ENDOGENOUS CREDIT MONEY:

EVIDENCE FROM SELECTED DEVELOPING COUNTRIES.

Nicola Theron

Dissertation presented for the Degree of Doctor of Economics at the University of Stellenbosch. Promoter: Prof. B.J. Moore.

April 2003.

Financial assistance provided by the National Research Foundation (NRF): Social Science and Humanities is hereby acknowledged. The points of view presented here are those of the author and should not be attributed to the National Research Foundation.

Declaration

I, the undersigned, hereby declare that the work contained in this dissertation is my own original work and that I have not previously in its entirety or in part submitted it at any university for a degree.

Signature:

Date: March 2003

ABSTRACT

The endogenous money theory states that the money supply responds endogenously to the demand for credit. The money supply is not exogenously determined by the central bank. The endogenous theory is associated with the Post Keynesian school. It has been tested extensively for developed countries, where it was found that the modern credit-driven world is characterised by an endogenous money supply.

The contribution of the present study is to extend this analysis to developing countries, specifically twelve countries in the SADC region. To examine the applicability of the endogenous money theory to developing countries, the thesis begins with an overview of the views of the different schools of thought on the role of money. The areas of consensus and disagreement within the Post Keynesian school are discussed. The theoretical basis of the thesis is the 'structuralist' Post Keynesian view that money cannot be endogenous if the financial system in a country has not reached the final stages of development.

The 'structuralist' hypothesis is tested for the SADC countries by examining the demand and supply of credit money in each country. It was found that households do not generally have full access to formal credit markets. Changes in the money supply are not determined by changes in private sector credit in many of the countries. The analysis was then extended to the institutional environment in each country. A financial institutional index was developed to

facilitate comparison between the SADC countries. It was shown that South Africa is the only country in the SADC area that has a financial system that can be classified as 'largely developed'. It is also the only country where changes in the supply of money are predominantly credit-driven.

Post Keynesians maintain that the money supply is endogenous and interest rates are exogenous. Interest rate mark-ups and spreads are assumed stable over the business cycle. This notion is challenged by the 'structuralist' Post Keynesians. To test the theory of stable interest rate mark-ups and spreads, data for each individual country were examined. Neither interest rate spreads, nor interest rate mark-ups were found to be stable. Interest rate spreads are generally higher in developing countries than in developed countries. No clear pro- or counter-cyclical variation in spreads was found.

Finally, an econometric model was developed and the links between financial development and growth were examined. By looking at 49 developed and developing countries, it was found that financial development is strongly linked to economic growth. Financial repression and high interest rate spreads cause growth to be depressed. Financial development and increased competition in the banking sector will lead to higher real economic growth rates. In an environment where the financial system has not reached the stage where money is endogenous, the lack of financial institutional development stifles economic growth.

OPSOMMING

Die teorie van 'n endogene geldvoorraad aanvaar dat die aanbod van geld endogeen reageer op die vraag na krediet. Die geldvoorraad word nie eksogeen bepaal deur die sentrale bank nie. Die endogene gedvoorraad teorie word geassosieer met die Post Keynesiaanse skool. Dit is reeds getoets vir ontwikkelde lande, waar die bevinding was dat 'n endogene geldvoorraad 'n eienskap is van 'n moderne kredietgedrewe wêreld.

Hierdie tesis maak 'n bydrae deur die analise uit te brei na ontwikkelende lande, spesifiek twaalf lande in die SADC streek. Om die toepasbaarheid van die endogene geldvoorraad vir ontwikkelende lande te toets, begin die tesis met 'n oorsig van die verskillende denkskole se sienings oor die rol van geld. Die areas waar Post Keynesiane ooreenstem en verskil word bespreek. Die teoretiese basis van die tesis is die 'strukturalistiese' Post Keynesiaanse siening dat die geldvoorraad nie endogeen kan wees indien die finansiële sisteem in 'n land nog nie die finale ontwikkelingstadia bereik het nie.

Hierdie hipotese van die 'strukturaliste' word getoets vir die SADC lande deur te kyk na die vraag na en aanbod van krediet in elke land. Daar is bevind dat huishoudings oor die algemeen nie volledige toegang het tot formele kredietmarkte nie. Veranderinge in die geldvoorraad word nie in al die lande veroorsaak deur veranderinge in privaat sektor kredietverlening nie. Hierdie analise word dan uitgebrei na die institusionele omgewing in elke land. 'n

Finansiële institusionele indeks is ontwikkel om vergelyking tussen die SADC lande moontlik te maak. Daar is bevind dat Suid Afrika die enigste land is met 'n finansiële sisteem wat geklassifiseer kan word as 'grotendeels ontwikkeld'. Dit is ook die enigste land waar die geldvoorraad beduidend kredietgedrewe is.

Post Keynesiane glo dat die geldvoorraad endogeen is en rentekoerse eksogeen. Rentekoersmarges word gesien as stabiel oor die konjunktuursiklus. Hierdie aanname word bevraagteken deur die 'strukturalistiese' Post Keynesiane. Die teorie van stabiele rentekoersmarges word getoets deur te kyk na data vir elke individuele land. Die bevinding is dat rentekoersmarges nie stabiel is nie. Marges is oor die algemeen hoër in ontwikkelende lande as in ontwikkelde lande. Daar is geen duidelike pro- of kontrasikliese variasies in rentekoersmarges gevind nie.

Laastens is 'n ekonometriese model ontwikkel om die skakels tussen finansiële ontwikkeling en groei te ondersoek. Deur te kyk na 49 ontwikkelde en onontwikkelde lande, is daar bevind dat finansiële ontwikkeling en groei 'n sterk verband toon. Finansiële onderdrukking en hoë rentekoersmarges lei tot laer ekonomiese groei. Finansiële ontwikkeling en groter mededinging in die bank sektor sal lei tot hoër reële ekonomiese groeikoerse. In 'n omgewing waar die finansiële sisteem nog nie die stadium bereik het waar geld endogeen is nie, sal die gebrek aan finansiële institusionele ontwikkeling ekonomiese groei benadeel.

CONTENT

Chapter 1: Introduction

Chapter 2: The Role of Money

Chapter 5: The Supply of Credit: Credit Rationing

Chapter 6: The Monetary Transmission Mechanism

Chapter 7: Institutional Environment

Chapter 8: Exogenous Interest Rates

Chapter 9: Financial Development and Growth

Chapter 10: Conclusion

List of Tables

List of Figures

CHAPTER ONE

INTRODUCTION

When I began to write my Treatise on Money I was still moving along the traditional lines of regarding the influence of money as something so to speak separate from the general theory of supply and demand. When I finished it, I had made some progress towards pushing monetary theory back to becoming a theory of output as a whole (John Maynard Keynes, 1936).

1.1 INTRODUCTION

The nature and meaning of money have changed dramatically over time. In a world of commodity money where its value is backed by another item such as gold, the monetary authorities have the power to determine the money supply. When the supply of money is determined independently of the demand for it, it is regarded as exogenous. An exogenous variable is one which is determined outside of the system under consideration. In orthodox monetary theory the high-powered monetary base is considered to be under the control of the monetary authorities. This idea of an exogenous money supply still forms the basis of the theoretical framework most economists use today. Yet the reality of the credit-driven world we live in implies that the money supply is endogenously determined by the demand for credit.

Commodity money must be distinguished from credit money or fiat money. The endogenous money supply theory acknowledges that the modern world is characterised by credit money and liability management practices of commercial banks. In the endogenous theory, reserves and deposits do not create loans, but are rather created by loans. In today's world banks first extend credit as demanded, creating deposits in the process, and then look for the reserves later. If this is a correct description of reality, it has serious implications for both monetary policy and nominal variables, such as interest rates and inflation.

The endogenous money supply theory has been examined extensively for developed countries. Research, on the money supply processes in developed countries found the money supply to be credit driven. There are strong correlations between private sector credit and the money supply. Firms and households have access to credit and credit lines are drawn down as needed. The role of the central bank is to ensure financial stability and liquidity. It has no choice but to accommodate the demand for credit. The money supply in industrialised countries respond endogenously to the financing needs of the economy.

It has not been shown conclusively that the same applies to developing countries. The institutional realities of developing countries differ from those of developed economies. Capital markets are undeveloped and firms and households typically do not have overdraft facilities. Credit rationing is prevalent in these markets and financial innovation is limited. This has certain

implications for the money supply process and the conduct of monetary policy. While the money supply is not strictly exogenous, in the sense of controlled by the central bank, it is also not fully endogenous. Credit is not supplied on demand. This thesis examines the money supply process in selected developing countries.

1.2 SCOPE OF THE STUDY AND METHOD OF INVESTIGATION

Endogenous money theory is examined within the developing country context. The question addressed is how the money supply process operates in less developed countries. In the case of an exogenous money supply, the central bank has full control over the money supply, and the stock of money is fixed. The demand for money in turn sets the interest rate. This is the classical textbook case of exogenous money and endogenous interest rates. The money supply is determined by the central bank, and market forces of supply and demand endogenously determine interest rates. In the endogenous case the money supply is determined by the financial system, and the central bank sets the price at which it supplies money. The interest rate becomes exogenous and policy-determined.

To examine the endogenous money supply theory in developing countries, the nature of their financial systems must be examined. The demand and supply of money will be investigated to determine whether all credit demanded is supplied. The question of whether interest rates are exogenous or endogenous will also be considered. There are different schools of thought

within the broad category of Post Keynesian economists. 'Accommodationists' regard interest rates as fully exogenous, while 'Structuralists' regard them as both exogenous and endogenous. Interest rates vary over the business cycle to reflect variations in risk. Interest rate movements in different countries will therefore be examined.

The rationale for the investigation is the importance of monetary policy for economic stability and economic development. There is convincing evidence of a strong relationship between financial development and economic growth. Most countries in the current study experienced low average growth over the last two decades. Most of these countries also have undeveloped financial systems. It will be argued that the money supply becomes increasingly endogenous as financial systems develop. When agents are subject to arbitrary credit rationing, and the money supply process is not endogenous, economic growth is adversely affected. The implications of an endogenous money supply are important not only for monetary policy, but also for economic growth.

The study is structured as follows:

In the remainder of this introductory chapter a brief overview is given of the SADC countries that are examined in subsequent chapters.

Chapters 2 and 3 deal with theoretical monetary concepts. The 'role of money' is discussed in chapter 2, and an overview is given of different schools of

thought in monetary economics. The issue of money neutrality is examined and the views of different schools of thought regarding the role of money in the economy are described. Chapter 3 gives a detailed overview of the work of Post Keynesian authors and their individual contributions to the endogenous money theory, while there is not complete consensus on the degree of money supply endogeneity, Post Keynesians agree on the basic notion of an endogenously determined money supply.

In chapter 4 the demand for money is distinguished from the demand for credit. Keynes's finance motive is explored in order to get a proper demand side focus. The composition of the demand for credit in selected developing countries is examined. Chapter 5 deals with the supply of credit money. It is argued that New Keynesian concepts such as credit rationing are compatible with the Post Keynesian idea of endogenous money. The relationship between private sector credit and the money supply is examined for individual developing countries to determine the extent that the money supply is credit driven.

In the Post Keynesian view the monetary transmission mechanism does not originate with changes in the money supply by the central bank. The central bank does not control the money supply, and this has certain implications for understanding the monetary transmission mechanism. Chapter 6 gives an overview of the monetary transmission mechanism in selected developing countries.

Chapter 7 deals with the institutional environment. The institutional realities in developing countries have certain implications for the money supply process. Different aspects of the institutional environment are discussed and combined to develop an index of financial development. This index can also be interpreted as a measure of the degree of endogeneity of the money supply.

The issue of exogenous interest rates is discussed in chapter 8. The differences in the views of the 'structuralist' and 'accommodationist' Post Keyensians are highlighted. Stable mark-ups are an important part of the accommodationist endogenous money supply theory. The stability of mark-ups over the business cycle is examined using a vector autoregression (var) model. Where 'accommodationists' argue that mark-ups are stable, 'structuralists' focus on the behaviour of interest rate spreads as indication of liquidity preference of banks. Interest rate spreads are examined using a var model. Interest rate spreads are generally higher in developing countries than in industrialised countries. To provide some insight into the reasons for high average levels of interest rate spreads, data was obtained from 76 individual banks in 9 SADC countries. The determinants of interest rate spreads on a micro-level are explored using an ordinary least squares (OLS) cross-sectional model.

The evidence on financial development (chapter 7) and interest rate spreads (chapter 8) are combined in a econometric model in chapter 9. This model is used to examine the links between financial development, levels of interest rate spreads and economic growth.

1.3 COUNTRIES EXAMINED IN THE STUDY.

The purpose of this thesis is to test the endogenous money supply theory for developing countries. To facilitate this, it was decided to focus on a specific group of developing countries. The Southern African Development Community (SADC) was chosen for this purpose. SADC currently has 14 member states. Two of these, the Democratic Republic of Congo and Seychelles, have joined since the current study was initiated. The study therefore includes 12 SADC countries, which will be discussed briefly.

Angola is a very poor, under-developed country. It has been plagued by a severe civil war for the past three decades. In 2000 it had a population of 12.9 million, but a very low per capita GDP of $ 433. Only 40% of the population is literate and 26% are urbanized. Its main contributors to economic activity are primary products, diamonds, oil and gas (SADC,2000).

Botswana is one of the SADC countries with a remarkable growth record. Of the 49 countries used in the econometric model in chapter 9, only three countries achieved average per capita growth rates above 4% over the period 1980-1999. Botswana was one of these (Ireland and Cyprus were the others). Botswana is a large country (582 000m^2), with a small population of 1.6 million. Per capita GDP in 2000, was $ 3117 (SADC,2000).

Lesotho is a small country (2.1 million people) with per capita income of

$ 437 in 2000. **Malawi** is one of the poorer underdeveloped SADC countries. In 2000, it had 10 million inhabitants with a low per capita GDP, $ 182. Only 40% of the population are literate and 13% urbanized. **Mauritius** is a small island economy (1.18 million people), with a relatively high per capita GDP (2000) of $ 3 582. It is an important tourist destination and has a relatively advanced financial sector. **Mozambique** is a very poor country with per capita GDP in 2000, of $ 242. In 2000 it had 16.8 million people of which only 28% are literate.
(SADC,2000).

Namibia is a large country (824 269 m^2), with only 1.77 million people, in 2000. It became independent from South Africa in 1990 and economic data are usually only available from 1992. **South Africa** is by far the largest economy in the area, with a highly developed financial system and per capita income of $3 044 (SADC,2000).

Swaziland is one of South Africa's small neighbouring countries, with a population of less than 1 million people and per capita GDP of $ 2 255, in 2000. **Tanzania** has a large population (32 million), but low per capita GDP of $ 243 in 2000. **Zambia** is also a poor country with per capita GDP of $ 302. In 2000, there were 10.4 million people with an average life expectancy of 46 years. Copper and zinc are the main contributors to economic growth. **Zimbabwe** has a population of 13.1 million people. Per capita GDP is $ 278. The country has experienced severe economic problems over the past few years (SADC,2000).

In the final chapter, the analysis is extended to 49 countries (25 developed and 24 developing).

CHAPTER TWO

THE ROLE OF MONEY

Any fool with a high enough IQ can produce an analytical model in which money is irrelevant, but what has that to do with money's role in the real world ? (David Laidler,1994)

2.1 INTRODUCTION

There are different views as to what constitutes money. Money is usually defined as a means of payment. It also provides a method of transferring purchasing power through time, allowing one to purchase today and to pay later. Wray defines money (1990:15) as "the unit of account, as a balance sheet entry, as a promise to pay". Some Post Keynesian authors believe that the money supply has always been endogenous (e.g. Wray), while others (e.g. Chick, Dow and Niggle) consider endogenous money to be a characteristic of the modern credit-driven world. The nature of money has changed over time. Different views on the role of money will be discussed in this chapter, by examining the different schools of thought in monetary economics.

2.2 EXOGENOUS MONEY

Exogenous money can be traced back to the initial formulation of the Quantity Theory of Money by David Hume. Hume used the illustration of an influx of gold, which

initially causes output to rise, and eventually causes an increase in prices. In such a world, money was fully backed by gold, and the level of the money stock had a direct influence on the price level. Once a banking system is introduced, the picture becomes more complex. If banks find it profitable to extend more loans, they will do so. Banks are able to raise the ratio of credit to the cash base at their own initiative, through innovations such as liability management.

Desai (1987:137) uses the concept of 'fiat money' to explain the *exogenous* nature of money. Fiat money is paper money printed as the state's liability or, in his terminology, 'outside money'. Since the monetary authorities are the sole suppliers of fiat money, the money supply is exogenous, i.e. quantity-constrained by the central bank. This exogeneity of the money supply could be guaranteed through enforceable reserve requirements. In this story banks are passive. They are always fully loaned up, given their reserve requirements. The monetary authorities control the high powered base - consisting of currency in circulation and central bank reserves – and thus determine the money supply.

An *exogenous* money supply also seems to have been accepted by Keynes in the *General Theory*. Apparently he subscribed to the conventional view and accepted the classical quantity theory of money. Post Keynesian writers argue that Keynes's views on the exogeneity or endogeneity of money should not be judged solely by looking at the *General Theory*. In his earlier writings, e.g. *The Tract on Monetary Reform (1923)* and *The Treatise on Money (1930),* money was treated as endogenous. In the *General Theory* he wanted to meet the classical economists on their own grounds and therefore concentrated on his ideas of effective demand and involuntary

unemployment, while keeping the money supply exogenous and firmly in the background. Moore (1988:172) describes it as follows:

> Although in the *General Theory* Keynes did choose to regard the money stock as being exogenously controlled by the monetary authorities, in the *Treatise* he did not. There is ample evidence from his earlier writings that Keynes had in fact fully recognized the endogeneity of a credit money system, in which the money supply is driven by the demand for bank credit to finance increases in business working capital requirements.

If money is considered solely as a medium of exchange, it has a minimal role to play in economic relations. This view also implies that money is neutral and does not affect the productive side of the economy. This was the position of the Classical economists. It is only when money is also recognised as a store of value that it loses its neutrality. Keynes argued that people choose between holding money or other financial instruments, because money is also a store of value as well as a unit of account. Since the money supply is also influenced by the real side of the economy and is no longer exogenous.

Orthodox monetary theory maintains that the monetary authorities can directly control the monetary base by manipulating the quantity of reserve assets. The stock of money is some multiple of the reserve assets as defined by the monetary authorities. The standard textbook model then explains how the money multiplier works to create more money through subsequent rounds of money creation. But the origin of this process always remains the exogenous determination of the monetary base by the monetary authorities.

This view of an exogenous money supply goes hand in hand with the idea of the neutrality of money. The extreme classical view sees money as simply a veil, behind which the real economy operates. Changes in the amount of money supplied to the economy (under the control of the central bank), will have no real effects on the economy. This belief was later challenged by Keynesian economists, who argued that money enters into the picture through the speculative demand for money.

The classical economists believed in the neutrality of money. The neutrality proposition states that there is a clear dichotomy between real and monetary phenomena. A change in the money supply has no effect on any real variables, it can influence only nominal variables. In a barter economy all that is produced will be used to pay for all that is demanded. Money is regarded as a device for facilitating transactions. Nobody would be interested in holding money other than for transaction purposes and therefore money was neutral. Monetary theory was reduced to a price theory, with no real influence on macroeconomic factors such as employment and economic growth.

2.3 LOANABLE FUNDS

The classical idea of the demand for money was embodied in the Quantity Theory of Money. Money was only demanded for transaction purposes. Holding money for any other reason would be irrational. Individuals or firms would not hold more money than needed for transactions, since to do so would be to sacrifice the income which could be earned by lending money out at interest. Therefore all current savings would be

available as funds available for loans, either as bonds or stocks or as deposits at banks. The classical theory of loanable funds, stated that an investment project would be undertaken if the interaction between the demand and supply of loanable funds resulted in an interest rate that made the project viable. The interest rate was the crucial variable. It served as the equilibrating mechanism between saving and investment, always ensuring that there would be a sufficient demand for the aggregate output of the economy at the prevailing interest rate. This was the mechanism that ensured that the economy would always return to full employment equilibrium after a disturbance. The interest rate was seen as a real phenomenon. Money was only a veil, which had to be pierced to examine the real world behind the veil. Saving could not exceed investment as both were determined by the interest rate and interest rate movements ensured equilibrium.

If money is neutral, its only influence is on the price level. The interest rate mechanism would prevent any increase in aggregate demand to cause inflation. All income was either consumed or invested, and no deficiency of aggregate demand could arise. Inflation was caused by supplying too much money to the economy, i.e. more than is needed to facilitate transactions at the current level of output. This idea was embodied in the classical Quantity Theory of Money. According to this theory, the money supply (M) is assumed to be exogenously determined by the monetary authorities, the velocity of money (V) is assumed to be institutionally determined and constant in the short run. The price level (P) is the general price level and Y is the level of output, which is assumed to be fixed at the level of full employment outcome in the short run.

If V and Y are assumed to be constant in the short run, and if M is exogenous, it follows that the level of prices is determined by the money supply. Changes in M will cause proportionate changes in P. This can be written in the form of an identity:

$$MV \equiv PY$$

This Fisherian version of the quantity theory concluded that P was determined by the amount of money in circulation in the economy.

Another version of the quantity theory was the so-called Cambridge / Cash-balance version. This version stated that the price level equated the demand for money with the supply of money. Demand for real money balances was a fraction (k) of the level of real output (Y) which was assumed to be fixed at full employment in the short run. Therefore P is once again proportional to the money supply and the identity becomes:

$$M \equiv kPY$$

It is clear from this equation that money is neutral. It has no real influence on the economy. When the supply of money doubles, people are holding more money than they wish to hold or need to support their current level of transactions. Because the classical view ignored the idea of money as a store of value, the logical step for people holding more money than they intended was to spend excess money on additional goods and services. This would cause the price level (P) to rise, because Y is assumed fixed at the full employment level and k is a constant. The only effect of a

doubling of the money supply is a doubling of prices. There are no effects on the real side of the economy.

This cash-balance version of the Quantity Theory rests on the assumption of a stable demand for real-money balances: any increase in the nominal amount of money in circulation would in equilibrium simply lead to an increase in prices sufficient to restore the level of real money balances to their original level, re-establishing equilibrium in the monetary sector. The demand for money was only explained by the use of money for facilitating transactions. No consideration was given to the idea that money also serves as a store of value.

This theory of a stable money demand function was later revived by Friedman and Scwartz in their monumental work, *A Monetary History of the United States (1963).* Money was reduced to a theory of the price level. In classical theory the real wage and the level of employment are determined in the labour market. Equilibrium in the labour market determines the level of output via the production function. The interest rate is determined by equilibrium between savings and investment. Money determines only the price level. This separation between money and real variables has become known as the classical dichotomy.

2.4 KEYNES AND THE NON-NEUTRALITY OF MONEY.

The classical view of money as a price theory offers no real policy prescriptions regarding full employment and economic growth. This is exactly the shortcoming that Keynes tried to address. In *The General Theory of Employment, Interest and Money*

(1936) he aimed to explain how money enters into this model as an essential element and not only as an afterthought. He wanted to provide an answer to the widespread unemployment of the 1930s by understanding what determined national income and expenditure. He aimed to provide an answer by linking the monetary and the real sectors of the economy, and not focussing, as his predecessors did, only on the real sector. In *The General Theory* Keynes demonstrated that aggregate output depended on the volume of employment and that economies did not automatically adjust to full employment equilibrium. The central proposition of his book was the principle of effective demand. Keynes reversed Say's law and argued that demand creates its own supply.

Keynes had a different view of the demand for money than the classical economists. The demand for money was seen as determined by the speculative, transaction and precautionary motives. These three motives determine an individual's demand for money or his "liquidity preference". The speculative motive was seen as the most important one. His equation for the demand for money ($M^{D)}$ was:

$$M^D = kPY + L(r),$$

where P is the price level, Y is the level of real income or output, r is the interest rate and L is liquidity preference.

The money demand therefore has two parts, the first term kPY embodies both the transactions demand and the precautionary demand. Both are a fraction (k) of PY and in this aspect resembles the cash-balance version of the Quantity Theory. The

speculative demand is denoted by the term L(r), being a function of the interest rate. As this was Keynes major extension to the classical theory, this was seen as the most important motivation for holding money. Keynes's theory of money is a theory of the determination of the interest rate, based on his analysis of the demand for money. The speculative demand L is an inverse function of the interest rate (r). Keynes assumed that the level of money income (PY) was given. The demand for and the supply of money then determine the interest rate.

It is clear in Keynes's earlier work, *A Treatise on Money,* that he did not believe the money supply was exogenously controlled by the central bank:

> ...it is evident that that there is no limit to the amount of bank-money which the banks can safely create, *provided that they move forward in step.* The words italicised are the clue to the behaviour of the system. Every movement forward by an individual bank weakens it; so that if they all move forward together, no one is weakened on balance. Thus the behaviour of each bank, though it cannot afford to move forward more than a step in advance of the others, will be governed by the average behaviour of the banks as a whole – to which average, however, it is able to contribute its quota small or large. Each Bank Chairman sitting in his parlour may regard himself as the passive instrument of outside forces over which he has no control; yet the "outside forces" may be nothing but himself and his fellow-chairmen, and certainly not his depositors (1935:26-27).

Keynes based his idea of an endogenous money supply on his concept of 'bank money', money that is created by the modern banking system:

> There can be no doubt that, in the most convenient use of language, all deposits are "created" by the bank holding them. It is certainly not the case that banks are limited to that kind of deposit, for the creation of which it is necessary that depositors should come on their own initiative bringing cash or cheques (1935:30).

In Keynes's model money is not neutral. An outside disturbance, e.g. an increase in the money supply, can stimulate aggregate spending via an increase in investment, which in turn will increase aggregate output. If the transmission mechanism could operate in this way, then the central bank could stimulate the economy by increasing the money supply. Keynes, however, warned of two circumstances under which this transmission mechanism would fail. The first was his so-called liquidity trap, where the LM curve becomes horizontal, the interest rate becoming so low that everybody expects it to rise. The other was an interest inelastic investment function (a vertical IS curve). If one or both of these prevailed, then monetary theory would be ineffective. Keynes believed that these circumstances are often present.

Keynes argued in *The General Theory* that even if wages and prices were flexible (as in the classical case), full employment would not be established automatically. If money wages are too high and they do fall, then the reductions in money wages led to reductions in costs and eventually prices. The result of this is that the real wage is not reduced sufficiently to directly equilibrate the labour market at full employment. Full employment could be restored later through the indirect effect of the fall in prices on the demand for money and interest rates, i.e. the 'Keynes wealth effect'. This led Keynes to conclude that wage cuts were not the best policy to achieve full

employment, because interest rates could be lowered directly through monetary policy by the monetary authorities.

This is why Keynes advocated a strong role for the state. He showed that a flexible wage policy was not a solution to unemployment; that monetary policy is often ineffective, and the only option left is fiscal policy. An increase in government spending (G) or a decrease in taxes (T) will increase aggregate demand, illustrated by a shift of the IS curve to the right and stimulate investment and economic activity. If the central bank increased the money supply, the monetary transmission mechanism will be prevented from working properly by either a horizontal LM curve or a vertical IS curve or both. The central bank should set the interest rate at a level conducive to economic growth.

Keynes's policy prescriptions were intended to move the economy towards full employment equilibrium. Anywhere below such a point, an increase in any variable, e.g. the money supply, will have an effect on both output and prices. If the economy reaches full employment, then expansionary policy will not cause output to increase but only prices to rise, i.e. the classical case. But Keynes believed that this classical case was in fact a special one. He described his theory as a general theory that incorporated the classical theory only as a special case. In contrast, Johnson (1958:240) later described Keynes's theory as a special case of the classical theory. Hicks (1937:133) in his seminal article "Mr Keynes and the Classics" concluded that: "the General Theory is something appreciably more orthodox".

2.5 THE NEUTRALITY PROPOSITION AND THE NEO-CLASSICAL SYNTHESIS.

In his 1937 article, Hicks argued that before *The General Theory* of Keynes, no formal model existed of the classical theory. He wanted to prove that after the formulation of both, they are closer than Keynes would have thought. Hicks's argument and his derivation of the well-known IS-LM diagram formed the basis of the neo-classical synthesis. Hicks (1937:62) had stated: ".. the General Theory of Employment is the Economics of Depression". He believed that the Keynesian arguments were applicable to times of depression, but in normal times the classical theory was sufficient and would provide the correct policy measures.

Hicks's IS-LM diagram reflected the close inter-relationship between the goods and money markets of the Keynesian analysis. Consumption (C) was determined by income (Y) and not by the interest rate (r). Therefore, saving (S) was also determined by income (Y) and was no longer dependent on the interest rate. Interest was the reward for abstaining from present liquidity. The level of investment (I) was determined by the marginal efficiency of capital. Two measures could be used to determine investment, i.e. the internal rate of return and the present-value method. (Morgan,1978:26).

Hicks argued that *The General Theory* was Mr Keynes's special theory. He said that Keynes, like the classical economists, believed that the demand for money was not determined only by the interest rate. The dependence of the demand for money on the interest rate was only a qualification of the old dependence of the demand for

money on income (Y). Keynes also included the transactions motive and was therefore not radically different from the classicals. The IS-LM diagram determines r and Y together, just as the classical theory simultaneously determined Q and P.

Despite these criticisms, Keynes made a huge contribution to monetary theory by providing the link between the nominal and real sectors. Although the idea of an endogenous money supply can be derived from the work of Keynes, it remained in the background. It was rather his fiscal policy recommendations that would become the focus of policy makers in the period after the Second World War. The (real or perceived) success of Keynesian fiscal policy was unprecedented. It was not until the early 1970s that the phenomenon of stagflation dethroned Keynesian demand management policies.

The widespread acceptance of Keynesian fiscal policy recommendations actually diminished the contribution of his work in the monetary field. His theory was reduced to the four-quadrant general equilibrium model by Hicks, as explained above. Although this was a very elegant exposition, monetary theory was reduced to a single quadrant. This reduced the understanding of the effect of money on the whole economy. Most monetary economists found themselves working within the constraints of this one quadrant, estimating money demand functions, while neglecting the overall effects of monetary policy.

Keynesian monetary policy became part of the neo-classical synthesis in a reduced form, as a special case of the classical model. This did not do justice to Keynes's contribution. Under the neo-classical synthesis, Keynesian monetary policy became

associated with the idea that "money doesn't matter". Money was again neutral, exogenously determined and unimportant as a policy variable. Changes in the money stock were viewed as largely impotent, since they could be completely offset by changes in velocity. This initially resulted in the implementation of "cheap money" policies. If money exerts only a slight influence on aggregate demand, because changes in M are likely to be offset by changes in V, the preferred policy approach would be to keep money in plentiful supply in order to keep interest rates low and thus reduce the burden of financing private and public debt. However, the money supply was not as impotent a policy variable as this view suggested. Demand management policies led to the stagflation of the 1970s. This provided fertile ground for criticism of the Keynesian approach, which first came from the Monetarist school.

2.6 FRIEDMAN AND THE ROLE OF MONEY

Monetarism is the belief in the importance of money. Friedman wrote in his *Monetary History of the United States,* written with Anna Schwartz:

> Money played an important role in economic and political developments in the United States during the period we cover – as it so often has in other periods and other places (1963:3).

Monetarism renewed interest in the classical quantity theory of money and reaffirmed the neutrality of money, by arguing that changes in the money supply did not influence the real side of the economy in the long run:

> Money is a veil. The "real forces" are the capacities of the people, their industry and ingenuity, the resources they command, their mode of economic and political organization, and the like (Friedman&Schwartz,1963:696).

Based on his monetary history of the United States, Friedman concluded that the money supply was exogenous:

> The close relation between changes in the stock of money and changes in other economic variables, alone, tells nothing about the origin of either the direction or influence. The monetary changes might be dancing to the tune called by independently originating changes in the other economic variables; the changes in income and prices might be dancing to the tune called by independently originating monetary changes; the two might be interacting, each having some elements of independence; or both might be dancing to the common tune of still a third set of influences. A great merit of the examination of a wide range of qualitative evidence, so essential in a monetary history, is that it provides a basis for discriminating between these possible explanations of the observed statistical covariation...One thing is abundantly clear from our narrative. Monetary changes have in fact often been independent, in the sense that they have often not been an immediate or necessary consequence of contemporaneous changes in business conditions (Friedman&Schwartz,1963:686).

Where Keynes focussed on the speculative demand for money, Monetarists saw the demand for money as dominated by income, not current measured income but a longer-term concept of permanent income. A discrepancy between the demand for and supply of money can only be reconciled by variations in permanent income and not by interest rate changes. This view caused Monetarists to view interest rates with suspicion, preferring to focus only on the money supply. They acknowledged that interest rates are an indication of the desire to hold financial assets. Since they

included a broader range of capital assets and expenditures in wealth portfolios, the interest rate was no longer a key variable. The implications of the Monetarist analysis are that the stability of the income velocity of money was the key relationship in macroeconomics and that the money supply was the crucial policy variable.

The Monetarists were suspicious of any activist stabilisation policy by government. They believed that changes in the money stock were the predominant factor explaining changes in money income. The economy is inherently stable and will automatically attain long-run equilibrium at some natural rate of unemployment. All that was necessary to ensure this was a stable growth in the money stock approximating the growth in output. The monetary authorities should ensure such stable growth of the money supply, by keeping to some monetary rule.

If it can be shown that the supply of money is not determined exogenously by the monetary authorities, but endogenously, then one of the main assumptions on which the Monetarist view is based, is refuted. This alternative view of the money supply will be dealt with in detail below. But it is necessary to realise at this point the implications of such a finding for the Monetarist view. If banks accommodate all demand for increased finances at a given interest rate, then the banks endogenously expand the money supply. This supply response of the banks is then accommodated by the monetary authorities who for debt-management reasons do not want the rise in credit demand to lead to a sharp rise in interest rates. The demand for and supply of money are not strictly independent and Friedmans' key insight into how the discrepancy between demand and supply manifests itself in changes in nominal income is erroneous.

The Monetarist idea of minimal government intervention differed greatly from the activist demand management policies of the Keynesian school. This was well summarised by Modigliani in 1977: "Nonmonetarists accept what I regard to be the fundamental practical message of *The General Theory*: that a private enterprise economy using an intangible money *needs* to be stabilized, *can* be stabilized, and therefore *should* be stabilized by appropriate monetary and fiscal policies. Monetarists by contrast take the view that there is no serious need to stabilize the economy; that even if there were a need, it could not be done, for stabilization policies would be more likely to increase than decrease instability". (Snowdon et al.,1994:170).

2.7 OTHER VIEWS ON MONEY NEUTRALITY

The New Classical school had their roots in the Monetarist counterattack on Keynesian analysis, but with rather more extreme policy implications. As the name suggests, they advocated an economic system similar to that of the Classical economists. Central to their theory were the concepts, rational expectations, continuous market clearing and the policy ineffectiveness proposition. The rational expectations revolution evolved during the 1970s and is usually associated with the work of Robert Lucas (like Friedman, from the University of Chicago). Sargent, Barro and Wallace have also written in this tradition.

The assumption of continuously clearing markets, is a highly controversial element of the New Classical analysis. It is also the one linking them to the Classical school. Like the classical economists, they believe that all prices are flexible and adjust

immediately to disturbances. In the Keynesian model prices adjust slowly and sometimes not at all, without some help from the government. Prices are slightly quicker to adjust in the Monetarist view, but there are also important rigidities present. In the New Classical view, economic agents may be wrong with their forecasts, but they adjust so quickly to the new information that becomes available that the aggregate supply curve is vertical. Supply curves are upward sloping only in the "very short-run". Equilibrium is reached almost immediately and therefore the supply curve is vertical. "Rational expectations is the hypothesis that such errors are discovered with almost no delay"(Hoover,1988:13).

These dual hypotheses of rational expectations and continuous market clearing have strong policy implications. One implication is that there can be never any involuntary unemployment. Persistent unemployment is explained by an intertemporal labour supply function, i.e. voluntarily choosing to take more leisure now and do more work later when real wages may be higher. But the most striking policy recommendations lie in the monetary field. Like the classical economists, New Classical economists believe that money is neutral. Lucas argued that monetary policy could still be effective in the short run, similar to the Monetarist argument, but the agents will adapt their expectations faster. Sargent and Wallace extended Lucas's model to develop the 'policy ineffectiveness proposition'. Only unanticipated monetary policy could have an effect by raising output and employment temporarily above their long run equilibrium levels, because of temporary errors in inflation expectations. They differ from the Monetarists who prescribed a monetary rule of stable money growth. According to the policy ineffectiveness proposition, rational agents will incorporate

the rule in their forecasts and monetary policy will have no effect on real variables. Only unanticipated changes have an effect.

Wray describes these views as follows:

> The rational expectations debate over the effectiveness of monetary policy can be taken as a final example of the use of an exogenous money supply (in the control sense) (1990:77).

These ideas made the New Classicals critical of any stabilisation policy, both monetary and fiscal. According to them, monetary and inflation policies have no effect at all. The implication is that if the public believes the monetary authorities, then inflation could be diminished without any real effects, like higher unemployment.

Real business cycle theory was an attempt to make the new classical analysis more relevant to real world problems and fluctuations in the economic cycle. All that the new classical theory could offer was the explanation that fluctuations were caused by unanticipated variations in the money supply. This policy ineffectiveness proposition proved to be theoretically and empirically invalid by the early 1980s. "The proposition that anticipated money was neutral did not prove to be robust" (Snowdon et al,1994:236). Therefore, some New Classical economists, notably Finn Kydland, Edward Prescott, Charles Plosser and Robert Barro, tried to extend the original theory to a more appropriate model. They developed the real business cycle theory.

This theory viewed monetary policy in a poor light. By 1980 Sims published some results on the causal role of money in which he argued that the direction of causality

runs from output to money and not from money to output. This new development raised further question marks with respect to monetary explanations of the business cycle. This shifted the focus to non-monetary explanations, i.e. to real factors. Random shocks, such as unanticipated changes in money supply, were now replaced by supply-shocks in the form of random changes in technology. This led to the conclusion that monetary policy is irrelevant, having no influence on real variables. This phenomenon is sometimes referred to as the *super-neutrality* of money, to distinguish it from the possible short-run effects that unanticipated money shocks could have in the New Classical models.

In real business cycle theory, money is always neutral. In a world characterised by rational expectations, perfect price flexibility, full information regarding the money supply and intertemporal substitution of labour, money has no real influence. This view, developed during the 1980s, was radically different from all the other macroeconomic schools. Although there were serious differences between Keynesians and Monetarists on exactly how monetary change affected real output, all agreed that the rate of growth of the money supply had serious effects on the real side of the economy (at least in the short run). The work of the Monetarists was seen to confirm the view that changes in the money supply had some effect on changes in output and therefore causality was running from money to output.

Real business cycle theorists argued (based on the work of Sims), that the money supply was endogenous. Rather than money influencing output, the direction of causation ran from output to money. During an upswing of the business cycle, firms have high expectations and therefore a higher demand for money. The monetary

authorities then accommodate this higher demand with an increase in the money supply. The money supply responds to changes in real activity, rather than the inverse.

But this fact of an endogenous money supply, caused the real business cycle theorists to argue that money should be disregarded altogether. If money only reacted to real changes in output, then it could safely be ignored. King and Plosser (1984) concluded that money was endogenous, reflecting real activity and can therefore be omitted from the model. They explained that as financial services can be produced more rapidly than the final product, it is clear the former is likely to occur *before* the expansion in output.

These results of an endogenous money supply are very similar to the Post Keynesian view of the money supply. But the policy implications of the Post Keynesian school are radically different. Where endogenous money caused the real business cycle economists to conclude that money has no role and can be ignored altogether, the Post Keynesian school view money and monetary policy as very important. As will be shown below, an endogenous money supply is central to Post Keynesian theory.

Rigid prices and wages are central to New Keynesian theory. Phelps and Taylor (1977:166) remarked: "In the ancient and honorable tradition of Keynesians past, we take it for granted that there are disadvantages from too-frequent or too-precipitate revisions of price lists and wage schedules". The original work on rigidities did not include rational expectations. Later Akerlof introduced the term near-rationality. This had interesting implications for monetary policy, as it implied that imperfectly

competitive firms may not fully optimise by adjusting prices in response to exogenous shocks. Therefore, monetary policy can be effective, especially in the short run.

The explanation of rigid prices and wages is used to show that at the individual level there are small lags where prices adjust slowly to wage changes. These small lags have a large cumulative effect on the economy as a whole. Even if individuals adjust their prices rather quickly, then the much slower vertical and horizontal interactions between price decisions will lead to slow aggregate price adjustment. Price and wage rigidity are thus explained by looking at nominal rigidity at the individual level, which is then translated cumulatively to the aggregate level (Blanchard,1991).

What are the implications for monetary policy? Monetary policy has an effect on the real side of the economy, and not only on the price level. Nominal prices and wages are rigid throughout the economy and these rigidities can have large real effects like unemployment. There is another strand of New Keynesian literature (Greenwald and Stiglitz, 1993) that argues that even with perfectly flexible prices and wages, small disturbances can still have large effects. Fluctuations in economic activity are not only the result of rigidities, but price flexibility could actually contribute to macroeconomic fluctuations and unemployment. Increased flexibility can exacerbate a downturn, by amplifying the shocks and causing the effects to be of a permanent nature. Such market failures might occur because of informational imperfections such as imperfect indexing or incomplete contracts. But the implication of flexible prices for monetary policy is the same as with rigidities. Monetary policy has real effects even when wages and prices are flexible. In both the cases of flexible and rigid prices, monetary policy has a place and this led the New Keynesians to reject the policy

ineffectiveness proposition of the New Classical school. Although the New Keynesians see a role for monetary policy, they limit it to the short run and believe that money remains neutral in the long run.

New Keynesians believe that the non-neutrality of money is consistent with the stylized fact that money is procyclical and a leading indicator in the business cycle. This is similar to the Monetarist position based on the empirical work of Friedman and Schwartz. However, New Keynesians do not believe in the rules approach of the Monetarist and New Classical schools. New Keynesian economists believe that it is virtually impossible to design rules that are appropriate in the face of a rapidly changing economy. The Monetarists and New Classicals plead for minimum government intervention and stable rules. But the New Keynesians believe that shocks to the economy would persist, because of rigidities in the system, creating a need for discretionary policy intervention.

2.8 A POST KEYNESIAN INTERPRETATION

The traditional view of the money supply is that the monetary authority has the power to control the quantity and the rate of growth of the high-powered base, the cash reserves and the total deposits of the banking system. The banks are then limited by their minimum reserve ratios and the price of additional finance from the monetary authority, in the amount that they can lend to the non-bank sector. This is also the assumption that the Monetarist case is built on, as explained above. The problem with this traditional view is that no distinction is made between a commodity and credit-money economy. The traditional view operates within a commodity money

world. The endogenous money supply theory acknowledges the changed world that we live in, characterised by credit and the liability management practices of banks. The endogenous theory does not see deposits as creating loans, but rather loans as creating deposits. It is believed that in today's world, banks extend credit, creating deposits in the process and looking for the reserves later. According to Wray (1990:13): "In any economy in which creditor-debtor relations exist, money cannot be neutral".

When banks accommodate all demand for increased finance, the money supply is endogenously determined. It is determined by the demand for credit. If a firm wants to increase its output, it has to raise finance for new capital equipment and employment of more workers. It obtains this from the banks. Higher wage bills therefore translate into an increase in the money supply through the credit markets. Wray (1990:16) describes this process as follows:

> Thus, by focussing on money, I focus on the process of debt creation, which is an important part of the capitalist production process. In contrast, orthodox quantity theory begins with a fixed quantity of money and focuses on the use of money as a medium of exchange, while the portfolio balance approach takes an exogenously given supply and analyzes the effects of changes in asset prices on portfolios. Neither of these orthodox approaches concentrates on the process by which money is endogenously created as assets and liabilities are produced and purchased in a capitalist economy.

This reverse causation is central to the Post Keynesian interpretation. If desired spending rises, which requires finance and if the financial institutions accommodate

this increased demand for finance, then the money supply increases as spending rises. Economic growth requires net deficit spending, which can only be financed by credit creation. Moore (1988:230) estimated for South Africa that: "On an annual basis the change in the nongovernment wage bill alone explains more than 90 percent of the observed variation in bank credit".

This provides a different view of the role of banks in a credit money economy. Banks are considered to be price setters and quantity takers in retail loan and deposit markets. They set a lending rate to creditworthy borrowers, and then accommodate all demand at this price. The rate they set is some mark-up over the bank rate. In the short run, business loan demand is extremely insensitive to changes in interest costs. The most important determinant of private sector demand for bank credit is the wage bill. This effect works through both the household and business sectors. The growing wage bill of a firm will create the need for additional working capital and at the same time the increases in the level of labour income can serve as collateral for more loans.

Central banks accommodate these loan activities by allowing the nominal supply of credit money to accommodate changes in the demand for bank credit. The money supply is credit-driven. The only decision for the monetary authority is the price at which they supply liquidity to the banking system.

2.9 SAVING AND INVESTMENT

The prevailing assumption of the classical world was the idea based on the work of the French economist Jean Baptiste Say, who formulated what became known as

Say's law. This law stated that supply would create its own demand. Aggregate demand would always equal aggregate income, i.e. all saving would find investment outlets. Both consumption (C) and investment (I) were jointly determined by the interest rate (r)

Expenditure (E) is equal to aggregate output (Y) (by definition).

$$E = C(r) + I(r) = Y$$

Households are responsible for consumption and firms for investment expenditure. But the income that households do not use for consumption, they save. Therefore savings are also determined by the interest rate.

$$Y - C(r) = S(r)$$

From the previous two equations it follows that saving is equal to investment.

$$S(r) = I(r)$$

This idea that saving would always equal investment and supply would always equal demand, was universally held by economists from John Stuart Mill to Alfred Marshall. Only Malthus claimed that a general glut of commodities was possible. This belief in the superiority of the invisible hand led the classical economists to believe that the system would always return to full employment equilibrium.

In the Keynesian model output is determined by expenditure by households (C) and firms (I). In the classical model consumption and saving are determined by the interest rate. In the Keynesian model they are both a function of income. Keynes explained his consumption function by referring to some "psychological law", where consumption increases as income increases but by some fraction, the so-called marginal propensity to consume. Investment is determined by expected profitability which Keynes termed the "marginal efficiency of capital". This fluctuated much as the future was uncertain and it was difficult to calculate the return from an investment decision. Keynes used the term "animal spirits" to indicate that business confidence was crucial to the level of investment and that it was not determined solely by interest rates as in the classical theory. The effect of a change in investment on output would be greater than the initial change, because of the multiplier.

Keynes rejected the loanable funds theory. He argued that investment determines saving through changes in income:

> The initial novelty lies in my maintaining that it is not the rate of interest, but the level of incomes which ensures the equality between saving and investment (Keynes,1937:250).

Saving was seen as a withdrawal from the income stream and there was not some interest rate that would ensure equality between saving and investment. Saving was determined by income, like consumption. All income that is not consumed is saved. If people save more, then they consume less and this will actually lower income and employment.

> No amount of actual investment, however great, can exhaust and exceed the actual supply of savings, which will always exactly keep pace (Keynes,1937:248).

This view of Keynes is one of the central aspects of an endogenous money supply theory. Wray sees the *ex post* equality of saving and investment as a logical conclusion of the endogenous money argument:

> Thus, the true order of events shows that orthodoxy clearly has reversed the process through which investment is funded. Banks do not begin as intermediaries which accept deposits of 'savers' and then make loans to 'investors'...Just as the logic of a capitalist system requires that it cannot be constrained by commodity money, its logic also requires that it cannot be constrained by saving (1990:58).

Moore argues that saving is the accounting record of investment:

> Since actual saving is the accounting record of investment, if a reduction in interest rates increases investment, it must necessarily also increase saving. If investment expenditure rises due to a reduction in interest rates, this will lead to an increased demand for bank loans, to finance producers' increased working capital needs. The resulting increase in the money supply provides the nonvolitional saving by all units whose money balances have increased over the period. Investment can thus never be constrained by a lack of saving (Moore,2000:21).

Keynes found it astonishing that this equality between saving and investment was not as clear to everyone:

> Some people find it a paradox, that, up to the point of full employment, no amount of actual investment, however great, can exhaust and exceed the supply of savings, which will always exactly keep pace (Keynes,1973:210).

In this view, investment actually causes saving. If an economy functions below its full employment level of output, then it is probably demand constrained in the Keynesian view, and the problem cannot be a lack of saving since investment creates the saving necessary to finance itself. But investment is determined by the interest rate, and this view of saving as the accounting record of investment then has serious policy implications for the way the monetary authorities view interest rates.

2.10 EXOGENOUS INTEREST RATES

Keynes rejected the classical idea that real forces, represented by the supply and demand for loanable funds, determine the interest rate. In the *General Theory* the interest rate was determined by the liquidity preference (demand for money) and the supply of money. The determination of the interest rate was a monetary and not a real phenomenon, as in the classical case. Inequality between saving and investment is addressed by quantity adjustments rather than interest rate adjustments that could ensure full employment equilibrium. In the *General Theory* Keynes assumed that the supply of money was determined exogenously by the monetary authorities.

Keynes introduced the interest rate as an important factor into the money market. The interest rate was essential to the speculative demand for money. The speculative

motive was based on an idea of a normal rate of interest. When the interest rate is low (relative to the normal rate), investors expect it to rise in future, causing bond prices to fall and therefore the demand for speculative balances is high. The transactions and precautionary demand for money determine the position of the money demand function, while the speculative demand determines the slope. In the Neo-classical synthesis, the money supply was fixed exogenously by the monetary authorities. The money supply and the money demand functions determine the LM curve. The LM curve has a positive slope and depicts different levels of Y and r at which the money market clears. Macroeconomic equilibrium is determined by adding the IS curve. To determine equilibrium in the money market, the interest rate is necessary and to determine equilibrium in the goods market, Y needs to be known. Y and r can be determined simultaneously where the two curves intersect.

In Keynes's analysis the investment function illustrated the negative relationship between I and r. In the classical case, the investment function is also negatively sloped, but investment and saving together determine the interest rate. Keynes believed that the interest rate is necessary to determine I and can not be determined in the goods market as a function of savings and investment. Where the classical school thought that the interest rate would adjust to ensure equilibrium, Keynes believed that there are different levels of equilibrium output associated with different levels of the interest rate. These combinations of output (Y) and the interest rate (r) give equilibrium in the goods market and together they form the IS curve, which has a negative slope. The slope of the IS curve is determined by consumption and saving and the marginal efficiency of capital.

There are different views about interest rate determination in a world with endogeous money. Moore (1988) believes in a simple mark-up approach. Since the money supply is horizontal at a given rate of interest, the interest rate is simply a mark-up over the wholesale price of funds. This means that all the monetary authorities need to do to reduce unemployment is simply to lower interest rates (which becomes exogenous in this model). According to Moore:

> ...in modern overdraft economies, the level of short term interest rates has now become exogenous. Monetary authorities administer the interest rate as their chief policy instrument to induce the rate of growth of the money supply and aggregate demand, in their attempt to guide the economy towards their stabilization targets (2000:1).

This implies that:

> Classical loanable funds and Keynesian liquidity preference theories of interest rate determination, AD-AS and IS-LM theories of income determination, and any long-run growth model, are all fatally flawed (Moore,2000:5).

Other Post Keynesians (e.g. Wray) believe that liquidity preference theory is perfectly compatible with an endogenous money supply. Banks have some liquidity preference, which determines the loan rate of interest. The money supply is endogenous. But as more loans are extended, the interest rate must rise to compensate for the increased riskiness of the loan portfolio.

> Thus, the discount rate cannot be exogenously set, and cannot exogenously determine short term interest rates. Indeed, it makes no more sense to argue

that interest rates are exogenous than it does to argue that the money supply is exogenous.

These different views will be further dealt with in Chapter 4 when the demand for money is discussed.

2.11 THE MONETARY TRANSMISSION MECHANISM

The Keynesian transmission mechanism operates as follows: If the central bank wants to increase the money supply, then it does so by buying bonds. Households have more money, which they use to buy financial assets that are seen as a good substitute for holding money. Bond prices rise and the interest rate falls. Businesses will issue more bonds at the higher price, they will use this money to purchase capital goods, i.e. to invest. This will cause the supply price of capital goods to increase and production will increase. This higher production will work through the multiplier effect to increase expenditure through higher consumer demand. This provided the link between the monetary and the real sectors that was absent in the classical view.

The monetarist transmission mechanism differs substantially from that of the Keynesian school in its policy prescriptions. It starts in the same way as above. A higher money supply causes a portfolio imbalance. But now there are more options than only substituting money with other financial assets as in the Keynesian case. Households can also buy other assets, e.g. durable consumer goods. Households buy bonds, prices rise, interest rates fall and this causes higher investment by firms but now higher consumer spending on household assets also causes higher demand and higher prices for all goods, not only capital goods and financial assets. This is

why the Monetarist school saw interest rates as too narrow an indicator of whether monetary policy is tight or easy. They considered the rate of change in the money supply as the correct instrument to control inflation.

This view was based on the assumption that the supply of money is determined exogenously by the monetary authorities. Therefore, in order for the existing stock of money to be willingly held, the demand for money must change whenever the money supply is altered by the authorities. Empirical work done by Monetarists showed that changes in the money stock are followed by changes in money income, but by a lag (on average) of sixteen months. Because these lags were both long and variable, attempts to "fine tune" the economy in the short run were seen to be ineffective or even *de*stabilising. Therefore the Monetarist policy prescription was that the monetary authorities should avoid any drastic policy changes and should rather commit themselves to attaining a steady growth rate of the money supply, roughly equal to the growth in GDP. Discretionary fiscal policies should be avoided because of their crowding-out effect on private expenditure.

The question of how the monetary transmission mechanism works in a world with an endogenous money supply will be further explored in Chapter 6. The different transmission mechanisms in the literature and especially the credit channel of transmission will be looked at, as well as its relevance to less developed countries.

2.12 LESS DEVELOPED COUNTRIES (LDCs)

The discussion above showed that there are different views within the endogenous money school on whether the money supply has always been endogenous. Authors such as Moore, Wray, Dow and Chick, believe that endogenous money is a feature of the modern credit-driven world. This idea seems to have been recognised already by Keynes in his classification of different types of money in the *Treatise*:

> The proportionate importance of State-Money and Member Bank-Money, created as above, in making up the aggregate of Current Money varies widely at different periods and in different countries, according to the stage which have been reached in the evolution of monetary practice (Keynes,1935:31).

Wray seems to be the only Post Keynesian author who believes that the money supply has always been endogenous.

Wray acknowledges that the situation might be quite different in a less developed country (LDC). The ability of the central bank in a LDC to supply credit money on demand may be constrained by international capital flows.

> In this case, the money supply of the LDC cannot be endogenously increased because high 'liquidity preference' (that is, preference for DC debts) prevents creation of LDC money...For this reason, it is not at all clear that financial development in the LDCs can proceed along the path outlined...(Wray,1990:63).

The aim of this thesis is to look at the specific characteristics of LDCs today and to test whether, given the institutional environment, money can be endogenously created by the economic system.

2.13 CONCLUSION

In this chapter the role that money plays in an economy was looked at. It was seen that money was neutral in the classical analysis. Money was a veil, behind which the real economy functioned. Interest rates were determined in the goods market through the interaction between saving and investment. This was the classical theory of loanable funds. The money supply was considered exogenous and under the control of the monetary authorities.

Keynes rejected the loanable funds theory. In his analysis money was not neutral. The demand for money was not only influenced by transactions demand, but also by its property as a store of value. The interest rate is therefore a money market price and this determines the level of investment. This provided the link between the monetary and the real sectors that was missing in the classical analysis. In Keynes's *A Treatise on Money* he used a concept of endogenous money, where banks can supply money on demand, so-called 'bank money'.

The importance of Keynes's work in the monetary field was overshadowed by his fiscal policy recommendations. In the Neo-Classical synthesis, Keynes's emphasis on money was reduced to one of the quadrants of Hicks' IS-LM model.

Monetarism revived the old quantity theory of money. The money supply was viewed as exogenous, and determined by the monetary authorities. If the money supply grew by more than the targeted growth rate, this was due to a lack of 'moral fibre' of the monetary authorities. Money was not regraded as neutral in the short run, but was neutral over longer time periods. Monetarists concluded that the money supply should be kept at a stable rate of growth, more or less equal to the natural growth rate of the economy.

This idea of long-run monetary neutrality is also shared by the rational expectations school, the real business cycle theorists and even the New Keynesian school. Money is exogenous. Even when it is endogenous as in the
real business cycle analysis, the implications are that money is not important and can be disregarded altogether.

Against this background of exogenous and neutral money, it was shown that the Post Keynesian school offers important new insights into the role of money in a modern economy. In an overdraft economy the money supply is not under the control of the central bank. The demand for money or finance is automatically accommodated by banks who are price setters and quantity takers in their retail loan markets. This has dramatic implications for monetary policy. Saving is then always equal to investment – according to Moore, saving is the accounting record of investment. An economy can never be constrained by a lack of saving. An endogenous money supply process, causes the interest rate to become exogenous, fully under the control of the monetary authorities. The interest rate is simply a stable mark-up over the bank rate.

This also has further implications for the way that the monetary transmission mechanism works.

Finally, the question was raised whether this Post Keynesian view of the role of money in a credit world, is also applicable to LDCs. Do the same theory and policy implications apply to a country that has not yet developed all the financial institutions associated with a modern, sophisticated financial system? This question will be addressed in more detail in subsequent chapters.

CHAPTER THREE

ENDOGENOUS MONEY

In a world of banks and insurance companies, money markets and stock exchanges, money is a quite different thing from what it was before these institutions came into being (Moore,1988).

3.1 INTRODUCTION

As discussed in Chapter two, the period immediately after the Second World War witnessed a powerful consensus in the field of economics. Keynes's fiscal policy recommendations and the principle of 'effective demand' appeared to be very successful in creating a vibrant post-war economy. World War II was the beginning of government spending on a big scale. This continued with very little inflationary pressure until the 1970s. The neo-classical synthesis reigned supreme. This was generally a model of a world where markets returned to equilibrium, where agents had perfect information and where periods of prolonged involuntary unemployment were extraordinary. The aggregate supply curve had an upward sloping part when the economy was below the point of full employment equilibrium, but would soon return to the vertical part of the curve at full employment, where markets were clearing, i.e. the classical case with not much need for government intervention. This neo-classical synthesis became the basis of most economists' training, largely as a result of the influential textbook written by Paul Samuelson.

In the United Kingdom, some of Keynes's former colleagues continued their research in the original Keynesian tradition. They argued that the Neo-Classical synthesis, developed mostly in the United States of America, was not true to the original ideas of Keynes. As argued above, Keynesian policy prescriptions were reduced to fiscal stimulation packages, and due to interest inelasticity pessimism, monetary policy was regarded as less powerful. The critique of British economists is well summarised in the following remarks of Joan Robinson :

> The doctrines of the new era have been attributed to Keynes, but the dominant economic theory of the time in North America and spreading from there over the world, is what I have called the 'Bastard Keynesian doctrine'. I do not use the term just as abuse. It has a definite meaning. The old orthodoxy against which the Keynesian revolution was raised was based on Say's Law, there cannot be deficiency of demand. The Bastard Keynesian doctrine has allowed all the old doctrines to creep back in again. Keynes was diagnosing a defect inherent in capitalism. But the Bastard Keynesians turned the argument back into a defense of laissez-faire.(Davidson,1991:23).

The neo-classical consensus began to disintegrate with the events of the 1970s. The oil-shocks of 1973 and 1979 and the resulting phenomenon of stagflation dealt a severe blow to the once powerful consensus. The stable trade-off between inflation and unemployment (the Phillips curve) was no longer an accurate description of reality. The search was on for a new all-encompassing doctrine. The newer schools of thought have been discussed above, the Monetarist school which emphasised monetary policy and monetary phenomena, the New Classical school with rational expectations and the New Keynesian school with their desire to revive some of

Keynes's ideas of inflexible prices and coordination problems. The Post-Keynesian school has been criticised for their negative critique of the existing models and beliefs without offering any positive alternatives in the place of the old. Philip Arestis (1996:111) argued in a paper entitled 'Post-Keynesian economics: towards coherence' that this was not exactly true: "...post-Keynesian economics has passed through the important initial stage of mounting a concerted critique of mainstream economics." However, Dornbusch and Fischer in their macroeconomics textbook view Post-Keynesians in a rather different light:

> Post-Keynesians are a diverse group of economists who share the belief that modern macroeconomics leaves aside or explicitly assumes away many of the most central elements of Keynes's General Theory....Post-Keynesian economics remains an eclectic collection of ideas, not a systematic challenge as, for example, the rational expectations hypothesis. (Dornbusch&Fischer,1992,687-688).

Post-Keynesians argue that the view of critics like Dornbusch and Fischer was incorrect. Post Keynesian economics originated in the continuation of Keynes's work by some of his former colleagues at Cambridge, England, primarily Nicholas Kaldor, Joan Robinson and Richard Kahn.

Palley (1996:8) has argued that:

> Post Keynesian economics...has steadily coalesced over the last fifteen years into a coherent body of thought that is distinguished by its own theoretical perspectives.

He summarises the main propositions of Post Keynesian economics in his book *Post Keynesian Economics – Debt, Distribution and the Macro Economy* (1996). These are the idea of effective demand (built on Keynes's original idea), the view that wage deflation is not a solution for unemployment, the insight that nominal wages are determined by wage bargaining and that the money supply is endogenous. This last proposition of the endogeneity of money is central to the Post Keynesian view of the world we live in. This chapter gives an overview of this doctrine.

3.2 ENDOGENOUS MONEY – A DEFINITION.

In Keynes's analysis money mattered a lot. But this view had to take a backseat to his fiscal policy recommendations under the neo-classical synthesis. Fiscal policy remained the focus throughout the post-war years up to the 1970s when Monetarists revived the original quantity theory of money. Friedman argued that too much money was the cause of rising prices, i.e. 'too much money chasing too few goods'. The Post Keynesian school reversed the idea of money determining prices. Instead they argue that although money and prices move together, money does not determine prices. Both are determined by other factors. In an uncertain environment entrepreneurs use their "animal spirits" to determine whether an investment project should be undertaken or not. If they decide to invest, they need working capital. This capital is obtained in a modern credit world from commercial banks in the form of new loans and the utilisation of existing credit lines. Thus, instead of the traditional view of bank intermediation whereby deposits create loans, loans are now seen as creating deposits. The direction of causation runs from loans to deposits, not the other way around. The central bank must accommodate all demand for extra funds, in its role of

supplier of system liquidity, and normal functioning of the banking system. [1] This endogenous view of the money creation process is based on the idea of an overdraft economy where firms and households have outstanding credit facilities provided by commercial banks. Although it is assumed that modern financial innovation is crucial to endogenous money, the formulation of this view can be traced back to the previous century. French writers trace the idea of endogenous money back to an influential essay by Le Bourva, a French economist. The article appeared in the *Revue Economique* in 1959. Le Bourva explained the endogenous money concept, showing that the direction of causation was from prices to money rather than the other way around. In his own words: "Given that banks exist only in so far as entrepreneurs are indebted to them, the quantity of money can always be reduced by repaying loans without borrowing anew; in other words, *only desired money can exist"* (Lavoie,1999:108). Moss (1997:368) argues that the historic origin of the approach may go back further. He refers to a Professor Neil T. Skaggs who argued that Henry Dunnings Macleod, an eccentric English barrister (1821-1902), "may have been the first to understand completely how the quantity of money or its changes can be endogenously determined by the level of production but at the same time the level of production can be constrained by the lack of available credit and financial intermediation."

In his 1990 book *Money and Credit in Capitalist Economies – The Endogenous Money Approach,* Wray argues that the supply of money has always been endogenous, even in a commodity money world. Nonetheless, the endogenous view

[1] There is some debate among Post Keynesians whether commercial banks passively accommodate all demand for finance. Moore argues that the supply of money is horizontal in interest-money space, i.e. all demand is accommodated at a certain price. "Modern commercial banks are price setters and quantity takers in both their retail deposit and loan markets. As a result at every moment in time the money supply should be viewed as *horizontal*."(Moore,1988:xii). Wray on the other hand (1990) argues that the money supply is a step-function.

of money is usually associated with the development of the modern banking system. Arestis (1996:121) argues that the capacity of banks to create credit depends crucially on their stage of evolution. Innovations in the banking system make it possible for banks to operate more independently of their reserve requirements, making the supply of credit, and of money, more responsive to demand. This view sees the money supply as becoming increasingly endogenous as the banking system develops.[2]

The commodity money view, with money determined exogenously by the monetary authorities, is not an accurate description of the world we live in. Developments in financial markets during the past decade have dramatically changed the way banks do business. A multitude of new financial instruments have been developed, such as credit cards, charge cards, money market funds, electronic cash transfers, smart cards, etc. Commercial banks respond endogenously to the demand for credit, supplying all creditworthy borrowers with the necessary funds, at a given price. In the exogenous view, central banks can control the money supply by enforcing reserve requirements. But because of financial innovation, commercial banks are no longer narrowly constrained by reserve requirements. Even if the central bank wanted to control the monetary base, they could not do so. The central bank has the role of ensuring the smooth functioning of the financial system in a fiat money world. The consequence of not accommodating the demand for money would be disastrous, as confidence in the banking system could be destroyed rapidly. The central bank has

[2] This issue will be analysed further in later chapters when the endogenous money supply theory will be tested for developing countries.

no choice it has to accommodate all demand for money. The supply of money therefore becomes demand-determined and endogenous.

3.3 ENDOGENOUS MONEY – A DIVERSITY OF IDEAS

As stated above, some writers had traced the origins of the theory of endogenous money back to the nineteenth century and a certain British barrister, Henry Dunnings Macleod. A more recent exposition is that of Le Bourva in 1959. But most Post Keynesians believe that Keynes was indeed a supporter of the endogenous money theory as is evident from his earlier works the *Tract on Monetary Reform (1925)* and *The Treatise on Money (1935).* Although the *General Theory* is regarded as an improvement on his earlier work and indeed a replacement of it, Post Keynesians argue that his main ideas on monetary theory are embodied in the *Treatise on Money.* Rochon (1999:3) describes Keynes's views in the following way:

> From the *Treatise on Money* to his articles in the *Economic Journal* (1937-1939) and through the *General Theory*, Keynes's intellectual development and his attempt at building the foundations of a monetary economy of production slowly progressed toward the recognition of credit-money as the central institution of modern capitalism.

The earlier debate on the nature of money was overshadowed by the post-war emphasis on fiscal policy. The emergence of the Neo-Classical synthesis further reduced the importance of monetary policy. During the 1960s and 1970s Milton Friedman and the Monetarist school re-emphasised the importance of monetary policy. They argued that the amount of money in circulation directly influences the

price level, with causation running directly from money to prices. This led them to recommend the use of money supply growth rules, as the response lags of prices to money were long and variable.

During the 1960s in Britain, there was a different view on the efficiency of monetary policy. This was clear from the report published in 1959 by the British Committee on the Working of the Monetary System (known as the Radcliffe Committee). The Committee was directed to launch a full enquiry into the role of monetary policy. This was done against the background of the reduced significance of monetary policy during the Neo-Classical synthesis era. As Kaldor reported in 1982 in his influential book *The Scourge of Monetarism*:

> For those chiefly instrumental in the decision to set up the Committee, the Report must have come as something of an anticlimax (1982:5).

The reason for this was that the Committee under Lord Radcliffe concluded:

> ...we envisage the use of monetary measures as not in ordinary times playing other than a subordinate part in guiding the development of the economy...when all has been said on the possibility of monetary action and of its likely efficacy, our conclusion is that monetary measures cannot alone be relied upon to keep in nice balance an economy subject to major strains from both without and within. Monetary measures can help, but that is all (Kaldor,1982:6).

Across the Atlantic Ocean, Monetarism was gaining ground very rapidly in the United States. Kaldor compared the proponents of the new doctrine to "a band of enthusiasts, combining the fervour of early Christians with the suavity and selling

power of a Madison Avenue executive" (1970:1). The rapid rise of Monetarism made it essential for Keynesian economists to reformulate their views on the importance of monetary policy. The Radcliffe committee had questioned the importance of targeting the money supply and argued that the focus of monetary policy should rather be on the regulation of interest rates.

> Though we do not regard the supply of money as an unimportant quantity, we view it as only a part of a wider structure of liquidity in the economy...*It is the whole liquidity position* that is relevant to spending decisions and our interest in the supply of money is due to its significance in the whole money liquidity picture...(Kaldor,1982:8).

The Radcliffe committee unfortunately came to be associated with the idea that money is not very important. The basic idea seemed to be that changes in the velocity of money would offset changes in the money supply. The money supply could be allowed to grow rapidly, and this would lower interest rates. The resulting 'easy money' policies of the 1970s seemed to prove them wrong. Stagflation was rising and Keynesian demand management policies received most of the blame. This was a welcome development for Monetarism. Both the United States and Britain soon embarked on Monetarist experiments. On 6 October 1979, Mr Volcker the Chairman of the Federal Reserve Board announced the implementation of Monetarist policy measures, aiming for a steady growth of the monetary aggregates M1 and M2. In Britain, when Mrs Thatcher came to power in May 1979, the new government soon announced the adoption of Monetarist policy measures (Kaldor,1982).

Both these Monetarist experiments failed. The money supply grew by much more than the targeted rates while both interest and inflation rates soared. Kaldor (1982:xiv) notes that Friedman admitted publicly in 1982 that the American Monetarist experiment was a terrible failure. The fault was supposed to lie with the authorities, who did not implement the policy efficiently. The Bank of England fared even worse than the Federal Reserve: "Friedman has admitted that, as far as the United Kingdom is concerned, the money supply is *not* exogenously determined by the monetary authorities, but he attributed this to the 'gross incompetence' of the Bank of England…If the Bank of England is so incompetent that it cannot do so, how can we be sure that the Bank of Chile or of Argentina or Mexico – to take only the highly inflationary countries – are so competent, or rather so competently incompetent, as to make it possible to assert that the inflation of these countries was the consequence of the deliberate action of their central banks flooding these countries with money" (Kaldor,1982:xvi).

The Radcliffe report became an important statement on the practice of money supply targeting. The report had questioned the impact of the money supply on the price level, as advocated by the original Quantity Theory as well as by the Monetarist school. But the report mainly criticised existing monetary policy in the United Kingdom at the end of the 1950s. It had few positive policy recommendations to offer. This was regrettable as the report was used by policy makers to justify the spending policies of the 1970s, which resulted in high inflation. Unfortunately the Monetarist experiments of the late 1970s and early 1980s did not offer a much better alternative. By the 1980s the search was again on for a new paradigm. This led to renewed interest into the nature of money. The Post Keynesian School emerged with their

view of the supply of credit money as endogenous, demand-determined and credit-driven.

An earlier statement of the Post Keynesian view was by James Tobin. He wrote an influential article in the *Quarterly Journal of Economics* in 1970, entitled: 'Money and Income: Post Hoc Ergo Propter Hoc'. Tobin attempted to refute the idea of Friedman that a correlation between the quantity of money and prices implied one-way causation running from money to prices. In this paper Tobin constructed two models, one that he called an "ultra-Keynesian" model and the other a Friedman model. In the ultra-Keynesian model changes in the money supply respond passively to changes in income, which in turn were generated by autonomous investment and government expenditure. Banks accommodate the demand for credit, aided by the monetary authorities who supply the necessary liquidity. "The monetary system responds to the 'needs of trade'" (Tobin,1970:305). This model explicitly assumes endogenous money. But its aim was to show that with the ultra-Keynesian model in which money plays no causal role, results are obtained that would imply monetary causality, even more so than in the Friedman model. Tobin (1970:303) used these models to argue that: "I do think, nevertheless, that the exercise points up the dangers of accepting timing evidence as empirical proof of propositions about causation". Although he used the endogenous money theory to criticise Friedman's model, he also pointed out in his article that he did not believe the ultra-Keynesian model was truly descriptive of the world.

The earlier proponents of the endogenous money theory were Paul Davidson in the United States and Nicholas Kaldor in the UK. Moore (1988) describes Kaldor as the

first prominent Keynesian to fully embrace the concept of monetary endogeneity. This is clear from Kaldor's Radcliffe Lectures, delivered at the University of Warwick in 1981. In the second lecture he stated clearly: "Now, in the case of credit money the proper representation should be a *horizontal* 'supply curve' of money not a vertical one. Monetary policy is represented *not* by a given quantity of money stock but by a *given rate of interest;* and the amount of money in existence will be demand-determined" (Kaldor,1982:24). As early as 1970, Kaldor had written a critique of Monetarism in the *Lloyds Bank Review.* In this article he showed that in a credit money economy, the money supply could not be controlled exogenously by the central bank. He refuted the Monetarist idea by stating that: "The explanation, in other words, for all the empirical findings on the "stable money function" is that the "money supply" is "endogenous", not "exogenous. This, of course, is the crux of the issue, and it is vehemently denied by the Monetarist school"(Kaldor,1970:9). These ideas of Kaldor, especially the idea of a horizontal money supply curve was later further developed by Moore in his influential 1988 book, *Horizontalists and Verticalists.* This will be discussed in detail below.

Paul Davidson on the other hand never fully subscribed to the idea of the money supply as horizontal.

> Thus, as early as 1972 Post Keynesian monetary theory had not limited itself to the concept of an endogenous money supply – much less to a fully accommodating money supply. Moreover, the Davidson-Weintraub article (1973) explicitly recognized a) that observed increases in the money supply could be either exogenous or endogenous (cause or effect) and even when endogenous, need not be fully accommodating…Thus, as far as I am

concerned, there has never been anything in Post-Keynesian monetary theory which required a fully accommodating system (Davidson,1978:489).

It is important at this stage to remember that the members of the real business cycle school also support the idea of endogenous money. King and Plosser (1984), explained in detail how higher output could cause a higher volume of transaction services demanded by households and firms. This clearly implies that the direction of causality is also the reverse of the mainstream view of changes in money causing changes in income and prices. But the similarity between this school and the Post Keynesian analysis ends at this point. Snowdon et al. (1994:254) describe this in the following terms: "In an unholy alliance, both Post-Keynesians and real business cycle theorists appear to agree with Robinson that the quantity theory equation (MV=PY) should be read in causal terms from right to left." The reason why it is described as an unholy alliance is that the policy implications are vastly different. The real business cycle economists use the endogenous theory of money to prove that only real forces matter. Monetary policy is irrelevant with no influence on real variables, i.e. money is neutral. This is definitely not the Post Keynesian view. Post Keynesians see an important role for monetary policy, *because* the money supply is endogenous. In the rest of the study, the focus will be on the Post Keynesian idea of endogenous money and its implications for monetary policy.

3.4 MOORE : HORIZONTALISTS AND VERTICALISTS

In his 1988 book *Horizontalists and Verticalists,* Moore argued that in a credit money world the money supply is endogenous. Like Kaldor, he clearly distinguishes

between a world using commodity money and today's world of credit money. The orthodox theory and the quantity theory of money are only valid for a world with commodity or fiat money. In a world characterised by credit money, the money supply becomes endogenous. Moore uses the term "verticalists" to describe the economists who believe in an exogenous money supply. They see the money supply curve as vertical in interest-money space, as in the standard IS-LM analysis.

In the modern credit world, loans make deposits and not the other way around. Bank assets consist of bank loans. These loans are not marketable as they are heterogeneous, and the risk associated with each individual loan is costly to calculate. Most businesses and private individuals have unutilised credit lines. Rousseas (1988:476) argues that these unutilised credit lines are normally not where they are most needed and would therefore most probably not be utilised. "It is quite possible that a great part of unused overdrafts remain just that – *unused*". But if there are outstanding credit facilities, the total amount of credit money cannot be controlled by the central bank. The nominal money supply is therefore never quantity constrained by central banks.

The role of the central bank as the ultimate supplier of system liquidity, is to set the price of credit. The central bank cannot not accommodate the demand for money, as their role is to ensure the smooth functioning of the financial system. "All that central banks can do is set the price and terms at which they supply fiat money on demand to the financial system" (Moore,1988:xii). The supply of credit money responds endogenously to changes in the demand for bank credit. This higher demand can be explained by changes in the wage bill, which could be indicative of entrepreneurs'

future expectations of demand. The high-powered base is no longer tied to any exogenous gold stock. The price of credit is set, either by the central bank in the form of the bank rate or by commercial banks as some mark-up over the bank rate. But the quantity of credit money is demand-determined. Central banks cannot increase or reduce the money supply or the monetary base by open market operations so long as they are targeting the interest rate. But how can they reduce the supply of credit money when most businesses have access to unutilised lines of credit? Liability management practices by banks have developed in such a way that pre-arranged lines of credit are arranged between the borrowers and the banks. The utilisation of such credit lines obviously is at the discretion of the borrowers, not the banks. Moore & Smit report (1986:86) that "In the U.S. and the U.K. the utilization ratio of these overdraft facilities typically varies between 50 and 60 per cent, and unutilized credit lines are broadly equal to loans granted."

Commercial banks actively sell credit. They set the price at which they are willing to supply credit, and accommodate all creditworthy demand at this price. Moore describes modern commercial banks as price setters and quantity takers in both their retail deposit and loan markets. That leads to the conclusion that the total quantity of money is demand-determined and credit-driven. The supply curve of money is horizontal at the price set by the central bank.

Moore differs from Wray in his treatment of the demand for nominal money. Wray argues that the supply of money has always been endogenous, even in a world without credit money. His argument is based on the view that money is only needed

for paying taxes, otherwise it would have no value. Anything could fulfil this function, e.g. "beaver pelts" (Wray,1998:4).

There is disagreement in the literature about strong vs. weak endogeneity of credit money. But if the demand for credit money has any influence at all on the supply of credit money, then the supply cannot be considered an exogenous variable. Money, by its very nature, can never be in excess supply. The demand for money will always equal the quantity of money supplied. Post Keynesians therefore have a view of reverse causality. The quantity of credit money supplied responds to changes in the demand for bank credit. The demand for credit is simply the demand by borrowers for additional money balances. This higher demand is a reflection of the increased need of businesses for working capital, mainly to finance wages during a cyclical expansion. Money wage growth then becomes the exogenous variable, rather than the stock of money.

Moore criticises the Monetarist idea of an independent supply and demand for money function. He argues that this view is not applicable to a credit money economy. Demand and supply functions are not identifiable, as they are interdependent. In the Monetarist view, an excess supply of money causes an excess demand for goods and services. But the endogenous view is that there is no independent supply of money function existing independently of the demand for money. There can be no excess supply, as all money supplied is always demanded. The money supply has already been influenced by a higher demand for goods and services. It cannot be the cause of this higher demand. The supply of credit money is therefore credit-driven, the money supply responds to changes in the demand for bank credit.

Moore emphasises that the *raison d'être* of commercial banks is to grant short-term loans to credit-worthy customers. These loans are made at the initiative of the borrower. The problem is that these loans are not marketable. If commercial banks held only marketable securities as assets, then it could theoretically be possible for the central bank to control the money supply. Banks would sell these marketable securities if they experience a deficiency of reserves, until the desired reserve ratio is established again. But in reality banks cannot sell their assets consisting of non-marketable loans, because of their heterogeneous nature.[3] The development of liability management practices and marketable certificates of deposits have changed the nature of the banking business. It has also caused the banking system to be much more risky. A risky and illiquid asset base is increasingly supported by a more liquid and unstable liability structure. These developments actually add to the importance of the central bank's role as supplier of liquidity to the banking system, requiring an endogenous supply response. "The liquidity of the banking system as a whole was seen to depend on the preparedness of the central bank to provide unlimited support in times of crisis, and not on banks' aggregate holdings of cash and reserves" (Moore,1988:32).

In the Post Keynesian view, modern commercial banks are price setters and quantity takers of loans and deposits. Moore specifies that this view is applicable to economies with sophisticated financial markets, so-called overdraft economies. He questions whether the endogenous view is also applicable to developing countries where financial technology is not well developed, markets are thin and banking

[3] The only way they can restore the reserve ratio is by increasing their reserves. These are always supplied by the central bank, but at a price set by the monetary authorities.

systems are frequently publicly owned. It might be possible under such conditions for the central bank to restrain the rate of expansion of bank credit directly by imposing quantitative ceilings on the expansion of bank loans. Arestis (1996) also argues that as the banking system develops, the nature of money and the degree of credit money endogeneity change. He calls this the 'stages of banking' approach and argues that in the early stages (probably some of today's developing countries), the money supply could still be exogenous. But as the banking system develops and becomes more sophisticated, the money supply becomes endogenous. He also predicts that the globalisation of financial markets will increasingly cause money to become endogenous. These issues and their applicability for developing countries will be dealt with below.

Moore argues that most central bankers accept the endogenous view. Central banks have no choice but to accommodate the demand for money: "In the short run all the Bundesbank can do is specify in which way and at what price it will satisfy this demand" (Moore,1988:88). That is why commercial banks can extend as much credit as they like, creating deposits and looking for the reserves later. Moore also asks why there are such wide fluctuations in the rate of growth of monetary aggregates if they can be controlled by the Federal Reserve. He says that if the Federal Reserve tried to maintain a rigid monetary growth rate, the result will be widely fluctuating interest rates. The evidence that Kaldor gives in *The Scourge of Monetarism* supports this view. He describes the implementation of Monetarist policies in the USA in 1979. The stated aim of monetary policy was to secure a steady growth in the money supply, not a steady rate of interest. This would be achieved through open market operations, irrespective of the accompanying movements in interest rates.

The results were money supply figures that failed to grow at a steady rate, but even worse, inflation and interest rates that both soared to levels not seen in the United States since the Civil War (Kaldor,1982:xiii).

The statistical evidence in Moore's analysis shows that changes in the monetary base explain at the most forty per cent of the observed variation in the monetary aggregates. Open market operations also have no statistical significance in explaining changes in bank reserves. He argues that if money is credit-driven, then it should be possible to explain movements in the money stock by movements in the amount of bank credit. He concludes that changes in wages offer the best explanation for changes in the monetary base. Regarding the targeting of money supply figures, Moore has the following to say: "The great virtue of "intermediate monetary targeting", with its high rhetoric of "reserve restraint", is that it enables the Fed to shed all *visible* responsibility for interest rates" (Moore,1988:137). In the Post Keynesian view the rate of interest is the control instrument of monetary policy and should be set by the central bank.

3.5 ENDOGENOUS MONEY : WRAY'S INTERPRETATION

In his 1990 book *Money and Credit in Capitalist Economies,* Wray argues that the money supply in a modern capitalist economy is determined endogenously by the system. Money demand and money supply are interdependent and the factors that determine the money demand also determine the money supply.

Wray denies that the existence of the endogenous theory rests upon the modern credit-driven world that we live in. Where Moore (1988) argues, as shown above, that the money supply could be exogenous in a world with commodity money, Wray argues that the money supply has always been endogenous, even prior to the development of modern financial institutions and credit facilities. Moore argues that the endogenous theory is specific to an overdraft economy and therefore more relevant and realistic than the orthodox version of an exogenous money supply.

Another aspect of Wray's exposition of the endogenous theory is his distinction between endogeneity in the control sense and statistical endogeneity. He shows that the money supply can not be exogenous statistically. If the money supply should be statistically exogenous, then the central bank shouldn't respond to anything that influences the demand for money or the demand for credit. "Those who use an exogenous money supply in empirical work must provide a theoretical justification for the absence of responsive monetary policy" (1990:81)

Wray explains that even if statistical exogeneity of the money supply is ruled out, then one can still use a normative argument to prove that it could be exogenous in the control sense. With this terminology he indicates that the money supply is controlled by the central bank. In explaining why it is not so, he follows closely the argument of Moore (1988:144-146). Banks cannot decrease reserves. When banks need extra reserves and cannot get it privately they have to turn to the central bank. If the central bank pursues a strict monetary policy and does not want to supply the necessary reserves, then the commercial banks can either call in loans or begin to liquidate assets. Calling in loans will lead to financial instability. Selling assets to

increase reserves, can lead to price deflation. The central bank has no other option but to accommodate the higher demand. It can raise the cost of finance by raising the bank rate. But it is also limited in this. As the price of credit rises, the rate of money supply growth can be expected to fall as customers decide to postpone taking out loans. But when interest rates rise, banks can get into trouble if their assets are worth less than their liabilities, the typical example being that of a savings and loans institution which has long-term fixed rate mortgages financed through issues of shorter-term time deposits. If the central bank raises the interest rate so high that it might cause a run to liquidity and threaten the stability of the whole financial sector, then it might have to supply the necessary liquidity and increase the money supply, reversing its tight monetary policy. Wray uses the high interest rates of the 1980s in the USA as an example of such an experiment that threatened the stability of the financial system "thus…the Fed is ultimately not free to refuse to provide reserves through loans at the discount window or through open market operations" (Wray,1990:85).

Commercial banks have several options for finding reserves after loans have been granted. They can use asset and liability management, inter-bank loans, international sources of liquidity or the discount window of the central bank. Loans create deposits and reserves are found later. Wray says that: "While the Fed can influence the rate of growth of the money supply, bank behaviour usually enables banks to escape Fed constraints. When a Fed constraint actually becomes operative, the Fed is eventually forced to abandon the constraint and accommodate the demand for money"(1990:83).

Wray quotes Moore's idea of an asymmetry in the ability of the central banks to initiate changes in the base. The central bank can not reduce reserves, but Moore believes that: "Central banks always possess the ability to *increase* the base, so as to support any increased nominal volume of bank intermediation" (Moore,1988:15). Although Wray seems to support this idea of the ability of the central bank to increase reserves, he remarks later in a note to chapter three that Moore has overstated the Fed's ability to increase the money stock: "The money supply will only increase if the banks are faced with prospective loans. Otherwise excess reserves merely increase"(Wray,1990:97). This is in contrast to the idea (supported by Wray) that banks want to maximize profits and actively seek borrowers. Wray statistically shows that excess reserves vary greatly over time. He also uses this to oppose Moore's horizontal money supply curve. If the central bank passively supplies reserves at a certain price (as Moore argues) then the ratio of reserves to loans should be stable. Wray also shows that the ratio of reserves supplied by the Fed to total required reserves fluctuates widely as the Fed changes its policy. Wray uses this to prove his upward sloping money supply curve.

Wray believes that the money supply is not horizontal, but is an upward sloping step function. Kaldor and Moore believe that banks can never be quantity constrained with regards to the amount of loans they can make, because the central bank always accommodates the demand for reserves. The money supply is horizontal at the going rate of interest, which is set by the central bank. Wray argues that this is an oversimplification, labelling Moore's approach the "endogenous money exogenous interest rate" theory. He says that the insights of Minsky should be added to this oversimplistic view. Minsky uses an institutional analysis incorporating leverage ratios

of banks. As banks face a greater demand for loans, they use innovation to expand loans and business activity without an expansion of bank reserves, e.g. using the federal funds market or repurchase agreements. But they soon reach a point where leverage ratios increase so much that more loans become very risky and they therefore increase the cost of borrowing by raising the interest rate.

This is the argument behind Wray's money supply step function. There may be times when the money supply is horizontal. When the central bank raises interest rates banks want to take advantage of profit opportunities and find new ways of meeting loan demand without increasing reserves. But after a while a point is reached where banks can't stretch reserves further and they have to raise the interest rate to compensate for higher risk. At this point the money supply becomes vertical and then horizontal again at the new rate of interest.

3.6 AN ONGOING DEBATE

3.6.1 Accommodationists and Structuralists

Palley is another Post Keynesian author who argues that 'loan demand' should be incorporated into endogenous money theory. Palley argues in his book, *Post Keynesian Economics, Debt, Distribution and the Macro Economy* (1996), that the principal limitations of the orthodox model of exogenous money are its : suppression of (a) the market for bank loans and (b) bank asset and liability management. Palley differentiates between the so-called "accommodationist" approach (associated with Moore) and the "structuralist" view, which he advocates. He sees the

accommodationist view as incorporating the market for bank loans, but ignoring bank asset and liability management. The structuralist position is seen as superior as it includes loan demand and the banking sector balance sheet constraint. It argues that if the central bank buys assets from the private banks, then balance sheets will be transformed. Private banks then have to decide which assets to sell, and when they sell them, they will have an incentive to alter their liability positions, which are cross-linked to asset holdings. Palley believes that the accommodationist view is "nested" within his structuralist view (Palley,1998:172).

The main difference then between the accommodationist and structuralist views is the choice that banks have about the composition of their assets and liabilities. The structuralist view argues that accommodation can be only partial and that the loan supply schedule is positively sloped. If bank loans are fully accommodated, as argued by Moore, then the money supply schedule becomes horizontal. Moore sees the accommodationist approach as a good explanation of what happens in the immediate current market period. (Moore,1998:175). During this brief time span, the interest rate is set exogenously by the central bank and the money supply function is horizontal. Palley agrees with this position for the market period. Since we cannot predict the short- or long-run money supply relationship beyond the market period, we can accept the money supply as endogenous. Moore says that: "In the real world, the central bank always fully accommodates the bank demand for reserves, in its role as residual supplier of system liquidity" (1998:176). Therefore, partial or complete accommodation becomes irrelevant as in the market period the central bank always accommodates all bank credit demanded and the money supply and monetary base are therefore perfectly endogenous. Moore rejects Palley's upward-sloping reserve

supply function. Over the immediate market period the money supply is endogenous and perfectly elastic. In a nonergodic world, no short- or long-run money supply relationships extending beyond the market period can be specified *ex ante.*

3.6.2 Circuitists

'Circuitists' is a term used to describe an alternative view of endogenous money. This view is built on the work of a few French and Italian economists who also accept the money supply as endogenous. Their work has been influenced by Keynes (specifically his *Treatise* and post-*General Theory* articles) as well as by Michael Kalecki, Knut Wicksell and Karl Marx. Rochon (1999:2) claims that the endogenous theory developed by Paul Davidson and Nicholas Kaldor was largely a response to Friedman's monetarism. But the continental Circuitists have developed a different aspect of Keynes, seeing him as more radical than most Post Keynesians would care to admit.

The circuitist theory is one way of solving the debate about an independent demand for money. Rather than seeing money based on the demand for money balances, circuitists emphasise the monetary circuit, with banks at the centre of the credit creation process. Money is created by banks and profits are necessary to extinguish all debt – 'the ultimate destruction of money'. Where Post Keynesian authors like Arestis and Howells emphasise the liquidity preferences and portfolio decisions of economic agents, the focus in the circuitist approach is on the flow of endogenous credit. Money endogeneity is unrelated to the role of the central bank. Commercial banks create credit money. This endogenous creation of money is part of the

production process, i.e. money is endogenous because of production not because of the accommodative role of the central bank. In the words of Lavoie, another French circuitist: "Accommodation or the lack of it, liability or the lack of it and financial innovation or the lack of it are second-order phenomena to the crucial causal story that goes from debt to the supply of the means of payment" (Rochon,1999:2).

The circuitists also emphasise, like Moore, the special characteristics of money. Before entrepreneurs decide to carry out planned investments, they already consider the credit money they will need. Money can therefore not be added later to a production theory. Money enters into the picture right from the beginning. Money is a 'non-commodity in a universe of commodities'. Money is part of the production process and is therefore endogenous. The distinction between money and credit is also vital in the circuitists approach. Credit is an asset of banks, while money is a liability. Credit creates money. "With respect to production, credit precedes production, while money is created during the process of production, as the entrepreneur draws down his or her bank account to pay for wages or to purchase other raw materials" (Rochon,1999:3).

Some of the prominent Circuitist authors are Graziani, Lavoie, Parguez,and Rochon. They are sometimes also called neo-Post Keynesians as they feel that Post Keynesian monetary theory does not constitute a clear enough alternative to orthodox monetary thought. Circuitists believe that because of the interdependence of supply and demand, it is not possible to use the standard supply and demand analysis. They believe, like Moore, that supply increases with demand and therefore they are one and the same. The circuitists successfully incorporate the Arestis &

Howells critique by distinguishing clearly between the demand for credit money and the demand for money. "Since credit is not money, and similarly money is not credit, the demand for credit arises at the beginning of the circuit, whereas the demand for money becomes equivalent to hoarded savings. The demand for money is the households' liquidity preference" (Rochon,1999:16).

3.6.3 Institutionalists

Some economists explain the endogenous money theory within an institutional framework. The stages of banking approach of Victoria Chick has been mentioned above. In her view, the capacity of banks to create credit depends crucially on their stage of evolution. As the banking system develops within a country, banks become more independent of reserve requirements because of new innovations. The supply of credit becomes more responsive to demand and therefore more endogenous. Niggle is another author that uses the institutional approach. He argues (1991) that it is important to look at the specific institutional characteristics of a specific monetary-financial system to be able to determine if the money supply is endogenous or exogenous. According to Niggle (1991:138): "Actual monetary-financial systems are situated along a spectrum from the purely exogenous to the purely endogenous, with most systems characterized as at least partially endogenous".

Niggle explains the disagreement between participants in the debate over monetary endogeneity, as stemming from their ignorance of some important institutional characteristics of the monetary-financial system. Under certain circumstances

(historical stages), the money supply might be exogenous. But under current arrangements the money supply is endogenous to the financial system.

Niggle (1990) emphasises that monetary theory cannot be developed in isolation, it has to reflect the realities of the world we live in. Various forms of money (commodity, fiat or credit money) are associated with various banking institutions. "The 'correct' theory is that which responds most closely to the actual behaviour of the specific monetary-financial system under analysis" (1990:444). He describes the following stages of development of financial systems and the corresponding degree of endogeneity or exogeneity.

Stage one is an economy with commodity money or convertible paper currency backed by gold. The quantity of money is determined exogenously by factors such as trade flows, foreign investment or gold production. During the second stage the money supply becomes "somewhat endogenous – determined within the banking system" (1990:446). There is fractional reserve banking with the use of bank notes as a common medium of exchange, but most deposits are held as relatively liquid forms of savings by their owners with little interbank lending. There are no legal reserve requirements.

In stage three, a central bank enforces reserve requirements on the banks and the quantity of money is again exogenously determined. But after this stage, during stages four and five the money supply becomes endogenous. Innovations in the form of liability and asset management are largely responsible for an endogenous money supply during stage four. The issuing of credit lines also increases endogeneity

during this stage. During the last stage, the central bank assumes the role of lender of last resort and has to supply liquidity to the financial system and the money supply is fully endogenous. This leads to the conclusion that the money supply is largely endogenously determined in our current financial system.

3.7 CONCLUSION

Lavoie says that the differences of opinion among Post Keynesian economists are: "more apparent than real, and that the discussions reflect differences of opinion or emphasis over what factors should be considered of primary rather than secondary importance" (1999:103). There seems to be a general consensus on the main elements of Post Keynesian monetary theory. There might be lively debates on the demand for endogenous money, on whether the supply curve should be horizontal or upward sloping, but this does not alter the fundamental view among Post Keynesians that money in a modern world is indeed endogenous. Institutionalists like Niggle, have clearly shown that in a world where the central bank acts as lender of last resort, the money supply is endogenous. Wray differs in his approach, arguing that the money supply has always been endogenous, even in a commodity money world. Most Post Keynesians, however, accept that endogenous money is characteristic of the modern credit-driven world that we live in.

Some Post Keynesian authors have argued that causality runs from income to the supply of money. Rousseas (1988) has argued that the rise in money supply responds to an increase in the demand for money which in turn is a result of higher nominal income. But this is not necessarily true. As the circuitists have shown, money

is created *ex nihilo* by commercial banks. Credit is part of the production process. Firms obtain credit before they start production. Davidson (1988) shows that the money supply increases before income rises. This is exactly the point of departure from the Monetarist approach. It may be true that a rise in the money stock precedes a rise in income, but the Post Keynesian argument is that the direction of causality is reversed. Deposits do not create loans, but loans create deposits.

As shown above, there is considerable disagreement among Post Keynesians on the slope of the money supply curve. Moore and Kaldor seem to be the only "true" horizontalists. The view of Dow, Palley and Wray is that banks also have a liquidity preference. Banks incur rising costs from borrowing at the discount window and will pass these higher costs on to borrowers. Wray advocates an upward sloping step function. Banks try to accommodate all demand for credit at a certain cost, by stretching their reserves, but at a certain stage they have to raise their rates and the money supply curve starts sloping upwards. Dow believes that the money supply curve is mostly horizontal during normal times. But during a downturn in the business cycle, banks' liquidity preference increase and the money supply function has a positive slope.

Arestis and Howells also see a rising supply curve, but for different reasons. They believe that there might be insufficient demand for the money created by the increase in endogenous credit. They show that the liquidity preference of the non-bank public should be incorporated in the endogenous money approach. The Circuitists seem to be closer to Moore. They do not see the supply curve as always horizontal, but accepts this as a "second-best" solution. They see the demand and supply of money as interdependent and therefore not suitable for standard supply and demand

analysis. But they consider the demand for nominal money, i.e. money created during the endogenous supply process, as determined by liquidity preference. Moore also holds the view that the demand for nominal money is determined by income and the interest rate, as in the standard theory. The difference is that the demand for credit money determines the supply of credit money and therefore the two are one and the same.

There is a growing consensus in Post Keynesian monetary theory. Money is endogenous, whether the supply curve is fully or only partially horizontal. The demand for bank credit is generally accommodated by lenders – at least in the short run – because of bank practices such as overdraft facilities and prearranged lines of credit. The central bank generally accommodates all demand for reserves by banks. The central bank does not control the quantity of reserves, but it sets the price of reserves. New innovations in the banking business, such as liability and asset management, make expansion of bank lending possible, even when reserve growth is being constrained.

The demand for credit determines the growth of bank credit, the growth of reserves and the growth of the money stock. The deposits that are created in the process are willingly held. The liquidity preference of the non-bank public might influence relative interest rates. But during the current market period, interest rates remain at the level set by the central bank or some markup above that rate. As the demand for credit determines the supply of credit, they are interdependent and money is endogenous.

CHAPTER FOUR

THE DEMAND FOR MONEY vs. THE DEMAND FOR CREDIT

The total demand falls into two parts:

the inactive demand due to the state of confidence and expectation on the part of the owners of wealth, and the active demand due to the level of activity established by the decisions of the entrepreneurs. (Keynes, 1937)

4.1 INTRODUCTION

In the previous chapters the theory of an exogenous money supply, where money is neutral, was contrasted to an endogenous money supply. Post Keynesian authors believe that the modern credit-driven world is characterised by an endogenous demand-determined money supply.

This raises the question of what determines the demand for money and credit. The demand for money has not been a central area of research in Post Keynesian economics. Yet, the demand for money is one of the most controversial topics in macroeconomics. In the wake of Monetarism, many economists spent their time estimating money demand functions to determine money demand stability (a central aspect of Monetarist theory). The demand for money has received little attention in the work of most Post Keynesians. According to Post Keynesian theory, money supply is determined by money

demand. The nature of money is such that it can never be in excess supply (Moore, 1988). As a result, the flow demand of money is not independent of the flow supply of money. Other Post Keynesian writers (e.g. Wray, Dow and Arestis) have argued that liquidity preference is compatible with an endogenous money supply.

This chapter provides an overview of the work on money and credit demand by Post Keynesian authors. To put the debate in perspective, the analysis starts with a brief overview of Keynes's finance motive. The interpretation of this 'fourth motive' by later authors is then discussed. To test these various money and credit demand theories, data from developing countries are used to reach some conclusions about the demand for credit in less developed countries.

4.2 KEYNES'S FINANCE MOTIVE

In any analysis of the demand for money that purports to be based on Keynesian analysis, it is appropriate to start by looking at Keynes's own theory of money demand. As explained in Chapter 2, the demand for money in the classical world constituted only the transactions demand, derived from the need to conduct transactions in a common unit of account. No one outside of a lunatic asylum would hold money for any other reason. In the *General Theory*, Keynes introduced other reasons to hold money, his so-called liquidity preference theory. In his post-*General Theory* correspondence, in a

letter to D.H. Robertson, Keynes explained what he meant by liquidity preference:

> In my terminology *liquidity preference* relates to the *total* demand for money for all purposes and not merely to the demand for inactive balances. Quite often one needs to distinguish the demand for active balances from the demand for inactive balances (Keynes,1973:223), *(Emphasis in the original)*.

The demand for inactive balances refers to what he calls in the *General Theory,* the demand for hoards. "If we mean by 'hoarding' the holding of idle balances, then my theory of the rate of interest might be expressed by saying that the rate of interest serves to equate the demand and supply of hoards – i.e. it must be sufficiently high to *offset* an increased propensity to hoard relatively to the supply of idle balances available" (Keynes,1973:213), *(Emphasis in the original).* Hoarding is the holding of idle balances. People prefer to hold money (or hoards), rather than financial assets, because of their expectations about future economic activity and interest rates. A rise in liquidity preference means that people want to increase their supply of 'hoards'. This might have an effect on the interest rate, which is the return on financial assets. But Keynes did not reject the transactions demand for holding money. Although his focus was on the speculative demand for money (liquidity preference theory), he recognised income as a determinant in the transactions and precautionary motives.

One of his main goals was to refute the classical loanable funds theory. Keynes criticised Ohlin for reducing the central ideas of the General Theory to nothing more than the original classical theory:

> *The net supply of credit*, thus defined, is exactly the same thing as the quantity of saving; and the conclusion is exactly the same as the classical doctrine over again, to the effect that the quantity of saving depends on the rate of interest (1973:205), *(Emphasis in the original).*

And later in the same article:

> Thus we are completely back at the classical doctrine which Professor Ohlin has just repudiated – namely, that the rate of interest is fixed at the level where the supply of credit, in the shape of saving, is equal to the demand for credit, in the shape of investment (1973:206).

In trying to clarify his approach, in addition to the transactions, precautionary and speculative motives, Keynes introduced a **fourth motive** for holding money in his post-*General Theory* articles. Saving is always equal to investment (not through the interest rate mechanism), but by definition. But Keynes used a situation where investment occurs before the corresponding saving has been 'created':

> Planned investment – i.e. investment *ex ante* – may have to secure its 'financial provision' before the investment takes place; that is to say, before the corresponding saving has taken place (1937:207).

This demand for funds by entrepreneurs who want to invest, before saving has taken place, is Keynes's finance motive:

> This service may be provided either by the new issue market or by banks; - which it is makes no difference…let us call this advance provision for cash 'finance' required by the current decisions to invest…I should (I now think) have done well to have emphasised it when I analysed the various sources of the demand for money. It may be regarded as lying half-way, so to speak, between the active and inactive balances (1937:208).

The supply and demand of money are not equalised by the interest rate. Interest rates are determined in the money market as a result of liquidity preference. But, the demand for finance, or rather the demand for credit, can have an influence on the interest rate:

> Now, a pressure to secure more finance than usual may easily affect the rate of interest through its influence on the demand for money (Keynes,1973:209).

4.3 THE POST KEYNESIAN DEBATE

Following the work of Keynes, the idea that saving is always equal to investment, is central to Post Keynesian analysis. The interest rate is not determined by an interaction between saving and investment. There are two different views on interest rate determination in the Post Keynesian literature; the mark-up approach and the liquidity preference approach. The first denies that the demand for money has any influence on the interest rate, which becomes a fully exogenous variable. The liquidity preference theory uses

Keynes's demand for money principle to argue that changes in liquidity preference influence the interest rate. The implications for interest rate determination will be more fully dealt with in Chapter 8.

Seccareccia summarised the debate on the demand for money:

> Keynesian liquidity preference theory has sometimes been perceived as a source of embarrassment for Post Keynesians since, by overly emphasising the stock demand for money, it loses sight of the circular nature of credit (1997:135).

But Keynes also recognised this point when he said that:

> It is possible, then, that confusion has arisen between credit in the sense of 'finance', credit in the sense of 'bank loans' and credit in the sense of 'saving'(1973:209).

Keynes argued that savings are a stock, but finance is a flow. This is his idea of a revolving fund, which is sufficient to meet all demand for finance. As explained above, his finance motive is not incompatible with his liquidity preference theory; the two should rather be seen as complementary. The finance motive also affects the interest rate (like liquidity preference).

The finance motive has been incorporated into Post Keynesian literature in different ways. Moore (1999:14) argues that: "Credit or finance does not constitute a separate motive to demand money, an addition to Keynes's 'pool' of transactions, precautionary, and speculative demands. As a result finance cannot be regarded as a fourth motive for demanding money, as Keynes in his 1937 articles initially mistakenly envisioned." Moore sees the finance

motive as an imperfect solution to Keynes's struggle to escape from exogenous money: "Rather than view the 'finance motive' as a further refinement of the General Theory's liquidity preference theory of interest, it is alternatively possible to view Keynes's recognition of the importance of finance in these 1937 article as further steps in his 'long struggle of escape' from orthodoxy" (Moore,1999:16).

Another Post Keynesian author, Natke (1998), showed that the finance motive might be relevant in developing economies by testing the theory for Brazil. The argument is that the finance motive might be more important, due to restricted access to well-developed financial markets by firms in developing countries. Such firms might be dependent on costly bank credit and be forced to rely on internal funding.

Rochon (1998:6) argued that the finance motive is compatible with an endogenous money supply theory: "There is nothing incompatible between the finance motive and horizontalism, and horizontalists have made the finance motive an important component of their approach to endogenous money."

4.4 CONVENIENCE LENDING

Moore has argued that any increase in the supply of money creates its own demand in the form of an increase in *convenience lending* of fiat money to the banking system (Moore,1988b). This is due to the special nature of money.

Post Keynesian monetary theory states that loans create deposits. But as Marc Lavoie (1999:103) puts it:

> In an economy where money deposits are created whenever banks grant advances to agents requiring bank loans, how can we be sure that the quantity of money deposits so created is equal to the demand for money of agents?

The problem is that the demand for bank lending, because of higher wage bills or new production plans, originates with one set of economic agents. The deposits that are created by this lending have to be held by another set of economic agents. Therefore it is important to consider the demand for money of this latter group. Arestis and Howells (1996) argue that the liquidity preference of the 'non-bank' public should be included in an endogenous money model. They argue that the money supply curve may or may not be horizontal. It depends on the interaction between the supply curve and the demand curve. The money supply curve is upward sloping and determined by the behaviour of the banking system, (as also argued by Palley and Dow). But there is also an independent demand for money function, determined by the community's willingness to hold the deposits created by the endogenous supply. This demand for money curve moves continuously as nominal income changes. The supply curve shifts continually to the right as the money supply responds to the needs of trade. The interaction of the demand and supply curves gives a locus that may be horizontal, but does not need to be.

Arestis and Howells (1996:543) state the central difficulty as: "How does a flow of bank lending get turned into a stock of money which is *willingly held?*"

(Emphasis in the original). The interactions between the demand and supply curves give different equilibrium positions between a shifting liquidity preference schedule and a shifting money supply curve. There must be some equilibrating mechanism between these two. Arestis and Howells believe that this is the movement of relative interest rates. It is therefore impossible to depict the money supply curve as horizontal at *one* specific interest rate, be it the discount rate or some mark-up rate.

Moore's 'convenience lending' principle is based on the passive acceptance of new deposits. The new deposits act like a windfall, individuals may hold them only as long as it takes to decide on future investment and consumption patterns, but in the aggregate, convenience lending is a long-term phenomenon. Arestis and Howells have a different view. They agree that the newly created deposits "have a certain windfall quality about them. Their accumulation requires no sacrifice of consumption. But it does not follow from this that agents require no inducement to continue holding them" (1996:546). The holders of these deposits must have some liquidity preference. They must have a preference for e.g. holding bonds instead of other assets. The demand for money cannot be ignored. The liquidity preference of the non-bank public should be incorporated into the endogenous theory as they adjust their portfolio when relative interest rates change.

Arestis and Howells are unhappy with Moore's analysis which apparently "tries to eliminate consideration of the demand for money entirely but which seems to us to be merely a restatement of the most conventional demand for

money function without recognising it" (1996:549). Their view is that demand for money (based on liquidity preferences) should be incorporated in the endogenous money model. Relative interest rates provide a mechanism whereby discrepancies between the growth rate of advances and desired deposits could be eliminated.

Lavoie (1999) agrees that the supply of bank deposits could exceed the demand for deposits. The demand for loans drives the supply of money. But the money stock is not demand-determined. Therefore there could well be an excess supply of money. The conclusion that the money stock is demand-determined confuses the demand for money with the demand for credit. There should be a separate money demand theory and some equilibrating mechanism between the demand and supply of money.

Moore reacts to the above critique in the following way: "There is no separate and independent demand for money that must somehow be 'reconciled' with the demand for credit. We do not have to worry about what will happen if, 'net new lending (l) exceeds the rate at which the demand for deposits (d) is expanding, so that (l>d)'. The 'demand for money' is always and necessarily identical to the 'supply of money', because it is in fact simply the supply of money already in existence" (1997:425).

Earlier Moore stated that money supply and demand functions are "in no sense identical" (1988b). The quantity of money supplied and demanded are identical, but not the individual functions. In his earlier analysis, Moore stated

that the demand for nominal money is the same as in the neoclassical analysis, a function of income and interest rates. But the demand for credit money is identical to the supply of credit money, because all money is always demanded and willingly held. The Arestis and Howells critique states that the demand for the money created by the deposits is nominal money, not credit money and has a demand function that is determined by liquidity preferences of the non-bank public.

Some Post Keynesian authors argue that the demand for money should receive more attention. Most of them view the approach of Kaldor and Moore as insufficient, as it does not have a proper money demand theory (Goodhart 1989:33). Rousseas argues that the endogenous money theory inverts Say's law. He says that Moore's idea of the demand for money determining the supply, can be stated as: 'demand fully creates its own supply'. (Rousseas,1988:475). This further implies that the demand and supply schedules of money must be identical. The economy moves from one equilibrium point to the next as the supply and demand change, but the two functions are identical. Rousseas believes Moore is wrong in his treatment of the demand for money. Rousseas sees the money supply as being neither perfectly inelastic (exogenous), nor perfectly elastic (endogenous). The money supply is partly endogenous: "Demand does create, to a greater or lesser extent but never entirely so, its own supply. The degree to which the money supply is positively sloped depends on the discretionary policies of the Federal Reserve and the fervor with which they are applied in the misguided

belief that the money supply is exogenous and thus within the power of the central bank to control" (Rousseas,1988:478).

Moore argues that the correct conclusion is that the supply and demand for money are interdependent. The total quantity of money demanded is always identical to the total quantity of money supplied, but the two functions are not identical. He criticizes Rousseas' interpretation as the "...most common popular misinterpretation of endogenous money. Endogeneity is understood as implying that the money supply is determined by the demand for money, rather than the demand for credit" (Moore,1988b:483). Say's law is not inverted, for money supply creates its own demand. Moore believes that any increase in the supply of money creates its own demand, in the form of an increase in convenience lending of fiat money to the banking system. He maintains his position that the short-run supply of money is horizontal. The supply curve's slope is not determined by the monetary authorities. Because they always accommodate, it has to be horizontal. A long-run supply function of money does not exist independently of demand forces and the state of the economy. Since the future is uncertain, no such function can be identified.

Goodhart (1989) accuses Moore of becoming "too horizontal". He says that Moore overstates the passive reaction of banks to borrowers' demand for loans. "In effect, Moore completely suppresses any independent demand for money. I believe that he should not do so. It is in this context that Moore, both here and in his book *Horizontalists and Verticalists,* has become too horizontal" (1989:33).

4.5 THE DEMAND FOR MONEY IN LDCs

The endogenous supply of money is central to the Post Keynesian analysis. In the words of Trautwein (1997:11):

> The general argument is that the supply of credit money cannot come into existence without the corresponding demand for loans, *i.e.*, the spending decisions of borrowers.

To understand the nature of the demand for credit in LDCs, it is necessary to look at the demand for loans and the spending decisions of consumers.

In Post Keynesian monetary theory the emphasis is on the demand and supply of credit money, not commodity money.

> Post Keynesians de-emphasize the stock demand for money, reject the assumption of money-supply exogeneity (which is so central to much of contemporary neoclassical monetary economics), and instead stress the concept of an endogenous flow of credit-money (Seccareccia,1997:135).

In Moore's work the demand for 'commodity money' has the usual neoclassical determinants, interest rates and income. But the demand for 'credit money' does not have a separate function. The supply of credit money creates its own demand through convenience lending. The interest rate is not affected by the demand for credit money.

The Post Keynesian money supply is determined by the demand for credit / finance, a flow concept. The question is whether the transactions and precautionary demand for holding money can be safely ignored in the case of LDCs. They function more like cash economies than credit economies (as will be shown in Chapter 7). Therefore, the transactions motive might be more important than in developed credit economies. Wray (1992:160) seems to recognise this point:

> Furthermore, planned shifts of spending from one component to another might increase transactions demand for money even in the absence of an increase in aggregate demand. For example, if consumers have lower access to credit than do firms, a planned shift from investment spending to consumption spending would increase the need for transactions balances. If transactions demand for money rises and banks are unwilling to satisfy the additional demand, interest rates will rise.

This is a different world from a pure credit economy in an industrialised country:

> In an economy with developed financial institutions, with deposit insurance, and with a central bank which is willing to enter as a lender of last resort, hoards of cash or narrow money are relatively unimportant. Furthermore, lines of credit or overdraft facilities can satisfy the 'finance motive' without requiring cash hoards. Thus, Keynes's notion that the interest rate is determined by the supply and

demand of hoards does not strictly apply to our economy (Wray,1990:164).

This argument may be more relevant in the case of LDCs. Liquidity preference is about the desire to hold short-term liquid assets versus long-term assets. These assets refer to financial assets, typical of an advanced credit economy. Do agents in LDCs continuously exercise a choice between holding liquid and illiquid financial assets, given the rudimentary nature of equity and bond markets? Or is the choice rather between holding real assets (land, cattle) and holding money? Empirical demand for money studies in LDCs found that in countries where there was not a broad range of financial assets to act as substitutes for money, the inflation rate became a significant explanatory variable (Ghatak,1995:60).

Interest rates are usually administered rather than market related in the organised financial markets in LDCs. The effects of normal operations of the laws of demand and supply will not be fully reflected in the observed interest rates. In the unorganised markets, the interest rate may be determined by both economic and institutional variables. The determination of the rural rate of interest is usually viewed from the supply side, because of the paucity of data on the demand side. There must be a risk premium in the supply side of the interest rate, which is closer to Wray's idea of the liquidity preference of banks and a step-shaped money supply curve. The implications of undeveloped financial markets for the demand and supply of credit, and the associated institutional arrangements in LDCs will be addressed in Chapter 7.

4.6 DETERMINANTS OF THE DEMAND FOR CREDIT

Most of the studies dealing with the demand for money in LDCs, look at the demand for nominal money. Only a limited amount of studies look at the components of the demand for credit in LDCs. In order to test the hypothesis that credit is supplied upon demand, the demand for credit has to be clearly distinguished from the demand for money. Confusing these two distinct concepts has led to many incorrect conclusions regarding the endogenous money supply process. This is emphasised by Rochon (1998:4): "Rather than seeing credit as a component of the demand for money, it is better to view it as separate. Credit is not money, and neither is money credit. Credit creates money. Credit only becomes money when it is used to pay wages and purchase capital goods. If an entrepreneur is given a line of credit, money is not created until it is drawn down".

In the endogenous money literature, the emphasis is on liquidity preference (especially the liquidity preference of commercial banks) and more importantly on the need for finance. This need for finance is a characteristic of a credit economy. Production takes time and inputs have to be paid before the monetary proceeds from production can be realised. As explained above, this constitutes Keynes's finance motive and is the essence of Post Keynesian monetary theory:

> ...Keynes's finance is not required by the purchasers of capital goods and, if necessary, by consumers, but by firms (entrepreneurs) who

> wish to implement their production plans. Finance denotes the amount of liquid funds needed 'to finance the production of capital goods or the production of consumption goods'. The firms use it to advance money wages to workers and, if needs be, to purchase other inputs not available in their stocks but necessary to start current production (Messori,1997:44).

Moore's empirical studies confirmed that the main determinant of the demand for credit (and therefore also of the supply) was the wage bill of firms (Moore,1988). His econometric studies will be reproduced below to test this hypothesis for developing countries.

The wage bill of firms is the main component of the demand for credit. The demand for credit originates with firms' demand for finance in advance of the proceeds received from the finished production. There is a passage of time between the moment when factors of production are hired, and when the proceeds of their production are received. This is the source of the demand for finance / credit. This is the essence of the endogenous money theory. There is not a separate demand for finance or a 'finance motive', in addition to a transactions or precautionary motive. There is no need for a separate explanation for holding money. The demand for finance is the main determinant of the demand for credit. As Moore (1999:2) explains: "Keynes's finance motive should not be viewed as an additional motive for holding money. Instead it represents the demand for bank credit, and is consistent

with Keynes's early recognition that credit money is endogenous, and driven by the demand for bank loans".

According to Moore's view increases in planned investment spending (and consequent increases in the wage bill of firms), are the main sources of increases in credit money. The increased demand for production or consumption goods is reflected in higher investment spending by firms, and the finance necessary for this investment is supplied upon demand. The supply of endogenous credit money responds to the 'state of trade', i.e. the supply of credit money follows changes in GDP. Money supply is demand-determined.

The emphasis is on the demand for working capital by firms. The finance motive is not acknowledged as a separate motive for holding money, but becomes the basis upon which the whole endogenous theory rests. Firms need credit to finance production. This credit is supplied either in the financial markets or by the banks. If financial markets are not well developed (as will be argued in Chapter 7), firms are more dependent on banks to obtain finance. It is clear from the quotation from Messori that the finance motive or demand for credit is restricted to the need of firms to produce. No recognition is given to the fact that other sectors of the economy also need credit. In the empirical work done by Post Keynesians to test the finance motive and the demand for credit, the focus was solely on the demand for credit by firms. The composition of credit, i.e. the relative shares of households and firms in private sector credit will be examined below.

4.7 COMPOSITION OF THE DEMAND FOR CREDIT

As seen above, in the endogenous money view the main determinant of the demand for credit is the wage bills of firms. Credit is continuously demanded by firms as their expectations of increased output lead to higher demands for working capital. This demand is automatically accommodated by the banks.

During recent years, the composition of credit has changed in many countries. All types of spending require credit. Credit is not the exclusive right of firms. In industrialised countries, households have gained an increasing share in total credit to the private sector while the share of firms has decreased (Arestis & Howells, 1996).

Bank credit is an important source of finance to the private sector in most countries, but the development of sophisticated financial products and highly efficient financial markets have reduced the share of corporate borrowing in total bank credit to the private sector. The corporate sector's dependence on bank credit has been diminishing relative to that of the household sector. Firms are increasingly relying on non-bank sources of finance. Households' demand for credit is reported as being more interest rate elastic. As the share of households in total credit is increasing, it is reasonable to ask whether the money supply responds in the same way to the needs of the economy: "However, in the UK in the 1980s there was a substantial change in the composition of bank lending, the personal sector replacing ICCs as the

dominant borrowers. The personal sector may be more sensitive to interest rate changes (Arestis & Howells,1996:540)."

Howells and Hussein (1999) initiated a new line of research when they developed a model where total holdings of bank credit is the dependent variable, not just credit to industrial and commercial corporations (ICCs). They argue that this model is closer to the real world, recognising the importance of households in bank credit portfolios: "First, following our work on the demand for money, we would argue that credit is required to finance all types of spending. There is no more reason to suppose that credit is required only for the purchase of newly finished output than is money. Second, in the 1980s there was a major shift in the components of credit demand, as personal-sector borrowing overtook borrowing by firms. The Post Keynesian preoccupation with the 'state of trade' has led the existing literature to focus on firms as the source of credit demand (and new money), a focus which may well be incorrect and may, in turn, give unwarranted emphasis to the behaviour of GDP" (1999:442). It is not only the expectations of entrepreneurs that are important, but also those of households.

This is true for industrialised countries where firms have access to alternative sources of finance, e.g. money and capital markets. Households have become increasingly important in bank lending portfolios. The findings of Arestis and Howells (1996) that the personal sector has replaced the corporate sector as the dominant borrowers in the UK, is confirmed by recent figures from the Bank of England. These are shown in table 4.1.

Table 4.1. Composition of credit in the United Kingdom

	Total credit to private sector (£ millions)	Households (£ millions)	Firms (£ millions)	Households (%)	Firms (%)
2000 Q3	982 062	594 876	387 186	60	40
Q4	1 003 371	610 715	392 656	61	39
2001 Q1	1 033 904	619 481	414 423	60	40
Q2	1 051 691	634 889	416 802	60	40
Q3	1 067 571	649 106	418 465	61	39
Q4	1 076 316	664 226	412 090	62	38
2002 Q1	1 102 774	677 749	425 025	61	39
Q2	1 129 097	695 970	433 127	62	38
Q3	1 164 158	719 876	444 282	62	38

Source: Bank of England, data on private sector credit, 2002

Households hold on average approximately 60% of private sector credit in the UK, while firms hold approximately 40%. This is different from the situation in less developed countries.

Comparable data on credit composition are shown below for selected SADC countries. In some cases recent data were obtained from individual central banks, but in other cases the only data available were from the most recent IMF Staff Country Reports. Individual data are given below for each country.

Table 4.2 shows the composition of credit for the SADC countries in the sample, for the years 1997 and 2000 (where available).

Table 4.2 Composition of private sector credit – comparison of selected SADC countries.

Country	1997		2000	
	Households (%)	Firms (%)	Households (%)	Firms (%)
South Africa	58	41	48	51
Botswana	51	49	51	49
Lesotho	32	68	-	-

Mauritius	21	79	-	-
Namibia	65	35	71	29
Swaziland	26	74	-	-
Zambia	6	94	10	90

Source: IMF Staff country reports & individual central banks.

South Africa and Botswana are the only countries where households and firms have roughly equal shares in private sector credit. In the case of South Africa, the share of firms was slightly higher than that of households (2000), while the opposite is true for Botswana. In the rest of the SADC countries, with the exception of Namibia, the share of household credit is much lower than the share of firms. Namibia had a very high percentage of household credit – 65% in 1997, increasing to 71% in 2000.

Table 4.3 shows that the share of household credit has been decreasing in South Africa, while the share of firms has been increasing during the period 1995-2001. Table 4.4 shows that households have become the main recipients of credit in Botswana (55% in 2001). This is a significant change from the situation in 1993 when household credit amounted to 40% and firms' share was 60%.

The composition of private sector credit in Namibia has remained stable over the period 1996-2001. In all the other countries shown below, i.e. Lesotho, Mauritius, Swaziland and Zambia, there has been an increase in households' share of private sector credit, but their share is still significantly lower than the share of firms. In Zambia the share of households has increased from only 5% (1996) to 16% (2001), still a very low share.

Table 4.3 Private sector credit in SA – 1995-2001

	Total credit to private sector (R millions)	Households (R millions)	Firms (R millions)	Households (%)	Firms (%)
1995	316709	186709	130000	58.95	41.05
1996	367213	215662	151551	58.73	41.27
1997	420091	244177	175914	58.12	41.88
1998	490109	255337	234772	52.10	47.90
1999	532723	262149	270574	49.21	50.79
2000	590089	286826	303263	48.61	51.39
2001	673615	315071	358544	46.77	53.23

Source: SARB Quarterly Bulletin, various years.

Table 4.4 Private sector credit in Botswana – 1993- 2001

	Total credit to private sector (Pula millions)	Households (Pula millions)	Firms (Pula millions)	Households (%)	Firms (%)
1993	1516.6	603.5	913.1	40	60
1994	1784.0	646.6	1137.4	36	64
1995	1727.1	781.8	945.3	45	55
1996	1758.9	849.5	909.4	48	52
1997	1839.6	943.0	896.6	51	49
1998	2872.6	1379.9	1492.7	48	52
1999	4095.8	1995.0	2100.8	49	51
2000	4788.2	2429.6	2368.6	51	49
2001	5366.0	2947.9	2418.1	55	45

Source: IMF Staff Country Report No. 99/132; Bank of Botswana, 2002

Table 4.5 Private sector credit in Lesotho – 1992-1997

	Total credit to private sector (Maloti millions)	Households (Maloti millions)	Firms (Maloti millions)	Households (%)	Firms (%)
1992	332.6	68.2	264.4	20	80
1993	372.8	78.3	294.5	21	79
1994	529.2	166.1	363.1	31	69
1995	568.2	184.1	384.1	32	68
1996	632.2	198.7	433.5	31	69
1997	690.4	222.1	468.3	32	68

Source: IMF Staff Country Report No. 98/29

Table 4.6 Private sector credit in Mauritius – 1993-1997

	Total credit to private sector (Rupees millions)	Households (Rupees millions)	Firms (Rupees millions)	Households (%)	Firms (%)
1993	20387	3082	17305	15	85
1994	26463	4981	21482	19	81
1995	30474	6217	24250	20	80
1996	32055	7008	25047	22	78
1997	37208	7973	29235	21	79

Source: IMF Staff Country Report No. 98/75

Table 4.7 Private sector credit in Namibia – 1996-2001

	Total credit to private sector ($Nam millions)	Households ($Nam millions)	Firms ($Nam millions)	Households (%)	Firms (%)
1996	7016.0	4702.1	2313.9	67	33
1997	7960.1	5210.3	2745.8	65	35
1998	8752.8	5662.2	3090.7	65	35
1999	9233.6	6469.3	2764.3	70	30
2000	10791.7	7,630.9	3160.9	71	29
2001	12614.2	8,163.5	4450.7	65	35

Source: Bank of Namibia, 2002

Table 4.8 Private sector credit in Swaziland – 1993-1998

	Total credit to private sector (emalangeni millions)	Households (emalangeni millions)	Firms (emalangeni millions)	House holds (%)	Firms (%)
1993	702	155	547	22	78
1994	775	189	586	24	76
1995	807	217	590	27	73
1996	872	217	655	25	75
1997	947	242	705	26	74
1998	971	282	689	29	71

Source: IMF Staff Country Report No. 99/13

Table 4.9 Private sector credit in Zambia – 1996-2001

	Total credit to private sector (millions of Kwacha)	Households (millions of Kwacha)	Firms (millions of Kwacha)	House holds (%)	Firms (%)
1996	375072.5	17958.68	357113.8	5	95
1997	413788.6	24000.41	389788.1	6	94
1998	421002.7	82594.94	338407.7	20	80
1999	552429.1	111667.1	440762	20	80
2000	857781.8	86504.61	771277.2	10	90
2001	943975.3	153115.2	790860	16	84

Source Bank of Zambia,2002

Post Keynesian authors like Arestis and Howells (1996), argue that as the share of firms in private sector credit declines, the relative importance of firms' demand for credit decreases. In empirical work by Moore (1988) it was found that changes in the components of firms' demand for credit (working capital) explain changes in private sector credit well. In industrialised countries, firms have gained access to capital markets and other sources of finance and are no longer bank-dependent.

The tables above show that this is not true for less developed countries. Namibia is the only SADC country where the share of households in private sector credit is significantly higher than the share of firms. In South Africa the shares of households and firms are roughly equal. In 2001, firms had the larger share (53%) and households the smaller share (47%). Namibia and South Africa are also the more developed SADC countries. Botswana is the other SADC country where households and firms each have around 50% of private sector credit. Botswana is one SADC country that has been growing rapidly over the past decade. In the process, households have gained more access to formal credit markets, as shown in table 4.4.

In all the other less developed SADC countries, the shares of households have increased over the period, but remain significantly lower than the shares of firms. Firms are still the main recipients of bank credit in the SADC countries. The demand for credit by firms should therefore explain changes in private sector credit well. Data on the components of firms' demand for credit were not available for the other SADC countries (except for South Africa). In the next section the demand for credit in South Africa will be discussed in detail, with some general conclusions made that have certain implications for the other countries in the SADC region.

4.8 DEMAND FOR WORKING CAPITAL

It was argued above that in the Post Keynesian approach, demand for credit originates with the demand for working capital by firms. In an article by Moore and Smit (1986), the authors found a high correlation between the components of the demand for working capital of firms, interest rates and growth in private sector credit in South Africa. Econometric tests performed for the South African economy between 1967 and 1984 by Moore and Smit, showed that there was a strong correlation between changes in bank credit to the private sector and changes in M2. (This will be examined in Chapter 5).

There was also a correlation between changes in bank credit to the private sector and the non-government wage bill (as representative of the working

capital needs of firms). These relationships have been re-estimated for the period 1970 – 2000 (using annual data). The results are reported below.

Table 4.10 Demand for credit – working capital of firms.

Dependent variable: Growth in private sector credit.

Period	Constant	Change in non-government wage bill	Change in inventories	3-month Bankers' Acceptances	R^2	Adjusted R^2	Durbin Watson
1970-2000	-3.00 (3.70)	0.53 (3.70)	0.00 (3.20)	0.18 (4.51)	0.80	0.76	2.16

t-statistics in parentheses

Source: SARB Quarterly Bulletin, various years.

The following table shows the results obtained by Moore and Smit (1986):

Table 4.11 Demand for credit

Dependent variable: Change in bank credit to the private sector

Period	Constant	Change in non-government wage bill	Change in inventories	3-month Bankers' Acceptances	R^2	DW	RHO
1967-1984	-0,3568 (2,00)	1,0439 (15,02)			0,933	2,105	
1967-1984	-0,3746 (2,25)	1,0112 (15,00)	0,1356 (1,79)		0,942	1,907	
1967-1984	-0,4036 (2,77)	1,0293 (11,49)	0,2114 (2,44)	-0,0654 (1,40)	0,901	1,8977	0,297

t-statistics in parentheses

Source: Moore and Smit (1986)

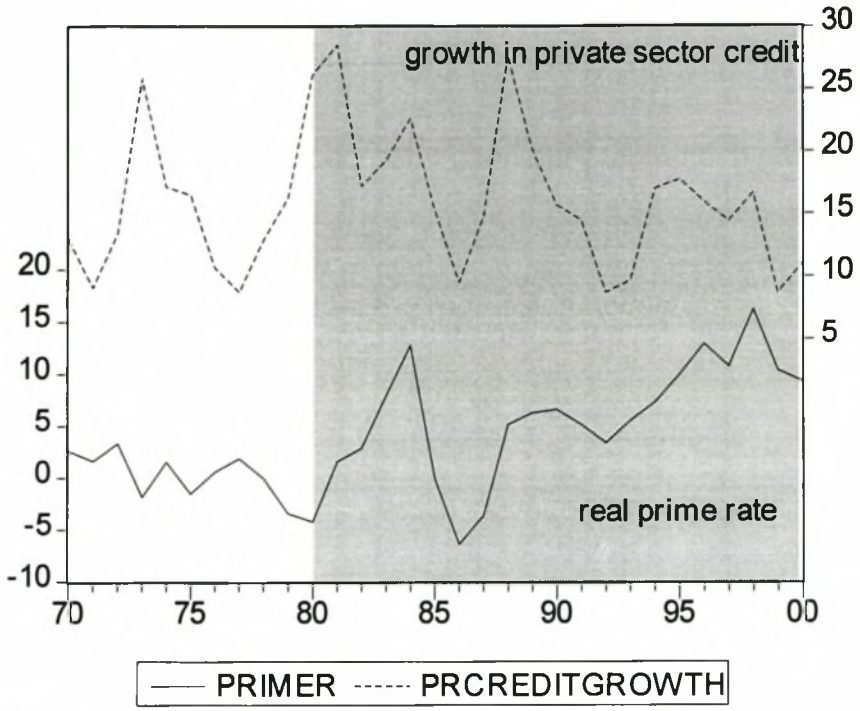
Using annual data for 1967-1984, Moore and Smit found that the three variables explain more that 90% of the change in bank credit to the private sector. On a quarterly basis, the same variables explained more than 80 per cent of the change in bank credit to the private sector (Moore and Smit, 1986:88). Using the same method as Moore and Smit, the results above show that for the period 1970-2000, changes in the non-government wage bill, changes in inventories, and interest rates explain more than 75% of the

change in private sector credit. The DW-statistic is acceptable, the t-statistics are all relevant, but the sign of the interest rate (BA3) is positive. A positive coefficient on the interest rate is not supported by economic theory, which presumes a negative relationship between the interest rate and bank credit. This result was, however, also reported in an earlier internal study of the SARB, conducted in 1985. In this study it was found that the bank credit equation (using quarterly data) had a significant but *positive* coefficient on the change in the interest rate used (prime rate). The authors therefore concluded that the first quarter impact of a rise in interest rates was perverse (Moore & Smit,1986:90): "As may be seen, the level of nominal or real interest rates typically enters with an insignificant coefficient in bank lending equations, suggesting perhaps a positive expectations effect, plus the misspecification inherent in a single-equation framework. None the less the empirical results suggest conclusively that the demand for short-term bank credit is exceedingly interest-inelastic" (Moore & Smit,1986:89). The low interest elasticity of the demand for bank credit may also contribute to this finding. This might seem surprising, but has also been found in some of empirical work by Post Keynesians. Howells and Hussein (1999:451) found a weak interest rate effect in a recent study: "What is more interesting, interest rates (domestic and overseas) appear to have no significant influence on the flow of bank lending. This may be *a priori* surprising, but is consistent with the earlier work of Moore and Threadgold (1980, 1985) and with Post Keynesian theory, where the demand for loans was dependent entirely on elements of firms' production volumes and costs".

This low interest-elasticity is a well known result. The research of Arestis and Howells (1996) and Arestis, Mariscal and Biefgang-Fris (1995), suggests that the increasing share of households in total credit, has given rise to higher interest rate elasticity. This could not be proved from the regressions for South Africa. The interest elasticity of the demand for credit also depends on the degree of competition in the market for credit. It is reported that corporate borrowing by banks in the United States is more interest elastic than in the UK: "This is due to the fact that alternative financial institutions have existed in the United States that enable corporations to seek funding outside the commercial banking sector. In the United Kingdom, by contrast, alternatives have not existed, especially in the past. Given also the commercial bank cartel in the United Kingdom, which for many years stipulated interest rate changes, the situation is very different" (Arestis, Mariscal & Biefang-Fris,1995:551). In South Africa, competition in the market for credit is limited. This might be a contributing factor to the low interest rate elasticity reported above. Research on the informal credit markets in South Africa, also reports very low interest elasticities (Ebony Consulting International,2000).

Figure 4.1 shows that South Africa has had positive real interest rates since the late 1980s. Over the shaded period, the general trend in growth in private sector credit is downward (showing a negative relationship with interest rates). This was however not clear from the regression above.

Figure 4.1 Growth in private sector credit and the real prime rate (1970-2000)



Source: SARB, various years.

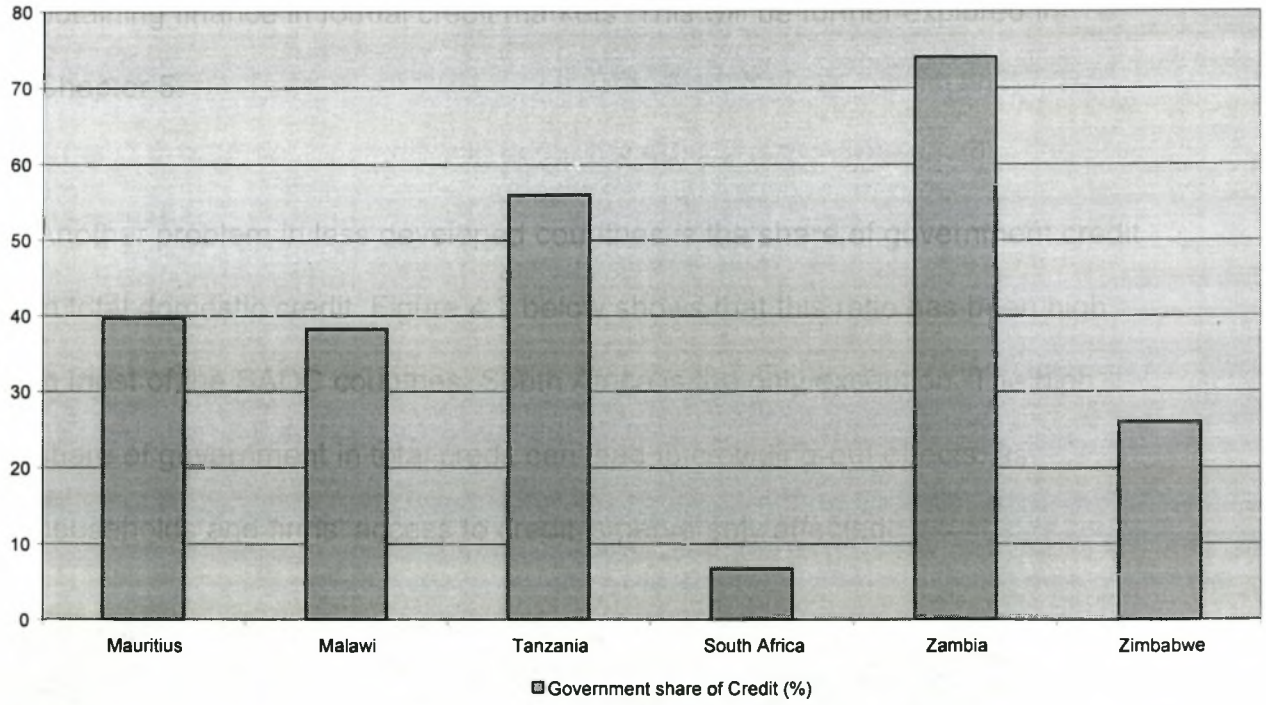
Data were not available for the other SADC countries to repeat the same regressions. In the case of SA, the variables used by Moore and Smit (1986) still explain changes in private sector credit well. Credit to businesses made up 53% of private sector credit in 2001. It makes sense that the components of firms' demand for credit explain changes in private sector credit.

In the majority of the other SADC countries discussed above, the share of firms in private sector credit was larger than the share of households. The share of households has been increasing, indicating better access to formal credit for individuals, but absolute figures are still low. Due to a lack of sophisticated capital markets, firms are dependent on banks for their credit needs (in contrast to developed countries). Firms may also not qualify automatically for credit, as credit rationing might be present in these countries.

Households, lacking a credit history, probably have even a smaller chance of obtaining finance in formal credit markets. This will be further explored in Chapter 5.

Another problem in less developed countries is the share of government credit in total domestic credit. Figure 4.2 below shows that this ratio has been high in most of the SADC countries. South Africa is the only exception. The high share of government in total credit can lead to crowding-out effects, as households and firms' access to credit is perversely affected.

Figure 4.2 Government share of credit in selected SADC countries (average value 1980-1999).



Source: IFS, various years.

4.9 COMPOSITION OF CREDIT IN SOUTH AFRICA

South Africa has a relatively well-developed financial sector, nevertheless a large part of the population is still excluded from formal credit markets. A large informal market for micro credit has evolved over the past few years in South Africa, providing short-term finance for a large part of the population. The formal market for private sector credit can be broken down into categories by financial instruments. These categories and the shares of households and firms in each will be discussed below.

Table 4.12 Total credit to the private sector (composition)

	Bills discounted (% of total)	Instalment Sales credit (% of total)	Leasing finance (% of total)	Credit cards (% of total)	Mortgage loans (% of total)	Other loans and advances (% of total)
1978	4.1	9.0	8.6	-	44.8	33.5
1979	5.2	10.9	9.2	-	44.6	30.1
1980	6.6	13.5	9.8	-	43.7	26.5
1981	5.7	17.7	10.3	-	40.0	26.3
1982	6.7	18.8	11.0	-	36.7	26.8
1983	2.7	18.8	11.3	-	37.8	29.5
1984	2.4	19.9	10.7	-	34.6	32.3
1985	3.7	17.6	8.8	-	35.2	34.8
1986	3.9	15.4	7.3	-	37.2	36.2
1987	4.6	12.3	6.0	-	39.6	37.4
1988	5.5	11.9	6.7	-	39.3	36.6
1989	5.1	12.3	7.2	-	38.3	37.2
1990	5.9	12.2	7.4	-	37.6	36.9
1991	6.9	11.2	7.7	1.8	38.6	33.9
1992	6.7	10.4	7.7	1.9	41.7	31.6
1993	3.7	10.9	7.3	1.7	43.8	32.5
1994	3.0	12.0	6.8	2.0	44.9	31.4
1995	2.5	12.8	6.6	2.4	44.6	31.0
1996	1.6	12.8	6.4	2.5	42.8	33.9
1997	1.5	12.0	5.3	2.3	42.9	36.0
1998	1.4	10.7	4.6	2.2	40.5	40.6
1999	1.1	10.0	4.2	2.2	39.0	43.2
2000	1.4	10.1	4.3	2.2	40.1	42.0

Source: SARB DI-900 returns, various years.

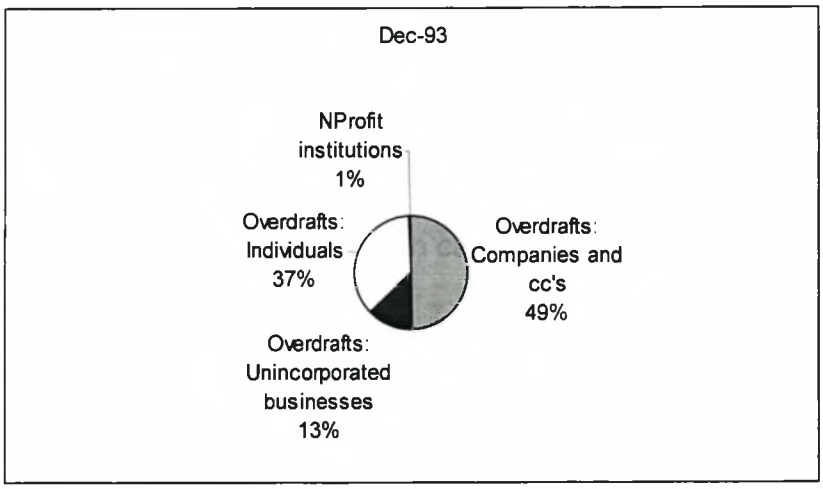
From table 4.12 it can be seen that the largest portion of bank credit to the private sector consists of 'other loans and advances' followed by 'mortgage loans'. In 2000 these two categories accounted for 82% of total credit to the private sector. This is different from the situation in 1978, when 'mortgage loans' exceeded 'other loans and advances' by a significant margin. There was a dramatic decline in 'bills discounted' since 1992, falling to a figure of 1,4% in 2000. This is a result of a change in statutory requirements, where the liquid asset status of bankers' acceptances was terminated in terms of the Banks Act. Bankers' acceptances lost their status as collateral for overnight loans at the discount window from May 1993 (Van der Walt,1997:3). 'Instalment sales credit' and 'leasing finance' together constituted 14,4% of total private sector credit in 2000. 'Mortgages' remained relatively stable over the period. Van der Walt (1997:7), explains that firms borrow mainly through the category 'other loans and advances'. "Households were the main recipients of bank loans in the form of mortgage advances: more than 90 per cent of this type of bank credit is allocated to households. Companies on the other hand, mainly borrowed in the form of "other" loans and advances, including overdrafts and factoring. The corporate sector accounted for about two-thirds of this type of bank credit". 'Other loans and advances' increased over the above period from 33,5% (1978) to 42% (2000). "This type of credit consists largely of overdrafts and is mainly used as working capital by businesses"(Van der Walt,1997:6).

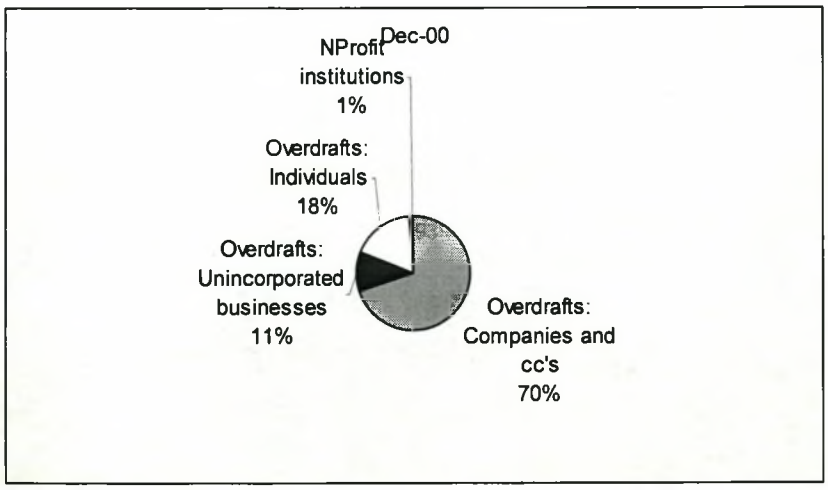
In order to get a better picture of the demand for financial instruments of firms and households, DI-900 forms were used. The commercial banks report their individual data to the South African Reserve Bank (SARB). Using these

disaggregated statistics, it was possible to break the categories 'overdrafts', 'other loans and advances', 'credit cards' and 'mortgages' down into their individual components. The figures show the composition for December 1993 and December 2000, for each category. Data for the whole period are shown in the tables.

Overdrafts are a component of the category 'other loans and advances'. It is clear from figure 4.3 that the share of businesses in overdrafts has increased relative to households. The share of individuals has experienced a dramatic decline from 37% to 18% of total overdrafts.

Figure 4.3: Composition of overdrafts (1993 and 2000)





Source: DI-900 forms, various years

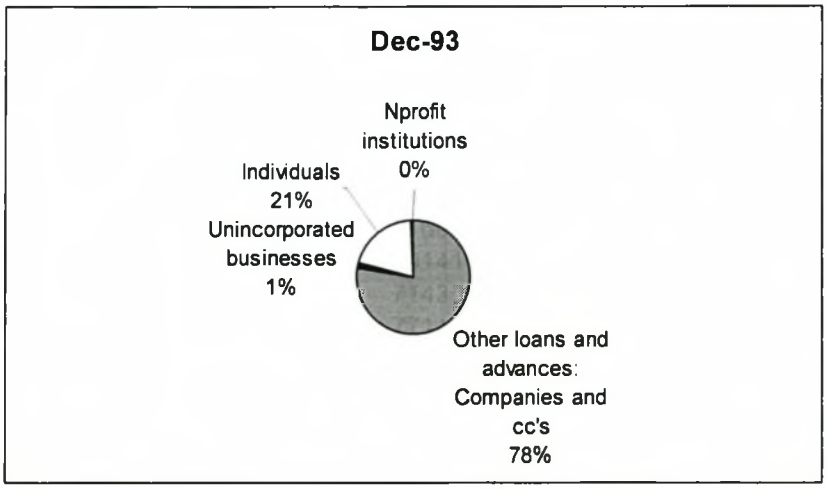
Table 4.13 – Composition of overdrafts

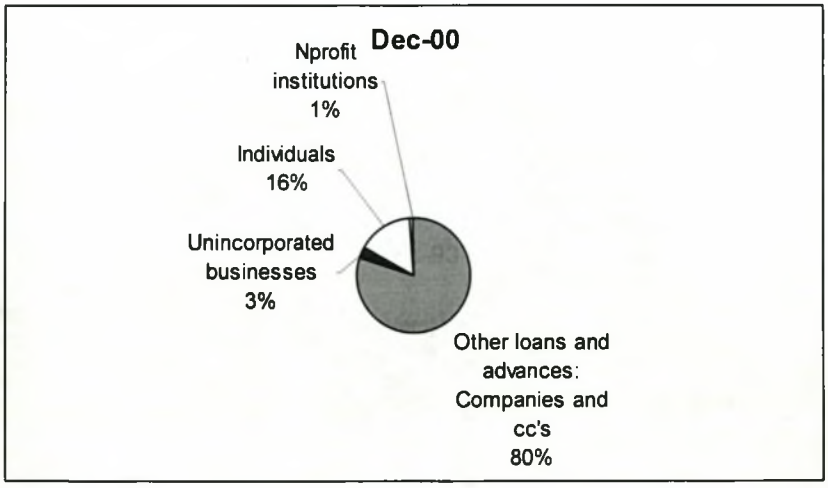
	Overdrafts: Companies and closed corporations (R'000)	Overdrafts: Unincorporated businesses (R'000)	Overdrafts: Individuals (R'000)	Overdrafts: Non-Profit institutions (R'000)	TOTAL OVERDRAFTS (R'000)
Dec-93	16624560	4417499	12396462	182254	33620775
Dec-94	19946635	5160128	9901976	316809	35325548
Dec-95	23749732	5914169	13666150	292834	43622885
Dec-96	28123457	7143060	15313221	368134	50947872
Dec-97	34578728	7711037	16961503	852418	60103686
Dec-98	46292056	8365553	14823653	766975	70248237
Dec-99	48222649	7988220	12437479	763800	69412148
Dec-00	51863692	8597746	13616771	754382	74832591

Source: DI-900 forms, various years

Table 4.13 shows that individual overdrafts have increased in absolute figures, but their relative share has declined.

Figure 4.4 Other loans and advances (1993 and 2000)





Source: DI-900 forms, various years.

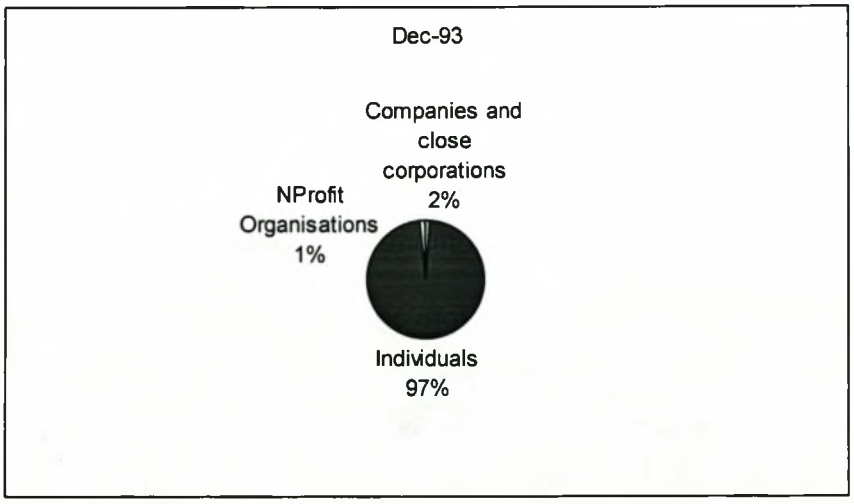
Table 4.14 Composition of other loans and advances.

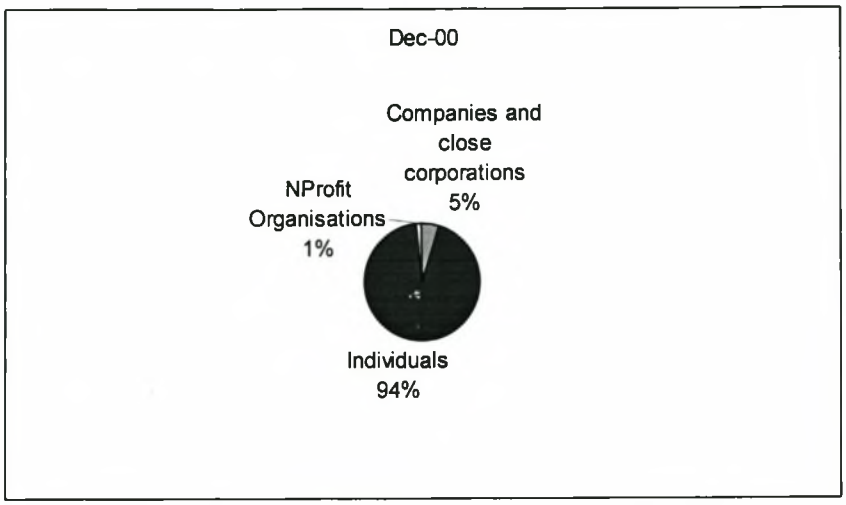
	Other loans and advances: Companies and closed corporations (R'000)	Unincorporated businesses (R'000)	Individuals (R'000)	Non-profit institutions (R'000)	TOTAL PRIVATE SECTOR LOANS (R'000)
Dec-93	28274545	465585	7575657	120241	70494731
Dec-94	30681468	657174	9472360	425361	77211338
Dec-95	32058793	692522	9871966	402779	87780560
Dec-96	34535683	1007101	10463724	1579670	99789700
Dec-97	48632657	1268898	13696119	933769	126008613
Dec-98	75925813	1425026	15016955	1436430	165352456
Dec-99	94249291	4137800	20401155	732392	190743698
Dec-00	1.05E+08	4350732	21198179	968579	208198774

Source: DI-900 forms, various years.

The same picture emerges when the category 'other loans and advances' is considered. The share of businesses increased from 79% to 83%, while the share of individuals decreased from 21% to 16%. Table 4.14 shows that loans and advances to individuals have increased in absolute terms, but their relative share has decreased.

Figure 4.5 Credit card composition





Source: DI-900 forms, various years.

Credit card debtors consist mainly of individuals. In 1993, 97% of all credit card debtors were individuals. The share of households as a percentage of credit card debt is shown in figure 4.5. Households accounted for the biggest share of credit cards, 94% in 2000, and also of mortgage loans, 75% in 2000. The share of credit cards in total private sector credit remains negligibly small (2,2% in 2000). Table 4.15 shows the absolute figures over the period.

Table 4.15. Composition of credit cards.

	Credit cards: Companies and close corporations (R'000)	Credit cards: Individuals (R'000)	Credit cards: Non-Profit Organisations (R'000)	TOTAL (R'000)
Dec-93	62902	3533724	46935	3643561
Dec-94	156892	4598555	38859	4794306
Dec-95	205207	6724084	97098	7026389
Dec-96	192681	8533957	107248	8833886
Dec-97	218336	9197703	107854	9523893
Dec-98	324551	9881351	151333	10357235
Dec-99	502103	10878271	66483	11446857
Dec-00	612219	11224645	178530	12015394

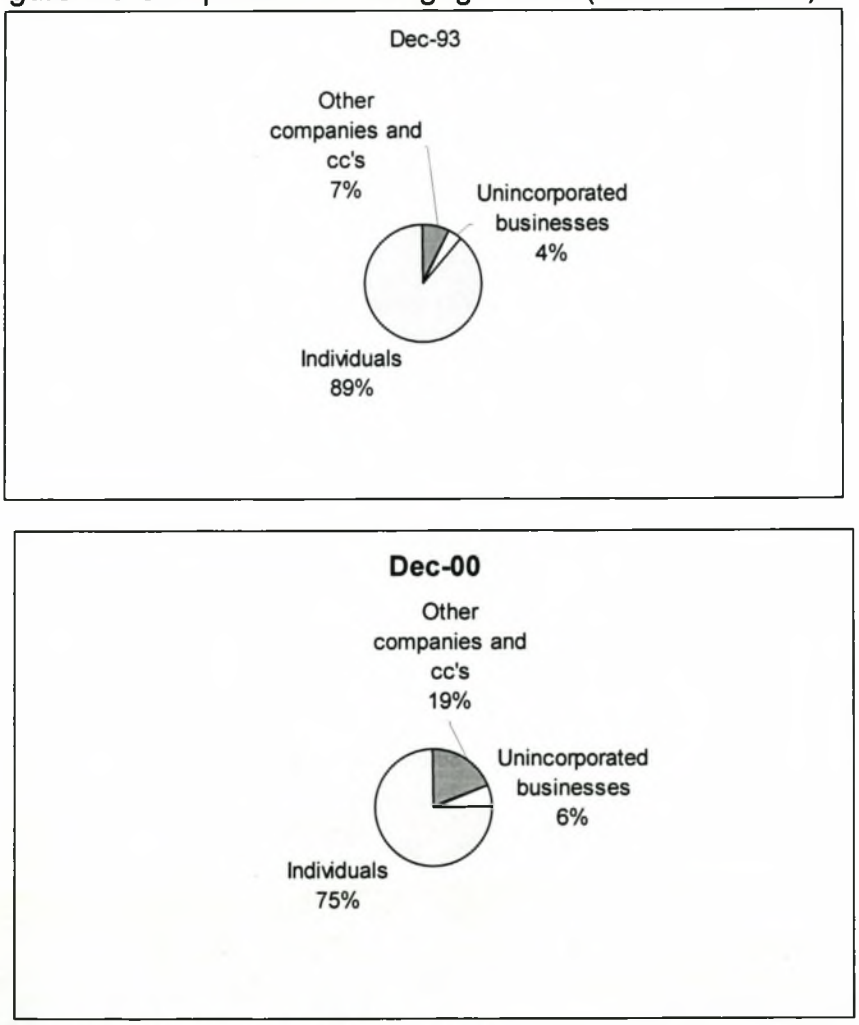
Source: DI-900 forms, various years.

Where the household sector is the biggest user of mortgage finance and credit cards, companies obtain bank credit mainly by means of overdrafts and

other loans and advances. This is in line with international trends, as seen in the work of Arestis and Howells (1996) for the UK.

Figure 4.6 shows that the share of individuals in mortgage loans decreased between 1993 (89%) and 2000 (75%). Yet, it remains the largest share of mortgage finance.

Figure 4.6 Composition of mortgage loans (1993 and 2000).



Source: DI-900 forms, various years.

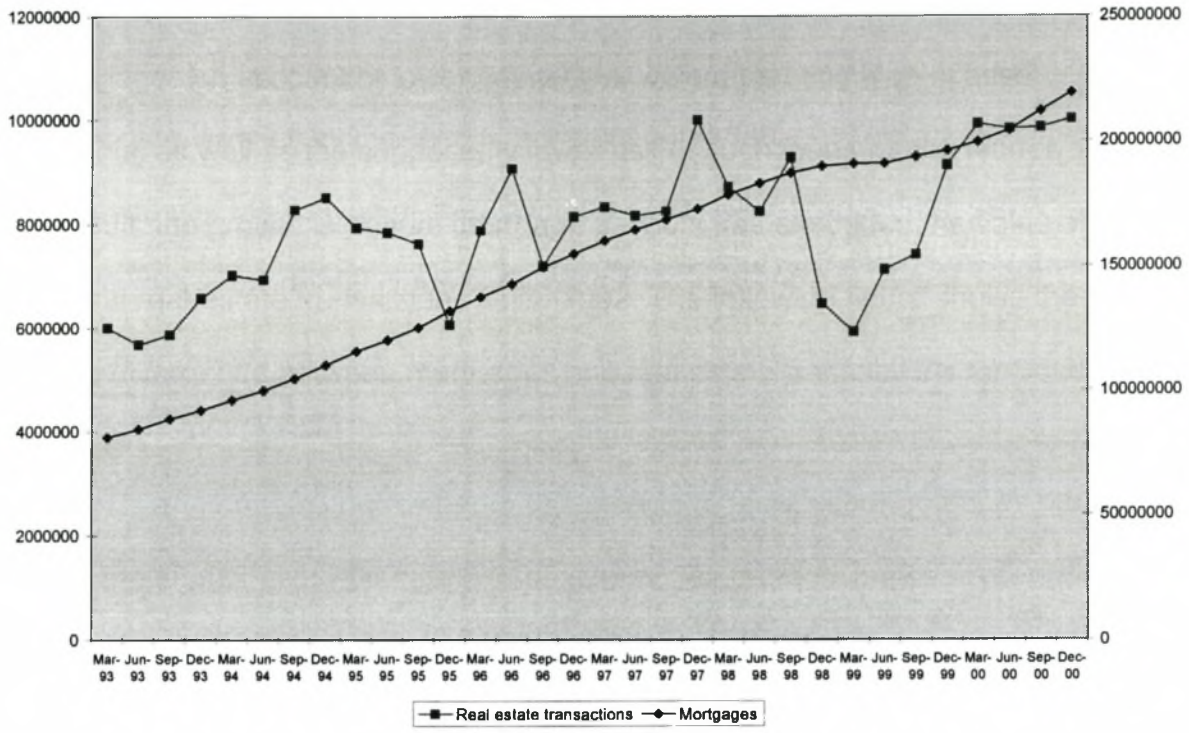
Table 4.16. Composition of mortgage loans.

	Other companies and cc's	Unincorporated businesses	Individuals	TOTAL MORTGAGES
Dec-93	6653034	3501770	79821798	92036076
Dec-94	8460972	4433808	94294616	110166001
Dec-95	12788175	6333172	108211933	132005722
Dec-96	17426339	8421921	122964982	154850510
Dec-97	19352235	9123906	138490330	172755041
Dec-98	28181462	11224795	144791595	189780482
Dec-99	35091445	11974107	144173998	196064498
Dec-00	40657219	12761213	160250838	219250602

Source: DI-900 forms, various years.

Table 4.16 shows that the absolute figure of mortgage loans to households has increased between 1993 and 2000. Borrowers in South Africa increasingly use mortgage loans to finance other expenditure not related to real estate transactions. Banks actively encourage this behaviour, because of the lower risk of this type of loan. Van der Walt (1997:6) found the same results in a study on the credit composition in South Africa: "Since 1991, mortgage advances have been increasing at a surprisingly stable rate...The introduction of flexible mortgage loans improved the attractiveness of this type of credit and enabled borrowers to use mortgage facilities for purposes other than the financing of real-estate transactions. The attractiveness of mortgage borrowing was enhanced further by the relatively low cost of this type of financing. From the supply side, banks actively encouraged the use of mortgages on account of lower capital-risk weight that this type of asset attracts, as well as the supposedly lower risk of such loans for the lender." As a result, the growth in annual mortgage payouts has exceeded the value of annual real-estate transactions since 1992. The following figure shows the large divergence between mortgages and real estate transactions for South Africa.

Figure 4.7 Relationship between mortgages and real estate transactions.



4.10 THE MARKET FOR MICRO-FINANCE (SOUTH AFRICA).

South Africa has recently seen exponential growth in the market for small loans. This happened as a result of a change in the law governing the micro-finance sector. In 1992, the Exemption to the Usury Act removed interest rate ceilings on small loans under R 6 000. Before that there were few official options available to people who wanted access to micro-finance. Pawnbrokers or other informal credit agents, such as stokvels and burial societies, were the only available options, since commercial banks did not offer micro-credit (Ebony Consulting International,2000:21).

The industry has expanded significantly over the last 9 years. Unfortunately there are little data available. A few *ad hoc* studies have been done to

estimate the size of this sector. There has been a rapid growth in the demand for finance and banking services by the lower income groups in South Africa, due to a variety of reasons, such as low access to formal banking services by the poor, increased income of low income groups, urbanisation and growth of the SMME sector (small, medium and micro enterprises). This increase in demand has been met by the rapid rise of the micro-lending market. Commercial banks have been reluctant to enter this growing market, due to perceived high risks.

A survey done by the University of Pretoria in the peri-urban areas of Pietersburg in the Northern Province, showed that the demand for micro-credit originated from the following needs:

Table 4.17 Demand for micro-credit.

Instalments	27,8%
School fees	38,9%
Household needs	22,2%
Agriculture	5,6%
Small Business	5,6%

Source: Ebony Consulting International (2000:22)

These figures imply that these loans are mainly used for consumption and not for productive uses. This was also found for Madagascar: "The informal sector, however, frequently serves consumption needs. Here, 759 out of 1 214 loans are used for consumption, mostly for food and to a lesser extent to finance expenses related to education, health and social events." (Zeller,1994:1897)

Data from the South African Micro Finance Regulatory Council show that the amount of gross loans outstanding during the period 1/12/2001-28/02/2002,

was R 14,9 billion. A study done for the Department of Trade and Industry (Ebony Consulting International, 2000), estimated the total size of the outstanding portfolio of the micro-finance industry as R13 billion in 2000. Their calculations showed that the effective demand, on an annual turnover basis, was about R 25 billion. This is clearly an industry where demand for credit exceeds the supply of credit. Demand for credit in this industry is a function of the cost of the services, the availability of the services (especially in the rural areas) and awareness of the services. The interest elasticity of demand for a small loan seems to be very low. The immediate utility of the loan is probably more important than the cost of the loan: "A recent survey of rural borrowers revealed that only 8.9 percent of the borrowers knew the interest rate. By contrast, all of them knew the amount they had to repay and the cash flow to do so"(Ebony Consulting International, 2000:24).

4.11 CONCLUSION

In Post Keynesian monetary theory, credit is supplied on demand. All creditworthy demand for loans is met by the banking sector. Little attention is given to the composition of the demand for credit. It was argued in this chapter that the composition of the demand for credit is important in the developing country context.

In industrialised countries, households have replaced firms as the dominant borrowers. In the SADC countries, the share of households has been increasing relative to that of firms, but it remains low. Botswana, Namibia and

South Africa are the only SADC countries where households' share of private sector credit exceeds 40% (compared to 62% in the UK). Firms rely on banks as a source of credit, due to lack of deep capital markets. Households also rely on banks, but their share is much lower, reflecting the restricted access of households to formal credit in these LDCs.

By examining balance sheet data for South Africa, businesses were shown to borrow mainly in the form of overdrafts and 'other loans and advances'. These are forms of credit that can be accessed on demand. Household have the biggest shares of mortgage loans and credit cards. Credit cards in South Africa constitute only 2% of total private sector credit. It can be argued that only households with access to credit cards (a small percentage of the population) and owners of real estate can obtain credit on demand. The components of the demand for business credit explained changes in private sector credit well, since business credit is an important component of total private sector credit in South Africa.

Firms constitute the largest component of private sector credit in most of the SADC countries (all except Namibia and Botswana). In these countries firms do not have access to alternative sources of finance. Many borrowers (both firms and households) do not have automatic access to credit facilities. Credit is supplied on demand to *creditworthy* borrowers. Given the low share of households in private sector credit, most individuals are not considered creditworthy.

CHAPTER FIVE

THE SUPPLY OF CREDIT: CREDIT RATIONING

As liquidity preference rises, banks become increasingly unwilling to meet the demand for credit, so that credit rationing replaces accommodating behavior.

(Wray,1990)

5.1 INTRODUCTION

The previous chapters gave an overview of the Post Keynesian theory of an accommodating central bank. The supply of money is demand determined and in financially developed economies, all creditworthy demand for funds is met. The demand for money was then examined in a developing country perspective. It was argued for LDCs that the transactions demand for money is more important than the finance demand. This chapter will look at the supply of finance, from the point of view of a developing country.

In a seminal article on credit rationing, Stiglitz and Weiss (1981) argued that credit rationing implies an excess demand for loanable funds. This is a classic case of market failure. Markets do not necessarily clear and government intervention is needed. Credit rationing is a theory firmly rooted in the Keynesian tradition – there are some features in an economy that prevent markets from efficiently allocating resources. The concepts of coordination failure, asymmetric

information, and credit rationing have become associated with the New Keynesian school and have been elaborated by New Keynesian authors such as Stiglitz, Greenwaldt, Romer and Mankiw. But fundamental uncertainty is a Post Keynesian theory, and plays a central role in the work of Post Keynesian authors. The central Post Keynesian idea is that the future is unknowable, and the world is characterised by fundamental uncertainty. It will be explained in this chapter how the ideas of asymmetric information and credit rationing illuminate Post Keynesian money supply theory, and how this can be applied to the developing country analysis.

5.2 CREDIT RATIONING – SOME DEFINITIONS.

Economists writing in the neo-classical tradition regard market failure phenomena like credit rationing as a short-term problem. Coordination failure is possible in the short run, but in the long run markets tend to equilibrium. New Keynesian literature on credit rationing argues the opposite: *in equilibrium* loan markets may be characterized by credit rationing. This is explained by concepts such as 'adverse selection' and 'incentive effects'.

Adverse selection assumes that different borrowers have different probabilities of repaying their loans. Those willing to pay higher interest rates may be worse risks. As interest rates increase, only those who are less risk averse will demand credit, since they consider their probability of servicing the debt to be low. Banks

ration the total supply of credit rather than raise interest rates. The same principle applies to collateral requirements. The returns to the banks will decrease as collateral or equity requirements are increased, since less risk averse borrowers are selected (Stiglitz & Weiss,1981:394).

The incentive effect refers to the fact that the actions of banks affect the actions of borrowers. Credit is not a commodity like beef or potatoes, where anybody who is willing to pay the market price can acquire the goods. The seller (lender) has to be sure that he sells the product to a specific buyer (borrower). In the credit market, the price of the product influences the pool of borrowers. Increasing interest rates affect the riskiness of average loans made by the banks. At the higher interest rate, the expected return is lower, since only projects with a high expected return (more risky) are undertaken. This is the incentive effect, where more risky projects are undertaken as a direct result of the behaviour of the banks. Once again, this causes banks to ration credit rather than raise interest rates. The same problem exists for banks who consider lowering their interest rate. If a client is a good credit risk, his bank will most likely match the lower interest rates. If he is a bad credit risk, there will be an incentive for him to accept the lowest interest rate available. The bank with the lowest interest rate will tend to draw higher risk borrowers due to adverse selection.

Credit rationing therefore describes a situation where:

> ...either (a) among loan applicants who appear to be identical some receive a loan and others do not, and the rejected applicants would not

> receive a loan even if they offered to pay a higher interest rate; or (b) there are identifiable groups of individuals in the population who, with a given supply of credit, are unable to obtain loans at any interest rate, even though with a larger supply of credit, they would (Stiglitz & Weiss,1981:395).

In credit markets the interest rate that maximizes the return of the bank, does not clear the market, in the sense that there perpetually exists an excess demand for credit at this interest rate. Banks see the expected return on a loan as a decreasing function of the riskiness of the loan.

In the presence of credit rationing, credit money is not simply supplied upon demand. Some creditworthy borrowers are unable to obtain credit, because of adverse selection and incentive effects. If there were a bigger supply of credit, more borrowers will be accommodated. But the supply of credit is always restricted on risk grounds. This is also due to institutional limits on credit, in addition to the adverse selection effects. As Greenwald and Stiglitz (1993:32) argue:

> And in the credit rationing regime, it is the supply of loans which is critical; firms are limited in their investment activities, and possibly even in their production activities (if they rely on bank credit for working capital) by the lack of credit.

This describes a situation where there is a general shortage of credit. Firms who are credit constrained by banks will find it difficult to raise money from non-bank

sources for the same reasons. Equity is not a viable alternative, as adverse selection is also prevalent. Firms who know that their shares are overvalued by the market will be the most eager to issue new shares to diversify their risk. The market will treat the issuing of new equity as a negative signal, and this avenue is thus limited as a source of new finance. For firms in developing countries where financial markets are thin, obtaining finance through equity issues is frequently not an option. Other sources of funds are even less informed about credit worthiness. Banks are experts in developing screening devices and building long term relationships to determine the credit risk of their clients: "Adverse selection works to exacerbate other sources of credit, too; the firms that avail themselves of these alternative supplies are those in dire straits" (Greenwald & Stiglitz,1993:32).[1] Credit is rationed, either by the market or by the government through credit laws. Credit is not supplied on demand to any creditworthy borrower.

5.3 CREDIT RATIONING FROM A POST KEYNESIAN PERSPECTIVE

Credit rationing is not a description of banking practices where higher risk individuals pay higher interest rates. It is the phenomenon that loans are denied to borrowers who are observationally indistinguishable from those who do receive loans. Banks ration the total number of loans, rather than limiting the size of each loan. Banks do not increase the interest rate charged, as an increasing function of the expected riskiness of the loan (Stiglitz & Weiss,1981).

[1] This is why there has been such a growth in informal micro-lending in most developing countries over the past decade.

It is sometimes argued that the idea of credit rationing is incompatible with the Post Keynesian theory of an endogenous money supply:

> In a Post Keynesian demand-determined system of endogenous credit-money, neoclassical scarcity cannot hold sway. Consequently interest rates emerge as a non-market conventional phenomenon (Seccareccia,1997:135).

A limited supply of credit, or credit rationing, is not possible in a world where all demand for credit is accommodated. Moore and Kaldor emphasise that banks will only make loans to borrowers who they deem creditworthy. As explained by Wray (1990:158), lack of finance is indeed possible in a Post Keynesian world: "Keynes went on to argue that while investment can never be constrained by lack of saving, it can be constrained by lack of finance." The structuralist Post Keynesians have incorporated the concept of credit rationing into their work and obtained results closely related to New Keynesian capital market theory.

Dow is one Post Keynesian author who has advocated the extension of endogenous money to include liquidity preference. She argues that it is important to consider the liquidity preference of commercial banks. Their increased liquidity preference in a downward phase of the business cycle will encourage credit rationing. This leads to a money supply function that is upward sloping at times, similar to Wray's step-wise money supply function. Dow (1996:497) notes that: "It

can be argued that this extension of liquidity preference theory to bank behaviour is not compatible with Kaldor's and Moore's overall stance".

Nevertheless, Dow acknowledges that neither Kaldor nor Moore argues that all demand for credit is accommodated. Moore explicitly states that only *creditworthy* demand for credit is accommodated. Banks have specific criteria that must be met by all prospective borrowers. Dow has argued that different stages of the business cycle have different effects on the credit extension of commercial banks. Through much of the business cycle, the supply of credit is close to horizontal. But during a downturn, when banks have a higher liquidity preference, the supply function has a positive slope. It might even become vertical in extreme cases, if banks put an absolute ceiling on credit supply, placing free reserves instead in investments as better providers of liquidity. Dow argues that as the "moods" of financial institutions are likely to follow a pro-cyclical pattern, so too will the availability of credit.

This seems to be compatible with the New Keynesian view, with its emphasis on asymmetric information and the behaviour of commercial banks. As noted by Stiglitz and Weiss (1981:394):

> It is not our argument that credit rationing will always characterize capital markets, but rather that it may occur under not implausible assumptions concerning borrower and lender behavior.

The difference between the Post Keynesian and New Keynesian approaches is a different emphasis on the supply and the demand side. In the Post Keynesian view, credit is demand determined. A shortage of creditworthy borrowers may exist, but all creditworthy demand is met. In the New Keynesian view, the credit-driven nature of the modern economy is recognized, but the emphasis throughout is on the supply side. Both agree that credit rationing causes an excess demand for credit in equilibrium.

Wolfson (1996) argues that the Post Keynesian institutional approach should be applied to the concept of credit rationing. The credit rationing literature can be enriched by incorporating Post Keynesian concepts such as uncertainty, time and expectations formation. Asymmetric information in the New Keynesian view implies that the borrower has more information regarding the outcome of a certain project than the lender. In a Post Keynesian world, both borrower and lender face an uncertain future, their expectations differ not solely because one knows more than the other, but rather because the world is characterized by fundamental uncertainty. Banks have expertise developed over years such as specialized screening mechanisms and long-term relationships with clients. Some borrowers may be able to borrow from banks, but are unable to borrow from other sources, or only at an increased cost. Anything that disrupts normal banking activity can reduce the supply of credit to borrowers dependent on banks. This is the essence of the credit view. In developing countries with underdeveloped financial sectors and large underbanked parts of the population,

credit is a scarce commodity. In the *Treatise,* Keynes used the concept of a "fringe of unsatisfied borrowers" (1935:212). This is a reference to credit rationing, where the relationship that an individual has with his bank determines the amount lent and interest rate charged, with some borrowers left unsatisfied. Banks influence the size and composition of this unsatisfied fringe. This is the main explanation why observationally indistinguishable borrowers appear to be treated differently.

The research of Wolfson confirms the Keynesian idea of an unsatisfied fringe of borrowers. He examined the loan practices of commercial banks in the USA and found that banks assign borrowers to particular risk categories. About 20 percent of respondents used a statistically based credit model to assign borrowers to risk categories, but usually risk evaluation was done on a judgmental basis (1996:456). This confirms the importance of long-term relationships in banking practices and the supply of credit. Both price and non-price terms are varied according to the creditworthiness of a borrower. "Price" terms refer to the spread of loan rates over some base rate. "Non-price" terms refer to requirements such as collateral, and the size of credit lines. Credit lines are an important part of loan negotiations in developed countries. Most large business loans use money market rates as a reference rate, rather than the prime rate. Prime rate is used for individual and smaller business loans.

Wolfson argued that in the USA credit lines are different from credit commitments:

> Lines are relatively informal arrangements under which banks agree that on demand they will quote a price on a fixed-rate loan for a particular amount and maturity (usually under a year) selected by the borrower, within specified limits. Banks typically set the price of such loans by marking up a reference rate for the same maturity as the loan – for example, the rate on 30-day certificates of deposit for a 30-day loan…By widening or narrowing their markups, banks can affect the quantity of these loans outstanding.
>
> Unlike lines, loan commitments require fees, which are paid on the unused credit available under the arrangement. Commitments oblige banks to lend up to agreed-upon amounts as long as borrowers meet loan covenants included in the contract…borrowers draw down credit up to specified limits at pre-established spreads over reference rates (Wolfson,1996:457).

Three types of lending may be distinguished. In the first case, the bank determines the prime rate, and the spread over the prime rate. The borrower has little or no negotiating power about price. The second case is that of credit lines. The borrower is able to determine within specific limits how much he wants to borrow, but the interest rate is determined by the bank. The bank can influence the amount of credit demanded by varying the spread over the reference rate. In the third case, with loan commitments, the borrower has greater discretion. He

determines both the size of the amount borrowed, and the price, where both are subject to the agreement reached between the bank and the borrower. This last case is one of the essential arguments of the Post Keynesian endogenous money supply theory. When credit is rationed, this last group is hardly affected. Credit rationing mainly applies to the first and second groups. Moore found for the US that by the late 1980s, 70 percent of all commercial and industrial loans were made under prearranged loan commitments, and consumer loans made under credit card arrangements became increasingly important in bank portfolios (1988:25). The conclusion from this is then that since most bank loans are made under previous commitments, the total volume of bank lending is largely determined by loan demand.

An important criticism of this view is from Rousseas (1988:476): "Nor does it follow that to the degree that unused overdrafts exist, they exist where they are most needed, or that they can be instantaneously transferred to those points of need. It is quite possible that a great part of unused overdrafts remain just that – *unused*"(Emphasis in the original). In the UK, the equivalent of credit lines is overdraft facilities. Dow reported that the proportion of loans made under overdraft facilities in Britain decreased substantially from 22% in 1984 to only 14% in 1992. For the US it was found in a 1990 survey that 73% of small firms did not have a credit commitment, compared with 40% of medium-sized firms (Dow, 1996:506). Only large companies qualify for loan commitments where they can draw down funds, as they need them. In developing countries, most

individuals and small companies do not qualify for credit facilities. They are credit-rationed by banks. Credit rationing is borne by borrowers *without* loan commitments, and is more prevalent in developing countries. This is confirmed by Wray (1990:63):

> ...credit rationing by banks is the norm. The disadvantage of a system based on deposit banking rather than on small local banks may be that small borrowers do not receive credit. This would tend to hinder the development of small scale industry and agriculture. In fact, this does seem to be a characteristic typical of the LDC.

The New Keynesian idea of credit rationing has been adopted by the so-called structuralist Post Keynesians, such as Wray, Dow and Dymski. Liquidity preference essentially has the same foundations as credit rationing. The difference between the mark-up approach and the liquidity preference approach was explained in the previous chapter. The markup theory is primarily concerned with the endogenous creation of money by banks. The liquidity preference or structuralist school takes the allocation of financial assets into account and therefore focuses on the lending practices of commercial banks, similar to the New Keynesian approach. Both are directed at an analysis of bank behaviour and credit markets. Both are interested in understanding bank credit extending practices. Pigay (1999:266), summarizes this common focus as follows:

> But such a complementarity cannot be envisaged within a single coherent theoretical structure. In particular, a monetary production economy cannot

> be confused with an exchange economy; furthermore, radical uncertainty cannot be reduced to probabilistic risk. The two approaches do, however, share a common objective, and the results of both approaches may be valuable despite their derivation from different theoretical foundations.

The emphasis of structuralist Post Keynesians on banking behaviour is important. Their consideration of the institutional aspects of money creation reinforces the concept of endogenous money. It does not contradict the endogenous nature of money, but contributes to our understanding of the processes that cause money to become endogenous. The theory of endogenous money cannot be considered without also looking at the institutional environment:

> It seems then, that the two analyses are more complementary than exclusive as the new considerations about liquidity preference are explicitly based on the notion of the endogeneity of money. Their purpose is indeed to reinforce Post Keynesian monetary theory, taking into account the complexity of the operations performed by banks, in order not to weaken it on theoretical grounds (Pigay,1999:277).

The structuralist Post Keynesian school, in their emphasis on the allocation of financial assets, sees banks essentially as portfolio managers operating in financial markets. This approach has been called by different names: the structuralist view, the liquidity preference approach, the neo-Banking school and the 'new view' or portfolio choice approach. This new view is an extension of the

original work of Gurley and Shaw (1955), which emphasized the role of financial intermediation in economic development. According to the new view, financial institutions are important, and the level of development of financial markets has definite effects on the productive side of the economy. The maturity of the financial structure governs the pace of economic growth. Firms and households must make portfolio choices, but this is hampered by the high degree of uncertainty. Banks develop special screening mechanisms over time, but this is difficult in a world characterised by fundamental uncertainty. This problem may be exacerbated by shallow financial markets in developing countries, contributing to the use of credit rationing. As explained by Dymski (1992:315):

> For example, suppose many potential borrowers are unable to access credit markets directly due to informational problems rooted in their size, inexperience, ethnicity, and/or lack of collateral or net worth. Suppose that banks too are unable to ascertain all relevant information about these potential borrowers' credit-worthiness, and hence ration credit to them. Suppose that those denied credit must operate at reduced activity levels, hiring fewer workers and buying less goods than if they had received bank credit. Finally, suppose the workers not hired by these firms have no other job options. *Then,* one may infer that the macroeconomy is operating below full employment. (Emphasis in the original).

In a Post Keynesian world characterized by fundamental uncertainty, banks face more than the problem of asymmetric information. Banks must absorb default

and liquidity risks in financial markets and these are subject to fundamental uncertainty. This Post Keynesian emphasis on uncertainty furthers our understanding of why banks are unwilling to absorb liquidity risks. In well-developed financial markets banks have some notion of the average default rate, and the cost of liabilities. If banks can quantify their risks, they will be more willing to create credit by increasing their own exposure to default and liquidity risks. If banks are not willing to carry these risks because of a highly volatile environment, then credit markets will be shallow and may resemble a world without financial intermediaries. Credit rationing is indeed possible in a Post Keynesian world of endogenous money. Both schools have developed valuable insights and can learn from their common Keynesian foundations:

> Post Keynesian models have either suggested that credit rationing does not occur (the neo-Banking school), or have not explicitly addressed the matter. New Keynesians have not seriously considered the impact of uncertainty. The middle ground between these two Keynesian approaches may lead to a more complete model of banking. Intuitively, New and Post Keynesian elements would interact because Keynesian uncertainty can force adjustments with ratchet effects on credit supply (up or down) in a rationed market for bank credit (Dymski,1992:318).

5.4 POST KEYNESIAN CRITICISM

Some Post Keynesians have criticised the apparent eagerness of other members of the school to find common ground with New Keynesians. Rochon (1999:233) argues that although Post and New Keynesians are perhaps closer than most New Keynesians are willing to admit, they remain nonetheless far apart "based on their respective intent." He believes that New Keynesian theory is not Keynesian at all. The emphasis of Keynes's work is on the demand side of the economy, while New Keynesians emphasize the supply side. The driving force of monetary policy is the supply of loanable funds. The problem here is that Post Keynesian theory, having rejected the classical theory of loanable funds, has little to offer on the supply side. According to the accommodationist view, credit that is demanded by creditworthy borrowers will be supplied. The theory of supply is therefore the same as the theory of demand, those factors which determine the demand for credit automatically also determine the supply of credit. Because of weaknesses in the Post Keynesian theory, it is useful to look at the supply-side theory of the New Keynesians for valuable new insights.

Another point of criticism is that: "First, Post Keynesians, such as Dymski and others who are proponents of such reconciliation, fail to correctly assess the New Keynesian literature. Second, if these authors believe that a reconciliation is possible, it is because their own model can be reconciled with the orthodox multiplier model where causality runs from deposits to loans"(Rochon,1999:232).

In the usual textbook money multiplier model, banks are restricted in their lending activities by the amount of required reserves. In the New Keynesian literature, loans are rationed because banks cannot lend more than their deposits and reserves. Some borrowers receive loans while others are rationed. Although this reflects the liquidity preference of banks, rather than an exogenous credit constraint, more borrowers could be accommodated with a larger supply of credit.

There is an element of neoclassical scarcity in this analysis, based on some notion of a traditional money multiplier: "...New Keynesians adopt a theory of credit rationing because of the general limited supply of loans. In this sense, since the demand for loans is greater than the supply, rationing must occur. This intuitive argument runs counter to the overall post-Keynesian framework" (Rochon,1999:235). The shortage of funds exists because of the characteristics of the Post Keynesian world, i.e. fundamental uncertainty. Banks are unwilling to bear too much risk in an uncertain world. This is why credit is rationed. Even if the central bank were fully accommodating, banks would still ration credit and rather choose to buy securities with any excess supply of funds, because of liquidity preference.

Rochon (1999:239) mentions another point: "They do not explain how banks finally decide on how to divide the available supply – that is who among the potential borrowers receive credit. *Ex post*, New Keynesians admit that the

distribution of credit may not be the most optimal one, yet they cannot explain how *ex ante*, banks divide the available supply if bank borrowers are identical. Moreover, New Keynesians do not offer any criteria used to determine which borrowers received loans". But this criticism does not seem to be valid. The New Keynesian microeconomic models focus on factors that determine creditworthiness, such as cash flows, collateral, etc. Even though these criteria might be based on some subjective judgement, they do exist.

Asymmetric information is not accepted by all Post Keynesians. Banks have evolved in such a way that their sophisticated screening mechanisms have overcome this problem of asymmetric information. They have developed expertise and technical skills which neutralize the possible asymmetric information effects. Banks make sure that asymmetric information does not exist. While this may be true of banks in developed countries, it cannot be said of banks in developing countries, where borrowers do not have a credit history, and information is a scarce commodity.

The main difference then between the two schools is the focus on the demand versus the supply side. According to the Post Keynesian Horizontalists, the reason why banks do not supply all demand for credit may be because there is a limited supply of creditworthy borrowers. The shortage is on the demand side rather than on the supply side. In the New Keynesian analysis, there are always some borrowers whose demand for credit is not met. There is an excess demand

for funds in equilibrium, and the equilibrium interest rate does not clear the market. Some borrowers are rationed, even though they may be indistinguishable from those who do receive credit. There is a general shortage of credit money. In Post Keynesian analysis this is not possible. The emphasis on liquidity preference by structuralist Post Keynesians shows that banks ration credit as part of their portfolio decisions. This view is also held by Fazzari (1994:367): "Economists in the Post Keynesian tradition have long known…the importance of information for economic activity. Recent theoretical work on asymmetric information, even though it may strictly fall outside of what is usually considered the Post Keynesian sphere, supports and adds insights to the theory of investment and its links to finance". Credit rationing is compatible with Post Keynesian monetary theory. This emphasis appears to be closer to the realities of less developed countries.

5.5 CREDIT RATIONING AND LDCs

As explained in the previous chapter, there is a difference between the demand for money and the demand for credit. The demand for finance ('active balances') determines the supply of credit or finance. Money is created '*ex nihilo*'. But this is not always the case during the earlier stages of development that a country passes through. Structuralist Post Keynesians argue that endogeneity is the result of central bank accommodation, financial innovation and the stages of evolution of the banking system in a specific country. When the money supply is

fully endogenous, then the direction of causality runs from the demand for credit to the quantity of credit supplied.

In Post Keynesian research on credit lines in developed countries it was found that total bank lending is ordinarily less than 60 per cent of total lines of credit previously committed: "This means that in the short run banks have little control over an individual bank's supply of funds, it must change its net demand for wholesale funds, change its base and deposit rates, and/or alter the degree to which it rations credit" (Moore & Threadgold,1985:67). Since credit lines have been granted (and they form a large part of loan negotiations in most developed countries), the scope for credit rationing is rather limited. The central bank has to supply the funds needed by the banks. The existence of a central bank as lender of last resort ensures that the supply of money responds to the needs of the economy.

It was argued above that in developing countries there may be a general shortage of credit. The general credit supply may be limited and most borrowers are unable to obtain the loans they desire, at any interest rate. The implication is therefore that with a larger supply of credit, more people would receive loans. The problem is not due to a lack of demand (the Post Keynesian argument), but may be the result of limited supply. In order to test this hypothesis, the nature of credit in the SADC countries will be examined more closely, with specific emphasis on South Africa.

5.6 CREDIT EXTENSION IN THE SADC COUNTRIES.

Data on credit extension and credit lines are virtually non-existent for the SADC countries. In most cases the only data available is aggregate private sector credit. The most comprehensive data are for South Africa. Although a developing country, South Africa has a well-developed financial sector. The South African case is much closer to developed countries in terms of the endogenous nature of the money supply.

5.6.1 CREDIT ACCOMMODATION

Endogenous money supply theory argues that demand for credit is accommodated by the central bank. The demand for credit was discussed in Chapter 4. Most studies on the accommodation of credit demand concentrate on the relationship between a measure of the broad money stock (M2 or M3), and private sector credit. A study by Moore and Smit (1986) found that on an annual basis for the period 1966 to 1984, more than 95 per cent of the variation in M2 was explained by changes in bank credit. They warn, however, that these figures should be interpreted with care: "Credit to the private sector is the largest single component of bank total assets, and total deposits which comprise M2 are similarly the largest single component of total bank liabilities" (1986:87). Nevertheless, the authors conclude that the high levels of correlation are

evidence of an endogenous money supply: "The case for M2 being credit driven rests *both* on the very high observed correlation between changes in M2 and total credit, particularly over periods of one year, *plus* the recognition that changes in total credit are largely non-discretionary and thus an exogenous variable from the view-point of individual commercial banks and the Reserve Bank, determined as they are largely by borrower rather than lender decisions." (1986:87) (*Emphasis in the original*).

The regressions of Moore and Smit (1986) are reproduced below for South Africa, as well as some of the other SADC countries.

Table 5.1 Changes in M2 and bank credit to the private sector in South Africa (1966-1984).

Dependent variable: Change in M2

Time period	Time unit	Constant	Change in credit to the private sector			R^2	Durbin Watson
				Lag (-1)	Lag (-2)		
1967-84	Annual	-0.0337 (0.23)	0.9293 (21.03)			0.963	1.655
1966.1-84.4	Quarterly	0.0136 (0.49)	0.8914 (12.21)			0.895	1.928
1965.4-84.12	Monthly	0.0402 (277)	0.6751 (13.85)			0.447	2.057
1965.4-84.12	Monthly	0.0181 (1.21)	0.4710 (7.16)	0.1727 (7.96)	0.1825 (2.59)	0.498	1.984

t-stats in parentheses

Source: Moore & Smit (1986)

The regressions above were re-estimated for South Africa, for the period 1970-2000. The regression results (table 5.2) show the relationship between M2, M3 and private sector credit (on an annual basis).

Table 5.2 Changes in M2 and M3 and Bank credit to the private sector in South Africa (1970-2000), (annual data).

Time period	Time unit	Constant	Change in credit to the private sector	R^2	Durbin Watson
Dependent variable: M2 growth					
1970-2000	Annual	-0.69 (-0.32)	1.05 (8.30)	0.70	2.22
Dependent variable: M3 growth					
1970-2000	Annual	2.90 (1.76)	0.74 (7.59)	0.66	1.69

t-stats in parentheses

Source: SARB Quarterly Bulletin, various years.

As shown, the results are less confirming to the endogenous money theory than those of Moore and Smit, who found extremely high correlations (R^2=0.963) between M2 and bank credit, for the period 1967-1984 (annual data). As shown in table 5.2, the R^2 drops to 0.70 between 1970-2000. A somewhat lower (R^2 =0.665) is found for the relationship between M3 and private sector credit.

When these relationships are looked at on a quarterly basis,there is still a positive correlation, but the R^2 is much lower. Moore and Smit found a high correlation (R^2=0.895) on a quarterly basis. Regression results using quarterly data, are shown in table 5.3. Data from other SADC countries were only available from 1980. Quarterly data were therefore used to examine the relationship between growth in M2 and growth in private sector credit in 10 SADC countries.

Table 5.3 Change in M2 and change in private sector credit in selected SADC countries (1980-2000) (quarterly data).

Dependent variable: change in M2 (quarterly data)

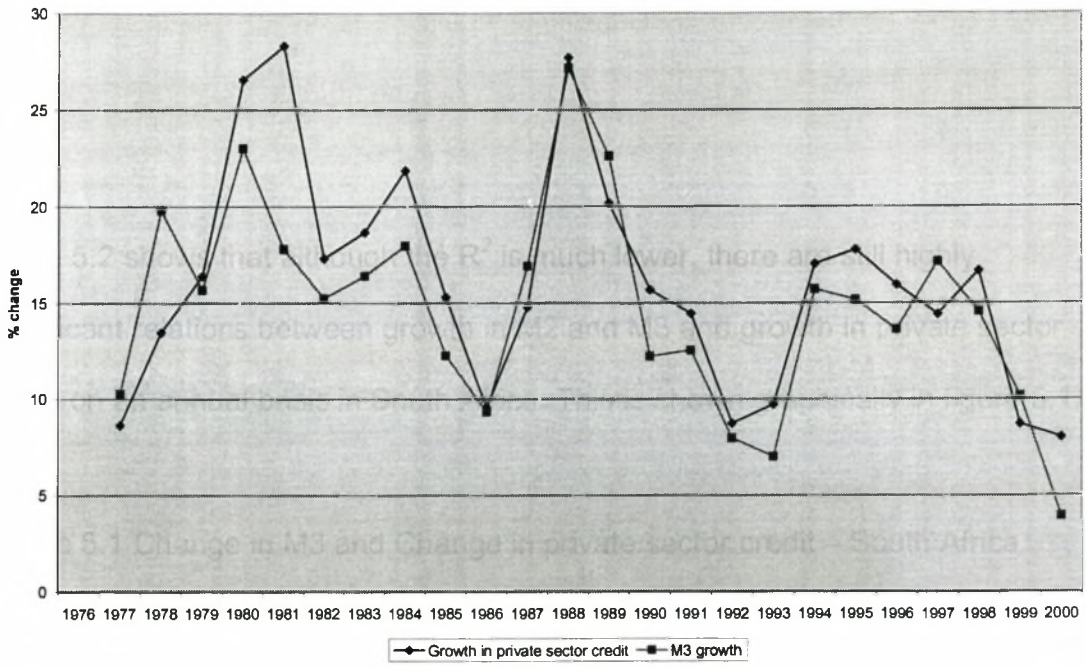
Country	Time period	Number of obser-vations	Con Stant +	Change in private sector credit +		R^2	F-stat ++	Durbin Watson
					Lag(-1)			
Botswana	1980.2-2000.4	83	5.10 (4.44)	-0.06 (-0.48)		0.002	0.23 (0.63)	2.18
	1980.3-2000.4	82	5.19 (3.81)	-0.02 (-0.16)	-0.07 (-0.55)	0.004	0.17 (0.83)	2.18
Lesotho	1980.2-2000.4	83	2.44 (4.61)	0.22 (4.21)***		0.18	17.8 (0.00)	2.42
	1980.3-2000.4	82	2.43 (4.12)	0.22 (4.17)***	0.01 (0.20)	0.18	8.74 (0.00)	2.37
Malawi	1980.2-2000.4	83	6.81 (3.77)	-0.02 (-0.16)		0.00	0.02 (0.86)	2.06
	1980.3-2000.4	82	4.04 (2.28)	-0.07 (-0.51)	0.60 (4.02)***	0.17	8.11 (0.00)	2.12
Mauritius	1980.2-2000.4	83	3.15 (5.85)	0.24 (2.77)***		0.08	7.72 (0.00)	2.46
	1980.3-2000.4	82	2.57 (3.60)	0.27 (3.14)***	0.07 (0.86)	0.11	5.01 (0.00)	2.50
Namibia	1993.2-2000.4	31	3.42 (2.06)	0.28 (0.92)		0.02	0.85 (0.36)	2.49
	1993.3-2000.4	30	4.16 (2.15)	0.33 (1.03)	-0.26 (-0.79)	0.04	0.64 (0.53)	2.44
South Africa	1980.2-2000.3	78	1.56 (3.27)	0.49 (4.71)***		0.22	22.26 (0.00)	2.00
	1980.3-2000.3	76	0.92 (1.61)	0.41 (3.71)***	0.24 (2.26)**	0.26	13.02 (0.00)	2.01
Swaziland	1980.2-2000.4	83	3.09 (3.74)	0.18 (2.64)***		0.07	6.98 (0.00	2.35
	1980.3-2000.4	82	2.55 (2.87)	0.20 (2.88)***	0.11 (1.60)	0.10	4.68 (0.01)	2.32
Tanzania	1980.2-2000.4	60	5.11 (6.00)	-0.009 (-0.68)		0.007	0.46 (0.49)	2.24
	1980.3-2000.4	58	4.90 (5.35)	-0.009 (-0.63)	0.003 (0.21)	0.008	0.23 (0.79)	2.29
Zambia	1980.2-2000.4	58	5.87 (5.40)	0.32 (3.50)***		0.18	12.29 (0.00)	1.72
	1980.3-2000.4	56	4.78 (3.95)	0.29 (3.24)***	0.19 (2.06)**	0.23	8.07 (0.00)	1.70
Zimbabwe	1982.2-2000.4	73	5.67 (4.58)	0.06 (0.52)		0.003	0.16 (0.85)	2.11
	1982.3-2000.4	70	5.70 (3.71)	0.07 (0.56)	-0.01 (-0.09)	0.004	0.27 (0.60)	2.11

+ t-stats in parentheses
++ p-value in parentheses

Source: IMF, International Financial Statistics, various years.

Table 5.2 shows that although the R^2 is much lower, there are still highly significant relations between growth in M2 and M3 and growth in private sector credit on an annual basis in South Africa. This is shown graphically in figure 5.1.

Figure 5.1 Change in M3 and Change in private sector credit – South Africa (1977-2000) (Annual data)



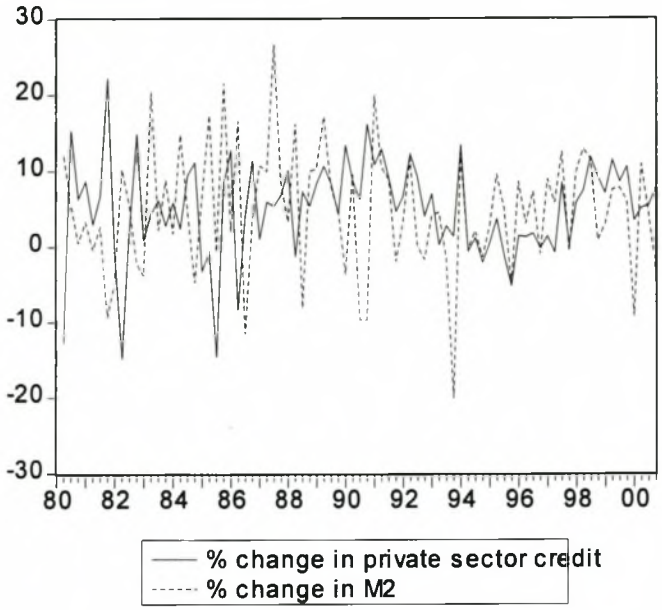
Source: SARB Quarterly Bulletin, various issues

The relationship is much weaker using quarterly data, as shown in Table 5.3. Two sets of results are shown for each country, one with no lagged values and another where one lag is included. Including more lags did not alter the results. In most of the countries no strong relationship between M2 and private sector credit was found. An R^2 =0.89 was found by Moore and Smit for SA (1986) on a quarterly basis (table 5.1). The highest R^2 obtained in table 5.3 is

0.26 (for South Africa). This is probably still a significant value, as the quarterly observations are assumed to have a lower correlation than the annual data. The t-statistics for SA are both significant and including a lagged value improves the R^2 from 0.22 to 0.26. The only other countries in the sample with R^2 values above 0.1 were Lesotho (0.18) and Zambia (0.23). They also have significant t-statistics. For Malawi, the inclusion of a lagged value increases the R^2 value from 0.00 to 0.17, with a significant t-statistic for the lagged value of private sector credit. Mauritius has an R^2 0f 0.11, with significant t-statistics. Swaziland has a R^2 value of 0.10 with significant t-statistics. Botswana, Namibia, Tanzania and Zimbabwe show no significant correlation between growth in M2 and growth in private sector credit. The F-test for overall significance confirms the R^2 results in each case.

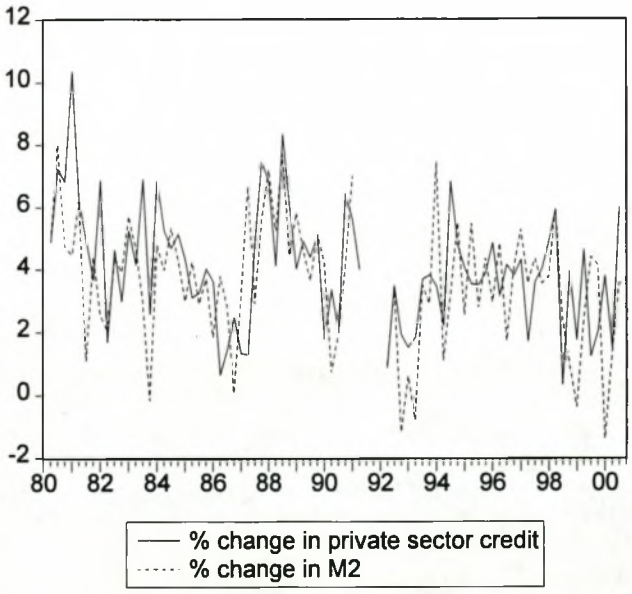
High correlations between changes in M2 and changes in private sector credit provide evidence of an endogenous money supply. In the above sample, South Africa was the only country that exhibited a strong and significant correlation. Some of the other countries also had positive correlations, but the relationships were much weaker. With the possible exception of South Africa, it is therefore not possible to conclude, from the evidence in table 5.3, that the money supply is endogenous (M2 is credit driven) in these countries. Some of the figures showing the relationships are given below. Botswana is an example of a country where there was no significant relationship. South Africa is then shown (figure 5.3), where the correlation was the most significant.

Figure 5.2 % change in M2 and private sector credit in Botswana – quarterly data.



Source: IMF, International Financial Statistics, various years.

Figure 5.3 % change in M2 and private sector credit in South Africa – quarterly data.



Source: IMF, International Financial Statistics, various years.

The regressions reported in table 5.3 were re-estimated using annual data and the results are shown in table 5.4. The results confirm the findings of the regressions in table 5.3 based on quarterly data. Using quarterly data, the only SADC countries with significant relationships between M2 and private sector credit were Lesotho, Mauritius, South Africa, Swaziland and Zambia. In Botswana, Malawi, Namibia, Tanzania and Zimbabwe, no significant relationships were found. Out of the ten countries, five show a significant endogenous relationship and, five do not. Using annual data, only three countries show a significant relationship, i.e. Lesotho, Mauritius and South Africa. Swaziland does not have a significant relationship and there are not enough observations for Zambia to make any conclusions. The number of countries with a significant relationship between M2 and private sector has decreased when annual rather than quarterly data were used. The relationships for Mauritius, Botswana, Lesotho and Malawi are also shown graphically in Figures 5.4 - 5.7.

Table 5.4 Change in M2 and change in private sector credit for selected SADC countries (1980-2000) (annual data)

Dependent variable: change in M2 (annual data)

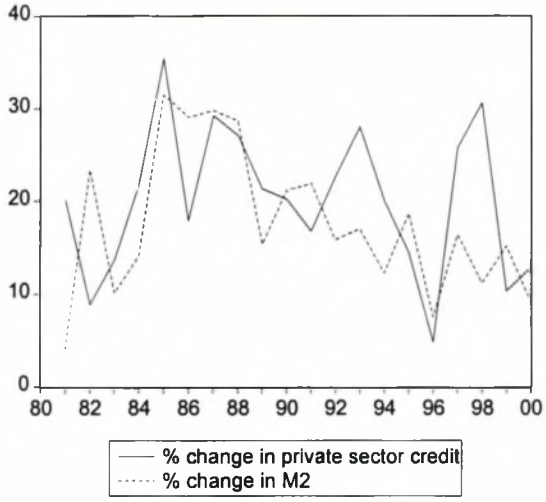
Country	Time period	Number of observations	Con stant	Change in private sector credit	R^2	Durbin Watson
Botswana	1981-2000	20	23.62 (2.97)	-0.13 (-0.49)	0.01	2.27
Lesotho	1981-2000	20	10.17 (4.04)	0.20 (2.46)**	0.25	2.07
Malawi	1981-2000	20	23.30 (4.80)	0.13 (0.97)	0.04	1.99
Mauritius	1981-2000	20	9.33 (2.02)	0.41 (1.93)*	0.17	1.65
South Africa	1981-2000	16	3.84 (1.28)	0.67 (4.16)***	0.55	1.26
Swaziland	1981-2000	20	14.76 (4.41)	0.02 (0.13)	0.00	1.59

Tanzania	1981-2000	20	22.48 (7.31)	0.11 (1.39)	0.09	0.67
Zambia	1981-1997	10	37.65 (4.19)	-0.11 (-0.62)	0.04	1.00
Zimbabwe	1981-2000	20	19.78 (2.84)	0.16 (0.89)	0.04	1.49

t-stats in parentheses

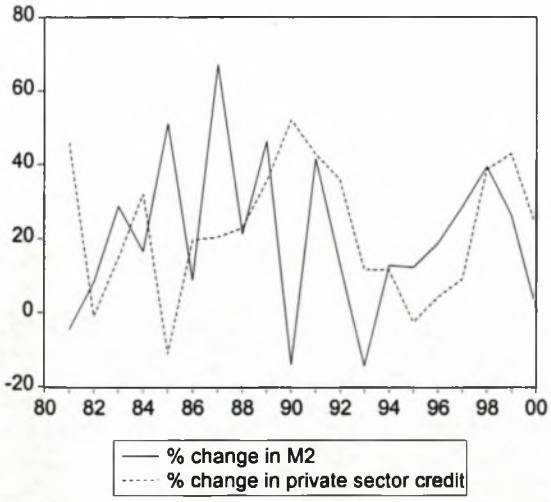
Source: IMF, International Financial Statistics, various years.

Figure 5.4 % change in M2 and private sector credit in Mauritius - annual data



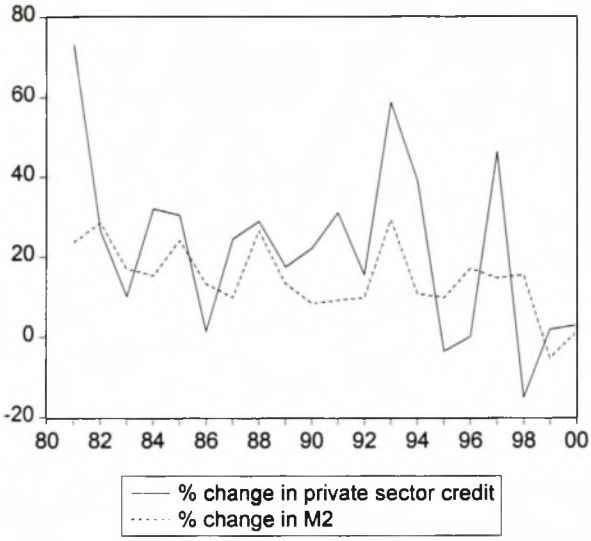
Source: IMF, International Financial Statistics, various years.

Figure 5.5 % change in M2 and private sector credit in Botswana - annual data



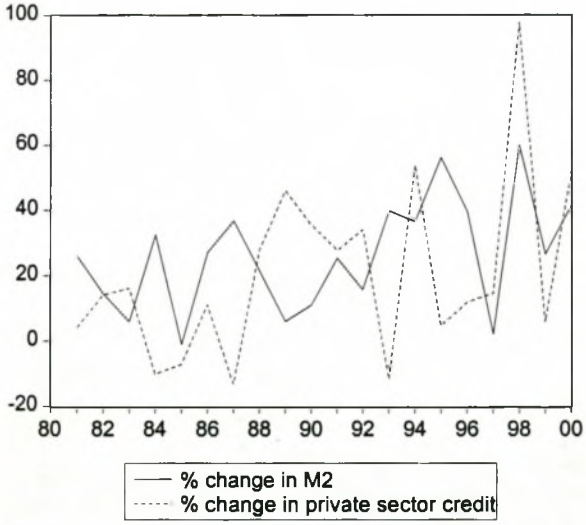
Source: IMF, International Financial Statistics, various years.

Figure 5.6 % change in M2 and private sector credit in Lesotho - annual data



Source: IMF, International Financial Statistics, various years.

Figure 5.7 % change in M2 and private sector credit in Malawi - annual data



Source: IMF, International Financial Statistics, various years.

South Africa, Lesotho and Mauritius are the only SADC countries where the relationships between M2 and private sector credit are stable and significant,

using both annual and quarterly data. A central aspect of an endogenous money supply is the existence of credit lines and overdraft facilities. This is one of the most central assumptions of the endogenous money theory. In spite of repeated requests to the monetary authorities in these SADC countries, no data were available on the existence or utilization of credit lines and overdrafts. It is highly unlikely that credit lines play a role in these countries. The situation in South Africa (where more data were available) will be discussed in some detail below, and inferences drawn for the other SADC countries.

5.6.2 CREDIT LINES AND OVERDRAFT FACILITIES – South Africa

The Post Keynesian theory of an endogenous money supply is based on the existence of credit lines. In the original work of Moore (1988), 70% of all commercial and industrial loans (in the USA) were made under prearranged loan commitments. Consumer loans made under credit card arrangements were increasingly important in bank portfolios. Dow (1996) found that in the UK there has been a drastic reduction in the amount of loans made under commitments. Similar figures for the USA showed that 73% of small firms did not have a commitment, compared to 40% of medium-sized firms. The lack of overdraft facilities appears to characterize developing economies: "While there is no explicit evidence that relatively lower use of commitments by small and medium-sized firms is due to supply constraints, it is nevertheless reasonable to presume that such is the case. In other words, significant rationing of small firms may well occur at the stage of application to banks for commitments" (Dow,1996:506).

Moore (1985) estimated that the utilization ratio of overdraft facilities typically varies around 50 per cent. Unutilised credit lines are broadly equal to loans granted, i.e. the initiative lies with the borrowers to almost double the amount of outstanding loans. Data calculated for South Africa showed that the ratio of total unutilised overdraft facilities to total advances for commercial banks similarly varied around 50 per cent for the period 1965 - 1985 (Moore & Smit,1986:86).

These ratios were re-estimated with more comprehensive and recent data, released by the South African Reserve Bank since 1993. The percentage of bank loans in existence at any time, was roughly equal to 50 per cent of committed overdraft facilities (see table 5.5). The equivalent of credit lines in South Africa is overdraft facilities (similar to the UK). The figure is close to the earlier results of Moore (about 50 per cent).

Table 5.5 Credit card and overdraft utilisation ratios in SA (1993-2000)

Year	Credit card utilisation ratio (%)	Overdraft utilisation Ratio (%)
1993	28.1	55.5
1994	23.3	42.8
1995	41.2	51.9
1996	41.9	52.0
1997	40.5	54.5
1998	40.0	61.0
1999	35.5	59.2
2000	32.9	58.0

Source: SARB, TOTAL DI-900, various years

The average credit card utilisation ratio is rather low (below 42%). But credit cards are relatively unimportant in total bank credit to the private sector. This

confirms Rousseas's point that unused overdrafts and credit facilities do not necessarily exist where they are most needed. It was shown in Chapter 4 that credit cards constitute less than 2.5% of total private sector credit in South Africa. This is in contrast to the findings of Moore (1988) for the US, that consumer loans made under credit card arrangements have become increasingly important in bank portfolios.

The overall utilisation ratio of South Africa confirms the endogenous money view. Nevertheless the financial sector in South Africa consists of a relatively small formal sector, and a large informal sector. The data below show that credit lines, overdraft facilities and credit cards are available only to a very small proportion of the population, highly concentrated among the high-income groups.

Chapter 4 showed that households' share in private sector credit has increased relative to that of firms (in both developed and developing economies). Households in South Africa borrow mainly in the form of mortgage loans and credit cards, while companies use overdrafts and 'other loans and advances' for their credit requirements. Chapter 4 showed that households' share of mortgage loans was 75% in December 2000. Households' share of credit card finance was 94% in the same period. Figure 5.8, using data from the All Media and Products Survey (2000) shows that few people have access to mortgage finance. The AMPS data use language categories that give a valuable indication of the distribution of banking products across the South African population. In total,

2 776 000 mortgages are registered. Given an adult population (above 14 years), of 28 113 421 in 1999, only 9,87% of the adult population have mortgage bonds. Afrikaans-speaking South Africans have the biggest share (35%), with the share of the English-speaking group at 33%. The other two groups represent the majority of the South African population. The Nguni group includes Zulu, Xhosa, Swazi and Ndebele speakers. The Sotho group includes North Sotho, South Sotho, Tswana, Tsonga and Venda. Yet, these groups make up only 18% and 14% respectively of total mortgages. In absolute numbers, the number of Sotho speakers with mortgages were 380 000 and Nguni, 513 000 (Amps, 2000).

When one looks at the figures on home ownership, it tells a different story. Total home ownership for 1999 was 18 783 000, 66% of the adult population. Yet, only 9.78% of the adult population have mortgage loans. This implies that most houses are informal dwellings, for which no mortgage is registered. South Africa is a country with a huge informal sector, where most people are excluded from formal financing methods.

Credit rationing is especially important in the mortgage market. Information is a very important part of a loan contract. Mortgage markets may be a special case of asymmetric information. The borrower knows what the value of the house is, but the lender does not have full information. In order to get the necessary information, banks typically use a professional appraiser. This person looks at the average of house prices recently sold in the area. The 'mortgage value' of the

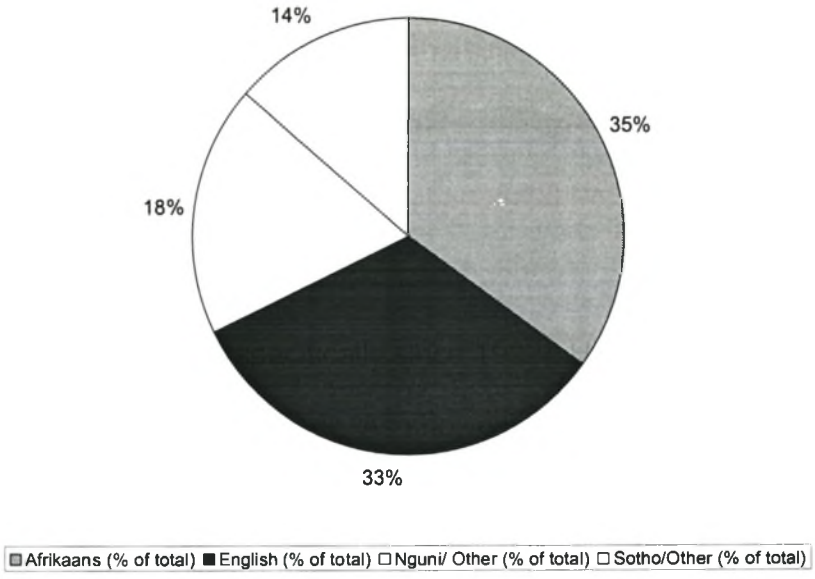
house is calculated as the lesser of the sale price or the appraised value (Nakamura,1993:5).

These methods are not applicable to informal settlements or run-down neighbourhoods. In areas where the re-sale price is expected to be lower than the sale price, banks are unwilling to finance the mortgage. These areas have become 'redline' areas, where the banks withdraw from the real estate market because of high perceived risk. Evidence on redlining has been found by Nakamura (1993) and Dymski (1993), for the US. Dymski found that in the Los Angeles mortgage market, the neighbourhood racial composition and the race of the individual applicant, were significant determinants of loan supply: "...developers reported that the racial composition of the area surrounding a planned project is one important determinant of credit availability" (Dymski,1993:50). It seems from this research that race is used as a signal of creditworthiness, in a world characterised by asymmetric information. Banks try to minimise their default risk and attempt to find as many indicators of creditworthiness as possible. Data on redlining is non-existent In the South African case. But there are obvious areas where banks perceive the risks as so high that they are unwilling to grant any mortgages in these areas.

In SA, mortgage finance is available only to a small part of the population. It was shown in Chapter 4 that banks actively encourage the use of mortgage loans for purposes other than the financing of real-estate transactions. This was confirmed by the divergence between growth rates in mortgage pay-outs and annual real-

estate transactions (specifically since 1992). Households mainly use mortgage finance as a source of credit. As shown by Figure 5.8, the distribution of mortgages is heavily skewed towards Afrikaans and English speakers.

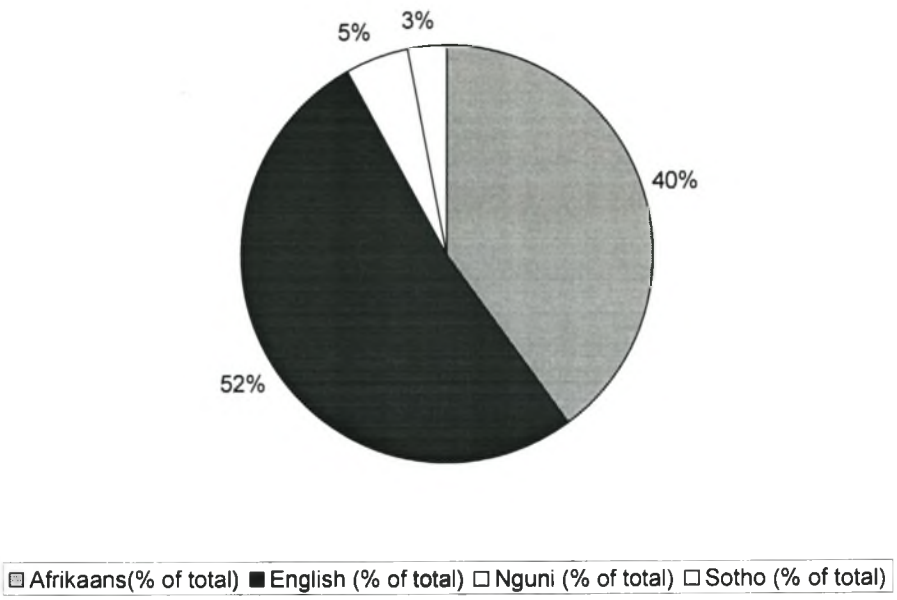
Figure 5.8. Distribution of mortgage financing in South Africa (1999)



Source: AMPS, 2000

Credit cards, the other main form of household financing, tell the same story. Figure 5.9 shows the distribution of the 3.1% of the total population who have credit cards.

Figure 5.9 Distribution of credit cards in SA (1999).



Source: AMPS, 2000

In absolute numbers, only 68 000 Nguni's and 40 000 Sotho's had credit cards in 1999. This also confirms the data in chapter 4, where it was shown that credit cards represent only 2.2% of total private sector credit. Table 5.6 shows the limited use of credit cards in many SADC countries:

Table 5.6 Credit Cards in SADC countries

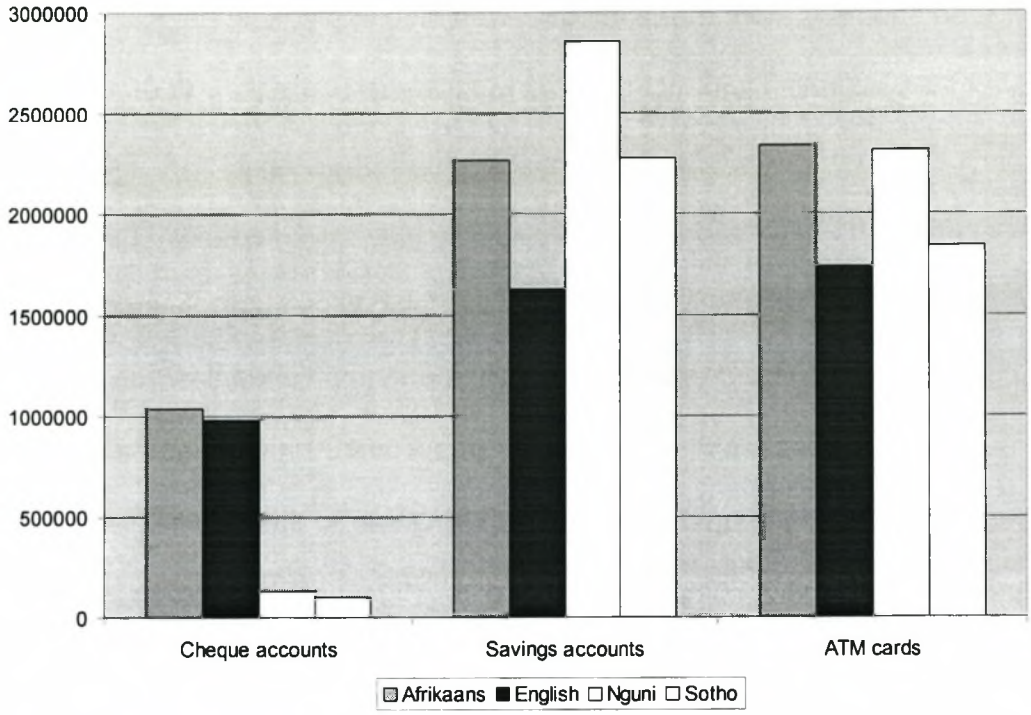
Angola	Among the non-cash payment instruments, cheques are used most often, representing about 75% of the number of items cleared daily. Very few businesses, mainly hotels and restaurants accept payments by means of credit cards. Banking institutions do not issue credit cards to customers, for use either locally or internationally.
Botswana	Only one of the four banks issues credit cards. The cards are affiliated to a major credit card institution abroad (South African) and are used both locally and internationally.
Lesotho	Credit cards are issued to those people who fall into a certain salary bracket. Credit cards are used widely to make all types of payments and are widely accepted.
Malawi	Credit card facilities are not yet available in Malawi. Hotels accept foreign credit cards.
Mauritius	Credit and debit cards are an integral part of the Mauritian retail payments system.
Mozambique	There are no credit cards.
Namibia	Credit cards are widely used, most cards issued by card divisions of SA parent banks. None issued by Namibian banks.
South Africa	All major credit cards are available.
Swaziland	Credit cards are used in Swaziland.
Tanzania	No credit cards.
Zambia	One non-bank financial institution issues a credit card to its customers which is used in selected outlets. Customers are given a time limit within which to settle the bill.
Zimbabwe	All major credit cards.

Source: IMF Staff Country Reports, various years.

Figure 5.10 shows the distribution of language groups using different financial products. Most Nguni and Sotho groups use ATM bank cards and savings accounts, rather than cheque accounts. The absolute numbers are not very high, similar to the Afrikaans group, which is a small minority in terms of percentage of the total South African population. Table 5.7 gives the number of customers of the individual banks. In total about the same number of Afrikaans and Nguni speakers use a bank (Afrikaans: 3 295 000; and Nguni: 3 389 000). English and Sotho speakers both have 2.7 million users of banking services. The total figure (12 227 000) represents 28.55% of the total South African population. The net figure is lower, as some people have accounts with more than one bank (AMPS,2000).

In general the black language groups (Nguni and Sotho) are underbanked. Those who do use formal banking services, have mainly savings accounts and ATM cards. These facilities do not qualify for overdrafts. Nguni's held only 5.8% of total cheque accounts and Sotho's only 4.5% in 1999. Most such people have no access to credit lines or overdraft facilities, which are offered normally only on cheque accounts.

Figure 5.10 – Distribution of financial products in SA (1999)



Source: AMPS, 2000

Table 5.7 Commercial banking distribution in SA (1999).

	ABSA	BOE	FNB	NBS	Ned bank	People's Bank	Perman ent Bank	Post Office	Saam bou	Standard Bank	Other	Total
Afrikaans	1470000	97000	527000	37000	156000	36000	47000	27000	89000	648000	133000	3295000
English	785000	22000	520000	108000	274000	32000	103000	8000	17000	730000	149000	2783000
Nguni	636000	11000	912000	111000	107000	112000	81000	90000	23000	989000	208000	3389000
Sotho	601000	17000	595000	29000	85000	102000	50000	164000	19000	889000	140000	2760000
TOTAL	3492000	147000	2554000	285000	622000	282000	281000	289000	148000	3256000	630000	12227000

Source: AMPS, 2000

5.6.3 CREDIT AVAILABILITY

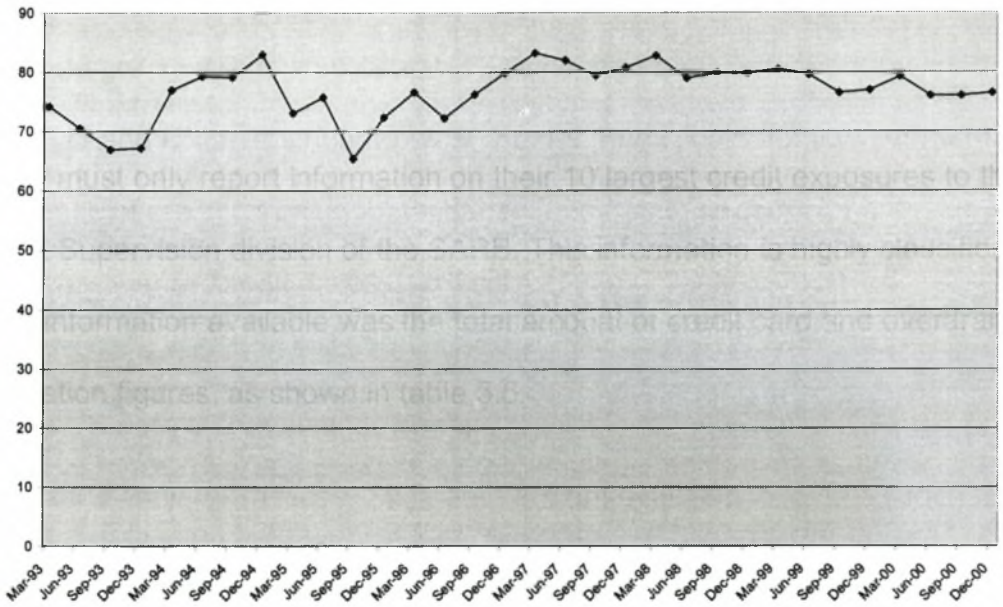
Another important point made by Dow is the observed phenomenon that: "Since the 'moods' of financial institutions are likely to follow a pro-cyclical pattern, so too will availability of credit" (Dow,1996:499). The availability of credit is assumed to fall during an economic downturn, reflecting the lower assessment of borrowers' creditworthiness. This idea is also expressed by Wolfson (1996:455): "Thus, there is likely to be a consistent increase in credit rationing as the peak of the business-cycle expansion approaches; *the degree of credit rationing depends at least in part upon the stage of the business cycle* (and of course the increase in credit rationing also contributes to the ending of the business-cycle expansion and the beginning of the recession)."*(Emphasis in the original)*.

The cyclical hypothesis was tested for the USA by Berger and Udell (1992). They argue that the fraction of new loans made under commitment will rise when credit markets are tight (high interest rates), since non-commitment borrowers are rationed and commitment borrowers are not. They could not find sufficient evidence of credit rationing. In fact, they found that the commitment ratio decreases when credit markets are tight.

In the US data on credit extension are available in the Federal Reserve Survey on Bank Lending Practices. Such data are not available for South Africa. South African banks need not disclose the terms or conditions of their loan portfolios.

They must only report information on their 10 largest credit exposures to the Bank Supervision division of the SARB. This information is highly classified. The only information available was the total amount of credit card and overdraft utilisation figures, as shown in table 5.5.

Figure 5.11: Ratios of total credit commitments (CC) to GDP in SA (1993-2000).

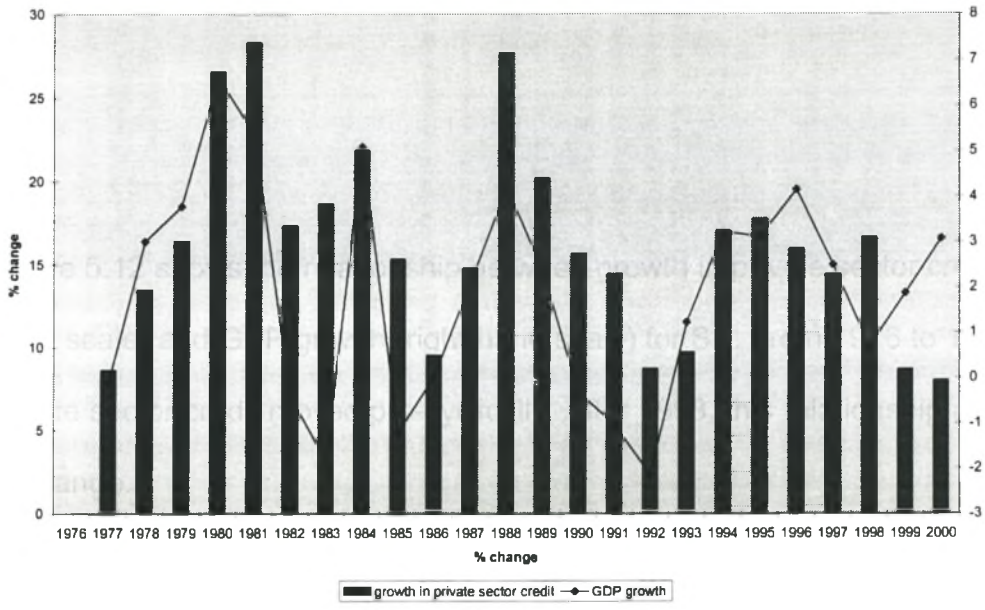


Source: SARB, TOTAL DI-900 Returns, various issues.

Figure 5.11 shows the behaviour of the ratio of total credit commitments to GDP in SA from 1993 (the data are only available from 1993). Credit commitments are the sum of total overdraft limits, revolving credit accounts and credit card limits. The ratio of total credit commitments to GDP has remained relatively stable over the period (between 70% and 80%).

Figure 5.12 shows the relationship between growth in private sector credit (left-hand scale) and GDP growth (right-hand scale) for SA. From 1976 to 1998, total private sector credit moved pro-cyclically. After 1998, this relationship appeared to change.

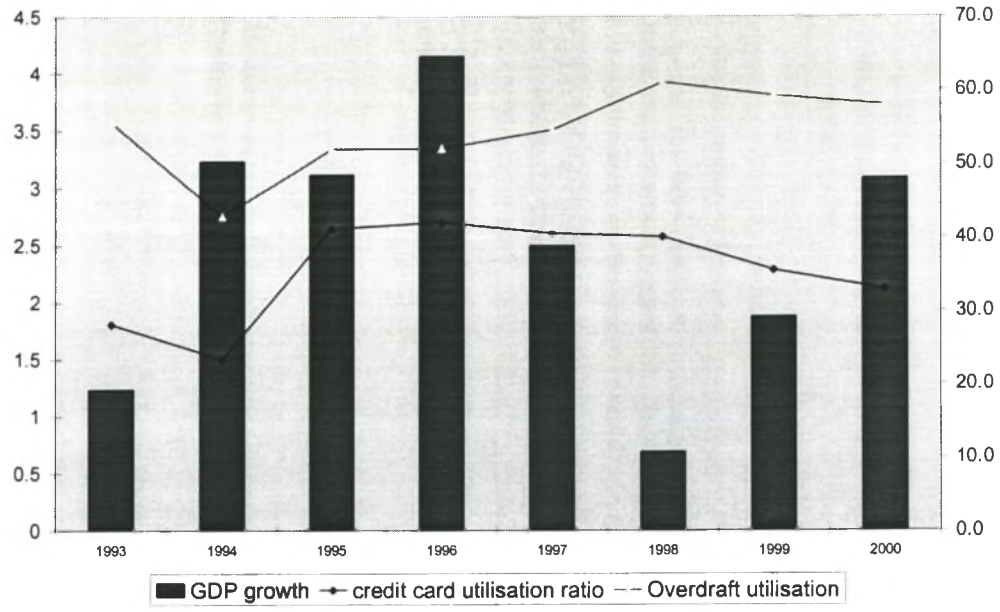
Figure 5.12 Growth in private sector credit and GDP in SA (1976-2000).



Source: SARB Quarterly Bulletin, various years.

Data on the growth in GDP and growth in money supply ratios (change in M2/ change in GDP) for other SADC countries are presented in Appendix 5.1. As seen, Botswana, Mauritius and South Africa are the only countries where a broad relationship between the movements in GDP and M2/GDP is evident.

Figure 5.13 Credit card and overdraft utilisation ratios in South Africa (1993-2000).



Source: *SARB, Quarterly Bulletin and DI-900 forms*, various years.

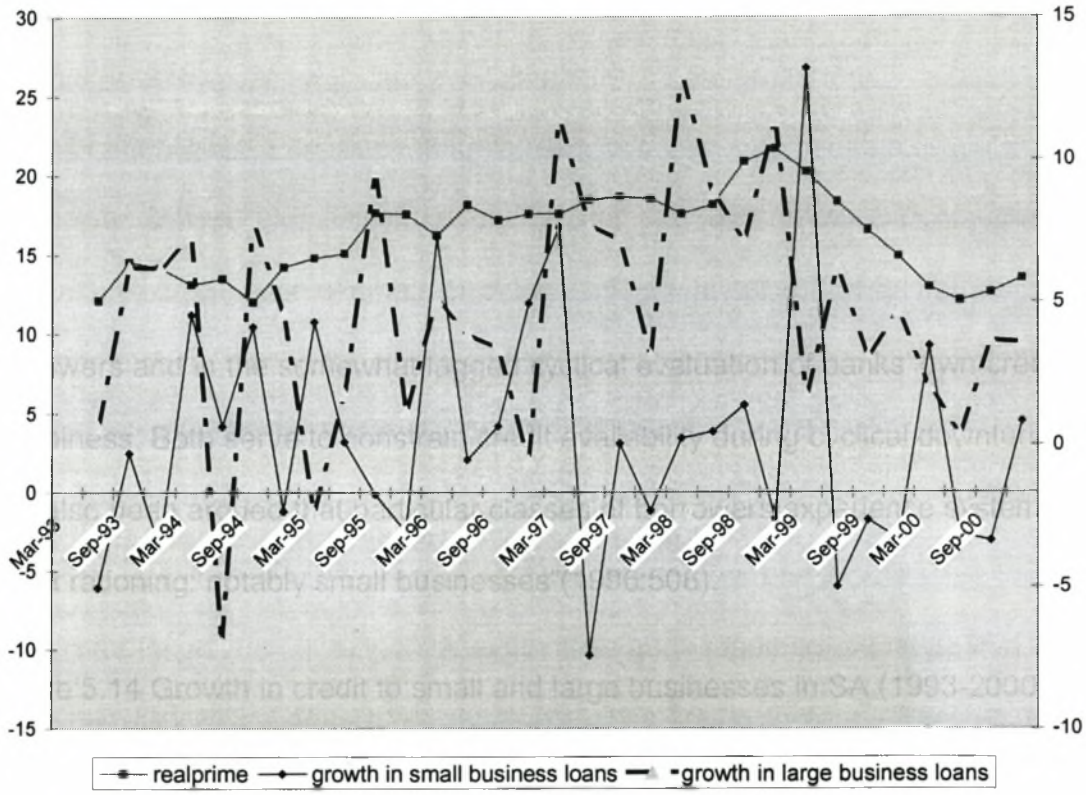
Figure 5.13 shows credit card utilisation and overdraft utilisation ratios (right-hand scale) with GDP growth (left-handscale) for SA. Both ratios move in the same direction, and both show a decline since 1998. GDP growth declined dramatically in 1998 and was followed by a reduction in credit card and overdraft utilization ratios. Consumers respond to changes in economic growth by increasing their credit utilization during an upswing and curbing it during a downswing. This has implications for interest rates as predicted by the structuralist Post Keynesians. Banks raise interest rate spreads during an upswing, to reflect increasing risk levels of their loan portfolios. This aspect of the structuralist version of Post Keynesian monetary theory is further explored in Chapter 8.

The above data confirm the structuralist Post-Keynesian view that credit availability follows a pro-cyclical pattern. The period is unfortunately short (1993-2000), but similar data were not available before 1993. In general though, it seems to confirm the assumption that credit rationing is compatible with a Post Keynesian endogenous money supply. Wolfson argues: "If bankers create money by accommodating the credit demands of bank borrowers, how can bankers also refuse to accommodate these demands by rationing credit? The answer is simply that bankers accommodate all *creditworthy* demands for credit, and ration all those demands not deemed creditworthy" (1996:455). It was shown earlier that both Kaldor and Moore argued that only creditworthy demand for funds is met. "The door has thus been opened for considering the possibility of credit-rationing, although neither Kaldor nor Moore follows up the significance of the possibility" (Dow,1996:499).

Much of the research on credit rationing has focussed on the different treatment of small and large firms. The problem of asymmetric information is especially pronounced in the case of small businesses. There is not sufficent information and therefore no trust in the abilities of small businesses to service their debts. It was already mentioned that in the US 73% of small firms did not have credit commitments. This situation is aggravated during the business cycle. During a downturn, credit availability is reduced. Dow argues that this is partly due to a revaluation of collateral: "...there is systematic bank rationing of credit. This is evident in the cyclical pattern of valuation of collateral for potential bank

borrowers and in the somewhat lagged cyclical evaluation of banks' own credit-worthiness. Both serve to constrain credit availability during cyclical downturns. It has also been argued that particular classes of borrowers experience systematic credit rationing: notably small businesses"(1996:506).

Figure 5.14 Growth in credit to small and large businesses in SA (1993-2000)



Source: SARB, DI-900 forms, various years.

Figure 5.14 appears to confirm this point. Although there are large fluctuations in the growth in credit to small and large businesses (left-hand scale), credit to small businesses seems to be more severely affected during periods of increasing interest rates. In South Africa, most banks and credit agencies (such as the large chain stores), use a credit scoring model. The Information Trust

Corporation (ITC) is the biggest supplier of data on credit users, with 16,7 million active credit users. This number is higher than the figure of bank customers (12,2 million), and probably show many people use credit facilities at e.g. furniture stores, who do not have access to bank credit. There are 120 subscribers which use the credit scoring model developed by the ITC and most of the banks have developed their own models. There is little discretion for a bank officer in supplying loans. In a developing country where information is scarce, this is another reason why credit is systematically rationed (Ann Daley, ITC,2001).

The above evidence suggests that credit rationing occurs over the business cycle. Credit is not simply supplied upon demand. Small classes of borrowers are more affected by this phenomenon. In a developing country context where most businesses are informal and small, the supply of credit is likely to be severely rationed by lack of information and downturns in the business cycle.

5.6.4 MICRO-FINANCE AND CREDIT RATIONING

In the work of Wolfson (1996) the New Keynesian idea of asymmetric information is transformed into a Post Keynesian concept called 'asymmetric expectations'. Many borrowers are rationed due to fundamental uncertainty. Banks have a certain expectation about the ability of a borrower to repay a loan, and the borrower has his own separate expectation. The problem lies in the divergence between the two. The lender is probably more risk averse than the borrower,

giving rise to credit rationing. In the Wolfson model there is also a change in non-price terms of loans as the economy moves through the business cycle. Wolfson found that interest-rate spreads, non-price standards and credit rationing increase together during economic downturns (1996:461).

This is not the Stiglitz-Weiss form of pure credit rationing, where interest rates do not rise to reflect higher risk, and credit is rationed. In the Post Keynesian model, an increase in non-price terms might mean that the size of credit lines is reduced, and new and small firms are not granted credit lines. In the research on non-price terms for the US Wolfson (1996), found that judgements about the riskiness of borrowers were always almost made by loan officers. In the US about 20 per cent of banks use a credit scoring model. This figure is higher for SA where the majority of banks use such a model. During an economic downturn the riskiness of most borrowers increases (due to devaluation in the value of collateral and future income streams). This automatically assigns them to a higher risk category, and their applications are more likely to be rejected.

As stated, in the SADC countries credit lines are almost non-existent and data on non-price terms are difficult to obtain. In these countries, most people have access only to informal credit markets, and do not qualify for formal sector loans. It was shown above that only a minority of South Africans qualifies for mortgages and credit cards, and borrowers are very interest inelastic. Since credit is rationed (in the formal loan markets), there are huge divergences between

informal and formal interest rates. Limited competition between formal and informal lenders is an important determinant of this divergence.

In a study of informal credit markets in Madagascar, Zeller (1994) found that there are large divergences between interest rates charged *within* the informal sector: "Mean interest rates paid by the poorest one-third of households are, on average: 103.6% to other informal lenders, 30.5% to friends and relatives, and 17.2% to formal lenders. These observed informal interest rate differentials between rich and poor borrowers could be explained by differences in the perceived risk of loan default, in the lender's transaction cost per unit of money lent, and in monopoly profits" (Zeller,1994:1899).

In SA, there has been an exponential growth in the market for small loans since the Exemption to the Usury Act (1992) removed interest rate ceilings on small loans under R 6 000. This has led to the growth of a viable Micro finance industry. Since interest rates were not regulated, they must reflect the excess demand for finance which exists, especially amongst the poorer households. A study by Ebony Consulting International in 2000 found interest rates to be excessively high: "Provident Fund did a survey of its clients in South Africa, which revealed that 96 per cent of their loans were used for productive activities with interest rates ranging between 109.99% and 277% (Ebony Consulting International,2000:22). This is evidence of an industry where demand exceeds

supply and credit rationing is prevalent. Legislation has since been passed (1999) setting interest rate limits of between 24% and 27% (MFRC,2002).

Although there is a serious commitment from the SA government to increase regulation of this sector, micro finance clients pay almost any amount to borrow a sum of money which they desperately need. The study by Ebony Consulting International (2000:24) found that: "The typical clients for microloans are relatively unsophisticated. A recent survey of rural borrowers revealed that only 9 per cent of borrowers knew the interest rate. By contrast, all knew the amount that they had to repay and the cash flow to do so". There are a large number of micro finance firms, which registered since the legislation was passed in 1992. In February 2000 there were 3 873 registered formal micro lending firms. There has been some consolidation in the industry over the past two years, yet the number of clients has remained constant or increased somewhat. The total number of registered firms decreased substantially to 1 354 in February 2002, as a result of the regulation of the industry (Ebony Consulting International,2000:25).

The Micro Finance Regulatory Council (MFRC) is a non-profit organization, which has been approved by the Minister of Trade and Industry to ensure compliance with the Usury Act Exemption Notice. In terms of this Notice, the MFRC has been appointed as an official regulator of the micro-lending industry, and its mandate covers:

- the promotion of the micro-lending industry

- encouragement of sustainable growth in the industry
- lending credibility to the industry
- serve unserved credit needs of South Africans who may not have access to credit by formal banks
- protection of consumers against unfair business practices by lenders
- to educate consumers and lenders about their rights and obligations

All money lenders who wish to operate within the scope of the Usury Act (Exemption of 1 June 1999) are required by law to register with the MFRC. In other words, if a lender wishes to charge more interest than the interest limit set in the Usury Act (which is between 24 and 27% annually), that lender must register with the MFRC (MFRC,2000).

If a lender does not register with the MFRC he must comply with the provisions of the Usury Act itself. All moneylenders that are not registered with the MFRC are required to lend in accordance with the Usury Act, which provides a limitation of 23% per year on amounts below R10 000 and 20% per year on amounts above R10 000. Any unregistered lender who does not lend according to the limitation set above is acting unlawfully and is guilty of an offense, and liable on conviction to a fine or imprisonment or both. (MFRC,2002)

Data on the micro-lending industry are available for South Africa since registration with the MFRC became compulsory. The following data from the MFRC give the latest available statistics on loan sizes and number of clients.

Table 5.8 – Micro finance statistics for SA (December 2001 – February 2002)

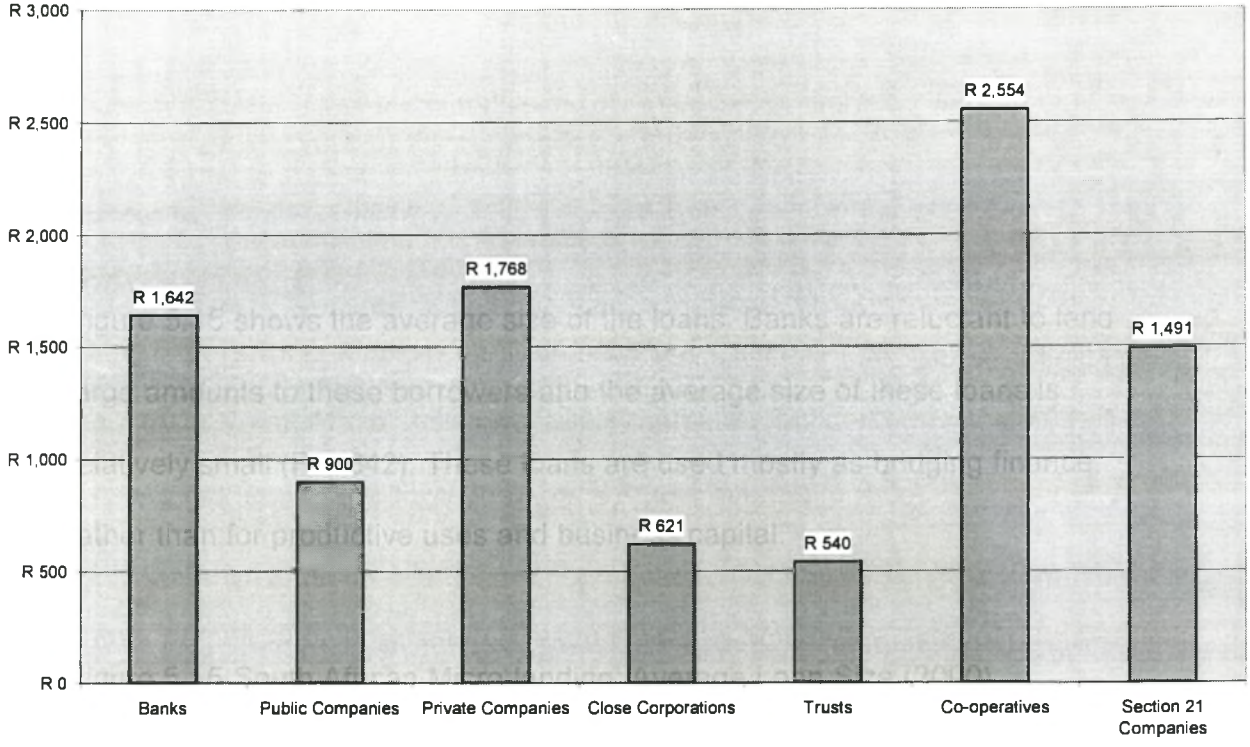
	Loan Statistics			
	Gross loans outstanding	**% of Industry by value**	**Number of Loan Clients**	**Average loan size**
Industry	**R 14 905 268 729**	**100%**	**4 915 448**	**R 1 292**
Banks	R 8 097 702 519	54%	2 041 016	R 1 642
Public Companies	R 255 079 331	2%	78 827	R 900
Private Companies	R 5 960 924 520	40%	2 297 577	R 1 768
Close Corporations	R 292 255 134	2%	370 596	R 621
Trusts	R 32 680 466	0.2%	32 194	R 540
Co-operatives	R 217 860 213	1%	55 192	R 2 554
Section 21 Companies	R 48 766 546	0.3%	40 046	R 1 491

Source: MFRC, 2002.

Table 5.8 shows that nearly 5 million people are served by the micro finance industry in South Africa, less than half the total amount served by the formal banking industry (12 million). Increased regulation has reduced the number of firms in this market, and interest rates are now capped. There remains a large number of informal, unregistered micro lenders who serve a large portion of the market.

Figure 5.15 shows the average size of the loans. Banks are reluctant to lend large amounts to these borrowers and the average size of these loans is relatively small (R 1 642). These loans are used mostly as bridging finance, rather than for productive uses and business capital.

Figure 5.15 South African Micro-lending: Average Loan Size (2000)



Source: MFRC, 2000.

5.7 CONCLUSION

This chapter examined one of the central aspects of Post Keynesian monetary theory, i.e. accommodation of the demand for money by the central bank.

Endogenous money theory assumes that there is a strong relationship between changes in private sector credit and changes in the money supply (M2). South Africa was the only country where a significant relationship was found.

It was shown that there exists substantial credit rationing in South Africa, and by implication more in the less developed countries of the SADC region. Credit rationing is synonymous with asymmetric information and also, as shown by Wolfson, asymmetric expectations. Credit rationing is widely believed to be more severe in developing countries, as a result of greater risk and more severe information failure.

One of the central aspects of an endogenous money theory, the existence of credit lines, was examined. It was found that in South Africa only a small privileged minority has access to such facilities. The wide divergences between formal and informal interest rates were evidence of excess demand for credit and credit rationing among poorer borrowers.

There is consensus in the literature that financial market frictions are more severe in developing countries. It can be expected that credit rationing falls as an economy develops. This explains why credit appears to be so highly rationed in the SADC countries.

APPENDIX 5.1 – CHANGE IN M2/GDP AND GDP GROWTH (IFS DATA)

Figure 5.1.1 Botswana

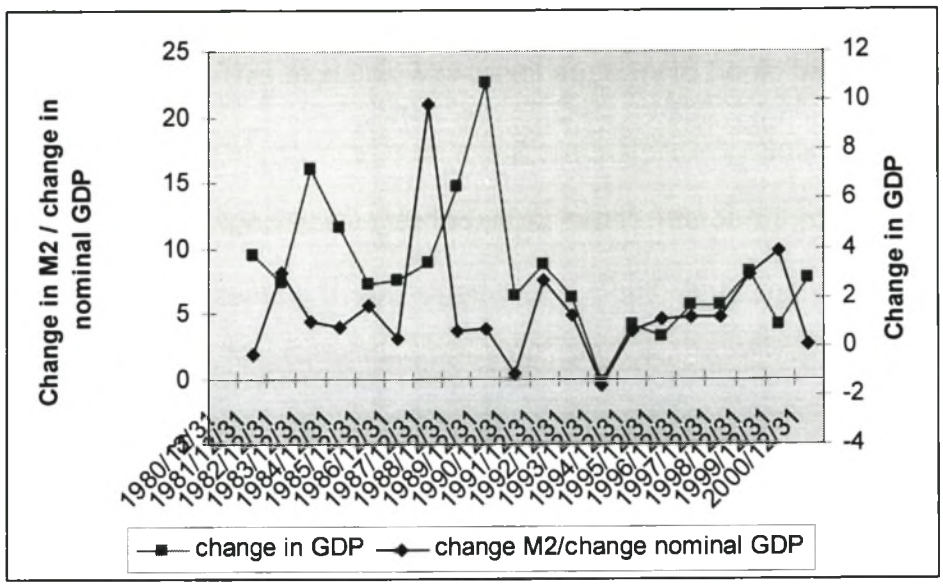


Figure 5.1.2 Malawi

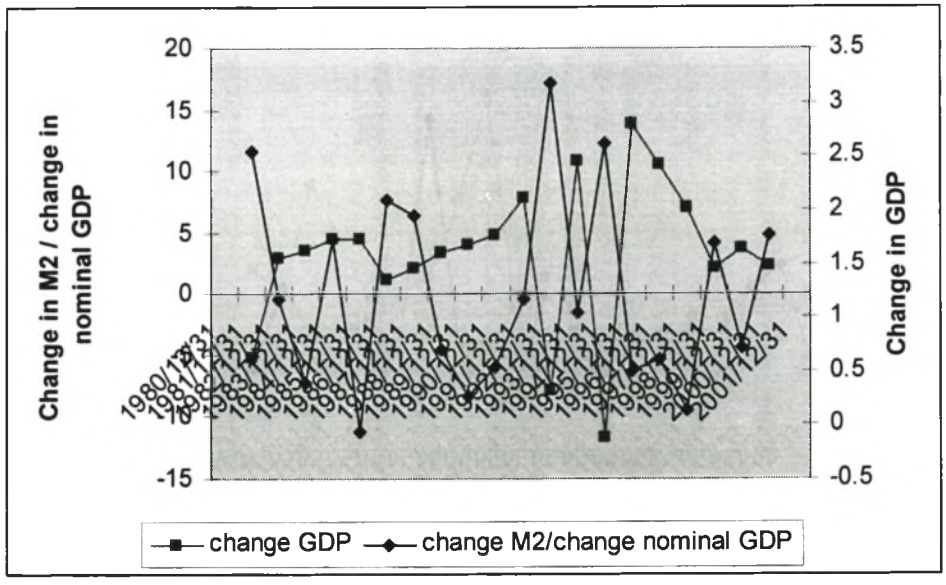


Figure 5.1.3 Mauritius

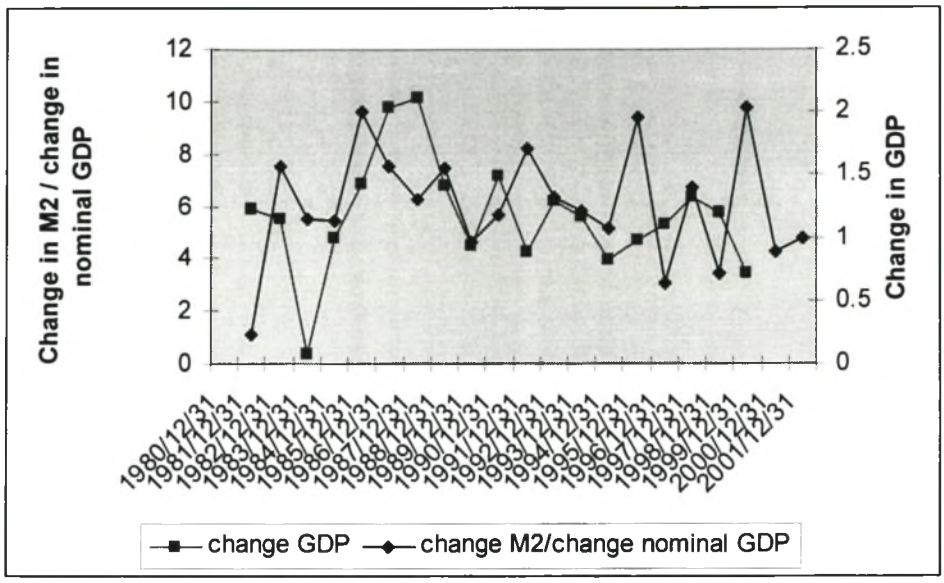


Figure 5.1.4 Mozambique

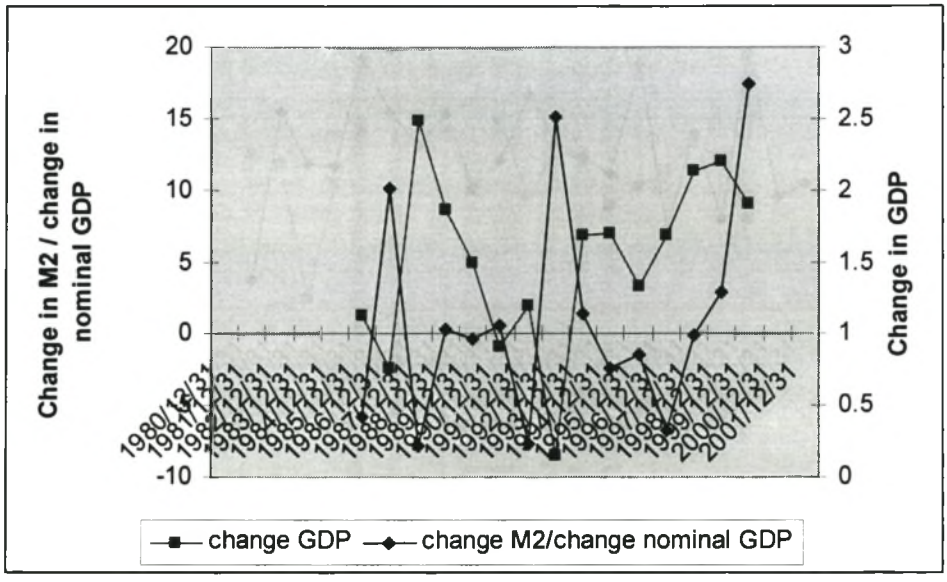


Figure 5.1.5 South Africa

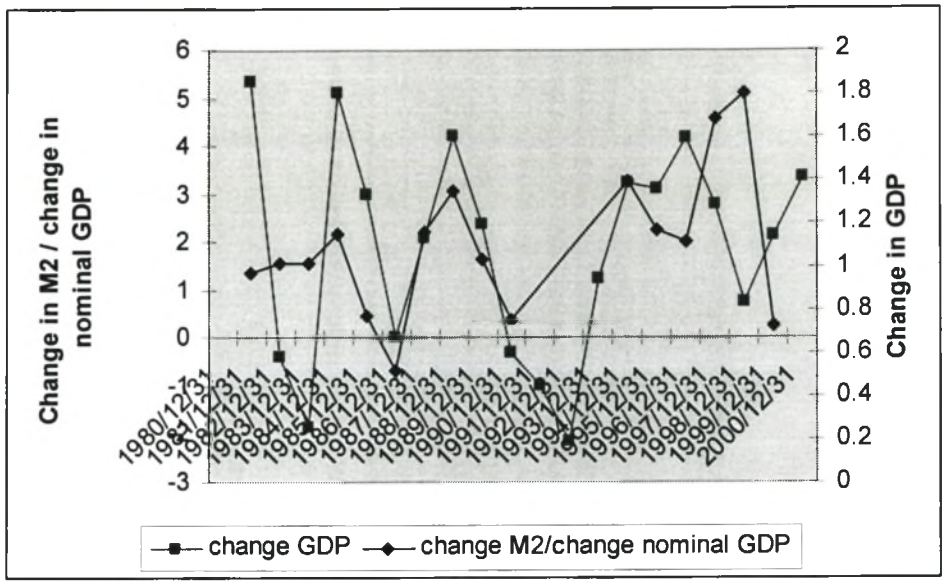


Figure 5.1.6 Swaziland

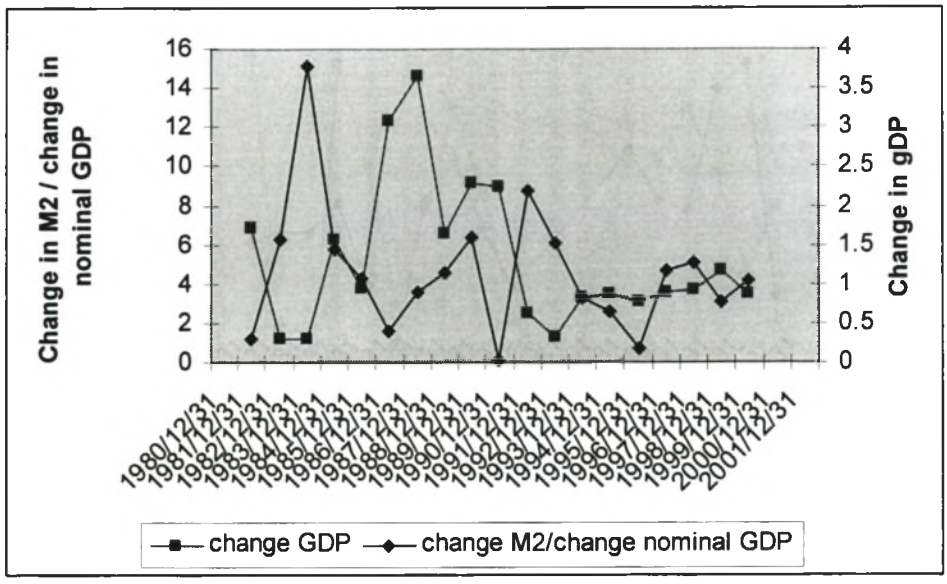


Figure 5.1.7 Zambia

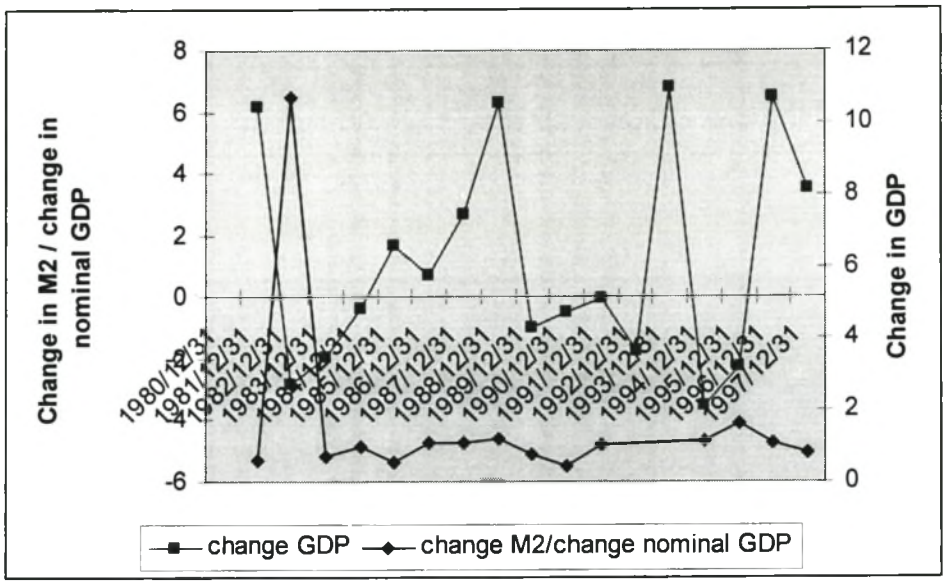
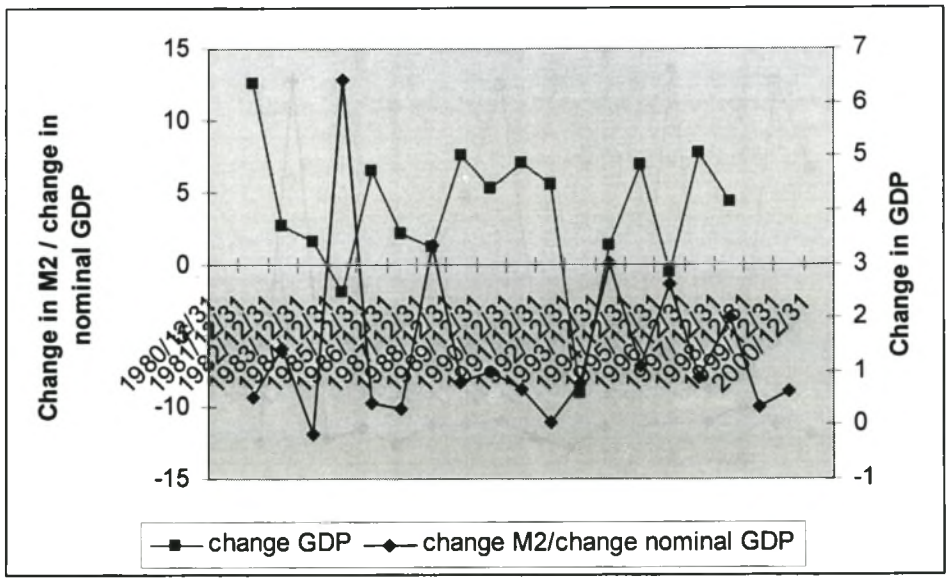


Figure 5.1.8 Zimbabwe



CHAPTER SIX

THE MONETARY TRANSMISSION MECHANISM

Recent experience, however, has prompted renewed attention to the role of the credit channel in the transmission process. Both at the peak and at the trough of the economic cycle, there can be situations in which bank credit exerts a vital impact on economic conditions and in which adjustments in interest rate conditions seem incapable of affecting the course of the economy (Van't Dack, 2001)

6.1 INTRODUCTION

Interest in the monetary transmission mechanism became especially pronounced during the years of the Great Depression of the 1930s. During these turbulent times the realisation grew that there was some link between the nominal and the real sides of the economy. Economists like Fischer argued that the weakened financial sector was propagating the economic downturn. The classical dichotomy could not shed any light on this observed phenomenon. The time was ripe for the Keynesian revolution.

Through the theory of liquidity preference, Keynes provided the vital link between the monetary and the real sectors of the economy. The interest rate was

determined in the money market, and monetary changes were transmitted to the productive side of the economy through movements in the interest rate. This was the Keynesian transmission mechanism. As explained in earlier chapters, the emphasis of Keynes's work (and later also that of the NeoClassical synthesis), was on the fiscal side. The economy could best be stimulated by direct fiscal measures, such as an increase in government expenditure, as apparently shown by the post-war boom of the 1950s and 1960s. Monetary theory – and the interest rate mechanism – was reduced to a single quadrant of the IS-LM analysis.

The interest in the monetary transmission mechanism was revived with the seminal work of Friedman and Schwartz in the early 1960s. They argued, based on empirical evidence for the United States, that monetary actions predicted output movements. The conclusion of their argument was, however, that the response lags of the real side of the economy to monetary changes were long and variable. Monetary policy could destabilise the economy and the best policy prescription would be a simple monetary rule.

Much research has been devoted to developing the central ideas of Keynes (the interest rate channel) and Friedman (the money channel). Yet, there is still no consensus among economists about how monetary policy affects the economy. Studies about the various channels of monetary transmission have focussed on four basic channels, which will be discussed below.

The aim of this chapter is to review briefly the four different channels of monetary transmission found in the literature. An understanding of the transmission process is essential to the appropriate design and implementation of monetary policy. Understanding the specific channel of monetary transmission helps in choosing the correct operative variable, be it the money supply, nominal interest rate, exchange rate or inflation rate. It will be argued below that the credit channel of monetary transmission is more important in developing countries and specifically in the SADC countries. The traditional emphasis in these countries on the interest rate channel is misplaced, with detrimental consequences for the efficiency and understanding of monetary policy in these economies.

6.2 TRADITIONAL MONETARY TRANSMISSION CHANNELS

6.2.1 THE INTEREST RATE CHANNEL

This is the traditional channel of monetary transmission, developed by Keynes in the 1930s. The Keynesian transmission mechanism starts with an exogenous change, e.g. an increase, in the money supply by the central bank. Households have more money, which they use to buy financial assets that are seen as good substitutes for holding money. Bond prices rise and interest rates fall. Businesses issue more bonds at the higher price, using this money to purchase capital goods, i.e. to invest. This causes the supply price of capital goods to increase,

together with the increase in production. Higher production works through the multiplier to increase expenditure through higher consumer demand. This provided a link between the monetary and the real sectors, which was absent in the classical view.

The distinguishing feature of this conventional model is that the choice is confined to two assets: money and 'bonds'. This is the liquidity preference theory that determines the demand for money in the textbook IS-LM model. Although there is no consensus among economists as to the correct channel of monetary transmission, there is agreement that the direct interest rate channel of the Neo-Classical synthesis is too narrow to describe the real world operation of modern monetary systems. Real interest rates, both short- and long-term, are also important. Rational agents take decisions based on the real return they receive on their deposits or the real cost of a loan. The nominal interest rate is less important. The monetary authorities target some specific short-term interest rate (usually an overnight interbank rate). The propagation of changes in interest rates along the term structure of interest rates is also important. The efficiency of this propagation mechanism depends on the structure and level of development of the financial markets in an economy, as will be argued below.

The realisation that the interest rate model is too simple a description of the real world has led to the development of new theories that include a whole range of

financial assets. More attention is now also given to structural factors and credit availability.

6.2.2 THE ASSET PRICE CHANNEL

Friedman and Schwartz, in their monumental monetary history of the United States, found a strong relationship between money and real variables. They believed the real trend path of the economy remained stable, and that inflation was always a monetary phenomenon. Today, there is near-unanimity among economists and policy-makers that monetary policy does not affect the long-term growth of the economy (Kamin, et al.,1998:6). But, monetary changes do have an effect on real activity in the short and medium term. The Monetarists describe the monetary transmission mechanism by incorporating a broader range of financial assets than only bonds.

The Monetarist transmission mechanism differs substantially from that of the Keynesian school in terms of its policy prescriptions. The Monetarist transmission mechanism's initial stimulus is similar to the Keynesian model. A higher money supply causes portfolio imbalance. But there are more options than only substituting with financial assets as in the Keynesian case. Households can also buy other assets, primarily bonds, equities and real estate. Households buy bonds, prices rise, interest rates fall and this causes higher investment by firms. But higher consumer spending on household assets causes higher demand and

higher prices for all goods, not only capital goods and financial assets. This is why the Monetarist school saw interest rates as too narrow an indicator of whether monetary policy is tight or easy. They considered the rate of change in the money supply as the correct instrument to control inflation.

Another way in which asset prices can change following a change in the monetary stance is by affecting the price of equities. Equity prices rise when interest rates are low (reflecting an expansionary monetary policy). This increases the market price of firms relative to the replacement cost of their capital. Newly issued equity can command higher prices and therefore lowers the cost of capital. This leads to higher investment and economic growth. The net worth of households (equity holders and real estate owners) increases during an upswing phase, causing households to adjust consumption patterns. Lower mortgage rates lead to higher demand for real estate, and an appreciation of real estate values. This may have a considerable wealth effect as houses are a major component of personal wealth and houses are used as collateral for loans, making it easier to obtain money when real estate values are high.

This view was based on the assumption that the supply of money is determined exogenously by the monetary authorities. In order for the existing stock of money to be willingly held, the quantity of money demanded must change whenever the money supply is altered by the authorities. Empirical work done by Monetarists showed that changes in the money stock are followed by changes in money

income, but with an average lag of sixteen months. Because these lags were both long and variable, attempts to "fine tune" the economy in the short run were believed to be ineffective and even destabilising. The Monetarist policy prescription was that the monetary authorities should avoid any drastic policy changes and should rather commit themselves to attaining a steady growth rate of the money supply, roughly equal to the growth in real GDP. Because of their crowding-out effect on private expenditure, discretionary fiscal policies should be avoided.

Modern Monetarists have tried to answer some of the initial puzzles raised by the original work of Friedman and Schwartz (1963). In doing this, they have tried to answer the allegation that the monetary transmission mechanism in the Monetarist model is not well defined, the so-called 'black box'. In Monetarist analysis, the interest rate is only one of many relative prices in the transmission process.

Meltzer has strongly defended the Monetarist view of the transmission mechanism. For Monetarists, the effects of a monetary impulse is neutral in the long run, there are only short-run effects. But even in the short run, households and firms misjudge the outcome of a monetary policy impulse. Information is costly and time is required to distinguish between permanent and transitory impulses. According to Meltzer (1995:50): "Contracting in nominal terms is one

response to these uncertainties." Monetarists advocate rules that reduce the cost of acquiring information.

Unanticipated changes in the money supply affect relative prices and real variables. It is not only a single price, i.e. a short-term interest rate, that is affected. A change in the money supply changes the marginal utility of money relative to the marginal product of other assets. Agents have to decide whether this change is temporary or permanent.

All these assets (money, bonds, equities and real estate) are substitutes. The transmission process begins in the asset markets. An exogenous increase in the money supply lowers the interest rate and asset prices rise. The demand for money is a negative function of the interest rate and therefore more money is willingly held after a reduction in interest rates. But the demand for money is also a positive function of income. With the increase in asset prices, the price of new production falls, investment increases and consumers spend more, through the wealth effect.

The policy implications of such a view are therefore that monetary policy should be rules-based, to reduce information costs. Meltzer lists five reasons why rules are superior to discretion (which requires too much information):

- Predictions are difficult, neither the central bank nor private forecasters can predict changes accurately in order to limit fluctuations.

- Lags are variable.
- The response of particular relative prices varies over different business cycles.
- Unanticipated policy exacerbates instability.
- Rules reduce the cost of information gathering. (Meltzer,1995:69)

The use of a monetary policy rule has become synonymous with the work of John Taylor. Taylor advocated a financial price framework, which is an extension of the Monetarist transmission mechanism. He summarised the new research in this field as follows: "How have models of the monetary transmission mechanism – progressed in the 25 years since Friedman and his critics wrote? It appears to me that the progress has been substantial. First, the framework has been internationalized: changes in exchange rates are now a key part of the monetary transmission mechanism...Second, through the use of rational expectations, the financial market price framework distinguishes quantitatively between real interest rates and market interest rates" (Taylor,1995:24).

In Taylor's monetary transmission framework, the emphasis is on financial market prices, rather than quantities. He argues that measurement problems make quantities (e.g. monetary aggregates) difficult to choose. These measurement problems have forced econometric modellers away from the quantity of credit toward the price of credit (Taylor,1995:12).

Financial prices in this model include exchange rates, short- and long-term interest rates. It is difficult to decide which interest rate to use in such a model. Usually some representative short-term interest rate is chosen. It is then assumed that the long-term interest rate is given by the expected weighted average of future short rates. Although there might be many other factors that could potentially influence long-term rates, it remains true that changes in short rates are empirically significant in determining long rates: "The expectations model of the term structure explains why changes in nominal short-term interest rates would affect nominal long-term rates" (Taylor,1995:18). Long-term interest rates are assumed to be more important for long-term decisions, e.g. buying a house or investing in a factory or productive plant. This means that the monetary transmission mechanism depends on how monetary policy affects the long-term interest rate.

Short-term interest rates affect long-term interest rates and nominal exchange rates. Given temporary rigidities in the prices of goods and services, real rates also change, albeit only for a time. This has a short-run effect on exports, consumption, investment and GDP. In the long run, however, when wages and prices adjust, real GDP returns to normal and real interest and exchange rates return to fundamental levels. But this is not the end. In the Taylor model, the central bank has the power to set the interest rate directly (which corresponds to the Post Keynesian view). To understand the monetary transmission process, the reaction function or policy rule of the central bank has to be included: "I have

proposed a simple interest rate rule in which the federal funds rate reacts to two variables: the deviation of inflation from a target rate of inflation; and the percentage deviation for real GDP from potential GDP, with the reaction coefficient being one-half for each variable" (Taylor,1995:15). The Federal funds rate thus reacts to deviations in inflation from the target, and deviation of real GDP from potential GDP.

6.2.3 THE EXCHANGE RATE CHANNEL

The exchange rate channel is more important than the asset price channel in a developing country context. In most developing countries the financial structure is characterised by rudimentary bond and equity markets. A tightening of monetary policy, with a floating exchange rate, will lead to an increase in interest rates, raising the demand for domestic securities. This will lead to an appreciation of the nominal exchange rate.

Capital flows have a major influence on exchange rates. The world is characterised today by high levels of financial capital mobility. The exchange rate responds quickly to changes in monetary policy and interest rates. The interest rate differential between any two countries is equal to the expected rate of change in the exchange rate between those two countries (Taylor,1995:15). This is the so-called 'interest rate parity relationship'. Raising interest rates (tight monetary policy) causes the exchange rate to appreciate. There is a positive

relationship between the exchange rate and the interest rate differential. The argument for the propagation of the change in the nominal exchange rate to the real exchange rate is the same as in the asset price model. A change in nominal interest rates causes a change in nominal exchange rates and because of price rigidities this also influences the real exchange rate, at least in the short term. In the long term the monetary change is neutral. The price level is higher by the same amount of the initial change in the money supply, but real GDP and the exchange rate return to their base line levels.

There are two ways in which the change in the exchange rate (nominal and real) feeds through to spending decisions. The first is through the relative price effect. An appreciation of the exchange rate makes domestic goods more expensive relative to foreign goods. This leads to a reduction in demand for domestic goods and a reduction in production, with an adverse effect on GDP in the short term: "There is substantial empirical evidence from many countries that a change in the real exchange rate affects the demand for real exports and real imports...The inverse relationship between the exchange rate and net exports is one of the more robust in empirical economics. The United States went through a vivid illustration of the relationship in the mid-1980s when the real exchange rate peaked at about the same time as net exports reached a trough" (Taylor,1995:17).

The other propagation mechanism is the balance-sheet effect. Changes in the exchange rate will affect the holders of foreign currency debt. This is an important factor in developing countries where domestic residents are often net debtors to the rest of the world. Changes in the exchange rate affect their net worth or balance sheet position: "A large depreciation of the exchange rate may lead to an improved balance-sheet position that may give rise to a marked expansion of domestic demand. Thus this balance-sheet effect tends to offset – and in some cases may even dominate – the relative price effect" (Kamin et al.,1998:12).

Another reason why the exchange rate channel is so important in the developing country context, is that it does not only affect the demand side, but influences the supply side as well. In countries with a history of high inflation and where most capital goods are imported, a depreciation of the exchange rate will lead to higher inflation expectations. Firms will raise their domestic producer prices, even in the absence of higher domestic demand. This will put upward pressure on wage and price structures throughout the economy.

6.2.4 CREDIT RATIONING AND THE CREDIT CHANNEL

The fourth channel of monetary transmission is the credit availability channel. This is a new development and is sometimes described in the literature as an enhancement mechanism, which propagates the conventional interest rate effects of the interest channel, rather than a separate channel. The existence of

this channel strongly relies on the presence of credit rationing (explained in the previous chapter). This makes it more important for developing countries than the other three channels described above: "In countries where private markets for credit either are poorly developed or are prevented by government regulation from operating freely, monetary policy is likely to affect aggregate demand more by altering the quantity or availability of credit than through the direct or indirect effects of changes in the price of credit" (Kamin et al.,1998:13). The emphasis is on asymmetric information and the effects of credit rationing on the real side of the economy.

The idea that Monetary policy works through changes in the quantity or availability of credit, rather than through changes in the price of credit can be traced back to the original paper of Akerlof (1970) about the 'lemons problem' of asymmetric information. This was developed further into a formal theory of credit rationing in the seminal paper by Stiglitz and Weiss (1981). In the traditional interest rate channel, an increase in the interest rate will cause lower spending and investment. But, in a world characterised by credit rationing, asymmetric information and contract enforcement problems, contractionary monetary policy will lead to tightening of both price and non-price means by banks. The adverse selection effect (explained in chapter 5) will make banks wary of increasing the riskiness of their loan portfolio, by increasing interest rates. Because of imperfect information, even creditworthy borrowers are also affected, since banks may not be able to distinguish fully between borrowers who have been adversely affected

and those who have not. Credit rationing in this way affects specifically small borrowers, because of the high cost of gathering information about them.

This idea of a reduction in the availability of credit during times of tight monetary policy is associated with the work of Bernanke. He has emphasised the role of the bank loan market as part of the transmission process. He developed the idea of the credit channel and described two mechanisms through which monetary changes are transmitted to the real economy. These are called the 'bank lending channel' and the 'balance sheet channel'. According to Bernanke, the distinction between the 'money view' and the 'credit view' of monetary transmission, does not define the issue correctly: "Unfortunately, this terminology has created a great deal of confusion...A better distinction is between the view represented in the standard IS-LM model and what might be termed the capital-markets-imperfection approach. The capital-market-imperfections approach is based on the premise that the same informational and agency problems that explain many aspects of financial structure (for example, the existence of financial intermediaries) also play a role in monetary transmission" (Bernanke,1995:130).

In an important paper by Bernanke and Gertler, *"Inside the Black Box: The Credit Channel of Monetary Policy Transmission "*(1995), more light is shed on the propagation of monetary policy through the credit channel. This paper will be discussed in some detail as it gives a comprehensive account of the balance sheet and bank lending channels.

The authors argue that most of the empirical research dealing with the interest rate elasticity of the components of aggregate spending found relatively weak cost-of-capital effects. The other problem with the conventional story is that since the central bank can control some short-term interest rate (like the federal funds rate), monetary policy should have its strongest influence through short-term rates. Yet, the empirical evidence shows that the effect of a monetary policy change is greater on long-term assets (e.g. housing and production equipment), which should rather respond to long-term interest rates, if there is significant interest rate elasticity. But the response to real long rates should presumably be weaker than the response to short rates. Therefore, the focus should be on credit availability, imperfect information and "friction" in credit markets, to explain the potency of monetary policy.

The credit channel is an enhancement mechanism: "We don't think of the credit channel as a distinct, free-standing alternative to the traditional monetary transmission mechanism, but rather as a set of factors that amplify and propagate conventional interest rate effects" (Bernanke & Gertler,1995:28). This channel works through what is known in the literature as the 'external finance premium'. This is the difference between funds raised externally (through loans or issuing equity or debt), and funds generated internally (retained earnings).

Bernanke and Gertler find the following effects of a monetary policy change (a positive interest rate shock). They argue that the magnitude and timing of these effects are not adequately explained by the traditional monetary transmission mechanisms:

The empirical observations are:

1. Monetary tightening is followed by sustained declines in real GDP and the price level. Real GDP starts bottoming out after about 24 months and returns to its base levels after about 40 months.
2. Final demand responds quickly, then production (with a lag). Inventories rise first and then decline.
3. The earliest and sharpest declines in final demand are in residential investment and consumer goods (durables and non-durables).
4. Fixed business investment declines, but it lags behind housing, consumer durables and production.

The puzzling facts are the composition of the spending effects:

- the real economy is powerfully affected by monetary policy that induces relatively small movements in interest rates (especially in the light of the weak cost-of-capital effects mentioned above).
- the timing is different than expected from neoclassical models.
- residential expenditure is more affected than business investment.

These empirical facts are better explained by the credit channel. The central idea is that monetary policy not only affects the general level of interest rates, but also the size of the external finance premium.

a. THE BALANCE SHEET CHANNEL

This channel relies on the difference between raising funds externally and internally – the 'external finance premium'. The greater the borrower's net worth, the lower the external finance premium. Changes in monetary policy affect the financial position of firms and households. Higher interest rates increase debt repayments and borrowers are in a worse position. But, simultaneously the tight monetary policy reduces asset prices and therefore the value of the borrower's collateral. This was one of the factors that propagated the recession in Japan in the late 1980s. Asset price deflation reduced the creditworthiness and collateral of many Japanese corporations and banks.

b. THE BANK LENDING CHANNEL

In this channel monetary policy also affects the supply of loans. The premise here is that a reduction in bank reserves by the central bank reduces bank deposits and, hence, banks' loanable funds. Many borrowers (especially individuals and small firms) are bank-dependent. Banks are the main source of credit in most countries and banks also specialise in overcoming the asymmetric

information problem. When there is a reduction in the supply of loans (as a result of open market operations), the decline in bank credit can have significant effects on bank-dependent borrowers and their spending patterns. They will face a higher external finance premium and this will reduce real economic activity.

An important criticism of this view is that institutional innovations such as asset and liability management have reduced the importance of the bank lending channel. Banks can replace lost deposits with other sources of funds, such as negotiable certificates of deposits (NCDs) and new equity issues. Reserve requirements have been reduced or eliminated in most industrialised countries. However, these institutional features are not an accurate description of financial systems in developing economies. The bank lending channel may be especially important in countries where most businesses do not have access to deep capital markets and are primarily dependent on bank loans for finance.

Whatever the relative importance of these two channels the work on the credit channel has greatly increased our understanding of the monetary transmission mechanism, especially in less developed countries: "It is extremely difficult to carry out an empirical test that would conclusively separate the bank lending channel from the balance sheet channel. For this reason, we are more confident in the existence of a credit channel in general than we are in our ability to distinguish sharply between the two mechanisms of the credit channel" (Bernanke & Gertler,1995:42).

6.3 WHICH CHANNEL?

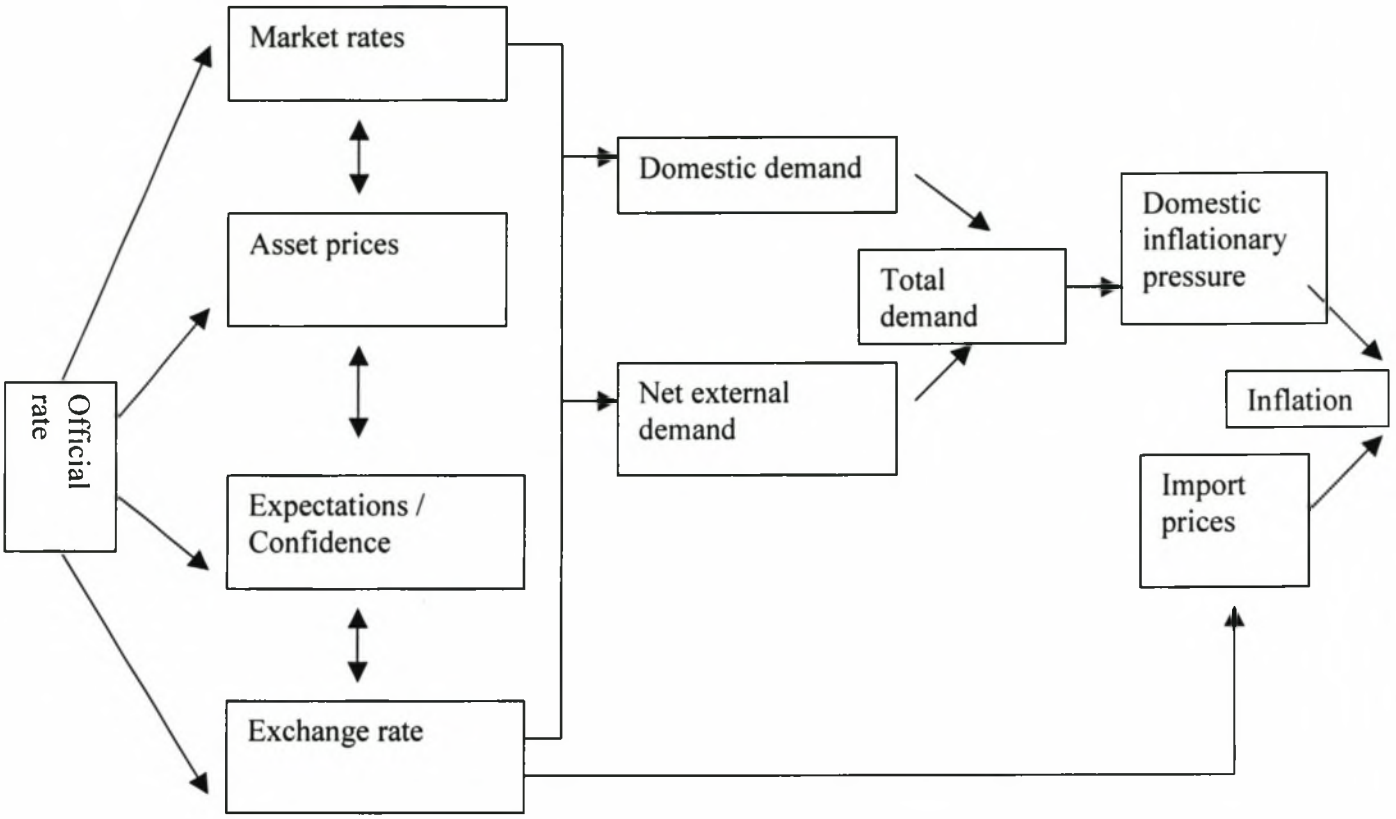
In the Monetarist model changes in monetary policy are transmitted throughout the economy by a range of financial market and asset prices. The interest rate is only one of many relative prices in the transmission process. Monetarists argue that the Monetarist analysis applies to developing countries as well:
"...monetarist analysis applies both to countries with and without developed financial markets. Monetary impulses have transitional effects on output and lasting effects on prices even where commercial paper, long-term bonds and even Treasury bills do not exist" (Meltzer,1995:59). It will be argued below that the traditional interest rate channel is not an adequate description of the monetary transmission process in developing countries. Shallow financial markets fail to transmit the interest rate signals sufficiently and timely. The Monetarist model is more applicable to developing economies, since the channel works through effects on durables and real estate spending, in addition to financial market prices.

Although the Monetarist channel is more applicable to developing countries than the interest rate channel, some of the important insights of the bank lending channel are not dealt with in the asset price channel. There are some points in common, but the credit view offers a better description of the transmission mechanism in developing countries with rudimentary credit markets,

characterised by credit rationing: "The monetarist and lending views agree that activity in lending or credit markets is an important part of the transmission process that is neglected in alternative frameworks. The two differ in important respects, however. The lending view emphasizes shifts in the distribution of loans and a composite consisting of securities and real capital. The Monetarist transmission process focuses on relative prices and distinguishes money, loans and securities, and real capital" (Meltzer,1995:64).

The four transmission channels discussed above are the main transmission mechanisms found in the literature. The credit view is a later development and although very important, especially in the developing country context, has not explicitly been included in the macro-models of the major industrialised economies. In the United Kingdom, the transmission mechanism is assumed to work through the more traditional channels, i.e. market interest rates, asset prices and exchange rates. The following graph shows the different channels used in the UK model:

Figure 6.1: The UK transmission mechanism



Source: Bank of England (1999)

The figure illustrates the economic thinking behind the macro-model used by the Bank of England. The official rate, set directly by the bank, affects other market rates by varying degrees. The interest rate movements also reflect the monetary policy stance of the authorities and therefore have an influence on the expectations and levels of confidence of businesses and households. Monetary aggregates are not considered important in this model. Asset prices move in reaction to changes in the official rate and finally the exchange rate responds, which affects imports and exports. The main effect of monetary policy is on the demand side of the economy. It has little effect on the supply side, which is

determined by long-run structural factors. In the long run, monetary policy determines only the general price level i.e. inflation. The real effects are only over the short to medium term. The macro-econometric model of the Bank of England works with a time horizon of up to two years: "...official interest rate decisions have their fullest effect on output with a lag of around one year, and their fullest effect on inflation with a lag of around two years" (Bank of England,1999:3).

The model of the Federal Reserve Bank is based on similar premises. The model also works with the three traditional channels of monetary transmission discussed above. A fourth channel used is called 'anticipated nonfinancial responses' (Reifschneider et al.,1999:8). Some consideration is given to the credit channel in the macro-econometric model of the Federal Reserve: "Although it is difficult to incorporate fully the effects of such credit market imperfections into a macroeconomic model like the FRB/US, in two spending categories allowance is made for such effects...More generally, household spending is estimated to be more procyclical than standard theory would imply, perhaps because of the effects of the credit channel" (Reifschneider et al.,1999:3). In the FRB/US model the initial effects of a 1 percentage point cut in the federal funds rate are initially small. Rational agents first expect the change to be temporary and only begin to respond to the change once they come to believe that it is permanent (the argument for a monetary rule like the Taylor rule). Two years after the easing of monetary policy, the level of real GDP has risen to about 1,75 per cent above its baseline level. (Reifschneider et al.,1999:6).

Although there is some evidence of the credit channel in the US model, it is not explicitly included in the UK model. The transmission mechanism works primarily through the three traditional channels, the exchange rate channel lagging behind the other two, having a greater effect in the second year after the monetary policy adjustment.

6.4 ENDOGENOUS MONEY AND THE TRANSMISSION MECHANISM

Research about the transmission mechanism is aimed at establishing how changes in monetary policy are transmitted through the economy, and to explaining the timing of these reactions. Much research has been done on these important issues. The point of departure of all the textbook monetary transmission models is some interference in the market by the monetary authorities, always through open market operations, i.e. a change in the money supply.

Monetarists argue that their model is applicable to both industrialised and developing countries. In both the asset price channel and the interest rate channel, open market operations trigger reactions in the financial and real sectors of the economy. In both cases these effects are transitory: Meltzer (1995:70) describes the 'basic insight' of Monetarism as: "monetary impulses set

off a transmission process that changes many relative prices and real variables until neutrality is (eventually) restored".

The implied causality of these two traditional channels – changing the money supply through open market operations which changes the interest rate – is contrary to the Post Keynesian model. The monetary authorities in a Post Keynesian world have the power to set the interest rate. The interest rate becomes the exogenous variable and the money supply responds endogenously to the needs of the economy (the real side of the economy). At a first glance it seems that the transmission models discussed above are therefore irrelevant to a Post Keynesian world. But it will be argued that the credit channel can be reconciled with a Post Keynesian theory of endogenous money.

In the FRB/US macro-econometric model (referred to above), the transmission mechanism is firmly based upon the Monetarist model. As explained by the economists working with the US model: "In fact, the Federal Reserve does not directly control the federal funds rate; instead, the funds rate is a market rate determined by the supply and demand for reserves. The Federal Reserve uses open market transactions – buying and selling Treasury securities – to expand or contract the supply of reserves. By choosing the right supply of reserves to the banking system, the Federal Reserve can effectively keep the funds rate near its desired level" (Reifschneider et al.,1999:4). This is the traditional view of monetary policy with the money supply as an intermediate target.

The opposite seems to be the case in the UK, given their focus on inflation targeting: "The money supply does play an important role in the transmission mechanism but it is not, under the United Kingdom's monetary arrangements, a policy instrument. It could be a target of policy, but it need not be so. In the United Kingdom it is not, as we have an inflation target, and so monetary aggregates are indicators only...In the current policy framework, **where the official interest rate is the policy instrument**, both the money stock and inflation are jointly caused by other variables" (Bank of England, 1999:11). In the UK there seems to be a realisation that the exogenous variable (under the control of the Bank of England), is the official short-term rate. The money supply responds to the 'needs of trade': "So the change in spending by individuals and firms that results from a monetary policy change will also be accompanied by a change in both bank lending and bank deposits. Increases in retail sales are also likely to be associated with an increased demand for notes and coin in circulation...the relationship between the monetary aggregates and nominal GDP in the United Kingdom appears to be insufficiently stable (partly owing to financial innovation) for monetary aggregates to provide a robust indicator of future inflation developments in the near term...In other words, money matters, but not in such a precise way as to provide a reliable quantitative guide for monetary policy in the short to medium term" (Bank of England,1999:11).

Where the US model is essentially a Monetarist one (with an emphasis on rules), the UK model is Keynesian in nature. The Monetarist model is not applicable to a Post Keynesian world of endogenous credit money. The credit channel, based on New Keynesian concepts such as credit rationing and asymmetric information, could be incorporated into an endogenous money model. In the UK, there is some recognition that the operative variable is the interest rate. The inclusion of the credit channel, both the balance sheet and bank lending channel, increases our understanding of the transmission mechanism in developing countries. Meltzer (1995:68) confirmed this: "The lending view is closely related to earlier work on credit rationing. Although credit rationing is not a necessary condition for the lending view, a finding of significant credit rationing would support the lending view." Chapter 5 cited some evidence on the existence of credit rationing in developing countries. It will be argued below that based on the existence of credit rationing, the credit channel is important in developing economies without well-developed capital and financial markets.

The work of Bernanke and Blinder (1992) on the credit channel can be used as support for the endogenous credit view. The effect of a monetary tightening was traced through the economy by looking at the effects of an increase in the federal funds rate on the unemployment rate and bank balance sheets. The increase had an immediate effect on the balance sheets through a fall in securities. Loans hardly move, which is explained by the fact that loans are quasi-contractual commitments whose stock is difficult to change quickly. In the longer run,

however, the primary effect of the monetary tightening is on loans. After two years, securities have returned to base levels, while the fall in loans reaches its maximum. Even more interesting is the phenomenon that the unemployment rate also starts to respond after about nine months and reaches its peak after about two years, before declining back to zero. The timing of the fall in loans corresponds to that of the rise in unemployment. This could yield support for the endogenous money view, i.e. loan supply responds to real factors, in this case higher unemployment. The supply of credit responds to the 'state of trade'.

Bernanke and Blinder (1992:920) see this timing as evidence that the credit channel is important: "The fact that the timing of the responses of loans and unemployment to monetary-policy innovations are so similar is circumstantial evidence that this channel is operative, even though loans do not Granger-cause unemployment." This may not necessarily be a correct interpretation, as the work of Moore has shown that causality runs from the wage bill to loan demand. This alternative interpretation of the Bernanke and Blinder (1992) results are also mentioned by Ramey (1993:8): "The obvious alternative interpretation of the results is that the decline in output, brought about through the money channel, is 'causing' the decline in bank loans". Loan volume responds endogenously to real factors, rather than monetary factors. But, this does not neutralise the effects of the bank lending channel and the adverse effects for small borrowers. The transmission mechanism is not defined in the traditional way, starting with open market operations and the money supply under the control of the central bank.

There is acknowledgement of the fact that the supply of loans responds to the real side of the economy. However, given the evidence on credit rationing in the previous chapter, the bank lending channel remains important, especially in developing economies. It will be argued in the next section that particularly small borrowers are affected by a monetary tightening.

6.5 EXISTENCE OF THE CREDIT CHANNEL IN DEVELOPING COUNTRIES

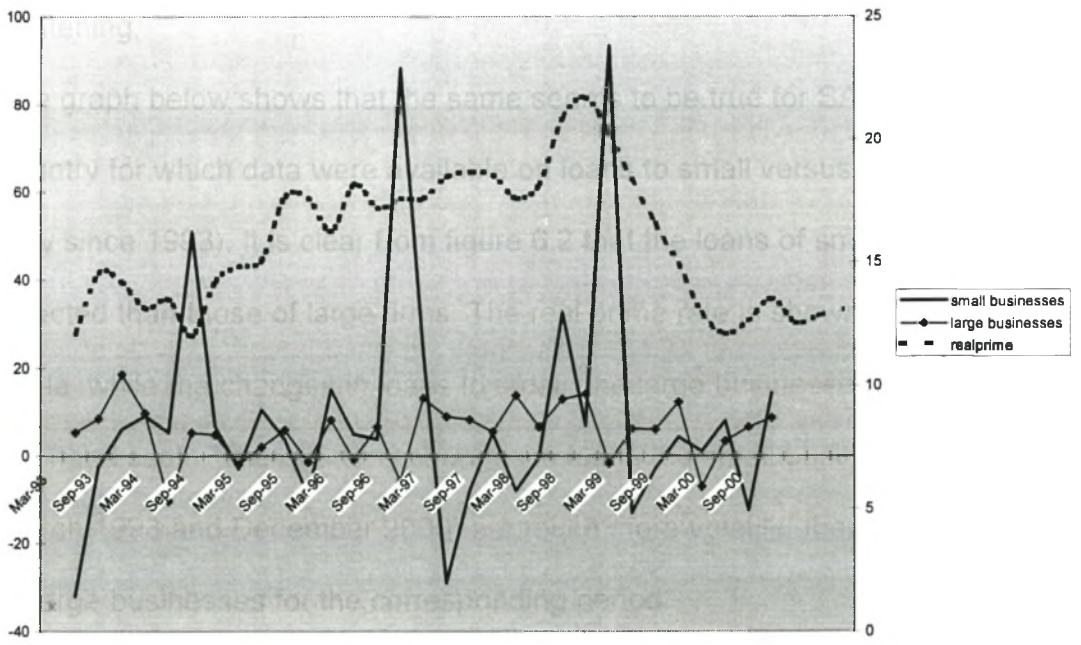
It has been argued above that the two most important transmission channels for developing countries are the exchange rate and credit availability channels. The traditional interest rate and money channels are less important for several reasons that will be explained below.

In the literature, the existence of the credit channel is closely linked to the existence of credit rationing. Several studies have looked at the different effects of tight monetary policy on small versus large firms. Some also focussed on the behaviour of small versus big banks. These studies found that small banks reduce lending following a monetary tightening more than large banks do. This may be explained by the fact that smaller banks do not have easy access to alternative sources of funds, such as NCDs. (Bernanke,1995). Several other studies found that the bank loans of small firms fall relative to the bank loans of large firms after a monetary tightening. According to Ramey (1993:7): "The panel study results and the small- versus large-firm results are very compelling

evidence in favor of the hypothesis that there are credit market imperfections, and that their effects are particularly important during periods of monetary tightening."

The graph below shows that the same seems to be true for SA. SA was the only country for which data were available on loans to small versus large firms (and only since 1993). It is clear from figure 6.2 that the loans of small firms are more affected than those of large firms. The real prime rate is shown on the right-hand scale, while the changes in loans to small and large businesses are shown on the left-hand scale. The quarterly changes in loans the small businesses (between March 1993 and December 2000) are much more volatile, than changes in loans to large businesses for the corresponding period.

Figure 6.2 – Changes in loans to small and large businesses.



Source: SARB DI-900 forms, various years.

6.6 TRANSMISSION MECHANISM IN THE SADC COUNTRIES

The arguments above showed that the two important transmission mechanisms for developing countries are the exchange rate channel and the credit-availability channel. The evidence on credit rationing and the supply of loans to small vs. large firms seem to support the credit channel. This was also shown to be applicable to SA (the only SADC country where disaggregated data were available).

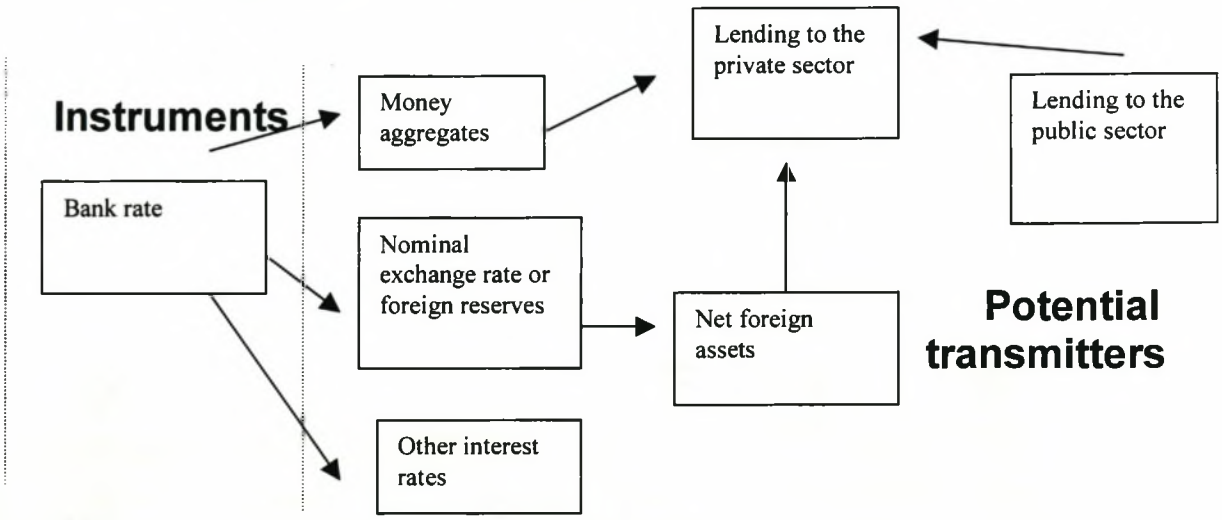
In most of the SADC countries, the emphasis is on the traditional interest rate channel. The understanding of monetary policy is still based on the standard IS-LM textbook model. The central bank is assumed to have control over the exogenous money supply. Changes in monetary policy are primarily transmitted through interest rate effects.

"Recent experience, however, has prompted renewed attention to the role of the credit channel in the transmission process. Both at the peak and at the trough of the economic cycle, there can be situations in which bank credit exerts a vital impact on economic conditions and in which adjustments in interest rate conditions seem to be incapable of affecting the course of the economy" (Van't Dack,2001:6).

In **Botswana**, the main instruments of monetary policy are the Bank rate and Bank of Botswana certificates. The operation of monetary policy focuses mainly on open market operations with three objectives, to mop up excess liquidity, achieve positive real interest rates and contribute to price stability. The Bank Rate is then influenced by these open market operations: "Thus its use is in line with the textbook prescription of a reduction in the rate to indicate a loosening of monetary policy and, vice versa, an increase to indicate that economic conditions require an increase in general interest rates" (Masalila & Phetwe,2001:11).

The following graph depicts the channels of monetary transmission in the Botswana economy:

Figure 6.3 Transmission mechanism in Botswana



Source: Masalila & Phetwe (2001:12).

In **Malawi**, there has been a period of substantial financial liberalisation as part of an IMF supported structural adjustment program that was launched in 1988. The

Malawi kwacha started floating against other currencies since 1994. This was reversed again during 1995-1997 when the kwacha was fixed again and exchange controls were not further relaxed. But since 1998, the kwacha has been floating freely and interest rates are market determined. Yet, as in the Botswana case, reserve money is the operational target of monetary policy. (Sato,2001).

The Reserve Bank of Malawi's (RBM) aim is to influence the money supply by controlling the M2 monetary aggregate: "The main instruments available to the Bank include statutory liquidity reserve requirement (LRR), Open market operations, and the Inter-bank rate. Reserve requirements are applicable to all financial institutions licensed under the Banking Act (1989)" (Sato,2001:9). The Reserve Bank Act states that the objectives of monetary policy are varied, i.e. economic growth, employment, price stability and external balance. Yet, there has been an increasing awareness that the chief responsibility of the RBM is price stability. In order to achieve this goal, an annual inflation rate target is announced by the RBM (Sato,2001).

An inflation targeting regime is underscored by the idea that monetary aggregates are not a sufficient intermediary target. Yet, even though Malawi has an explicit inflation target, they still work with monetary aggregates as intermediate targets: "In order to achieve the prime objective, the Bank exerts stricter controls over reserve money (high powered money) and employing for

this purpose a quarterly growth target (usually agreed with the Fund under the Fund supported programmes). While more emphasis was initially put on growth in the M2 aggregate, recent developments have indicated that M2 can better be influenced by monitoring growth in reserve money rather than the broad measure of money supply" (Sato,2001:12). This is done through standard open market operations.

In the **South African** case, formal inflation targeting was introduced in 2000, as a result of a disappointing experience with intermediate monetary targets. Although South Africa succeeded in bringing down the inflation rate to single digit levels, the monetary targets were seldom achieved. This resulted in an inflation targeting regime with the single operative variable the short term interest rate (in this case the repo rate): "The task of a central bank operating an independent monetary policy is in a sense a limited task, not least because it effectively has only one important instrument – its control over short-term interest rates" (Casteleijn,2001).

The research of the South African Reserve Bank (SARB) finds (similarly to the evidence from the UK and the US), that a change in the official short-term rate takes about one year to have its peak influence on demand and production. The full effect on the inflation rate takes another year (i.e. two years after the initial change). In terms of this model, the focus of the SARB has been on the transmission of changes in short-term rates to nominal and real long-term rates:

"After introducing the inflation-targeting monetary policy framework, the Bank increasingly focused its research on the relative roles of interest rates and of the exchange rate in the transmission of monetary policy"(Casteleijn,2001:18). The focus is again on the two traditional channels. These are important in the South African case, yet there is no consideration of the effects of the credit channel. It was shown in the previous section (and chapter 5), that the differential treatment of small and large firms, makes this channel important. Some consideration should be given to this by the SARB.

The monetary transmission mechanism and monetary control instruments are severely limited in the case of South Africa's neighbours, who are members of the Common Monetary Area (CMA). In **Swaziland**, the rand lost its status as legal tender in 1985, making the Swazi lilangeni the only acceptable means of payment. The lilangeni is pegged at par to the rand. Swaziland's membership of the currency union (CMA) with a fixed exchange rate effectively means that it has no monetary policy independence. The Central Bank of Swaziland has only limited powers to influence monetary policy. A recent article on monetary policy in Swaziland mentions the traditional monetary policy instruments, such as open market operation, reserve requirements and liquidity requirements. Yet, the rand still continues to circulate freely in Swaziland, making control of the money supply through open market operations impossible for the Swazi monetary authorities. The interest rate also closely tracks South African rates and financial markets are small and shallow (Central Bank of Swaziland,2001).

The same is true for **Namibia**, another member of the CMA. The SA rand has legal tender status in Namibia: "As a member of a currency board arrangement, Namibia does not engage in any active discretionary monetary policy. This is primarily subordinated to South Africa's conduct of monetary policy" (Kalenga,2001:1). The Bank of Namibia uses none of the traditional instruments of monetary policy (interest rates, reserve requirements, etc.). Monetary stability is rather attained by pegging the Namibian dollar to the rand. This has obvious implications for the independence of the central bank, but the benefits seem to outweigh the costs at this stage. Namibia has seen a reduction in its inflation rate, similar to the South African experience during the late 1990s.

In both the Namibian and Swazi experiences the traditional monetary policy instruments are not available to the monetary authorities. Both the exchange rates and the short-term interest rates are determined outside these countries (in SA). It is difficult to measure the response of economic agents to these outside changes. It does not seem that the interest rate or exchange rate channels can be extremely important in such a scenario. The credit channel may also be more applicable to the case of members of a currency union.

In **Tanzania**, one of the aims of the central bank is to take the necessary steps to deepen financial markets. It is recognised that the low level of development of the financial markets causes the transmission mechanism to be very weak.

(Masawe,2001). This is true for most of the SADC countries, as will be argued in chapter 7. In **Zambia**, monetary policy is practiced in the standard text-book manner, with the emphasis on reserve money targets, open market operations and reserve requirements. Direct control measures were generally abolished during the 1990s. Interest rate ceilings were only abolished in 1993. In the same year, a Treasury Bill was introduced and by 1994 the exchange rate was fully liberalised and the Lusaka Stock Exchange was established. The undeveloped nature of the money and capital markets hampers the effects of monetary policy. The transmission mechanism cannot function properly in such an environment. Interest rates do not react sufficiently to open market operations: "Money market imperfections can also be cited as a challenge for monetary policy in Zambia. This is clear from the volatility of overnight inter-bank lending rates, sticky market lending interest rates and a segmented market...The financial system is not only shallow, but the range of financial instruments and services offered is quite narrow with Treasury Bills and Government bonds being the main financial instruments available on the market. The stock exchange has yet to grow" (Kalyalya,2001:20).

6.7 FACTORS INFLUENCING THE TRANSMISSION OF MONETARY POLICY IN THE SADC COUNTRIES

Research on the monetary transmission mechanism in industrialised countries has focused increasingly on the interest rate channel, asset price channel and

the exchange rate channel. This is a result of increasing deregulation, trade reforms and international globalisation. In such sophisticated systems, characterised by high degrees of competition, the role of bank credit has lost some of its importance as markets move rapidly to allocate credit. This is recognised by many economists working in these developed nations: "...because of financial deregulation and innovation, the importance of the traditional bank lending channel has most likely diminished over time. While we believe this channel is still empirically relevant, obtaining sharp measurements of its potency is a challenging task. In any case, however, this framework may still be of value for interpreting historical data, for assessing the impact of institutional changes on the transmission of monetary policy and for comparing monetary transmission mechanisms across countries" (Bernanke 1995:42).

It was seen from the discussion on monetary transmission channels in the SADC countries, that most central banks still work within the framework of the interest channel. In order to test the relevance of this channel, interest rate movements over time have to be examined. If lending rates do not respond to changes in bank rates, then the traditional interest rate channel is not the correct analytical framework for these developing countries. Data on interest rate mark-ups and spreads will be used in Chapter 8, when exogenous interest rates are discussed. It will be clear from the evidence presented in Chapter 8 that lending rates do not respond timeously to changes in bank rates. Interest rates are sticky and both mark-ups and spreads have high variances over the business cycle.

In countries where credit and financial markets are poorly developed, changes in the quantity or availability of credit are more important than changes in the price of credit. The evidence confirms the importance of the credit channel in developing countries. Undeveloped financial markets hinder the monetary transmission process. There are several factors that are characteristic of undeveloped financial markets. Factors such as the degree of government intervention, concentration levels in the banking sector, depth of money and capital markets, stock exchange activity, etc. all influence the working of the monetary transmission mechanism. Some of these factors will be discussed below.

6.7.1 Government intervention – direct controls and reserve requirements

The proper functioning of the interest rate channel requires the transmission of official interest rate intervention (through control of some short-term interest rate and reserve requirement) to those variables that affect the real side of the economy, e.g. loan rates, deposit rates, asset prices and the exchange rate. This transmission depends on the structure of the financial sector. The structure has changed rapidly over the past decade in most of the SADC countries. The majority of these countries embarked upon structural adjustment programmes which led to the liberalisation of their financial sectors. Government intervention has declined and there was a move away from direct controls (e.g. interest rate ceilings) to more market related measures such as open market operations.

Interest rates have been liberalised in all the SADC countries. Reserve requirements are still used with different degrees of emphasis. The following table shows the reserve requirements applicable in some of the SADC countries.

Table 6.1: Reserve requirements in selected SADC countries.

COUNTRY	RESERVE REQUIREMENT
Angola	30%
Botswana	3,25%
Lesotho	3,0%
Malawi	30%
Mauritius	5,5%
Mozambique	11,5%
Namibia	1%
South Africa	2,5%
Swaziland	4%
Tanzania	10%
Zambia	12,5%
Zimbabwe	30-50%

Source: IMF Country Reports, various years; Kovanen (2002)

It is clear from table 6.1 that most SADC countries still have relatively high reserve requirements as their institutional environments have not developed to the same extent as developed countries. Most of the SADC countries still use a system of fractional reserve banking, with strong emphasis on reserve requirements. In more advanced monetary systems the reserve requirement has lost most of its importance: "The bank of England gave up reserve ratios as an instrument of monetary control in 1981 in recognition of the inapplicability of the reserve ratio as an instrument of monetary control in the context of contemporary British banking...Actual reserve ratios in 1991 varied across the EU from 3.8 percent (United Kingdom) to 32 percent (Portugal)" (Chick & Dow,1996:521). Some of the reserve requirements in industrialized countries are shown below.

Table 6.2: Reserve requirements in some industrialised countries:

	1980	1998
United States	3.0 – 12.0	3.0 - 10.0
Japan	0.125 – 2.5	0.05 – 1.3
Germany	4.15 – 12.1	1.5 – 2.0
United Kingdom	0.45	0.35

Source: Kamin, Turner & Van't Dack (1998).

6.7.2 Government intervention in credit markets

Despite deregulation and liberalisation, the government still plays an important part in the credit markets of some of the SADC countries. Although interest rate ceilings are no longer used, government ownership of banks means that interest rates are not fully market determined. In some SADC countries, such as Tanzania, Mozambique and Angola, the financial system was entirely state-owned (Mowatt,2001). Although there have been structural adjustment programmes, which included financial liberalisation, the state still plays a role as can be seen from table 6.3 below. In most of the countries there are some form of credit extension at favourable terms to certain priority sectors such as the agricultural sectors. Government-aided programmes to provide micro-finance at favourable rates, are also widespread in the SADC countries. The following table shows countries in which there is state ownership of commercial banks (including partial ownership / minority share) and where credit allocation is not purely market determined.

Table 6.3: State ownership of commercial banks in SADC countries.

	State ownership	Government intervention in the allocation of credit
Angola	✓	✓
Botswana	✗	✗
Lesotho	✓	✗
Malawi	✓	✗
Mauritius	✗	✗
Mozambique	✗	✓
Namibia	✗	✗
South Africa	✗	✗
Swaziland	✓	✗
Tanzania	✓	✗
Zambia	✗	✗
Zimbabwe	✓	✗

✓ Yes
✗ No
Source: Mowatt,2001

6.7.3 Concentration levels in the banking sector

As mentioned above, it is important that changes in government controlled short-term interest rates lead to timely and efficient changes in other short- and long-term rates. This can be hampered by the presence of state-owned banks that do not have a strong profit motive. Another factor that could diminish the responsiveness of loan and deposit rates to monetary policy is a lack of competitiveness in the banking sector. If this sector is controlled by four or five large banks, then the incentive for oligopoly pricing is high. If there is competition from foreign banks, the situation is different. There are no limits on foreign ownership of banks in the SADC countries.

The trend, however, is for foreign banks to concentrate on the market for corporate lending and to leave the retail segment to the local banks. Several South African banks have spread their networks to SADC countries, in order to benefit from increased liberalisation. Standard Bank has the largest presence in the region and has also focused mainly on the corporate sector, providing trade and investment finance (Mowatt,2001).

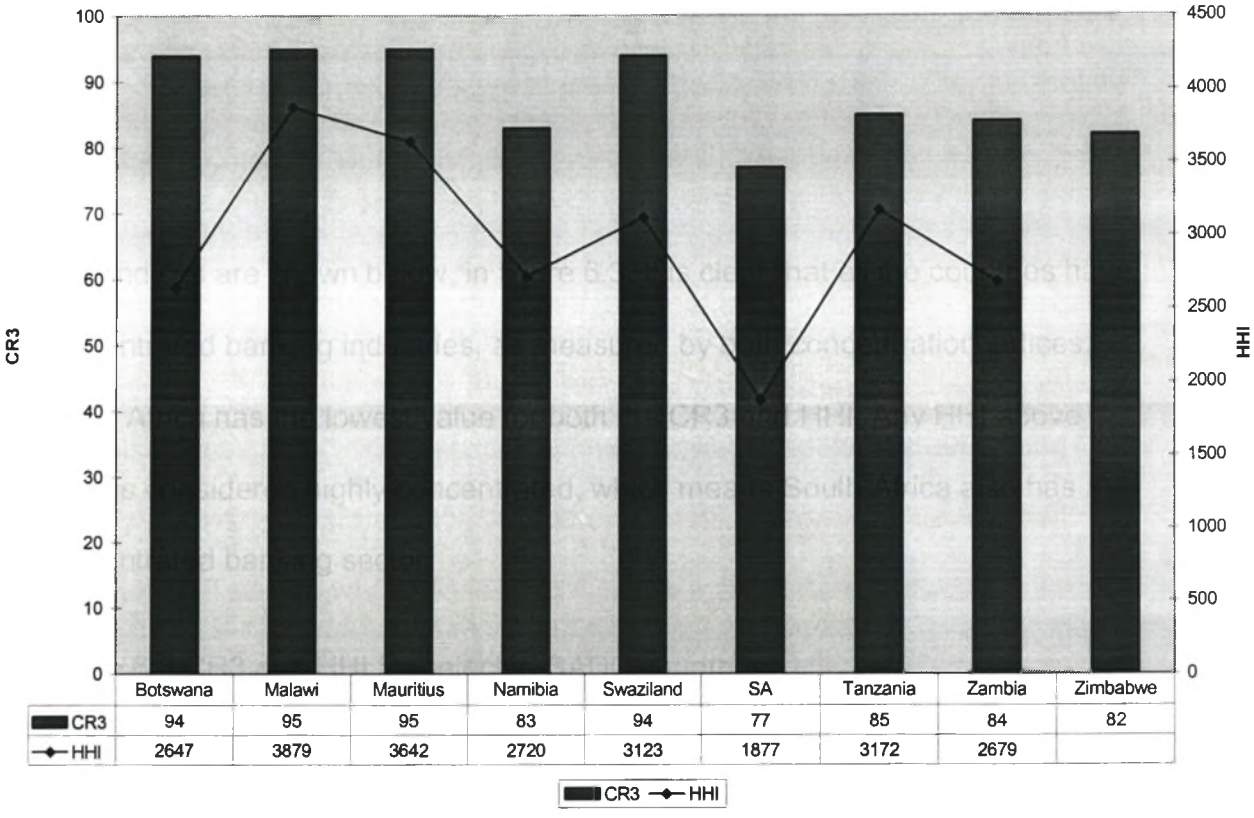
Most of the SADC countries have only a few commercial banks in the financial sector. This implies high levels of concentration and some tacit collusion and price fixing may be present in such circumstances. This reduces the effectiveness of monetary policy, as changes in monetary policy are not fully transmitted. Two concentration indices were calculated for nine SADC countries. Data for individual banks were obtained from the KMPG Banking Survey – Africa, 2001. The first concentration measure is the so-called CR3, where the sum of the assets of the three largest banks is expressed as a percentage of total assets. The second concentration index is the Herfindahl-Hirschmann index, which uses the following formula:

$HHI = \sum_{i=1,\ldots,n} Si^2$, where Si is the market share of each bank.

The HHI gives a good indication of the level of concentration in the banking sector as well as the distribution of market shares. It measures the relative distribution of power, where the CR3 considers only the three largest banks.

Both indices are shown below, in figure 6.3. It is clear that all the countries have concentrated banking industries, as measured by both concentration indices. South Africa has the lowest value for both the CR3 and HHI. Any HHI above 1800 is considered highly concentrated, which means South Africa also has a concentrated banking sector.

Figure 6.3 CR3 and HHI for selected SADC countries.



	Botswana	Malawi	Mauritius	Namibia	Swaziland	SA	Tanzania	Zambia	Zimbabwe
CR3	94	95	95	83	94	77	85	84	82
HHI	2647	3879	3642	2720	3123	1877	3172	2679	

Source: KPMG Banking survey – Africa, 2001

6.7.4 Stock exchanges

The importance of the bank lending channel is reduced in developed economies where financial innovations have increased the ability of banks to provide credit on demand. The development of a vibrant stock exchange has in most cases reduced the dependency of firms on banks. More firms choose to raise funds through the issuing of debt or some other alternative, than borrowing from the banks. Yet, in the absence of a well developed stock exchange, firms remain dependent on banks for credit and credit rationing might be present, strengthening the effects of the bank lending channel: "Nevertheless, stock exchanges in the region are small and illiquid, with the obvious exception of the JSE Securities Exchange in South Africa. They are also extremely volatile" (Mowatt,2001:16). Some even have restrictions on foreign ownership of shares, e.g. Tanzania and Zimbabwe.

Table 6.4 Stock Exchange data – SADC (1999).

STOCK EXCHANGE DATA	Botswana	Malawi	Mauritius	Namibia	South Africa	Swazi land	Tan zania	Zambia	Zim babwe
Market capitalisation (USDm)	723.40	7910.2	1643.3	27199	262606	85.2	236.4	301.0	953.6
Number of listed companies	23	7	48	40	668	5	2	8	70
Volume of shares traded	52.10	50.58	77.8	107.2	43097	11.4	0.3	3.7	1110
Value of shares traded (USDm)	65.10	6.60	85.266	187.22	73391	n/a	0.31	157.86	105.30
Liquidity (value traded as a % of market capitalisation)	9.00	0.08	5.19	0.688	27.947	1.10	0.14	52.45	11.04
Market capitalisation (%GDP)	12.71	8.75	44.03	875.11	128.00	7.04	2.99	8.98	16.14

Source: Trade and Industry Policy Secretariat, www.tips.org.za

Data in table 6.4 is for 1999 (in some cases 1998 data were used, as 1999 data were incomplete). It is clear that South Africa has the dominant market share in stock exchanges in the SADC region. It is the only country with a well functioning, liquid stock exchange. The ratio of stock market capitalization as % of GDP, is 128%. Namibia also has a high ratio, but only 40 companies are listed on its stock exchange. Most countries have only a few listed companies and low levels of liquidity (total value traded on the stock market as a % of market capitalization).

6.7.5 Depth of money and capital markets

If money and capital markets are not well developed, interest rate changes are not properly transmitted through the economy. It is usually costly to adjust loan and deposit rates in response to money market rates in developing countries. There might be various reasons for this phenomenon, e.g. administrative difficulty, keeping customers satisfied, etc. Especially if changes in money market rates are perceived as highly variable and easily reversible, other interest rates will be slow to respond.

All the SADC countries have money markets, but they are at different levels of development. South Africa is the only SADC country with a fully developed money market, using a wide range of instruments such as bankers' acceptances, negotiable certificates of deposit and commercial paper. For the rest of the SADC

countries, the main (and often only) money market instrument is usually a marketable treasury bill. Many of the SADC countries do not yet have interbank money markets. These structural factors severely constrain the operation of the interest rate channel.

The same is true for bond markets that are similarly underdeveloped. South Africa is once again the only SADC country with a well-developed bond market that attracts significant foreign investment. The only other SADC countries with bond markets are Botswana, Zambia and Namibia. Government bonds have been issued by Swaziland and Zimbabwe. The other SADC countries have little or no experience with long-term debt markets (Mowatt, 2001:41). This is not only the case in the SADC countries: "Although they have grown over time, bond markets in many developing countries indeed remain shallow and volatile. In the early stages of capital market development, therefore, the transmission of monetary policy measures may be particularly uncertain (Kamin et al.,1998:30).

6.7.6 Capital flows and exchange rates

Under a regime of fully liberalised exchange rates, domestic and foreign assets are supposed to be perfect substitutes. In the absence of exchange controls, capital moves to equalise the return on assets through movements in the exchange rate. The exchange rate channel is therefore important, as explained above. A tight monetary policy, that raises the interest rate, increases the

demand for domestic assets and leads to an appreciation of the exchange rate (at least in the short term). When there are exchange controls and fixed exchange rates, the exchange rate channel cannot function properly. This is the case in many of the SADC countries. Namibia and Swaziland maintain fixed exchange rates, with the Swazi lilangeni and the Namibian dollar pegged at par to the South African rand.

Angola and Mozambique have exchange controls on their current accounts. All the other countries have liberalised their current accounts. It will be shown in chapter 7 that Angola and Mozambique have undeveloped financial systems. Most of the SADC countries have exchange controls on their capital accounts. The only exceptions are Botswana, Mauritius and Zambia (Mowatt,2001).

6.8 CONCLUSION

It was argued in this chapter that the focus on the interest rate channel of the monetary transmission mechanism in developing countries is misplaced. The price of credit is not the important variable, if a country has an undeveloped financial system. In developing countries where institutions are inefficient and not competitive, the availability of credit is more important than the price of credit. In such cases, the bank lending and credit channels are the most important components of the monetary transmission mechanism.

This theory was tested for the SADC countries by examining the different factors that influence the monetary transmission mechanism. It was found that government intervention is prevalent in most economies, with direct credit controls still present in the less developed countries and a heavy reliance on reserve requirements in most countries. High levels of concentration in the banking sector probably indicate that banks do not allocate credit efficiently. Stock exchanges are undeveloped (except in South Africa), with only a limited number of listed companies and low volumes of shares traded. Money and capital markets are shallow and undeveloped. These institutional factors contribute to the understanding of the monetary transmission process in the SADC countries.

CHAPTER 7

INSTITUTIONAL ENVIRONMENT

We must continue to expand upon the work of Keynes as we explain what we mean by 'endogenous money' and 'liquidity preference' through institutional analysis of the economy (Wray,1995).

Actual monetary-financial systems are situated along a spectrum from the purely exogenous to the purely endogenous, with most systems characterized as at least partially endogenous (Niggle,1991)

7.1 INTRODUCTION

In the previous chapters it was argued that the money supply is not necessarily endogenous in developing economies. This may be due to a variety of factors that determine the monetary systems of these economies. As explained in Chapter 3, there is an ongoing debate amongst Post Keynesian economists on the degree of money supply endogeneity. Post Keynesian authors like Moore and Kaldor ('accommodationists') argue that the money supply is fully endogenous and can be represented by a horizontal supply curve. They distinguish clearly between a world using commodity money and today's world of credit money. Other Post Keynesian authors ('structuralists') differ and argue that

while the money supply might be endogenous during normal times, the money supply curve has a positive slope at certain times (e.g. Wray, Pollin, Chick, Dow).

In this chapter, the 'stages of banking' approach of Victoria Chick will be combined with the 'financial instability hypothesis' of Minsky in an attempt to put the endogenous money debate in its proper historical context. The question that will be addressed in this chapter is whether there are certain preconditions for the existence of endogenous money. What about countries which are in different stages of development? Is the money supply always fully endogenous, or does an endogenous money supply require the existence of a sophisticated financial sector and wholesale money market? It will be argued that the capacity of banks to create credit depends crucially on their stage of evolution. The validity of the Post Keynesian endogenous money theory cannot be considered without considering the institutional context. In this chapter an institutional approach will be used to supplement the analysis of the previous chapters, to develop some criteria for testing the existence of endogenous money in developing countries. This institutional view regards the money supply as becoming increasingly endogenous as the banking system develops.

The focus will be on the institutional environment of the SADC countries. Using the ideas of Chick and Niggle, it is expected that the money supply becomes increasingly endogenous as a country develops. In the early stages of development when the financial system is rudimentary, the money supply is

largely exogenous, represented by a vertical money supply curve. As the banking system develops and banks create money through fractional reserve banking, the money supply becomes increasingly endogenous. In the final stages of financial development, characterized by innovations such as securitisation and off-balance sheet activities, the money supply becomes completely endogenous. Most developing countries have not yet reached the final stage of development.

7.2 MINSKY AND FINANCIAL INSTABILITY

It will be argued below that the 'stages of banking' approach can be combined with the work of Hyman Minsky, which provides valuable insight into the investment-finance link in modern capitalist economies. It was shown in previous chapters that the theories of asymmetric information and credit rationing are indeed compatible with an endogenous money supply. The credit channel of the monetary transmission mechanism also confirmed the view that firms may be constrained by a lack of finance. In Minsky's work there is a strong emphasis on the link between finance and investment. During booms, firms increase their leverage ratios, and finance is easily obtainable. The availability of finance drives the business cycle.

The state of the economy influences the availability of credit. As the economy moves along the business cycle, there are endogenous processes that cause instability to fluctuate. Endogenous money theory states that the supply of money

is fully demand-determined. But during the upward phase of a business cycle, instability increases. This necessitates the consideration of institutional factors. As speculative finance increases during economic expansions, expectations become euphoric, as both banks and their borrowers become increasingly optimistic about future returns. All creditworthy demand for credit is accommodated, and the central bank supplies the reserves as ultimate supplier of system liquidity. As banks take on more borrowers, increasingly risky credit causes the system to become more unstable. There is a limited amount of credit-worthy borrowers, and as expectations become more optimistic, speculative financing increases. This might lead to a financial crisis. Banks will be slow to extend credit in the aftermath of the crisis. Borrowers who are adversely affected by the crisis are also now increasingly wary of speculative investment.

Minsky emphasized the inherent financial instability in today's modern credit economies. He developed the "financial instability hypothesis" or the "Wall Street paradigm". In this theory he showed how the money supply is endogenous and how cycles of booms and busts are inherent to a capitalist economy. Downward phases of the business cycle are necessary to deflate expectations and reduce leverage ratios. Minsky argued that the introduction of the central bank as lender of last resort and government deficit financing diminishes the instability of the system.

Minsky focussed on the institutional environment and how it changes over time. The cause of instability lies in the financing needs of industrializing economies. As production becomes more capital intensive, instability may be exacerbated as the relative cost of investment goods increase. It all depends on the financing structure, whether firms use internal or external funds. Firms finance investments in capital assets by a combination of equity and debt. Minsky identified three types of financing positions in the financial structure of a capitalist system: hedge, speculative and Ponzi finance.

1) Hedge units are those whose expected cash flows from operations exceed expected cash commitments at all points in the future. A hedge unit always carries positive present value. The risk is relatively low, as even low levels of cash flow will be sufficient to meet cash commitments.
2) Speculative units are those for which at some point in the future, cash commitments will exceed cash flows. Unlike hedge units, these firms depend on the normal functioning of the financial system to meet their future commitments. If short-term interest rates should rise more than expected, the present value of capital investments might become negative, and the firm will become insolvent.
3) Ponzi units are the most risky. Cash commitments are greater than expected cash flows at most points in time. These firms have to borrow to pay interest as well as principal, in the hope of larger profits at some future date. In general, the higher the proportion of speculative and Ponzi

> financial units, the greater the fragility of the financial system (Minsky,1986:206).

Minsky described the path of the economy by referring to these different financing methods. When the financial system is dominated by hedge finance, the system is relatively stable. Short-term interest rates are lower than long-term interest rates. Profit opportunities are taken up by investors using speculative finance. Asset values are bid up by the increase in demand, and capital gains are realised. In this favourable environment characterized by optimistic expectations about future profit opportunities, speculative and Ponzi financing increase. It is therefore the profit opportunities within a capitalist economy that cause the shift from a stable to a fragile financial system. This is an endogenous process, and may lead to a financial crisis. In the aftermath of the crisis, investors who were adversely affected move away from speculative and Ponzi finance. There is a general move towards hedge financing. As expectations gradually become more favourable, the cycle is renewed. Minsky emphasized the financing needs of a capitalist economy. Banks normally accommodate this demand for credit, especially when expectations are very optimistic at the height of the business cycle. The money supply is therefore endogenous, but this depends on institutional factors. The central bank may decide to restrict reserve growth, forcing private banks to innovate to get the necessary reserves. They can borrow from each other in the money markets, or they can use innovations such as asset and liability management to stretch current reserves. But there may be a limit to

the credit that the money markets can supply. At some stage, banks are no longer willing to extend credit, as their reserves are over stretched. A liquidity shortage might emerge, which could detonate a financial crisis. Even if banks accommodate higher demand for loans, interest rates may rise. The increased loan riskiness associated with rising cash commitments relative to cash flows puts upward pressure on interest rates (Pollin,1997).

Minsky's theory emphasizes the necessity of looking at the institutional environment. While the money supply is endogenous, there might not always be a fully adequate supply of loanable funds. Banks will try to stretch their reserves up to a point. But as financial fragility increases they will no longer be willing to extend credit to speculative units. This scenario might be more common in developing countries, where there is a limited supply of creditworthy borrowers and where credit markets are characterised by imperfect and asymmetric information.

7.3 FINANCIAL INSTABILITY AND THE STAGES OF BANKING

The financial instability hypothesis can be combined with the stages of banking approach (associated with the work of Victoria Chick) to develop a comprehensive institutional theory of endogenous money, where the capacity of banks to create credit depends on their stage of evolution. As banks develop, the money supply becomes increasingly endogenous. New innovations like the

securitisation of loans make it possible for commercial banks to avoid reserve requirements and capital adequacy ratios. They can accommodate increased demand for loans. But this is also the crux of the problem. As banks increase their ability to create more credit, the instability of the financial system increases and banks and firms become more vulnerable to adverse credit conditions. The stages of banking approach argues that the money supply might not always be endogenous, but might rather be exogenous in the early stages of financial development.

One of the main contributions of the endogenous money theory is its integration of bank loans with asset and liability management. If institutional factors are included, it is necessary to look at the balance sheet constraint of banks. The development of asset and liability management allows banks to switch to cheaper funds when the central bank raises the bank rate. Increased inter-bank lending causes the wholesale cost of funds to rise. Banks also have liquidity preferences, which increase in times of financial instability. Banks can obtain liquidity through liability transformations in their own balance sheets: "Methods of raising liquidity include (i) sales of secondary reserves by banks, (ii) raising interest rates on time and other checkable deposits, so as to induce substitutions out of currency and demand deposits, and (iii) decreasing excess reserves, and increasing borrowed reserves" (Palley,1996:127).

7.4 THE EVOLUTION OF BANKING

The 'stages of banking' approach focuses on the historical context of the exogenous vs. endogenous debate. In her description of endogenous money, Chick emphasizes that there was a time in the development of banking when the classical view of reserves creating deposits was true. The endogenous theory is dependent on the banking system having reached a certain stage of development. Where savings are necessary to finance investment, i.e. when banks are in the early stages of development, money cannot be created endogenously. The banking system must reach the stage where it can create loans "by the stroke of the pen" independently of saving (Chick,1997:535).

The first stage in Chick's analysis corresponds to the neo-classical view of banks as financial intermediaries. There are deficit units and surplus units, and the role of banks is to facilitate the exchange between these different role players. Saving must take place prior to investment. Surplus units deposit their savings with the banks, but claims on banks are not yet commonly used in transactions. The lending capacity of banks is constrained by their deposits. The interest rate is the price that equates the demand and supply of loanable funds. If entrepreneurs are willing to invest, because of positive expectations, they will bid up the price of funds, i.e. the interest rate. This will attract more deposits that in turn will generate additional saving. The greater availability of funds will probably lower

the interest rate and stimulate new investments. But this process of investment and growth is slow, as investment is still largely constrained by saving.

During stage two, claims on the banks are used as a means of payment. Bank liabilities become money, and the redeposit ratio rises. Reserves, rather than saving become the constraint. Banks adhere to reserve requirements, and lend out some multiple of the reserve requirement, the classic fractional reserve banking. Banks are not willing to lend out more than their reserve requirement allows. Their willingness might depend on their market share or the level of decentralization of the banking system. Banks can create credit, but not on demand. Investment can continue without prior saving, due to the credit creating ability of banks.

During the third and fourth stages, a central bank which acts as lender of last resort is added to the picture. Another development is a market for inter-bank lending. Banks are now willing to lend more than their reserve requirements prescribe, knowing that they can acquire the required funds if necessary. The increase in investment finance stimulates economic growth. The central bank acts as lender of last resort, allowing the banks to expand credit collectively, without risk of being caught short of reserves. As the central bank increasingly accepts its role as the ultimate supplier of liquidity, the money supply becomes endogenous. The volume of bank loans becomes fully demand determined and the supply of deposits simply follows.

The fifth stage is characterized by financial innovations, particularly liability management. Most loan requests that are considered creditworthy are met, irrespective of the monetary stance of the central bank. The availability of finance, for investment or other purposes, becomes a market phenomenon. It is during this fifth stage that financial instability increases as described by Minsky's hypothesis. Banks have an almost unlimited power to extend credit. As long as expectations are optimistic, they will accommodate all loan demand. This might lead banks to increase speculative and Ponzi finance, contributing to increased instability. (Chick,1988:233).

Chick later distinguished a sixth stage, which includes securitisation of loans and off-balance-sheet activity. These innovations are a response to the increasing fragility of the financial sector, as the money supply becomes increasingly endogenous. Securitisation of loans is introduced to reduce the endogenous financial instability of a modern credit economy. Chick describes how changes in banking practices, e.g. off-balance-sheet activities and securitised lending, have changed the institutional environment once again. Firms tend to rely more on internal financing or if they use external finance, they prefer the markets to the banks. Banks finance a smaller percentage of investment. It is necessary to look at what they are financing: consumer loans, property deals, takeovers or other speculative financial transactions (Chick,1997:540).

Niggle is another Post Keynesian who argues that the endogenous theory of money must be firmly grounded in institutional reality. He emphasizes that economic models must reflect the actual institutional characteristics of the economies they represent. The degree to which the money supply is determined by market forces is: "a function of a complex set of institutional factors, including the forms of money in circulation, banking practices, exchange rate systems, the organization of financial markets, and central bank objectives, techniques and operating targets" (Niggle,1991:138).

Niggle explains the disagreement between participants in the debate over monetary endogeneity as stemming from their ignorance of important institutional characteristics of the monetary-financial system. Under certain circumstances (historical stages), the money supply might be exogenous. But under current arrangements the money supply is endogenous to the financial system.

Niggle (1990) emphasised that monetary theory cannot be developed in isolation. It has to reflect the institutional realities of the world in which we live. Various forms of money (commodity, fiat or credit money) are associated with various banking institutions: "The 'correct' theory is that which responds most closely to the actual behaviour of the specific monetary-financial system under analysis" (1990:444). Niggle describes the following stages of development of financial systems and the corresponding degree of endogeneity or exogeneity. His

analysis is based on the experience of the United States, and his stages correspond closely to those of Chick described above.

Stage one is an economy with commodity money or convertible paper currency backed by gold. The quantity of money is determined exogenously by factors such as trade flows, foreign investment or gold production. During the second stage, the money supply becomes "somewhat endogenous – determined within the banking system" (1990:446). There is fractional reserve banking with the use of bank notes as a common medium of exchange, but most deposits are held as relatively liquid forms of savings by their owners, with little inter-bank lending. There are no legal reserve requirements.

In stage three, a central bank enforces reserve requirements on the banks, so the quantity of money is exogenously determined. But after this stage, during stages four and five, the money supply becomes increasingly endogenous. Innovations in the form of liability and asset management are largely responsible for an endogenous money supply during stage four. The issuing of credit lines also increases endogeneity during this stage. During the last stage, the central bank assumes the role of lender of last resort and has to supply liquidity to the financial system and the money supply is fully endogenous. This leads to the conclusion that the money supply is largely endogenously determined in the current financial system.

7.5 INSTITUTIONAL FACTORS

As an economy moves through different stages of development, it is characterized by different degrees of endogeneity of the money supply. It is therefore important to look at the different factors that determine the degree of endogeneity. As shown by Chick and Niggle, in their stages of banking theories, one cannot look at monetary policy independent of the institutional framework. As Niggle(1991:138) put it: "..an abstract monetary theory, assuming a priori that the money supply is either endogenous or exogenous, cannot be applied mechanically to all economies without being misleading in many cases".

It was argued in Chapter 5 that the availability of credit is especially important in the case of developing countries. In countries with either poorly developed or tightly controlled financial systems, interest rates may not move to clear the market. Aggregate demand is often influenced by the quantity of credit rather than the price. In such countries, where private markets for credit are not well developed or where they are prevented from operating freely by government regulation, the availability of credit might have a large influence on the state of the economy. Several major developing countries have controls or guidelines on the quantity of credit. Minsky's financial instability theory is especially relevant in these circumstances.

It is important to note that in the argument of Niggle (1990), the final stages of financial development, characterised by a fully endogenous money supply, were only reached in the US during the 1970s and 1980s. These innovations include asset and liability management techniques, financial instruments such as negotiable certificates of deposits (NCDs), EuroCDs and repurchase agreements and later securitisation of loans. The ability to match maturities on assets and liabilities depends on the access to long term securities via the financial markets. The absence of a deep government bond market can act as a handicap to banks with a pressing need for liquidity, reducing the degree of money endogeneity. Another important feature is an active market for inter-bank lending.

In order to test whether these innovations are present in developing countries, the institutional environment and settlement arrangements must be examined. These include arrangements such as the percentage of state owned banks, reserve and capital adequacy requirements, deposit protection schemes, etc. A crude indicator that can be used to determine whether a country has reached an advanced state of financial development is the ratio of cash to demand deposits. If this ratio is relatively high, then the economy is still functioning as a cash economy, and the role of credit is less important.

In modern financial systems the most important aspects of an endogenous money supply are central bank targeting interest rates (banks are price-takers and quantity-setters and interest rate spreads are stable), the existence of credit

lines or overdrafts, and financial innovations in response to changes in monetary policy. The Post Keynesian structuralists see the money supply as only partially endogenous. The elasticity of credit supply with respect to the rate of interest is neither infinite nor zero, but lies somewhere in between, i.e. the credit supply curve has a positive slope.

For the money supply to be fully endogenous in developing countries, these central aspects of an endogenous theory must be present. If small firms do not have sufficient access to credit (as argued by the structuralist approach), then there will be credit rationing. If credit lines are not normally available (due to a lack of information or a sufficient track record) then firms cannot simply obtain credit on demand. As argued in Chapter 5, whether or not the supply of credit is quantity constrained is another question. If a country has reached the final stages of financial development, the money supply will be endogenous, despite the existence of credit rationing. But if the amount of loanable funds is still constrained by saving, then the supply of money may be exogenous. This will imply the conventional direction of causality, with changes in monetary policy determining changes in the money supply, which in turn determine changes in the level of nominal GDP. An overview of the institutional arrangements in individual SADC countries is provided in appendix 7.1.

7.6 A FINANCIAL INSTITUTIONAL DEVELOPMENT INDEX.

A composite index was compiled to compare the levels of financial institutional development across the countries in the sample more formally. A total of 10 indices were used to compile the index. All of them reflect the level of development in either the banking sector or the financial sector as a whole. Data were available for eight SADC countries, i.e. Botswana, Malawi, Mauritius, Swaziland, South Africa, Tanzania, Zambia and Zimbabwe. The indices are measured on a 0-100 scale. This was used to group countries into four broad categories, depending on the quartile in which the overall index falls (following the approach of Gelbard & Leite, 1999). The four categories of financial institutional development used, were 'undeveloped', 'minimally developed', 'somewhat developed', and 'largely developed'.

To construct the index, the figures for an individual country (e.g. share of non-performing loans) was converted to a 0-100 scale based on the range of values of the whole sample. The conversion of the values was carried out according to the following formula:

$$d_{ij} = [(k_{ij} - \min_{i=1,\ldots n} k_{ij}) / (\max_{i=1,\ldots n} k_{ij} - \min_{i=1,\ldots n} k_{ij})] \times 100, \quad \ldots\ldots\ldots(7.1)$$

where i indicates the n countries for which information is available (8 countries in this sample), j indicates the m attributes being measured, k_{ij} is the value of

attribute j for country i, and d_{ij} is the measurement within the 0-100 scale of that attribute. The higher the value of the index, the higher the level of financial institutional development in a country.

The index was constructed as a simple average of the values associated with each attribute:

$$\text{Index}_i = [\, \Sigma_{i,j=1,\ldots m}\, d_{ij} \,] / m, \qquad \ldots\ldots\ldots(7.2)$$

For indices for which a higher figure is associated with a less desirable feature of the financial system (e.g. CR3, share of non-performing loans, interest rate spread, etc.) the following formula was used:

$$d_{ij} = [(k_{ij} - \max_{i=1,\ldots n} k_{ij}) / (\min_{i=1,\ldots n} k_{ij} - \max_{i=1,\ldots n} k_{ij})] \times 100, \qquad \ldots\ldots\ldots(7.3)$$

Ten variables were chosen, as given in table 7.1:

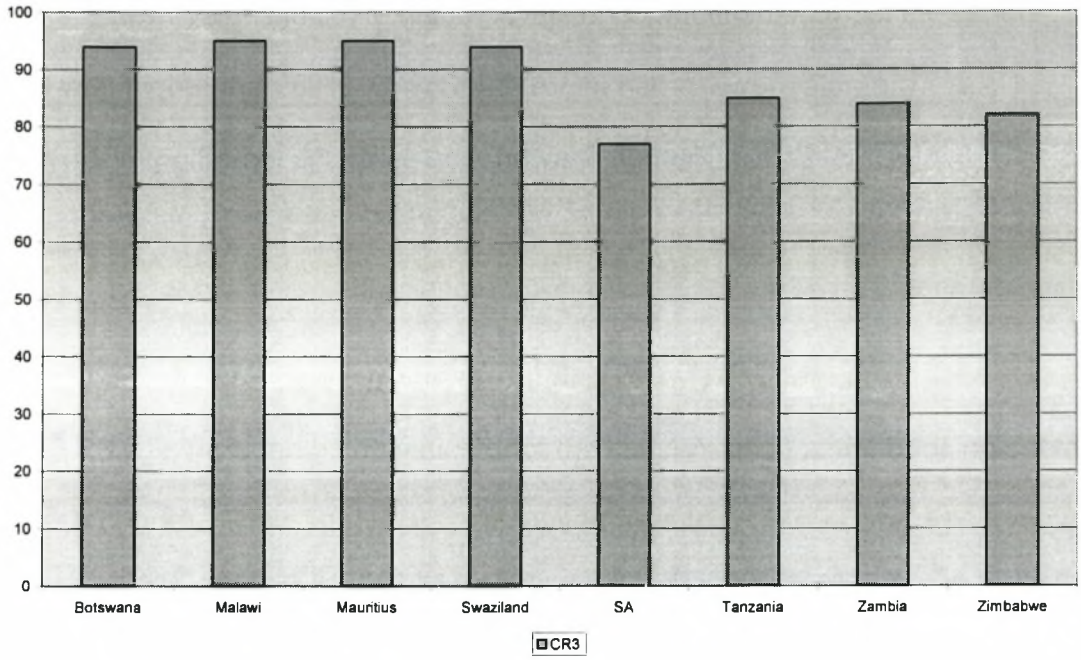
Table 7.1 Indices of financial institutional development for selected SADC countries.

	Botswana	Malawi	Mauritius	Swaziland	SA	Tanzania	Zambia	Zimbabwe
CR3	94	95	95	94	77	85	84	82
Capital adequacy (%)	16.82	15.1	10.55	7.5	10.09	16.47	13	8.34
Bank credit	11	10	28	20	51	n/a	5	12
Interest spread	4.6	17.2	9.9	7.5	4.9	17.2	15.6	13.05
Share of non-performing loans	3.34	10.14	6.24	9.6	4.13	8.27	n/a	8.89
Share of banks in total loans.	n/a	52	78	94	95	61	34	75
Share of foreign-owned banks	86	n/a	3	100	0.6	n/a	46	60
Total value traded	5	n/a	10	10	7	n/a	n/a	0.9
Stock market capitalization	7	n/a	21	13	131	n/a	n/a	13
Liquid liabilities as share of GDP (M3/GDP)	25	22	53	30	45	21	21	39
Financial market structure index	**43**	**18**	**58**	**35**	**85**	**37**	**26**	**31**

Source: IFS, KPMG Banking Survey – Africa,2001, TIPS data.

The CR3 was included as an indicator of the concentration in the banking sector of each country. This variable was calculated from the KPMG Banking survey, using data for 2000. The sum of the assets of the 3 largest banks is expressed as a percentage of total bank assets. The index equals 100 if there are only three banks. Lower values indicate higher levels of competition. In most cases, the CR3 was higher than 80%. Only South Africa had a lower value of 77%. The ratios for the different countries are shown in figure 7.1.

Figure 7.1 – CR3 ratios for selected SADC countries

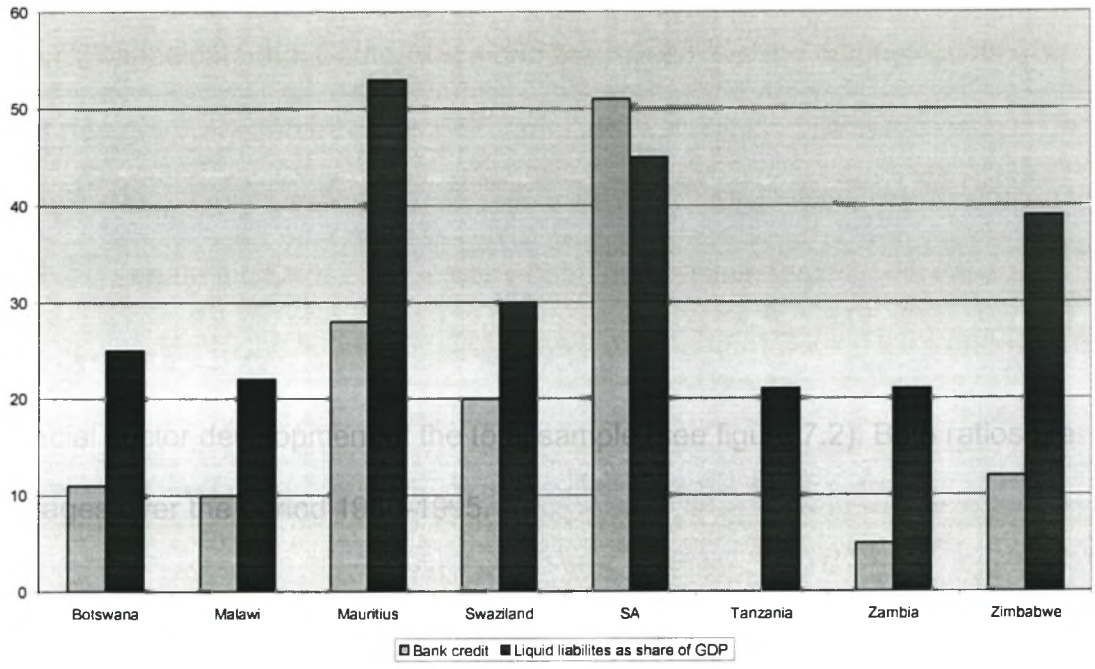


Source: KPMG Banking survey – Africa, 2001

The average value of capital adequacy ratios for most of the countries exceeded the 8 percent proposed by the Basle Committee on Banking Supervision (KPMG,2000). Only Swaziland had a smaller ratio (7.5%). 'Bank credit' is used as an aggregate indicator of development in the banking sector. This variable was obtained from the financial development database of Beck, Demirguc-Kunt & Levine (1999). 'Bank credit' is defined as: 'claims on private sector by deposit money banks as a share of GDP.' It measures the total loans extended to the private sector by commercial banks as a share of GDP. 'Liquid liabilities as share of GDP' is a more comprehensive indicator (also called M3 / GDP) and is often used in the literature as an indicator of the overall level of financial development. Both ratios indicate that South Africa and Mauritius have the highest levels of

financial sector development of the total sample (see figure 7.2). Both ratios are averages over the period 1980-1995.

Figure 7.2 Bank credit and liquid liabilities for selected SADC countries

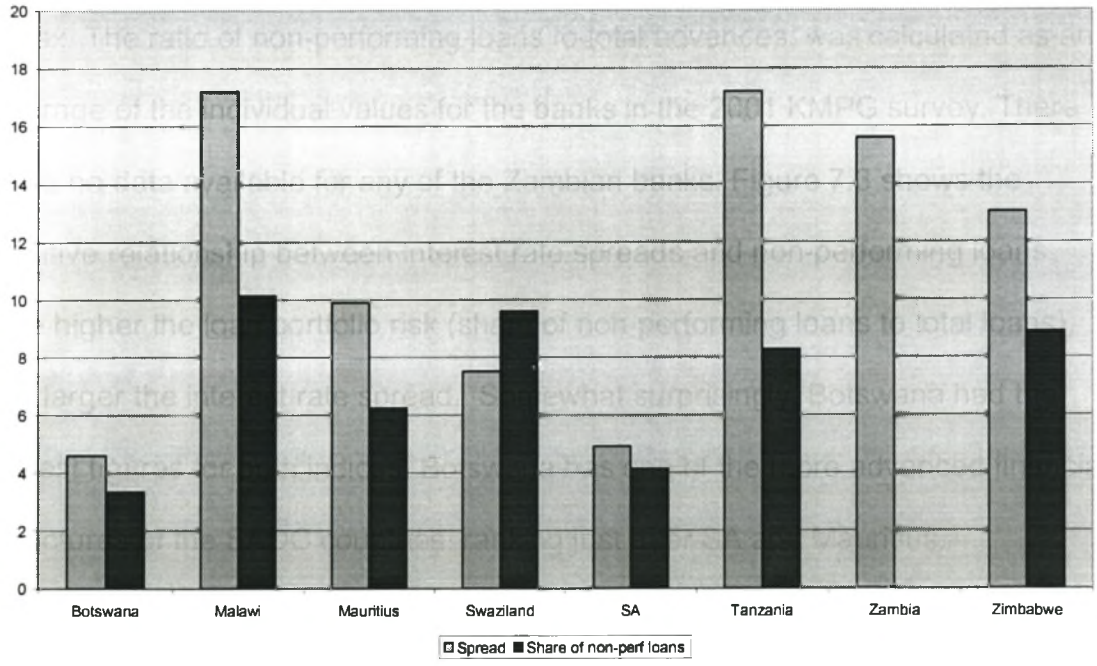


Source: Beck, Demirguc-Kunt & Levine,1999

Interest rate spreads are defined as the difference between lending rates and deposit rates. The values for the individual countries were calculated as the average value for the period 1995-1999, using IFS data. Most developing countries have high interest rate spreads (as will be shown in Chapter 8). The large spreads seem to be related to the degree of bank concentration, the share of non-performing loans, and the lack of overall financial development. Malawi and Tanzania had the highest average interest rate spreads over this five-year period (both equal 17.2%). Malawi also had the highest share of non-performing

loans, and was also the country with the lowest value for the financial market index. The ratio of non-performing loans to total advances, was calculated as an average of the individual values for the banks in the 2001 KMPG survey. There were no data available for any of the Zambian banks. Figure 7.3 shows the positive relationship between interest rate spreads and non-performing loans. The higher the loan portfolio risk (share of non-performing loans to total loans), the larger the interest rate spread. Somewhat surprisingly, Botswana had the lowest figures for both indices. Botswana has one of the more advanced financial structures of the SADC countries, ranking just after SA and Mauritius.

Figure 7.3 Interest rate spreads and ratios of non-performing loans for selected SADC countries.



Source: IFS, KPMG Banking survey – Africa, 2001.

Another variable that was included was the share of assets of foreign-owned banks in total banking assets. This variable was obtained from the database compiled by Beck, Demirguc-Kunt & Levine (1999), averaged over 1990-1995. This variable is equal to 100 for Swaziland, where all the banks are foreign-owned. SA had the lowest value, with only 0.6% of total bank assets being foreign-owned in 2000.

The last two variables are indicators of stock market development. Both these variables are from the Beck, Demirguc-Kunt & Levine (1999) database. 'Total value traded' is the total value traded on the stock market as a percentage of GDP. 'Stock market capitalization' is also expressed as a share of GDP. South Africa has a well-developed stock market, and its stock market capitalization ratio is 131%, much higher than that of any other country in the sample.

The ten variables were calculated as normalized values between 0-100 for each of the countries. If the country had the lowest value for an attribute, a value of 0 was ascribed to that country for that attribute (100 for the highest value in the sample). Some values were not available for all the countries, and the average was calculated according to equation 7.2.

The last row of table 7.1 shows the summary values of the financial market structure index. South Africa has the highest value (85), the only country in the sample that can be classified as 'largely developed'. Mauritius was the only

country in the 'somewhat developed' category (with a value of 58). Malawi had the lowest level of financial institutional development (a value of 18), classified as 'undeveloped'. The remaining five countries were in the 'minimally developed' category, i.e. Botswana (43), Tanzania (37), Swaziland (35), Zimbabwe (31) and Zambia (26).

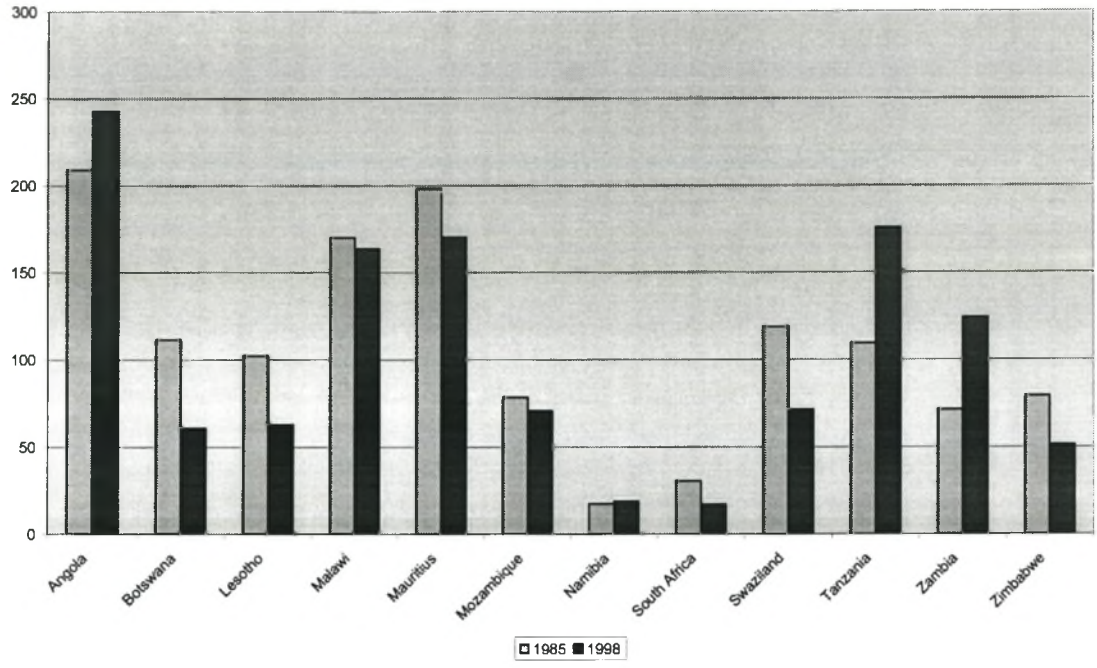
7.7 FINANCIAL DEVELOPMENT OVER TIME

The index calculated above indicates that only South Africa has reached a stage where the money supply is endogenous according to the Post-Keynesian structuralist theory. In the "stages-theory" of Chick, a bank has to pass "stage two" before the money supply becomes endogenous. During this stage, the banking system begins to create credit independently of saving and bank liabilities are used as money. The index calculated above can be used as an indicator of the level of financial institutional development in the SADC countries.

The index gives a picture of a country at a specific point in time. Two financial deepening indicators used to construct the index were examined to give some indication of financial development over time. Interest rate spreads and M3/GDP were looked at between 1980-1999. Two other indicators were also used to compare levels of development between 1985 (data permitting) and 1998. Where data for 1985 were not available, the earliest data available after that date have been used.

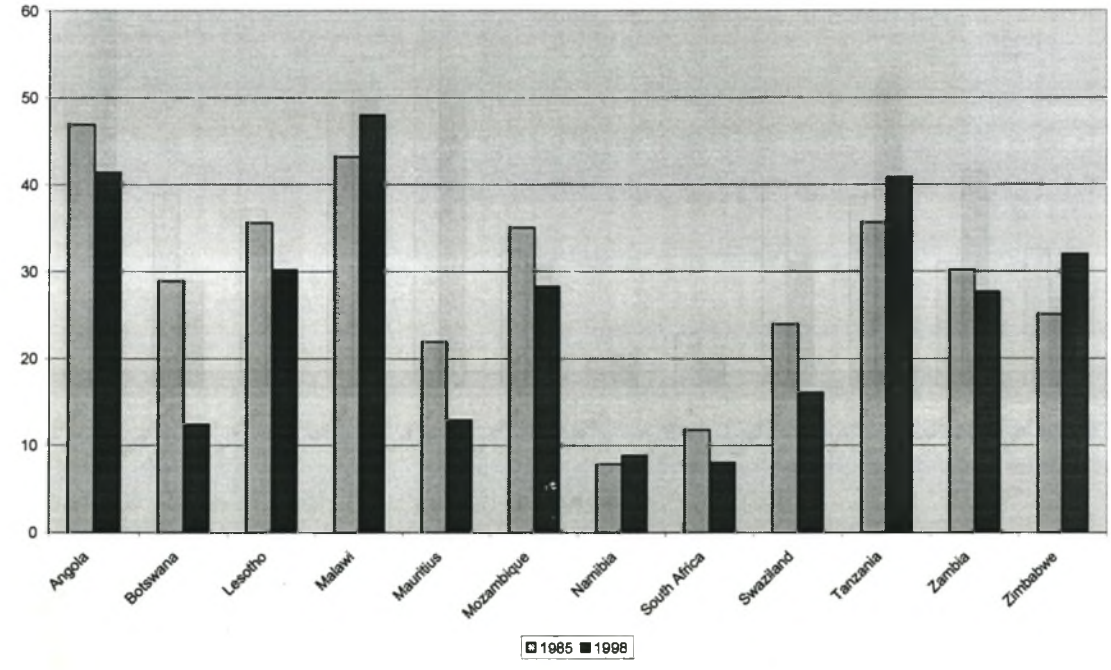
The first indicator used to examine the evolution of financial development was the ratio of cash to demand deposits. If this ratio is relatively high, then the economy is still functioning as a cash economy and the role of credit is unimportant. The ratios for the SADC countries (1985 and 1998) are given in figure 7.4. Once again, South Africa and Namibia are the countries with the lowest levels. The ratio has decreased in almost all the countries between 1985 and 1998. The exceptions are Angola, Tanzania and Zambia. All three these countries have undeveloped financial systems. Namibia once again had a marginal increase, probably due to the short period of measurement (1993 and 1998). The high value for Mauritius is surprising, probably indicating that levels of financial development are not equally distributed across the entire population. High levels of financial institutional development might be prevalent in developed centres, with the rural population still mainly relying on cash.

Figure 7.4 Ratio of cash / demand deposits (1985 & 1998)



Source: IFS (various years) and IMF Statistical Appendices for individual countries

Figure 7.5 Ratio of cash / M2 (1985 & 1998)

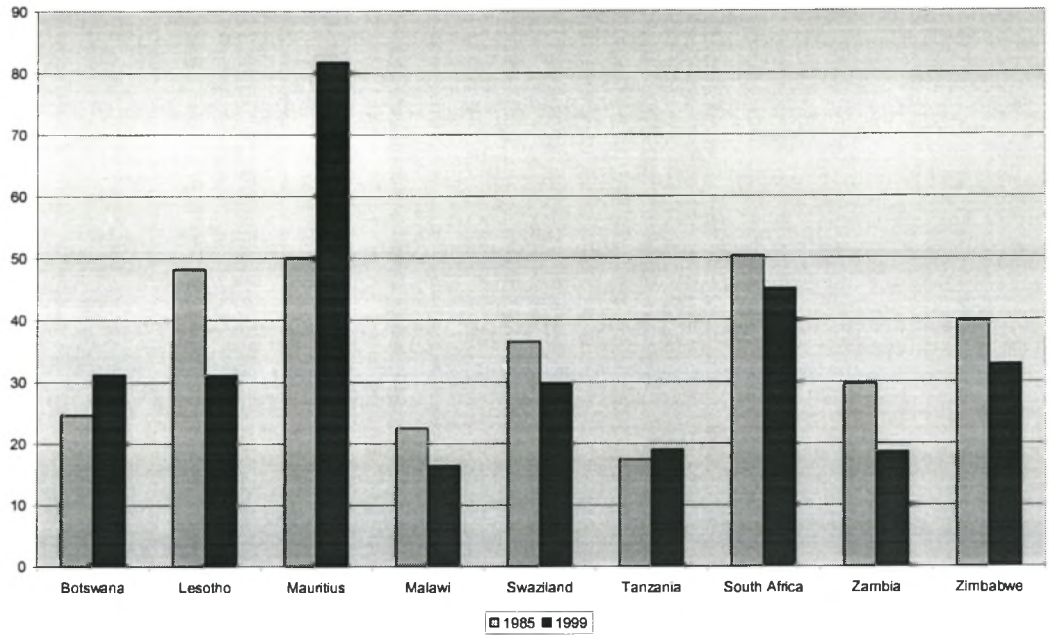


Source: IFS (various years) and IMF Statistical Appendices for individual countries

The second indicator used to measure financial development over time, was the ratio of cash to M2. The values for the years 1985 and 1998 are shown in figure 7.5. Once again, it is clear that the countries with the lower ratios are the countries with higher levels of financial institutional development (as shown above), i.e. South Africa, Mauritius, Botswana and Namibia. For most, the ratio fell over the period (indicating increased levels of financial sector development) between 1985 and 1998. The exceptions are Malawi, Tanzania and Zimbabwe. This is not surprising, as these countries also had the lowest level of financial institutional development, as measured by the index above. Namibia increased marginally, but since data were unavailable before 1993, the period is probably too short to make substantial conclusions.

Two other financial deepening variables, published *by World Bank Development Indicators* were used. Figure 7.6 shows ratios of M3 to GDP for 1985 and 1999. Except for the marginal increase in Tanzania, Botswana and Mauritius are the only countries where this ratio increased. Though South Africa had a small decrease, it remains one of the countries with a high M3/GDP value. Data for the period 1980-1999 are given in individual country tables (Appendix 7.2, tables 7.2.1 - 7.2.9).

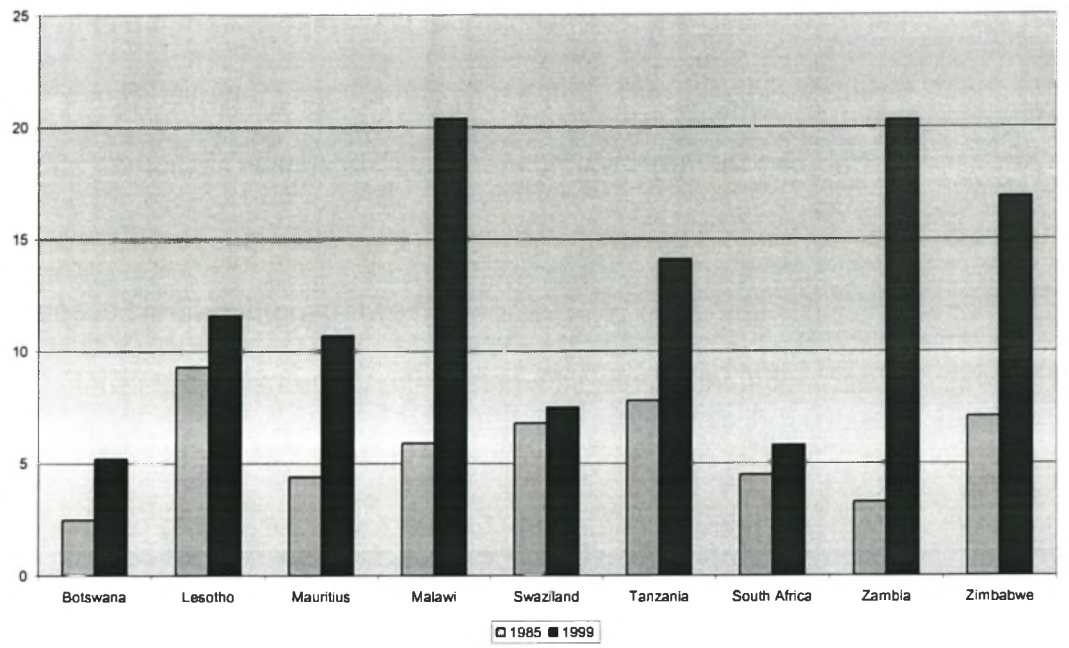
Figure 7.6 Ratio of M3 / GDP (1985 & 1999)



Source: IFS, various years

Figure 7.7 shows interest rate spreads in 1985 and 1999. This is an important indicator of financial depth. This variable increased in all the countries in the sample (data for 1980-1999 in Appendix 7.2, tables 7.2.1 - 7.2.9). The tables (appendix 7.2) also show the ratio of net domestic credit provided by the banking sector to GDP as a financial deepening indicator. Mauritius and South Africa were the only two countries where this ratio increased between 1980 and1999. The ratio decreased in the rest of the countries and became negative over the period in Botswana, Lesotho and Swaziland. This variable included claims on the private sector, as well as net claims on the government and parastatals. In some of the countries, net claims on the government had a negative value, causing net domestic credit to be negative too.

Figure 7.7. Interest rate spreads (1985 & 1999)



Source: IFS, various years.

7.8 CONCLUSION

The question of whether the money supply in an individual country is endogenous or exogenous cannot be answered without a thorough analysis of the institutional environment. In this chapter, the approach of Minsky (financial instability hypothesis) was combined with the 'stages theory' of Chick and Niggle. It was argued that the financial instability hypothesis, with its emphasis on vulnerability to shocks, is applicable to countries with under-developed financial systems. Borrowers in these countries often face credit constraints due to the inherent instability in their financial systems and the high liquidity preference of the banking system.

Chick and Niggle argued that countries move through different stages of monetary development as their financial systems mature. As economies move from one stage to the next, the money supply becomes increasingly endogenous. During the first stages the money supply is exogenously determined by the monetary authorities. After Chick's "second stage", the money supply becomes endogenous. As the development of the banking system encourages financial innovation, the system becomes increasingly unstable. Credit availability varies pro-cyclically with the business cycle. The important contribution of Dow is that banks also have a liquidity preference. During a downturn, they have an increasing liquidity preference and might decide to ration credit, to limit risk. The supply of loans falls below the total demand for credit.

Niggle argued that the money supply only becomes endogenous after stage 3, when innovations such as asset and liability management and overdraft facilities reduce the central bank's control over the money supply. From the institutional discussion of the individual SADC countries it was clear that most of these countries are still struggling with the transition from the second to the third stage of their monetary development.

South Africa was the only country that could be clearly classified as 'largely developed', from the financial institutional index that was calculated for eight of

the SADC countries. Malawi was the only country that was classified as 'undeveloped'.

Despite reform programmes the financial systems remain underdeveloped in most countries, with the informal sector still an important source of credit. The absence of a secondary bond market renders monetary policy ineffective and interest rates sticky. In most countries, the ratios of cash to M2 and cash to demand deposits have been lowered over time. In the countries with the lowest levels of financial development (Angola, Malawi, Tanzania and Zambia) some of these indicators have actually worsened. Interest rate spreads have widened in all the countries between 1980 and1999. M3/GDP ratios have also declined in all but Botswana and Mauritius (and marginally in Tanzania). Given the undeveloped state of the financial institutions in most of the SADC countries, it is difficult to envisage an endogenous money supply where the monetary authorities simply respond to the credit demands of the economy.

APPENDIX 7.1

SADC COUNTRIES: INSTITUTIONAL ARRANGEMENTS AND LEVELS OF FINANCIAL DEVELOPMENT

Most SADC countries embarked upon liberalisation programmes, as part of structural adjustment programmes during the 1980s and 1990s. The financial sectors were also liberalised as part of these programmes. In some of these countries, the financial sector was previously entirely state-owned, e.g. Tanzania, Mozambique and Angola. The reforms usually entailed increasing real interest rates to positive levels, using commercial criteria to allocate credit, strengthening bank supervision rules and restructuring previously state-owned banks (Mowatt,2001). From the individual discussions below, it is clear that most SADC countries still have economies with undeveloped financial markets. Most of them have not passed the second stage of Chick's 'stages of banking' model.

a) ANGOLA

An IMF examining the financial development of 38 Sub-Saharan countries in 1997 found that only two of these countries had "totally undeveloped financial systems". One of these was Angola (IMF,1999:10). A BIS study conducted in 1999 confirmed this: "The Angolan payments system is still in its embryonic stage, and the same can be said of the Angolan financial system" (BIS,1999:5).

This becomes clear when the institutional environment of the financial system is considered.

Until 1991, there were only two banks in Angola, the Banco Nacional de Angola (BNA), which served both as a central bank and a commercial bank, and Banco Popular de Angola, a state-owned commercial bank (Mowatt,2001:18). At the time of writing, after representative offices of three Portugese banks were opened, there were five commercial banks and one investment bank. The availability of credit by private institutions was scarce due to a lack of reliable facilities to carry out these operations. The ratio of M2 to the broad money supply was 7.6% in 1990. This increased to 32.15% in 1993, 22.7% in 1995 and 22.4% in 1996. Currency is the most used payment medium in commercial transactions: "A minority of the population use banking services, with salaries being paid directly to workers in cash and kind" (BIS,1999:7). Banking services outside Luanda are almost non-existent as a result of the ongoing civil war.

There is an inter-bank market, still in the early stages of development. Reserve requirements are strictly enforced (set at 35%). If a participating institution has insufficient funds after the daily clearing session, then the session is annulled and the staging of a new session takes place from which the defaulting institution is banned.

The Banco Nacional de Angola sets credit limits for financial institutions. The central bank also sets maximum interest rates for financial institutions. The bond market is underdeveloped. The insurance industry is also state-owned. Initiatives were being planned for the reduction of credit risk through the establishment of a credit risk centre, as well as a centre for complaints regarding bills and promissory notes, and the establishment of a register which includes information on issuers of cheques without sufficient funds (BIS,1999).

b) BOTSWANA

Cash (notes and coins) is the most widely used instrument of payment for most goods and services. In the rural areas, rudiments of the bartering system are still evident, in the form of payments in kind, usually agricultural products and the like. The commercial banks' branch network is virtually non-existent in most of the rural areas, especially the remote ones. Table 7.1.1 gives a breakdown of the institutions in the banking sector in Botswana in 1997.

Table 7.1.1: Botswana Institutional Framework (September 1997).

CATEGORIES	NUMBER OF INSTITUTIONS	NUMBER OF BRANCHES	NUMBER OF ACCOUNTS (Thousands).
Central bank	1	1	2.3
Commercial banks	6	50	286
Savings banks	1	0	n.a.
Public credit institutions	2	14	n.a.
Post Office	1	112	n.a.

Source: BIS, Payment Systems in SADC, 1999.

Table 7.1.2: Botswana – Commercial Banks (2000)

	Capital adequacy (%)	Non-performing advances/advances	Total assets (Pula Million)	Number of branches	Market share
Barclays bank of Botswana	18.8	N/a	3242.5	9	36.3%
Standard Chartered Bank of Botswana	16.98	2.65	2393	14	26.8%
First National Bank of Botswana	16.82	1.8	2033.5	12	22.7%
Stanbic Bank of Botswana	18	0.47	753.8	4	8.4%
Botswana Building Society	53.29	5.2	376.7	9	4.2%
ULC (Pty) Ltd.	17.33	6.6	129.1	2	1.4%

Source: KPMG Banking Survey – Africa, 2001

Capital adequacy ratios are relatively high (compared to the Basle requirement of 8%). The ratios of non-performing advances to total advances are some of the lowest in the whole sample for SADC countries, suggesting that banks manage their loan book well. It might also indicate a high degree of risk aversion, which might lead to credit rationing. There are three large banks (assets exceeding 2000 million Botswana pulas), all subsidiaries of foreign banks. The largest bank (Barclays Bank of Botswana) has only 9 branches.

There is an inter-bank market, but no formal structures regulating interaction among the commercial banks. The money market has developed over the past years; the main instrument is Bank of Botswana Certificates. This is the principal instrument through which interest rate policy is implemented (BIS,1999:27). The Bank of Botswana Certificates range in maturity from one to nine months and are traded on a secondary market. The majority of these are held by commercial banks. Botswana's bond market is undeveloped, with only a few bonds being

available. The Botswana Stock Exchange has been operating since 1995. In 2000 it had 23 listed companies (Mowatt,2001:19).

There are no interest rate ceilings, and all interest rates are market determined. Positive real interest rates have existed since 1993. The reserve requirement is 3,25% of deposit liabilities, and there is also a liquidity asset reserve requirement of 10% of deposit liabilities: "Reserve requirements...have been used sparingly in Botswana in consideration of the fact that they tend to put banks at a disadvantage *vis-à-vis* other institutions that provide similar services. Also given excess liquidity the reserve requirements are unlikely to have much impact" (Masalila & Phetwe,2001:11).

Botswana has made considerable progress with the development of its financial sector, but it still lags behind developed countries. Significant parts of the vast country remain underbanked, with most of the banking services concentrated around the bigger centres.

c) LESOTHO

Lesotho's financial sector consists of the following institutions:

Table 7.1.3: Lesotho Institutional Framework (1998)

CATEGORIES	NUMBER OF INSTITUTIONS	NUMBER OF BRANCHES	NUMBER OF ACCOUNTS (Thousands).
Central Bank	1	-	-
Commercial banks	3	16	372
Public credit institutions	1	8	-
Post Office	1	47	-

Source: BIS, Payment Systems in SADC, 1999.

Lesotho has a relatively advanced financial sector, probably explained by its proximity to South Africa. The Central Bank of Lesotho implements monetary policy through policy instruments such as interest rates, reserve requirements and open market operations. Credit ceilings are also used. There is an efficient inter-bank market, and cheques and credit cards are widely used. The reserve requirement was 9,73% in 1996. (This was a dramatic decline from 34,74% in 1992 and 41,39% in 1993).

d) MALAWI

The financial system in Malawi is underdeveloped and dominated by a few institutions offering a limited range of services. The economy is predominantly rural-based, and cash is the dominant method of payment. Approximately 75% of all business transactions are conducted through cash payments. The ratio of M1 to the aggregate money supply averaged 53% between 1992 and 1996. Few people have bank accounts (BIS, 1999:59). Table 7.1.4 gives some information about the commercial banking system in Malawi.

Table 7.1.4: Malawi – commercial banking sector (2000)

	Capital adequacy (%)	Non-performing advances/advances	Market share	Total assets (millions)	Number of branches
National Bank of Malawi	35.32	10.99	46.8%	10822.2	13
Commercial Bank of Malawi	15.1	5.87	39.8%	9187.9	19
First Merchant Bank	24.01	4.86	8.5%	1970.5	4
Fincom Bank of Malawi	22.12	18.86	4.7%	1099.4	1

Source: KPMG Banking Survey – Africa, 2001

Malawi started a programme of structural adjustment in 1988. Before that there were only two banks, the National Bank of Malawi and the Commercial Bank of Malawi. Both were owned by the state. There was no secondary money market and no capital market. Direct control measures were used, such as credit ceilings and interest rate controls (Mowatt,2001:21). There are five commercial banks (data were available for only four banks), three leasing companies, one building society and one savings bank. As can be seen from table 7.1.4, all banks have higher capital adequacy ratios than the required 8%. Non-performing loans are a problem for two of the banks (ratios exceeding 10%). Malawi has a very concentrated banking sector, since two banks control 86% of the market.

Monetary policy has shifted to market related measures. Interest rate controls were finally abolished in 1990 and quantitative controls in 1991 (Mowatt,2001:21). These were replaced by reserve requirements as an indirect monetary policy instrument. Treasury bills were already issued in 1984, but trading was very low until 1992, when the auctioning of treasury bills was introduced. Before 1995, Treasury bill auctions were held only once a month, currently they take place once a week. The Bank of Malawi uses targets for both inflation and for monetary aggregates. A quarterly growth target is set for reserve money: "While more emphasis was initially put on growth in the M2 aggregate, recent developments have indicated that M2 can better be influenced by monitoring growth in reserve money than the broad measure of money supply" (Sato,2001:12).

Traditional fractional reserve banking is the operative method in Malawi. Banks are constrained by capital and reserve requirements. Despite the reforms, the financial system remains under-developed, and the informal sector remains an important source of credit.

Some new initiatives aimed at providing credit to small and medium enterprises. The Malawi Rural Finance company provides specifically loans to small and medium enterprises and mainly in the agriculture and transport sectors. Other examples are the Malawi Union of Savings Credit Cooperatives Limited (MUSCO), Small Enterprise Development Organization of Malawi, Woman World Banking, etc. MUSCO is basically a savings institution which concentrates on encouraging people to form savings groups. The accumulated savings are then used for the benefit of the members in terms of loans granted.
An inter-bank market was established in 1997. This has fostered substantial growth in the financial sector, assisting financial institutions in their liquidity management task. Reserve requirements, however, still remain important, as the inter-bank market is relatively young (only 4 years). When the reserve requirement was introduced in 1989, it was set at 20%. It increased to 35% in 1995 and was only adjusted downward in the second half of 2000 (to 30%) (Sato,2001:15).

The Malawi Stock Exchange was established in 1994, but the first company was listed only in 1996. In 2000 there were six listed companies on the Malawi Stock Exchange (Mowatt,2001).

e) MAURITIUS

Mauritius has a highly developed financial system with ten commercial banks and nine offshore banks. The degree of development can probably be attributed to its popularity as an international tourist destination and its importance as an investment centre for gaining exposure to Africa. Five commercial banks are locally incorporated and five are branches of foreign banks. Treasury bills are auctioned weekly on the money market, with a secondary market handling daily transactions. Interest rates are set by the commercial banks. The inter-bank money market is also relatively active. Cheques, credit cards and debit cards are commonly used (BIS,1999:79). Table 7.1.5 gives some data for six of the commercial banks.

Table 7.1.5: Mauritius – commercial banks (2000)

	Capital adequacy (%)	Non-performing advances/ Advances	Market share	Total assets (Millions)	Number of branches
The Mauritius Commercial Bank	13.02	n/a	53.8%	65714.2	41
State Bank of Mauritius Group	21.18	5.9	24.5%	29978.4	51
HSBC Mauritius	12.02	3.5	8.9%	10951.9	11
Barclays Bank	10.55	1.1	5.4%	6651	12
The Delphis Bank	22.05	5.1	4.7%	5771.1	13
Bank of Baroda	20.39	21.87	1.7%	2092.8	6
Habib Bank	64.61	0.01	0.6%	811.6	4

Source: KPMG Banking Survey – Africa, 2001.

Table 7.1.5 shows that capital adequacy ratios are sufficient. Non-performing loans are not a problem, except for the Bank of Baroda. Cash as a percentage of M1 was 45,8% for 1998. There is a high number of bank branches in this small island economy.

Reserve requirements were reduced to 5.5% in July 1998. This was a part of the liberalization of the financial system that started in 1991. This represented a move away from instruments such as reserve requirements, quantitative controls on bank credit expansion, selective credit controls and interest rate guidelines (BIS,1999).

f) MOZAMBIQUE

Table 7.1.6 shows the institutions in the financial sector:

Table 7.1.6 : Mozambique Institutional Framework (1998)

CATEGORIES	NUMBER OF INSTITUTIONS	NUMBER OF BRANCHES
Central Bank	1	1
Commercial banks	5	239

Source: BIS, Payment Systems in SADC, 1999.

Mozambique has an underdeveloped financial system, due to the long civil war. Cash is the principal mode of payment, acceptance of cheques and other payment instruments is still marginal. Total cash as a percentage of the broad money supply is more than 65%. In 1992, a modernization program was initiated. At that stage there were three commercial banks of which two were state owned.

They have subsequently been privatised. Under the new program, a number of banks are emerging, including commercial banks, credit cooperatives, leasing institutions, etc. The Post Office is also expected to resume its role in the payments system. No international credit card facilities are available, and visitors to the country mainly use travellers cheques.

Under the modernisation program, the development of the money market has allowed the government to move towards indirect instruments of monetary control as of mid-1999 and away from bank-by-bank credit ceilings. The Bank of Mozambique started to issue treasury bills at the end of 1999. Reserve requirements were extended to time deposits in May 1999. The aim was to enforce the Basle Committee's minimum capital adequacy ratio in all banks by March 2000. Credit ceilings were also removed (IMF,1999).

g) NAMIBIA

Namibia has an advanced financial system, probably as a result of its close ties to South Africa for many years. After independence in 1990, the system has developed further into a sophisticated system that can be compared to that of a developed country. There are five commercial banks with 78 branches, one building society and a Post Savings Bank. Apart from the Namibian dollar, the South African rand is also accepted as legal tender in Namibia. Namibia forms part of the Common Monetary Area (CMA) with Lesotho, South Africa and

Swaziland as the other members. As a result of the fixed exchange rate policy, Namibia cannot engage in any active discretionary monetary policy. Monetary policy is subordinated to monetary policy decisions taken by South Africa.

Table 7.1.7 gives some data for four of the five banks, for which data were available.

Table 7.1.7 Namibia: commercial banks (2000)

	Capital adequacy (%)	Non-performing advances to total advances	Market share	Total assets (Namibian $ Millions)	Number of branches
Standard Bank of Namibia	11.25	0.51	36.6%	4251.8	19
First National Bank of Namibia	24.1	8.9	25.6%	2976.4	34
Bank Windhoek Ltd	10.63	2.97	20.8%	2415.4	22
Commercial Bank of Namibia	15.3	8.54	16.8%	1951.7	10

Source: KMPG Banking Survey – Africa, 2001.

The four banks in the table have relatively well distributed market shares, with the biggest bank being Standard Bank of Namibia (a subsidiary of Standard Bank South Africa). The ratio of non-performing loans is high for two of the banks (exceeding 8%). Capital adequacy ratios are sufficient.

Traditional monetary policy instruments, e.g. discount rates, reserve requirements, etc. are only used to a limited degree in Namibia. The bank rate is fixed at 25 basis points below South Africa's repo rate (Kalenga,2001:4). Reserve requirements are also used in a limited sense. Most commercial banks in Namibia are subsidiaries of South African banks, and capital flows would result

if reserve requirements differ substantially from South African levels. This must be avoided in terms of the fixed exchange rate arrangement. The minimum cash reserve requirement is 5% of short-term liabilities and 2% of medium-term liabilities to the public. There is an efficient inter-bank market.

In rural areas, the population trades mostly with cash. Namibia follows the monetary policy of South Africa very closely in order to maintain the fixed exchange rate between the Namibian dollar and the SA rand. The Namibian dollar, which was first issued in 1993, is pegged to the South African rand at par value. This has led to relatively low inflation rates (compared to other SADC countries) of less than 10%: "Over the past decade, inflation in Namibia has declined from an all time high of 18 per cent in 1992, reaching a low level of 6,2 per cent in 1998. Although it increased again to 9,3 per cent in 2000, it can be argued that the rate has been relatively low and stable" (Kalenga,2001:7).

h) SOUTH AFRICA

South Africa has a very well developed financial system with sophisticated financial instruments and a well developed bond market. There are approximately 20 million electronic cards in circulation.

Table 7.1.8 shows data for some of the larger banks in the financial sector. South Africa has four large banks (after recent consolidation in the sector). These are

ABSA bank, Standard Bank, Nedcor and the First Rand group (First National Bank). South Africa has an efficient banking sector, with sufficient capital adequacy ratios and low non-performing loans ratios (except for one small bank, VBS Mutual Bank).

Table 7.1.8: South Africa's banking sector (2000)

	Capital adequacy (%)	Non-performing advances to total advances	Market share	Total assets (Rand Millions)	Number of branches
ABSA Group Ltd	10.9	4.9	24.0%	165109	791
Standard Bank Investment Corporation Ltd	13.4	4.05	22.3%	153426	557
Nedcor Ltd	11.49	4.66	19.4%	133614	405
First Rand Banking Group	10.86	3.83	17.6%	121057.2	683
BOE Ltd	10.43	2.99	8.9%	61427	274
Investec Group Ltd	12	2.06	5.6%	39121	
African Bank Investments Ltd	45.91	0.01	0.75%	5164	1538
Imperial Bank Ltd	13.41	3.36	0.6%	4152.7	5
PSG Investment Bank	55	n/a	0.3%	2590.6	-
TEBA Bank Ltd	105.4	n/a	0.1%	1181.5	-
Bank of Taiwan SA	n/a	n/a	0.02%	144.8	-
VBS Mutual Bank	n/a	11.35	0.02%	137.6	4

Source: KPMG Banking Survey – Africa, 2001

The South African Reserve Bank (SARB) introduced a new repurchase system in March 1998. The aim was to allow the market to play a bigger role in determining interest rates. But as the banking sector is highly concentrated, this system failed to work as planned. In practice, the participation in the daily repurchase auctions was limited to the four big banks. This resulted in inflexible money-market rates and an inter-bank market that did not always clear effectively. In August 2001, some measures were introduced to increase the effective use of the inter-bank

market by the commercial banks. Measures introduced included: announcing the estimated liquidity requirement after the daily auction, changing daily repurchase tenders of a seven-day maturity to weekly tenders, and changing the calculation of the vault cash included in the minimum reserve requirement (Casteleijn, 2001).

i) SWAZILAND

Swaziland is also a member of the Common Monetary Area. Swaziland's financial sector comprises of four commercial banks, one building society, and a development bank. All commercial banks are subsidiaries of South African banks, and have therefore benefited from the technological innovations that have taken place in South Africa. These four commercial banks have a network of 30 branches. The main objective of the development bank is to issue agricultural and commercial loans, while the building society is primarily responsible for mortgage financing (CBS,2001:3).

Table 7.1.9: Financial Institutions in Swaziland (2000/01)

	2000/01
Number of Banks	4
Branch network (banks)	30
Agencies (banks)	9
ATM Networks (banks)	42
Building society	1
Branch Network (Building Society)	5
Non-Bank Financial Institutions.	5

Source: Central Bank of Swaziland,2001.

Table 7.1.10: Commercial Banks – Swaziland (2000)

	Capital adequacy (%)	Non-performing advances to total advances	Market share	Total assets (LilangeniMillions)	Number of branches
Standard Bank Swaziland	14.66	3.02	46.0%	1121.3	11
First National Bank of Swaziland	7.5	16.54	20.6%	502.8	6
Nedbank Swaziland	10.14	9.46	19.8%	482.1	5
Swaziland Development and Savings Bank	27	57.96	13.4%	327	8

Source: KPMG Banking Survey – Africa, 2001

The share of non-performing loans is relatively high, especially for the Swaziland Development Bank (57.96%). This might lead to credit rationing in the future which will impact negatively on the access to finance for small farmers. Standard Bank has the highest number of branches and the largest market share.

Swaziland maintains a fixed exchange rate of the Swazi lilangeni to the SA rand. This does not permit an independent monetary policy by the Central Bank of Swaziland (CBS): "With (effectively) a common currency, the money supply is controlled in South Africa. This means that Swaziland has limited ability to manage its own money supply, nor to have an independent exchange rate policy (as long as the Lilangeni remains at par with the Rand)" (BIS,1999:176).

Interest rates have been kept at stable margins with the South African rates, with deposit and lending rates several points below those of South Africa. The margins varied between 2% and 6%. During the last decade, these interest rate differentials have been reduced. The country has experienced growth in the use of current bank accounts, although cash is still the preferred medium of payment

in many areas, e.g. the payment of salaries and wages to lower income groups. There is an inter-bank market. Banks in Swaziland have always relied on the inter-bank market to meet shortfalls and are less reliant on borrowing from the central bank. The cash reserve requirement is currently 4% of domestic deposits.

Financial markets in Swaziland are small and under-developed. There is not a large market for securities, and only small amounts of both treasury bills (E40 million) and bonds (E30 million) are traded. These have been issued to encourage the development of the money market, not as a source of deficit financing for the government. The central bank issues its own bills from time to time. The Treasury and Central Bank bills are auctioned on a weekly and monthly basis. These markets remain shallow. In 1998 the CBS established a capital market development unit. The aim of this unit is to develop an appropriate regulatory framework for a capital market in Swaziland in order to facilitate the creation of an efficient securities market (CBS,2001:11).

j) TANZANIA

For 25 years after independence in the 1960s, Tanzania had only a single state owned bank, until a program of financial liberalization was initiated in 1993. Cash has been the dominant means of payment, with little usage of cheques or other cash-less financial instruments. As the existing payment system is still mainly cash based, most transactions and payments are affected outside the banking system.

Table 7.1.11 shows data for 9 commercial banks. Concentration levels are high, with the largest bank controlling about 47% of the banking sector. Most of the banks have a limited number of branches (usually between one and three). A payments modernisation project was launched in August 1996 with the aim of moving the economy from cash to cash-less modes of payment. For the year ended June 1996, commercial banks' credit to the economy declined by 50,2% compared with the previous year. This was as a result of a 82 billion Tanzanian Shillings write-off of non-performing loans (IMF,1999). The data in Table 7.1.11 is for 2000, and it seems that most banks have managed to reduce their ratios of non-performing loans. The exception is Stanbic Bank, with a ratio of 22.41%.

Table 7.1.11: Tanzania – Banking sector (2000).

	Capital adequacy (%)	Non-performing advances to total advances	Market share	Total assets (Shillings Millions)	Number of branches
Standard Chartered Bank	16.47	1.52	47.3%	197540	6
Stanbic Bank	22	22.41	27.7%	115855.6	4
Tanzania Postal Bank	195.77	9.08	10.3%	43173.1	4
Diamond Trust Bank	40.75	3.04	4.3%	17986.5	1
Tanzania Investment Bank	n/a	13	4.2%	17729.5	1
Akiba Commercial Bank Ltd	35	6.96	2.2%	9489.5	2
Kenya Commercial Bank	81.86	1.89	2.2%	9432.6	n/a
International Bank of Malaysia	2166.2	n/a	1.3%	5505.7	1
Mufindi Community Bank	n/a	n/a	0.06%	257.8	1

Source: KPMG Banking Survey, Africa – 2001

Open market operations are the main instrument of monetary policy in Tanzania. The cash reserve requirement is still very important, with the reserve requirement currently at 10% of total bank deposits. The monetary transmission mechanism is weak, as Tanzania does not have an efficient secondary or inter-bank market. There is only a rudimentary inter-bank market. The money market is also not well developed. Only one instrument, Treasury Bills is sold, and there are no publicly-owned companies.

There is only a rudimentary bond market, with government debt instruments the only securities in the market (BIS,1999). Treasury bills were auctioned for the first time in 1993 (Masawe,2001). The use of cheques is increasing slowly, because of problems with cheques being backed by insufficient funds and clearing taking up to 28 days in more remote parts of the country. Tanzania has a newly-created stock exchange, but foreigners are not allowed to invest and the market therefore remain very small, with only 2 listed companies in 2000 (Mowatt,2001:55).

k) ZAMBIA

Until a democratically elected government came to power in 1991(the first multiparty democratic elections in more than 20 years), Zambia was a centrally planned economy. The change to a market economy began with the election of the new government. In 1998 there were 22 commercial banks with a total of 152

branches, one Savings Bank, one Cooperative Bank, three building societies, six specialized non-bank financial institutions and one Post Office. Cash is still the dominant form of payment. The most important non-cash payment instrument is the cheque. Credit and debit cards have been introduced recently and are used on a small scale. Monetary policy focuses on monetary targets and the reserve requirement is an important operative variable. The required reserve ratio was reduced drastically in 1995, from 30% to only 3%(IMF,1999:18)

Table 7.1.12: Zambia – Banking sector (2000).

	Capital adequacy (%)	Market share	Total assets (Kwacha Millions)
Barclays Bank of Zambia	13	37.2%	740296
Standard Chartered Bank Zambia	20.12	27.7%	551375
Stanbic Bank Zambia	24.01	16.8%	335697.1
Citibank of Zambia	54.91	15.3%	305343
First Alliance Bank	262.4	1.9%	39636
New Capital Bank Plc	36.97	0.8%	16342.7

Source: KPMG Banking Survey, Africa – 2001

Table 7.1.12 shows data for six of the commercial banks in Zambia. Barclays Bank has the biggest market share (37%), followed by Standard Chartered Bank (27%) and Stanbic Bank of Zambia (16.8%).

A treasury bill tender system was introduced in 1993. This signified a shift from fixed pricing of treasury bills and government bonds, to a market-determined pricing system. Another development was the emergence of an inter-bank market as part of the liberalisation process.

The first formal capital market was formed in 1994, in the form of the Lusaka stock exchange. Yet, the weak and undeveloped nature of the Zambian financial system remains problematic for monetary policy effectiveness. Four of the five largest banks are branches of foreign banks. There is also a limited range of financial instruments, with treasury bills and Government bonds the main instruments. There are only nine companies listed on the stock exchange. Commercial banking services are limited and costly. The money and bond markets remain undeveloped. The absence of an active secondary bond market makes the use of open market operations less effective. The inter-bank market is weak and is characterised by very volatile lending rates (Kalyalya,2001).

I) ZIMBABWE

Zimbabwe has a relatively advanced financial sector. Table 7.1.13 shows the institutions that participate in this sector.

Table 7.1.13: Zimbabwe Institutional Framework (1998).

CATEGORIES	NUMBER OF INSTITUTIONS	NUMBER OF BRANCHES
Central Bank	1	2
Commercial Banks	7	131
Merchant Banks	9	-
Savings Banks	10	11
Building Societies	5	195
Finance Houses	6	16
Discount Houses	5	5
Post Office Savings Bank	1	181

Source: BIS, Payment Systems in SADC, 1999.

Table 7.1.14: Zimbabwe Banking System: selected data (2000).

	Capital adequacy (%)	Non-performing advances to total advances	Market share	Total assets (Zimbabwe $ Millions)	Number of branches
Standard Chartered Bank Zimbabwe	15.86	1.1	14.6%	25110	49
Barclays Bank of Zimbabwe	19	11.83	13.2%	22837.1	43
Commercial Bank of Zimbabwe	10.18	29.3	10.7%	18405	24
Central Africa Building Society	51.72	n/a	10.2%	17582.4	106
ABC Holdings	29.39	n/a	7.4%	12738.4	n/a
Stanbic Bank Zimbabwe	16.67	3.96	6.1%	10600	12
Beverley Building Society	142.07	n/a	4.8%	8349.5	63
Trust Merchant Bank	16.08	1.98	4.5%	7842.7	2
Kingdom Financial Holdings	28.7	3.29	4.4%	7598.2	7
NMBZ Holdings	21.09	7.98	4.2%	7283.8	3
Founders Building Society	96	n/a	3.0%	5173.6	47
First Banking Corporation	16.66	13.96	2.4%	4232.6	12
Merchant Bank of central Africa	23.7	2.5	2.4%	4198.1	2
Intermarket Discount House	17.02	n/a	1.6%	2756.5	1
Rapid Discount House	16.82	n/a	1.4%	2567	1
Century Holdings Ltd	17	3.74	1.3%	2320.8	n/a
Interfin Merchant Bank	14	n/a	1.3%	2365.2	1
National Discount House	8.34	n/a	1.3%	2347.6	1
Zimbabwe Building Society	70.5	4.6	1.3%	2389.3	17
First National Building Society	67.3	n/a	0.9%	1551.3	4
Global Investments House	44.12	n/a	0.5%	981.6	1
Stanbic Finance Zimbabwe	16.27	0.59	0.5%	950.7	2
Tetrad Securities	299.23	n/a	0.5%	945.4	0
Fincor Finance Corporation	52.14	30.82	0.3%	605.7	2

Source: KPMG Banking Survey – Africa, 2001.

Zimbabwe embarked on a five year Structural Adjustment Program in 1990, which also included the liberalization of the financial sector. There has been an increase in the number of participants in the financial sector. Given the regulated environment before liberalization, the new developments have exposed banks to greater competition and increased operational and liquidity risk.

The cheque is the major paper based instrument used in Zimbabwe. There is a bond market and an inter-bank market. Treasury bills are issued by the Reserve Bank of Zimbabwe, with maturities ranging from 90 to 180 days. Treasury bills are usually auctioned twice a week, but more recently they have been issued in response to market liquidity conditions. (Reserve Bank of Zimbabwe,2001:32).

The Reserve Bank has always intervened to provide liquidity where needed. Banks experiencing liquidity problems are always accommodated by the Central Bank against acceptable securities. Zimbabwe has a stock exchange, but there is a restriction on foreign participation, limiting acquisition to 35% of shares traded on the exchange. Zimbabwe has 70 companies that are listed on the stock exchange (Mowatt,2001:55).

APPENDIX 7.2 Financial deepening indicators

Table 7.2.1 Financial depth: Botswana

Botswana	Financial depth: Interest rate spread (Unit: lending rate minus deposit rate)	Financial depth: Net domestic credit provided by banking sector (Unit: % of GDP)	Financial depth: Liquid liabilities (M3) as % of GDP
1980	3.5	0.7	27.0
1981	1.0	8.2	23.9
1982	1.2	3.9	22.4
1983	1.5	-0.6	23.3
1984	2.0	-7.6	21.5
1985	2.5	-18.5	24.6
1986	2.3	-35.7	21.7
1987	2.5	-43.5	28.8
1988	2.8	-40.1	24.9
1989	2.1	-40.9	29.0
1990	1.8	-46.4	22.1
1991	0.4	-41.1	27.6
1992	1.5	-42.4	28.3
1993	1.4	-40.5	21.0
1994	3.5	-41.5	20.2
1995	4.3	-35.0	19.8
1996	4.1	-33.8	19.5
1997	4.8	-73.4	22.2
1998	4.8	-78.5	27.8
1999	5.2	-69.7	31.2

Source: World Bank Development Indicators

Table 7.2.2 Financial depth: Lesotho

Lesotho	Financial depth: Interest rate spread (Unit: lending rate minus deposit rate)	Financial depth: Net domestic credit provided by banking sector (Unit: % of GDP)	Financial depth: Liquid liabilities (M3) as % of GDP
1980	N/A	19.3	35.3
1981	5.4	29.3	38.2
1982	5.3	31.4	42.9
1983	6.0	31.0	47.3
1984	7.7	28.7	46.7
1985	9.3	30.9	48.2
1986	3.4	34.5	48.1
1987	4.1	36.0	44.5
1988	4.1	38.7	43.5
1989	5.9	38.3	40.8
1990	7.4	30.1	38.8
1991	7.0	24.9	36.1
1992	7.6	12.8	32.1
1993	7.8	4.8	35.0
1994	5.8	0.1	34.9
1995	3.0	-6.3	33.2
1996	5.0	-11.1	32.8
1997	6.2	-20.8	30.7
1998	9.3	-20.2	36.0
1999	11.6	-0.2	31.1

Source: World Bank Development Indicators

Table 7.2.3 Financial depth: Malawi

Malawi	Financial depth: Interest rate spread (Unit: lending rate minus deposit rate)	Financial depth: Net domestic credit provided by banking sector (Unit: % of GDP)	Financial depth: Liquid liabilities (M3) as % of GDP
1980	8.8	35.7	21.6
1981	8.8	41.5	24.4
1982	8.8	43.6	25.0
1983	8.4	44.1	23.2
1984	4.8	37.9	25.1
1985	5.9	38.0	22.5
1986	6.3	39.6	24.9
1987	5.3	35.6	28.6
1988	8.8	23.3	26.2
1989	10.3	22.7	22.8
1990	8.9	20.5	22.0
1991	7.5	20.2	22.6
1992	5.5	31.2	25.2
1993	7.8	25.8	24.6
1994	6.0	30.2	29.2
1995	10.1	14.3	20.8
1996	19.0	9.8	16.9
1997	18.0	10.5	16.2
1998	18.6	8.4	19.4
1999	20.4	8.9	16.4

Source: World Bank Development Indicators

Table 7.2.4 Financial depth: Mauritius

Mauritius	Financial depth: Interest rate spread (Unit: lending rate minus deposit rate)	Financial depth: Net domestic credit provided by banking sector (Unit: % of GDP)	Financial depth: Liquid liabilities (M3) as % of GDP
1980	#N/A	51.0	45.3
1981	2.9	57.8	40.1
1982	2.2	58.8	43.1
1983	3.0	63.1	43.5
1984	3.0	64.6	44.2
1985	4.4	60.7	50.0
1986	4.8	55.6	54.3
1987	4.8	48.0	57.2
1988	5.0	47.5	62.0
1989	5.1	45.9	61.7
1990	5.4	45.1	63.3
1991	5.4	50.2	68.3
1992	7.1	53.5	70.6
1993	8.2	58.9	72.7
1994	7.9	64.9	73.1
1995	8.6	67.1	79.0
1996	10.0	63.7	76.0
1997	9.8	72.1	79.5
1998	10.6	77.0	77.7
1999	10.7	76.7	81.8

Source: World Bank Development Indicators

Table 7.2.5 Financial depth: Swaziland

Swaziland	Financial depth: Interest rate spread (Unit: lending rate minus deposit rate)	Financial depth: Net domestic credit provided by banking sector (Unit: % of GDP)	Financial depth: Liquid liabilities (M3) as % of GDP
1980	5.0	8.1	29.5
1981	4.5	17.1	28.4
1982	6.0	19.7	27.6
1983	5.5	22.0	32.0
1984	5.5	20.7	32.7
1985	6.8	20.9	36.5
1986	6.8	19.1	31.8
1987	7.1	15.5	31.3
1988	5.8	11.3	32.4
1989	5.6	6.5	33.8
1990	5.7	7.7	29.0
1991	5.4	2.3	31.9
1992	6.0	3.4	33.9
1993	6.6	6.1	33.0
1994	7.0	13.6	31.3
1995	7.8	7.1	26.7
1996	7.5	3.5	27.2
1997	7.5	2.6	28.2
1998	7.6	-3.9	28.8
1999	7.5	-3.7	29.8

Source: World Bank Development Indicators

Table 7.2.6 Financial depth: Tanzania

Tanzania	Financial depth: Interest rate spread (Unit: lending rate minus deposit rate)	Financial depth: Net domestic credit provided by banking sector (Unit: % of GDP)	Financial depth: Liquid liabilities (M3) as % of GDP
1980	7.5	N/A	N/A
1981	8.0	N/A	N/A
1982	8.0	N/A	N/A
1983	9.0	N/A	N/A
1984	9.0	N/A	N/A
1985	7.8	N/A	N/A
1986	10.0	N/A	N/A
1987	11.8	N/A	N/A
1988	12.2	23.7	17.4
1989	14.0	26.4	18.4
1990	N/A	34.6	19.9
1991	N/A	30.0	20.0
1992	N/A	29.3	22.1
1993	N/A	32.5	24.5
1994	N/A	27.1	24.9
1995	18.2	23.0	25.6
1996	20.4	15.7	22.2
1997	18.4	12.4	20.1
1998	15.1	11.9	18.3
1999	14.1	12.8	19.0

Source: World Bank Development Indicators

Table 7.2.7 Financial depth: South Africa

SA	Financial depth: Interest rate spread (Unit: lending rate minus deposit rate)	Financial depth: Net domestic credit provided by banking sector (Unit: % of GDP)	Financial depth: Liquid liabilities (M3) as % of GDP
1980	4.0	77.1	50.1
1981	5.8	83.0	49.7
1982	6.3	84.1	50.6
1983	3.0	88.3	50.8
1984	4.0	90.6	50.4
1985	4.5	97.3	50.3
1986	3.4	95.1	44.6
1987	3.8	93.7	43.6
1988	1.8	94.6	44.1
1989	1.7	93.8	44.9
1990	2.1	97.8	44.6
1991	3.0	N/A	46.4
1992	5.1	119.8	41.9
1993	4.7	129.7	38.4
1994	4.5	136.2	40.0
1995	4.4	140.2	39.0
1996	4.6	140.2	41.0
1997	4.6	138.7	43.7
1998	5.3	139.5	45.5
1999	5.8	155.0	45.1

Source: World Bank Development Indicators

Table 7.2.8 Financial depth: Zambia

Zambia	Financial depth: Interest rate spread (Unit: lending rate minus deposit rate)	Financial depth: Net domestic credit provided by banking sector (Unit: % of GDP)	Financial depth: Liquid liabilities (M3) as % of GDP
1980	2.5	60.8	34.2
1981	3.3	64.9	32.2
1982	3.5	80.9	40.6
1983	6.0	76.1	38.7
1984	6.8	72.1	38.4
1985	3.3	59.7	29.7
1986	9.7	45.0	31.3
1987	8.0	32.7	30.4
1988	6.9	66.4	32.9
1989	6.9	73.2	30.3
1990	9.5	67.8	21.8
1991	N/A	83.3	22.4
1992	6.1	N/A	N/A
1993	N/A	35.8	14.1
1994	24.4	52.6	14.8
1995	15.3	64.1	17.2
1996	11.7	58.8	17.6
1997	12.2	45.1	17.0
1998	18.7	65.7	18.1
1999	20.3	59.7	18.6

Source: World Bank Development Indicators

Table 7.2.9 Financial depth: Zimbabwe

Zimbabwe	Financial depth: Interest rate spread (Unit: lending rate minus deposit rate)	Financial depth: Net domestic credit provided by banking sector (Unit: % of GDP)	Financial depth: Liquid liabilities (M3) as % of GDP
1980	14.0	48.8	47.7
1981	12.7	45.4	41.0
1982	8.5	45.9	41.6
1983	10.3	44.5	33.8
1984	12.7	39.5	37.6
1985	7.1	40.4	39.8
1986	2.7	40.0	38.0
1987	3.4	44.6	43.6
1988	3.3	35.5	36.7
1989	4.1	42.0	42.7
1990	2.9	41.7	41.8
1991	1.3	39.3	34.0
1992	-8.9	43.0	31.6
1993	6.9	47.7	37.1
1994	8.1	43.6	38.4
1995	8.8	52.0	45.0
1996	12.7	48.7	44.7
1997	13.9	62.9	48.1
1998	13.0	60.5	37.2
1999	16.9	45.4	32.8

Source: World Bank Development Indicators

CHAPTER EIGHT

EXOGENOUS INTEREST RATES

Classical loanable funds and Keynesian liquidity preference theories of interest rate determination, AD-AS and IS-LM theories of income determination, and any long-run growth model, are all fatally flawed (Moore, 2000).

8.1 INTRODUCTION

The core of the endogeneity theory is that the money supply is determined by the demand for bank credit. The demand for credit is determined by the 'state of trade', the level of nominal demand in the economy. The central bank plays the role of 'lender of last resort' and accommodates demand for additional reserves. The central bank sets the official short-term rate. The interest rate is exogenous. Banks charge this official rate plus a stable mark-up.

In recent years, an alternative theory of endogenous money has evolved claiming that reserves can be quantity constrained. There are several reasons for this. Some authors use the argument of 'liquidity preference', others refer to financial innovation and liability management. These 'structuralists' argue that the central bank does not pursue a fully accommodating monetary policy. Both accommodationists and structuralists agree that banks extend credit and 'look for reserves later.' In the accommodationist world, this is not problematic, since the central bank is obliged to ensure system liquidity. In the

structuralist world, the central bank "does indeed exercise its authority to quantity-constrain the reserves it supplies – it will not necessarily pursue a fully accommodative posture through open market operations" (Pollin,1991:374).

The endogenous money theory has become synonymous with the idea of 'endogenous money, exogenous interest rates.' There is a lively debate on the issue of 'exogenous interest rates.' The demand for credit has no direct influence on the interest rate in this analysis. Increases in the demand for credit are accommodated by corresponding increases in the supply of credit money. All the central bank can do to stimulate aggregate demand, is to lower the interest rate: "The ultimate constraints of credit and real production are thus derived from political contrivance, not from scarcity, the 'first principle' of neoclassical economics" (Trautwein,1997:9). In the 'accommodationist' view all creditworthy demand for credit is accommodated by the monetary authorities, and the interest rate is set at a constant mark-up over the official rate.

In the structuralist view, the liquidity preference of banks determines interest rates. The bank lending rate is not simply a stable mark-up over the wholesale rate. The mark-up reflects lending risks, and varies over the business cycle.

These opposing interpretations will be tested in this chapter. A general overview provides the theoretical background, briefly explaining the differences between the two schools. The stability and variance of mark-ups

will be examined. The focus then shifts to the behaviour of interest rate spreads over the business cycle. Finally, an econometric model will be developed, examining determinants of interest rate spreads at the micro-level in selected SADC countries. Individual banking data will be used to explain the high interest rate spreads in developing countries.

8.2 THE MARK-UP APPROACH

As explained in Chapter 4, the demand to hold nominal money is a function of interest rates, income and wealth. The supply of commodity money may be determined independently of demand, i.e. exogenously. But the supply of *credit* money is determined by the quantity of credit demanded and credit supplied. The demand for and supply of credit money are thus interdependent.

Moore has argued that the failure of modern economists to distinguish institutional changes in commodity and credit money has led to incorrect monetary policy conclusions: "In a world of banks and insurance companies, money markets and stock exchanges, money is quite a different thing from what it was before these institutions came into being" (Moore,1988:4). Banks attempt to meet all creditworthy demand for credit. The interest rate they set is a stable mark-up over bank rate (set by the central bank). The money supply is endogenous; **but interest rates are exogenous**.

> Once banks have acquiesced to an increased demand for credit and expanded their asset portfolios and total bank liabilities proportionately,

> it is virtually impossible for the central bank directly to restrict quantitatively the growth of any chosen monetary aggregate" (Moore,1988:38).

Banks first grant loans and look for reserves later. Moore has shown that for the United States, total unused business loan commitments are approximately one half of the narrowly defined money stock (M1). Given the changing nature and developments of the banking system, it is impossible for the central bank to exogenously set the quantity of the money stock. Because central banks must ensure that confidence in the financial system is maintained, they must fulfil their role as supplier of system liquidity. The only instrument left to the central bank is to vary short-term interest rates, causing the reallocation of asset and debt portfolios: "The Federal Reserve retains the power to set the interest rate at which it will provide lender of last resort liquidity. But it has very limited ability to constrain quantitatively the amount of reserves provided below the demand for them" (Moore,1988:39).

8.3 THE 'STRUCTURALIST' VIEW

In orthodox economic theory, the demand for money is a demand for a 'stock' of hoards, not a demand for a 'flow' of finance. The quantity of hoards is viewed as exogenously fixed. When aggregate demand (AD) rises, production and income increase, leading to a rise in the demand for money. Given the fixed supply of money, interest rates must rise. In the endogenous money world, when spending rises, the demand for and the supply of money

increase. The money supply responds automatically to the rise in the demand for credit, and there is no necessity that interest rates increase.

For accommodationists, an increase in the demand for credit does not directly influence the interest rate. For structuralists, the money demand function is based on Keynes's finance motive. Firms must finance production before the saving necessary to finance the investment has been 'created'. This finance is supplied by the banks in meeting the demand for credit, **but** this in turn affects the interest rate.

Structuralists base their theory of interest on the concept of liquidity preference. Apart from borrowers, banks also have their own liquidity preference: "Liquidity preference is a preference to exchange illiquid items on a balance sheet for more liquid items, or even to decrease the size of a balance sheet by retiring debt" (Wray,1990:20). During an economic downturn, the value of collateral and prospective returns on investment, fall. Given their liquidity preference, banks respond by curtailing new lending, and increasing the cost of lending in order to increase the liquidity on their balance sheets. The demand for liquidity cannot always be met by a quantity adjustment. Instead, the price has to adjust, to bring liquidity preference into equality with the supply of liquidity. A rise in money demand may not affect the interest rate, but a rise in liquidity preference is likely to do so.

When the central bank raises the bank rate, banks first try to stretch reserves through financial innovations, such as asset and liability management. This

leads to increased leverage ratios for banks. When they cannot stretch reserves any further, they raise interest rates. This institutional view of banking behaviour and rising interest rates is primarily associated with the work of Wray, Chick and Dow.

Moore's (1988) argument does not include this institutional innovation phase. He regards the rate at which banks lend to consumers as a stable mark-up over the bank rate. His money supply function stays horizontal at this rate, until the central bank changes the bank rate. The institutional approach of Wray, Dow, Chick, etc. uses a two-step approach. Banks first try to innovate and stretch reserves before raising their rates. In Moore's approach, the mark-up is stable. The supply of credit remains horizontal at the new rate from the start of the process. Wray believes the lending rate is **not** exogenously determined by the central bank. Banks choose whether they want to raise rates or not. Eventually they raise rates when the central bank tightens monetary policy.

Moore sees interest rates as determined exogenously by the central bank, and criticises the institutional approach outlined above. He argues that costs do not increase as banking operations are expanded, and may decrease as benefits of scale are achieved. Wray's idea does not exclude economies of scale being reached. He argues that at higher interest rates, banks want to increase loans, without increasing reserves. They do this through innovation and higher leverage ratios. But as leverage ratios increase, so does risk, and therefore the cost of lending. That is why they have to raise their interest

rates. If a commercial bank grows and more loans are granted to more borrowers, with a corresponding increase in reserves, then economies of scale can be reached. This is a different argument than the one employed by Wray. Wray argued: "I believe Moore has overstated the ability of the Fed to exogenously set the discount rate, has underestimated its ability to use quantity constraints, and has misspecified the money supply function"(1990:97).

Central banks do not rely primarily on quantity constraints. They rather focus on the supply price of reserves, and accommodate all demand at this price. Wray says: "In contrast to Moore, I argue that the Fed has much more discretion regarding the quantity of reserves it will supply during 'normal' periods. However, like Moore, I believe that when the stability of the financial system is threatened, the Fed must abandon quantity constraints"(1990:98).

Wray's step function of the money supply rests on directly on Minsky's visualisation of money demand. The distinction between liquidity preference and the demand for money (demand for finance / credit) is essential to his approach. Wray (1990) uses Keynes' argument that liquidity preference cannot be met by an expansion of credit. A rise in liquidity preference is not the same as an increase in money demand. A rise in liquidity preference causes interest rates to rise, even when the central bank accommodates all demand for reserves. The liquidity preference of banks together with that of the public determine the bond rate of interest. This in turn determines the loan rate of interest, and then determines the deposit rate of interest:

> If by 'credit' we mean 'finance', I have no objection at all to admitting the demand for finance as one of the factors influencing the rate of interest (Keynes,1973:209).

If the structuralist view is correct, the money supply should not be viewed as horizontal at an exogenously determined interest rate. Money supply is then determined by money demand, and money demand is a function of profit expectations. Interest rates are largely determined by the willingness of banks and other financial institutions to allow their balance sheets to expand. Both the money supply *and* interest rates are endogenously determined.

Commercial banks do not simply add a stable mark-up to the central bank's discount rate. They do try to accommodate all demand for loans at a certain interest rate. But after leverage ratios increased significantly, they raise the lending rate to compensate for higher risk. Higher money demand does not necessarily cause higher interest rates. But higher liquidity preference does cause banks to increase their interest rates. The central bank therefore influences interest rates, but does not set them exogenously. The controversy therefore is centrally about the stability of the mark-up. Interest rate mark-ups will be examined and as well as their stability over the business cycle.

8.4 STABLE INTEREST RATE MARK-UPS

Lavoie has described the exogenous interest rate theory as follows: "It simply means that there are no natural forces in the economy, meaning no supply

and demand market mechanism, that should compel interest rates to rise when economic activity rises. When the stock of money expands, rates do not have to rise, they may also decrease. Central banks can change the exogenous rate of interest whenever it pleases them to do so. Indeed, we may consider that each level of interest rate corresponds to a particular monetary regime or monetary policy. Graphically, each monetary regime may be represented by a different horizontal credit-money supply curve" (Lavoie,1996:279).

Moore argues that the mark-up over some base rate (federal funds rate in the US) remains stable. The structural endogeneity theory explains why mark-ups vary over the business cycle. As banks extend more credit in a non-accommodating situation, they are forced to attract deposits with lower reserve requirements. These term deposits are less liquid than demand deposits. As these are less popular with banking customers, banks have to pay higher rates on these deposits, to convince customers to move their money into term deposits. The liability side of banks balance sheets consists of more term deposits than before. To cover the rising costs on the liability side, banks increase the cost of lending on the asset side. This explains how the liquidity preference of banks enters as an explanation for rising interest rate spreads during a downturn.

The essential point of structuralists examined here, is that the growth of liability management exerts upward pressure on interest rates within a given institutional structure. "This pressure is due to the higher interest costs liability management will impose on the liability side of banks' balance sheets"

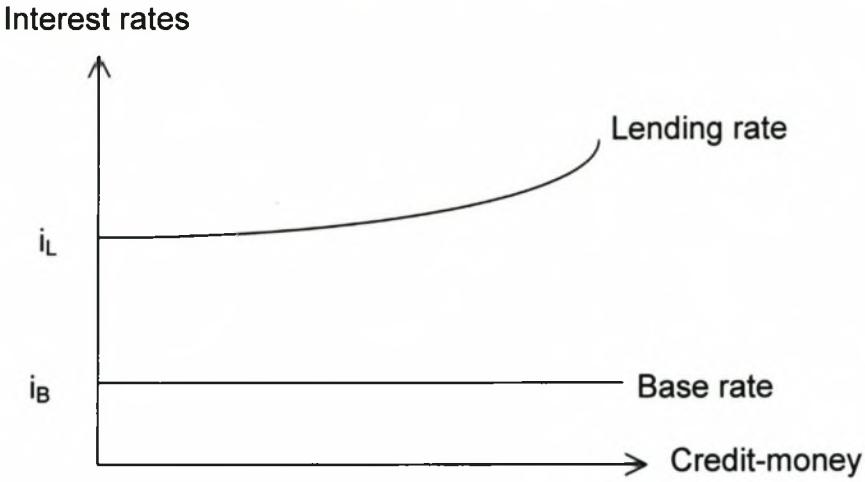
(Pollin,1991:375). The argument is that banks do not immediately raise rates (mark-ups). Due to financial innovation, they can react to increasing risks by managing liabilities in such a way that interest rates do not have to rise immediately. While there are no market related forces that influence the interest rate in the accommodationist view, for structuralists there is an interactive process where both the central bank **and** market forces play a role.

The central bank sets the interest rate (bank rate / discount rate). The liquidity preference of both banks and their customers determine the mark-up over the reference rate. Lending rates are not a stable mark-up over costs. There is some feedback from the market mechanism back to interest rates. The central bank uses quantitative constraints, and does not merely set interest rates. The focus of central banks may be on interest rate setting, but they can also influence monetary aggregates: "Accommodationists assert that the central bank can only conduct policy by adjusting interest rates, while structuralists maintain that quantity-based procedures are also theoretically possible" (Palley,1996:593).

The two major ingredients of the structuralist view are: a rising credit-money supply curve, and the non-accommodating behviour of commercial banks (as a result of their liquidity preference). In the words of Wray (1990:166-7): "The money supply curve is upward-sloping relative to interest rates in the absence of innovations or norms of behaviour, even though there is no strict quantity constraint on bank lending…It is the 'liquidity preference' of the banks which causes the short term interest to rise." Stable mark-ups are not a

characteristic of the structuralist world. The following figure shows that structuralists believe liquidity preference causes mark-ups to fluctuate over the business cycle.

Figure 8.1 Rising lending rates despite a pegged base rate.



In the literature, the mark-up is conventionally defined as the differential between some lending rate (i_L) over a base rate (i_B), such as the federal funds rate in the US:

$$i_L = (1 + m)i_B$$

In the calculations below, the data were obtained from the International Financial Statistics (IFS) data base. The mark-up was calculated as the differential between the lending rate and the discount rate. Lending rates are described as "...Bank Lending Rates, which usually meet the short- and medium-term financing needs of the private sector" (IFS Yearbook,1993:xv). The discount rate or bank rate "refers to the rate at which the monetary authorities lend or discount eligible paper for deposit money banks" (*ibid*). The mark-up can also be expressed as a ratio, e.g. i_L / i_B. The absolute differential was chosen to examine the fluctuations between the lending and bank rates

over time. The ratio gives a more stable relationship, but does not reflect the magnitude of interest rate movements in LDCs.

The relationships between mark-ups, spreads and real GDP growth rates are shown in graphs for the individual SADC countries (and the USA and the UK), in appendix 8.1. Monthly data were used for both mark-ups and interest rate spreads. For most of the countries in the SADC region, the only available data were for discount, lending and deposit rates. Data on money market rates, treasury bills, etc. were available only for more developed countries. From these graphs, no clear conclusions can be made regarding the behaviour of mark-ups and spreads over the business cycle. It is clear, however, that mark-ups and spreads are variable and that both mark-ups and spreads have been increasing during the last years of the sample period (1980-2001). To give a better picture of average movements over time, annual data are also shown for interest rate mark-ups and spreads.

In order to test the stability of mark-ups more formally, some summary statistics are presented below (table 8.1).

Table 8.1 – Interest rate mark-ups (sub-periods)

	Botswana	Lesotho	Malawi	Mauritius	Namibia	Mozam Bique	SA	Swaziland	Tanzania	Zimbabwe	USA
Cycle 1 : 1980:01 - 1986:12 Mean	2.5	n.a.	7.7	2.4	n.a.	n.a.	3.3	3.3	8.6	11.5	3.2
Standard deviation	0.7	n.a.	0.86	1.2	n.a.	n.a.	0.85	1.2	1.8	4.1	1.4
Standard deviation/ of mean	0.3	n.a.	0.1	0.5	n.a.	n.a.	0.3	0.4	0.2	0.4	0.4
Cycle 2 : 1987:01 - 1991:12 Mean	0.9	2.3	8.8	5.2	n.a.	n.a.	3.1	2.84	16.3	3.0	3.14
Standard deviation	0.87	1.63	2.74	0.82	n.a.	n.a.	0.34	0.49	0.74	1.55	0.56
Standard deviation/ mean	1.0	0.7	0.3	0.2	n.a.	n.a.	0.1	0.2	0.05	0.5	0.2
Cycle 3 : 1992:01 - 2001:12 Mean	1	1.09	4.3	8.4	2.7	11.34	3.23	3	7.08	1.43	3.37
Standard deviation	0.55	1.46	4.09	1.28	1.22	2.58	0.5	0.08	8.3	9.14	0.25
Standard deviation/ mean	0.6	1.30	1.0	0.2	0.5	0.2	0.2	0.03	1.20	6.30	0.1

Source: IFS – various years.

Some general conclusions about the stability of mark-ups can be made from the above table. In order to test whether mark-ups have become more stable over time (as the financial system develops), the whole period was divided into 3 sub-periods, shown in table 8.1. Some clear trends can be observed.

In most of the SADC countries, mark-ups became more unstable over the period. The stability is tested formally by comparing the standard deviation as a ratio to the mean. Zimbabwe is a good example, with this indicator increasing to 6.30 in cycle 3. Zimbabwe has been plagued during the 1990s by increasing instability (both political and economic). Countries with values of 0.2 or lower are Mauritius, Mozambique, South Africa and the USA. Mauritius and South Africa are the two countries in the sample with the highest levels of financial development. Swaziland is an outlier with an extremely low value of 0.3, because lending rates are kept at a fixed differential to the South Africa bank rate (this can be seen from the graph in Appendix 8.1). The USA has a

low value of 0.1%. Table 8.2 shows summary statistics for the whole period. Once again, Mauritius, South Africa and Swaziland are the SADC countries with lower variances.

Table 8.2 Interest rate mark-ups (1980-2001)

	Botswana	Lesotho	Malawi	Mauritius	South Africa	Swaziland	Zimbabwe	USA
Mean	1.30	2.46	5.85	5.08	3.16	3.07	3.60	3.60
Median	1.30	2.35	6.85	4.55	3.00	3.00	4.60	3.30
Maximum	3.00	7.70	18.30	9.40	8.50	4.50	14.10	6.90
Minimum	-0.60	-1.80	-9.00	0.20	-1.10	2.00	-19.20	2.20
Standard deviation	0.98	1.96	5.81	2.81	2.09	0.58	9.41	1.31
Standard deviation/ mean	0.75	0.79	0.99	0.48	0.66	0.18	2.61	0.36

Source: IFS – various years.

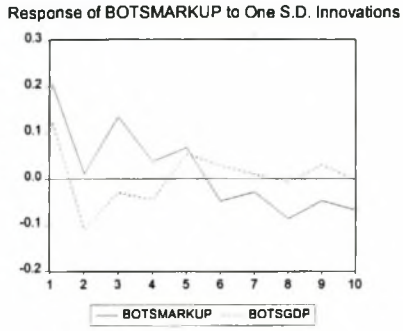
It is generally maintained by Post Keynesian authors (Pollin,1991; Vera,2001), that mark-ups vary pro-cyclically, as a result of cyclical changes in banks' risk positions. As the economy expands, demand for credit increases. Credit availability also increases during expansionary phases, but reserves may not be fully accommodating. To reflect the increasing loan/reserve ratio (higher risk), mark-ups increase (i.e. move with the cycle).

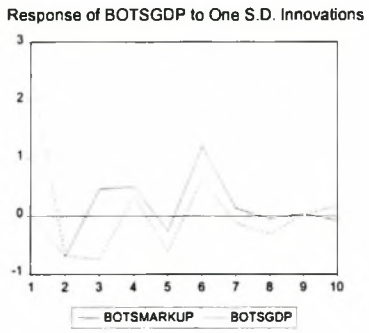
A recent article on the endogenous nature of the money supply in Spain tested the hypothesis of pro-cyclical mark-ups (Vera,2001). Vera examined both the stability and the movement of mark-ups: "'Structuralists argue that changes in banks' risk positions impact upon the level of mark-ups. Tests aimed at discriminating between the two approaches should directly examine the stability of mark-ups over time" (Vera,2001:514).

This hypothesis is tested below by looking at the movements of mark-ups (as defined above) over the cycle (approximated by changes in real GDP).

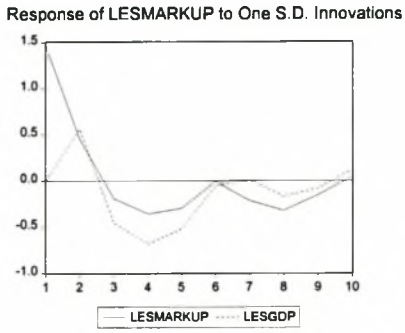
Figure 8.2 Var estimations – mark-ups over the business cycle

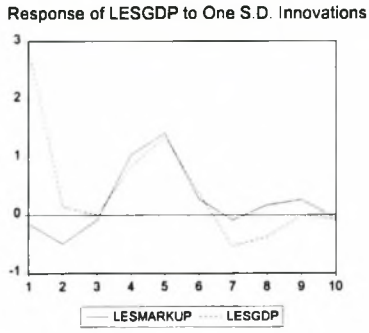
Botswana



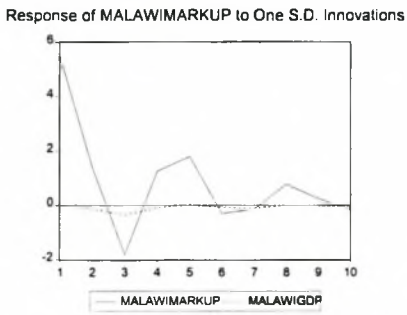


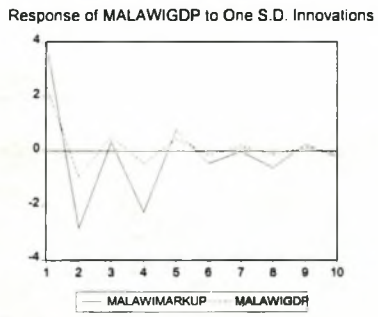
Lesotho



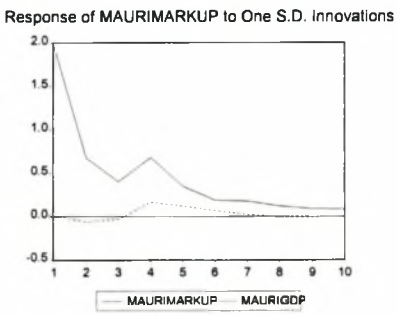


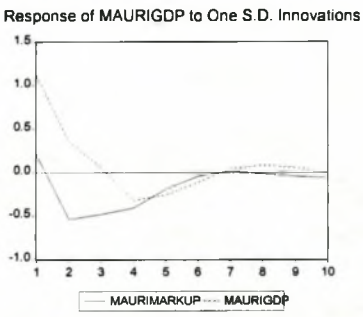
Malawi



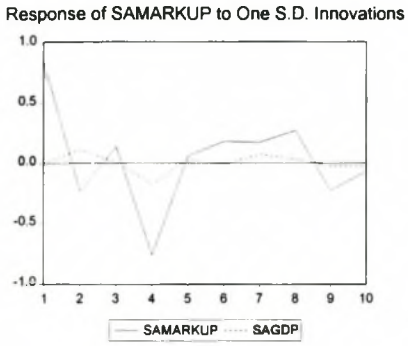


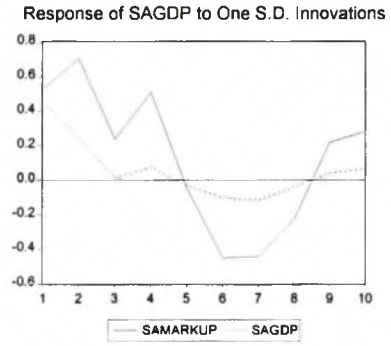
Mauritius



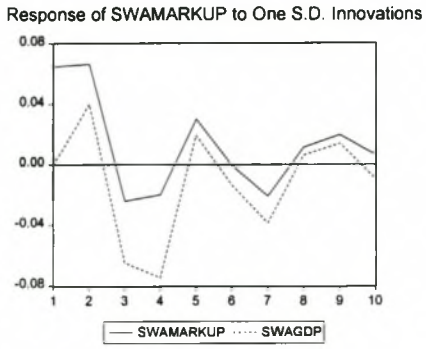


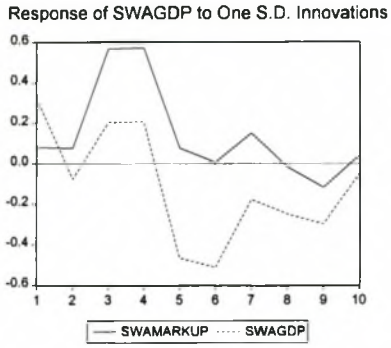
South Africa



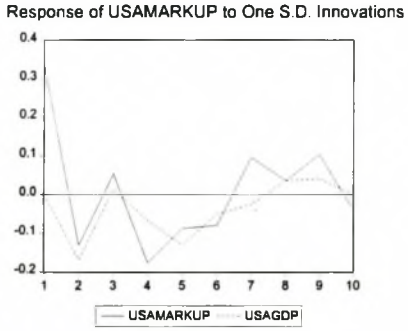


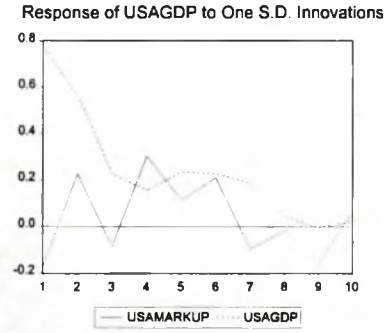
Swaziland



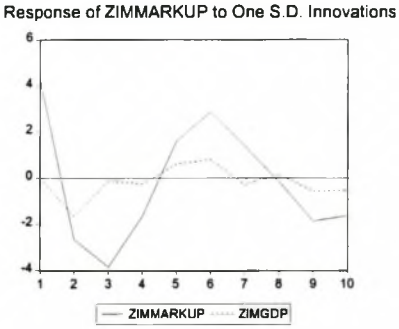


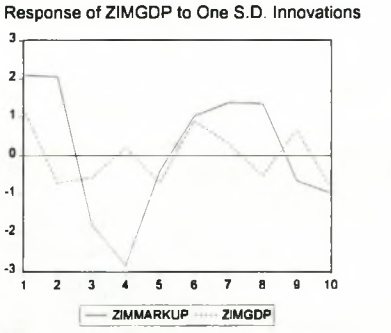
USA





Zimbabwe





In the graphs above, an unrestricted vector autoregression (var) model was used to look at the response of the mark-up when there is a shock to real GDP. The variables are stationary, real GDP is used and the mark-up moves

within a band and does not increase over time. The decisions on the number of lags included were determined by the availability of the data. In most cases there were 20 data points (or less) as annual data were used for the period 1980-2000. No more than 5 lags could be used, because of the small sample size. In most cases 3 or 4 lags were used. In order to test the robustness of the var regressions, the ordering of the two variables was reversed to see if this altered the results. In all the cases above, this did not significantly alter the results. There were insufficient data for var's for Mozambique, Namibia and Tanzania.

In the graphs above, the solid line in the top graph represents the response of the mark-up to a change in the real GDP. In all the graphs, there is a positive response of the mark-up to a change in GDP. The response varies and corresponds to the standard deviations shown in tables 8.1 and 8.2. The less developed countries have larger responses, i.e. Malawi and Zimbabwe. The bottom graphs show the inverse, i.e. the response of real GDP to a change in the mark-up. This also exhibits a positive trend.

The graphs show that the mark-up responds positively to changes in real GDP. It is difficult to derive any conclusions about the timing of the response, as annual data were used.

8.5 INTEREST RATE SPREADS

Apart from mark-ups, structuralist authors look at the movement of interest rate spreads over the business cycle. Interest rate spreads are important from a Post Keynesian viewpoint. Dow (1996:499) expects them to move counter-

cyclically. During an expansionary phase, banks extend credit readily (Minsky's financial instability hypothesis). As the expansionary phase continues, banks extend more and more credit, increasing the risk levels of their loan portfolios. As the banks' perception of risk changes they increase interest rate spreads.

Interest rate spreads can be defined in two ways, *ex ante* and *ex post* spreads. *Ex ante* spreads are the differential between the rates paid on liabilities and the rates charged on assets (lending and deposit rates). The *ex post* spread is the difference between banks' interest revenues and their interest expenses. This is a more comprehensive variable than the *ex ante* spread. The *ex post* definition will be used in 8.6 below, when a more comprehensive model of the determinants of interest rate spreads will be developed. To examine the movement of spreads over the business cycle, the *ex ante* definition is appropriate.

Where most structuralists see the mark-up as a pro-cyclical variable, the literature seems to suggest that spreads vary counter-cyclically. Dow (1996) argues that banks have a higher liquidity preference during periods of tight monetary policy. Financial crises occur following periods of rapid credit expansion when banks unduly reduce risk premia, encouraged by buoyant animal spirits. With the onset of a crisis comes a sharp rise in spreads and a sharp drop in borrowing. During a crisis, banks become less liquid as do their customers, forcing interest rates up. This might cause banks to raise interest rates to discourage borrowing. Raising interest rates, attracts riskier borrowers as customers, so-called adverse selection (described in Chapter 5).

The cost of capital rises and the availability falls during downturns: "Insofar as increased perceived risk is incorporated in a risk premium, borrowers may be rationed by price. Indeed, the evidence suggests that interest rate spreads vary counter-cyclically" (Dow,1996:499).

In order to look at the levels and stability of interest rate spreads in the SADC region, some descriptive statistics are given in table 8.3 below. The data are for the period 1980-2001.

Table 8.3 Interest rate spreads.

	Botswana	**Lesotho**	**Malawi**	**Mauritius**	**South Africa**	**Swaziland**	**Zimbabwe**	**USA**
Mean	2.84	6.94	10.86	6.73	4.18	6.43	8.93	2.3
Median	2.5	6.2	8.8	5.4	4.45	6.7	8.65	2.6
Maximum	5.2	12.2	21.2	11.3	6.3	7.8	24.1	3.2
Minimum	0.4	3	4.8	2.2	1.7	4.5	-8.9	1.3
Standard deviation	1.43	2.66	5.65	3.03	1.26	0.96	7.01	0.55
Standard deviation/ mean	0.50	0.38	0.52	0.45	0.30	0.14	0.78	0.23

Source: IFS – various years.

Spreads are generally higher than those of the USA. Developing countries have higher interest rate spreads than developed countries. The negative sign for Zimbabwe is surprising, as the lending rate is always expected to exceed the deposit rate. However, when monthly data are considered (shown in Appendix 8.1), it is clear that Zimbabwe had a lending rate that was **lower** than the deposit rate for every month during 1992, giving an average negative spread of –8.9%. Table 8.4 shows average interest rate spreads and mark-ups for a number of developing and developed countries. The values shown are the averages for the period 1980-1999. The SADC countries are shown in bold font.

Table 8.4 Average interest rate spreads and interest rate mark-ups

Country	Spread	Markup
Argentina	2.7	3.5
Australia	3.7	2.5
Austria	3.6	3.9
Belgium	5.8	3.6
Botswana	**3.2**	**1.8**
Canada	1.6	1.4
Switzerland	1.5	1.9
Congo	8.5	6.5
Colombia	9.9	3.4
Cyprus	2.9	2.3
Germany	5.5	6.1
Spain	3.5	1.5
Finland	2.9	1.9
UK	1.7	1.9
Italy	6.3	3.0
Japan	2.9	2.1
Kenya	6.4	1.2
Lesotho	**6.4**	**2.4**
Mauritius	**6.0**	**5.0**
Malawi	**9.8**	**5.8**
Netherlands	5.3	4.5
Portugal	4.1	4.2
Paraguay	11.7	9.6
Sweden	5.1	5.2
Swaziland	**6.3**	**3.0**
Tanzania	12.2	10.4
United States	1.9	3.5
South Africa	**4.1**	**3.1**
Venezuela	3.8	-5.5
Zambia	**10.0**	**1.1**
Zimbabwe	**7.7**	**4.3**

Source: IFS, various years.

From table 8.4 it can be seen that interest rate spreads are generally higher in less developed countries than in developed countries. This might place a serious constraint on economic growth, as wide spreads contribute to financial disintermediation: "The persistence of wide spreads can be a cause for concern because such spreads can be symptomatic of a number of serious problems, such as: a lack of adequate competition in the region's banking industry; perceived market risk; bank unsoundness; scale diseconomies constrained by 'small' markets; and/or high fixed and operating costs, due

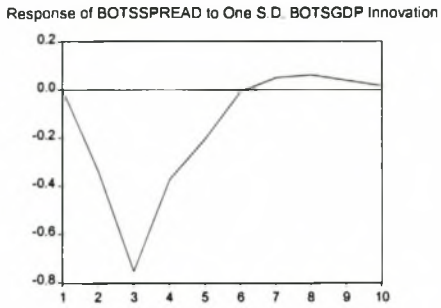
both to scale diseconomies and to the existence of regulatory constraints, which may distort the financial markets" (Perez & MacKenzie,1998:7).

According to the structuralist view, interest rate spreads should move counter-cyclically to the business cycle, as risk increases during periods of tight monetary policy. The graphs in appendix 8.1 show monthly data for both interest rate mark-ups and interest rate spreads for a selection of SADC countries. The change in real GDP is shown on an annual basis to facilitate comparisons. The USA and UK are also included, as representative of developed countries. In all the countries shown (except Namibia and SA), interest rate spreads have been increasing during the sample period (1980-2001).

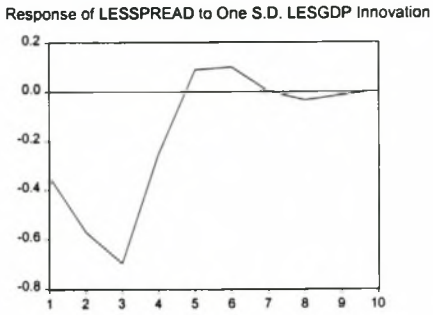
In order to test the structuralist claims that interest rate spreads move counter-cyclically, a VAR model was again used to examine the response of interest rate spreads to a change in real GDP. The approach is similar to the analysis of mark-ups. The data used were the series of interest rate spreads for the period 1980-2001 for the SADC countries for which data were available. The number of lags included depended on the availability of the data. Real GDP growth rates were calculated from this dataset as the change in real annual GDP, which in most cases also reduced the data points. Graphs depicting the response of the interest rate spreads are shown below.

Figure 8.3 Var-estimations: interest rate spreads and real GDP.

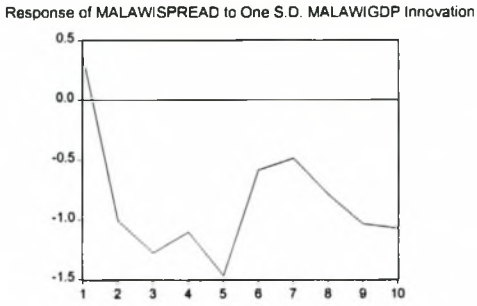
Botswana



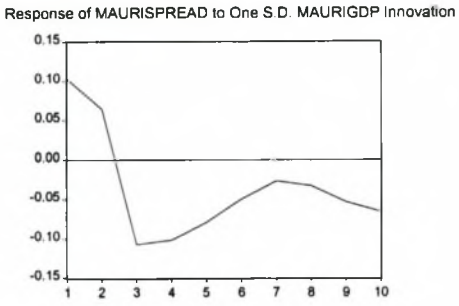
Lesotho



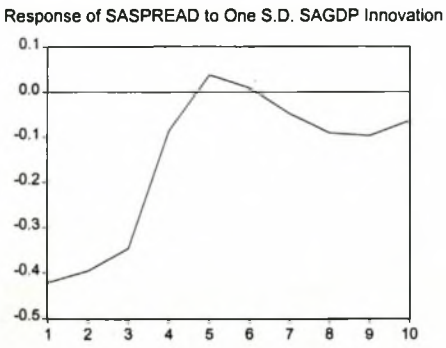
Malawi



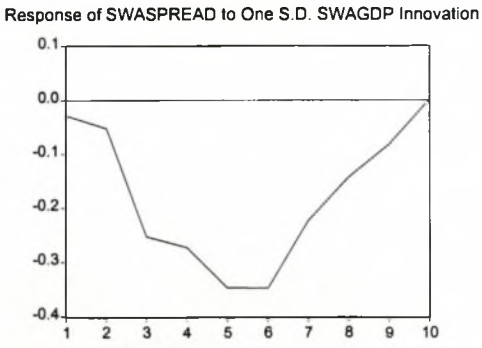
Mauritius



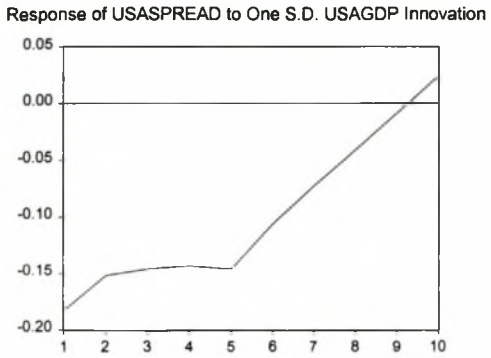
South Africa



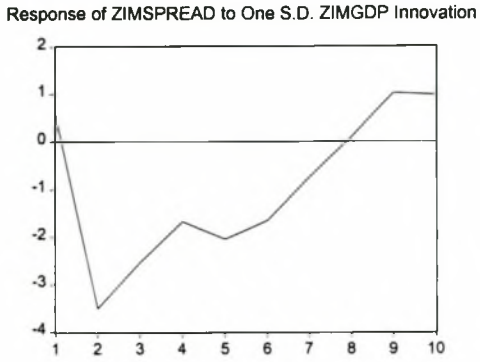
Swaziland



USA



Zimbabwe



In the graphs above, the same approach was used as for the mark-ups, i.e. an unrestricted vector autoregression (var) model. The response of the interest rate spread over time is examined, when there occurs a shock to real GDP. The variables are stationary, as real GDP is used and the spread moves within a band. The decisions on the number of lags included were determined by the availability of the data. In most cases there were 20 data points (or less) as annual data were used for the period 1980-2000. In order to test the robustness of the var regressions, the ordering of the two variables were reversed to see whether this altered the results. In all the cases above, this did not significantly alter the results.

From the graphs above, interest rate spreads appear to respond negatively to increases in GDP. The responses are generally related to the mean values and standard deviations of interest rate spreads, as shown in table 8.3.

In order to lower interest rate spreads, more information is needed on their determinants. If these problems can be redressed, spreads can narrow with positive effects on economic growth and improved resource allocation. The

model below is developed to increase our understanding of the determinants of interest rate spreads in the SADC countries.

8.6 DETERMINANTS OF INTEREST RATE SPREADS

Interest rate spreads are an important indicator of the level of financial development. As financial intermediaries, banks play a crucial role in most economies. Much research has been conducted on the link between financial development and economic growth. Some of the earliest work was done by McKinnon and Shaw (1973). Since then a growing body of literature has affirmed the importance of financial development for economic growth. One of the problems in this research is measuring the level of financial development in a country. Different authors use different indicators of financial deepening, e.g. narrow money to GDP, domestic credit to GDP, commercial bank domestic credit to GDP, etc. (King & Levine,1993).

Financial intermediation is vitally important for economic growth. In most developing countries however, financial disintermediation may be present. There are only a few banks, some banks are state owned, quantitative restraints are common, etc. These imperfections increase the cost of financial intermediation and stifle economic growth. Financial intermediation affects the net return to savings and the gross return to investment. The spread between these two mirrors bank interest margins, in addition to transaction costs and taxes (Demirguc-Kunt&Huizinga,1999:379). Bank interest spreads can

therefore be interpreted as an indicator of the efficiency of the banking system as well as of the level of financial deepening in an economy.

Regression analysis will be used to examine the underlying determinants of interest rate spreads. Data at the microeconomic level will be examined to determine what causes interest rate spreads to be so high in developing countries. Micro-level banking data were not available for all the SADC countries. Nine countries have been included in the analysis: Botswana, Malawi, Mauritius, Namibia, South Africa, Swaziland, Tanzania, Zambia and Zimbabwe. The primary data source for individual banks was the KPMG Africa Banking Survey for 2001. Data on country variables were obtained from the IFS database. Interest rate spreads can be defined as either *ex ante* or *ex post* spreads. The *ex ante* definition was used in the graphs above (differential between contractual rates charged on loans and rates paid on deposits). Demirguc-Kunt and Huizinga (1999:380) explained the *ex post* spread as follows: "The *ex post* spread is the difference between banks' actual interest revenues and their actual interest expenses. The *ex post* spread differs from the *ex ante* spread by the amount of loan defaults. The *ex post* spread is a more useful measure because it controls for the fact that banks with high-yield, risky credits are likely to face more defaults. An additional problem with using the *ex ante* spread is that data are generally available at the aggregate industry level and are put together from a variety of sources. Thus they are not completely consistent". The *ex post* spread will be used in the model below. This variable is reported by all the banks used in the

survey, and is reported as the 'net interest margin' (NIM) on banks' balance sheets.

The net interest margin **(NIM)** is defined in the KPMG Africa Banking Survey (2001:56) as: "The current year's net interest income divided by average interest earning assets." The net interest margin determines bank profitability rates, together with noninterest income, overheads, taxes and loan loss provisioning.

In a study on the determinants of bank interest spreads by Demirguc-Kunt and Huizinga (1999), the *ex post* spread is used as an indicator of bank efficiency. They find a positive correlation between interest rate spreads and bank profitability. Bank profitability is a bank's before-tax profits (BTP) divided by total assets (TA). Profitability can also be measured by the return on equity (ROE) as opposed to the return on assets. ROE will also be used in the regressions below.

The relationship between bank profitability and ex post interest rate spreads can be shown with a straightforward accounting identity:

$$\frac{BTP}{TA} \equiv \frac{ATP}{TA} + \frac{TX}{TA} \quad \text{.....(8.1),}$$

where before-tax profits (BTP) divided by total assets (TA), is defined as the sum of after-tax profits (ATP) divided by TA, and taxes (TX), divided by TA. From the bank's income statement, before-tax profits divided by total assets also satisfies the following accounting identity,

$$\frac{BTP}{TA} \equiv NIM + \frac{NII}{TA} - \frac{OE}{TA} - \frac{GPL}{TA} \quad \text{.....(8.2),}$$

where NIM is the net interest margin, NII is non-interest income, OE is operating expenditure and GPL is general provisions for bad loans. These are expressed as a ratio of total assets (TA). NII/TA is included, as most banks also engage in non-lending activities, such as investment banking and brokerage services. OE/TA shows the operational costs divided by total assets, and GPL/TA measures provisions for bad debts, divided by total assets.

Using the same information, the NIM can be expressed as the following identity:

$$NIM \equiv \frac{BTP}{TA} - \frac{NII}{TA} + \frac{OE}{TA} + \frac{GPL}{TA} \quad \text{.....(8.3)}$$

The net interest margin can be used as a measure of bank 'efficiency'. This is a crude indicator of bank efficiency, as a reduction in interest margins does not necessarily signal an improvement in efficiency. Variation in an accounting ratio, such as the NIM, may reflect differences in net interest income (the numerator) or differences in, for example, nonlending assets (a component of the denominator).

In the data set, the accounting data for the individual banks were obtained from the KPMG Banking Survey – Africa (2001). All the individual banks use different auditing firms, but the final data set has been put together by KPMG. The NIM is used as a rough index of bank efficiency. The total sample

includes data on 76 banks in nine different countries. The regression analysis uses different groups of determinants. The first group consists of a number of bank characteristics, such as loan loss provisions, net profits, overheads, etc. The second group contains a number of macroeconomic indicators, such as real per capita GDP growth rates, real interest rates, etc. The third group contains indicators of the financial structure of an economy such as M2/GDP, loans/reserves, bank assets/GDP, stock market capitalisation/GDP and market concentration indices (CR3 and HHI).

The regression analysis uses the following equation:

$$I_{ijt} = \alpha_0 + \alpha_i Z_{ijt} + \beta j X_{jt} + \gamma_j F_{jt} + \varepsilon_{ijt} \quad \text{.....(8.4)}$$

Where I_{ijt} is the dependent variable, the net interest margin (NIM) for bank $_i$ in country $_j$ at time $_t$. Z_{ijt} are characteristics of bank $_i$ in country $_i$ at time $_t$, X_{jt} are characteristics of country $_j$ at time $_t$, F_{jt} are characteristics of the financial structure of country $_j$ at time $_t$, and ε_{ijt} is a white-noise error term.

8.7 DATA

The current study uses income statement and balance sheet data that are reported in the KPMG Banking Survey – Africa, 2001. The survey covers a total of 14 African countries. The 9 SADC countries included in the survey are examined in this chapter. The total data set includes 76 commercial banks from these 9 SADC countries.

In general, the SADC countries have relatively high net interest margins, compared to developed countries. This is true of most developing economies.

In their research on net interest margins, Demirguc-Kunt & Huizinga (1999) found that several developed countries (e.g. Luxembourg and the Netherlands) have a net interest margin of close to 1%. This is the low end of the distribution: "Generally, developing countries, and especially Latin American countries, such as Argentina, Brazil, Costa Rica, Ecuador, and Jamaica, have relatively large spreads"(1999:383).

The accounting identity above (8.3) suggests a useful decomposition of the realised interest spread (the NIM) – into its constituent parts: non-interest income, operating expenses, general provision for bad debts and before tax profits. Column 2 of table 8.5 shows the net interest margin (NIM) for the nine SADC countries. Columns 3-8 break down the net interest margin into its components as shown in identity 8.3: non-interest income, operating expenses, general provisions for bad debt and net profit.

Table 8.5 – Bank income statement and balance sheet data for selected SADC countries (2000).

	NIM	Non-interest income/ Total Income	Non-performing advances/ TA	Operating expenses/ TA	General provision/ TA	BTP/TA	Net profit/TA
Botswana	8.3	27.4	3.3	3.7	0.9	4.4	2.7
Malawi	16.1	30.5	10.1	8.4	2.0	6.9	4.4
Mauritius	4.5	27.5	6.2	5.4	1.4	2.2	1.9
Namibia	6.7	33.2	5.2	4.6	0.9	4.0	2.5
Swaziland	6.9	28.8	21.7	7.9	1.3	2.1	1.7
South Africa	8.0	39.2	4.1	4.2	1.2	4.0	3.6
Tanzania	9.2	29.8	8.3	7.2	3.8	2.2	1.8
Zambia	15.6	49.9	n/a	10.3	n/a	7.4	4.8
Zimbabwe	19.0	32.6	8.9	7.1	1.7	9.8	7.2

Notes: NIM = net interest margin; TA = total assets and BTP = before-tax profit.

Source: KPMG Banking Survey – Africa 2001

Table 8.5 shows that the relatively more advanced SADC countries have lower net interest margins, i.e. Mauritius, Namibia, Botswana and South Africa. These four countries also rank higher in terms of non-performing advances as a percentage of total advances and operating expenses as a percentage of total assets. Non-performing loans are defined as non-performing advances (the total of loans and advances in respect of which no income is generated, i.e. non-performing debts), divided by total advances. Operating expenses are total expenses (before tax) excluding interest expense and doubtful debts expense, divided by average total assets. General provisions are the general debt provision for bad debts on balance sheets divided by total advances. These are relatively high in the less developed SADC countries, e.g. Malawi and Tanzania. Loan-loss provisioning as a share of total advances is a direct measure of differences in credit quality across countries (column 6).

Non-interest income as a share of total income reveals the importance of fee-based services for banks in different countries (column 3). Most of the SADC countries rely heavily on fee-based operations. In Zambia the figure is as high as 49.9% of total income. This probably indicates low levels of financial intermediation, since half of the commercial banks' income is made up of non-interest activities. According to equation 8.2, profit before tax (PBT/TA) should be higher if operating expenses and loan loss provisions are lower. It seems indeed that Botswana, Namibia and South Africa have relatively high profit ratios (above 4%), but Mauritius has a low value (2.2%), while some of the less developed countries (Malawi, Zambia and Zimbabwe) have very high

profit ratios. This might be because of highly concentrated banking industries and high margins (Zambia = 15.6, Malawi = 16.1 and Zimbabwe = 19.0). As a residual, net profits as a share of total assets reflect the extent to which the net interest margin translates into net-of-tax profitability. This is shown by the clear correlation between this variable and the NIM.

In order to compare some of these values with a wider sample of countries, data for some less-developed and developed countries are given in table 8.6 below.

Table 8.6 – Bank income statement and balance sheet data for selected countries, (average values,1988-95).

Country	Net interest margin	Loan loss provisions (as % of total assets)	Net profits (as % of total assets)
Argentina	7.3	1.8	2.0
Australia	3.0	0.7	0.6
Brazil	8.9	1.3	1.4
Canada	2.9	0.6	0.6
Colombia	6.0	0.9	2.2
France	2.4	1.0	0.1
Germany	2.0	0.6	0.3
Romania	9.7	3.7	4.3
United Kingdom	2.3	0.7	0.8
Venezuela	7.2	1.0	2.5
United States	3.9	0.7	1.0

Source: Demirguc-Kunt & Huizinga, 1999.

When the data for the SADC countries (table 8.5) are compared to some other developed and developing countries (table 8.6), interest rate spreads (as measured by the NIM) are much higher than in developed countries. The spreads in the SADC countries are comparable to some of the South American countries (Argentina, Brazil, Colombia and Venezuela). Interest margins are lower in developed countries (e.g. 2.4 in France and 2.3 in the UK). The spreads in the less developed SADC countries, i.e. Malawi, Zambia

and Zimbabwe, are much higher than in other countries. Their net profit rates exceed 4%. The only country in table 8.6 with a comparable net profit rate is Romania (4.3%). Romania also has the highest net interest margin, at 9.7%. High net interest margins are associated with higher loan-loss provisions, but also with higher profit rates.

Tables 8.7 and 8.8 show the macroeconomic and institutional variables that were used. The data are for 2000, or the most recent year available.

Table 8.7 – Macroeconomic variables

Country	Real GDP per capita growth	Real interest rates	Savings deposits/ total deposits	Loan/ reserve ratio
Botswana	2.76	6.6	78.6	18.7
Malawi	1.54	7.9	62.11	1.5
Mauritius	2.1	14.9	91.63	14.1
Namibia	3.1	10.4	37.83	24.5
Swaziland	-0.9	5.0	63.2	10.6
South Africa	-0.4	10.4	71.21	32.3
Tanzania	2.2	11.7	69.4	1.7
Zambia	0.2	15.4	76.2	2.5
Zimbabwe	-1.7	4.8	76.2	6.3

Source: IFS (various years), TIPS data.

The macroeconomic variables are real per capita GDP growth, savings/deposit ratios, loan/reserves ratios and the real interest rate. It is expected that there is a negative relationship between real per capita GDP growth and interest rate spreads. Financial disintermediation (high spreads) stifles economic growth. Theory presumes that higher real interest rates would increase the NIM. The savings/deposit ratio was included as an indication of the level of development. In most developing countries, savings deposits form the majority of total deposits. Namibia was the only country with a ratio lower than 60%. It was expected that this would increase the spread (as found in Perez & MacKenzie,1998), through both an increase in the cost

of funding to the banks and an increase in operating expenses in servicing a proliferation of small savings accounts. The loan/reserve ratio was also included as a financial development indicator.

Table 8.8 – Institutional variables

Country	HHI	CR3	M2/GDP	Stock market capitalisation/GDP	Number of banks
Botswana	2647	85.5	29.1	12.7	6
Malawi	3879	95.2	17.4	8.8	4
Mauritius	3642	87.4	80.5	44.0	7
Namibia	2720	83.16	40.1	875.1	4
Swaziland	3123	86.5	27.4	128.1	4
South Africa	1877	65.8	55.6	7.0	13
Tanzania	3172	85.5	19.3	3.0	9
Zambia	2679	81.8	16.9	8.98	6
Zimbabwe	820	38.6	21.8	16.1	25

Source: IFS (various years), TIPS data.

The financial structure/ institutional variables include M2/GDP, stock market capitalization/GDP, number of banks and market concentration (CR3 and HHI). The stock market capitalisation/GDP measures the extent of stock market development. Developing countries tend to have lower M2/GDP and capitalisation/GDP ratios. Two concentration ratios were calculated, the CR3 and the Herfindahl-Hirschmann Index (HHI). The CR3 is the sum of the assets of the three largest banks expressed as a percentage of the assets of all the banks. The HHI is defined as the sum of the individual market shares squared (as shown in Chapter 6). The HHI gives a good indication of the level of concentration in the banking sector as well as the distribution of market shares. It measures the relative distribution of power, where the CR3 considers only the three largest banks. Any HHI above 1 800 is considered to indicate a high degree of concentration. The SADC countries all have high CR3 ratios, as would be expected in an undeveloped financial market where a

few big banks (some still state-owned) dominate the local market, with little competition and high structural barriers. All the countries except SA, Zambia and Zimbabwe, had CR3 ratios above 80%: Botswana (85.8%), Malawi (95,2%), Mauritius (87,4%), Namibia (83,16%), Swaziland (86,5%), and Tanzania (85,5%). Zambia had a CR3 of 65,5%, SA 65,8% and Zimbabwe a low ratio of 38,6%. This is much higher than in developed countries. The USA has a very low CR3 of 16%, whereas France and Germany have ratios of around 50% (Demirguc-Kunt & Huizinga,1999:389). Table 8.9 shows the data for the NIM as well as its components, for the 76 individual commercial banks included in the sample.

Table 8.9 Bank balance sheet and income statement data for individual SADC banks.

	Net interest margin	Non-interest income/ total income	Operating expenses/ TA	General provision/ TA	PBT/TA
Barclays bank of Botswana	15	32	3.7	-0.3	6.316114
Botswana Building Society	9.34	10.29	4.87	2.93	4.592514
First National Bank of Botswana	6.15	36.11	3.75	0.55	3.707893
Stanbic Bank of Botswana	5.37	34.17	3.45	0.46	3.966569
Standard Chartered Bank of Botswana	6.36	39.37	4.6	0.58	3.5771
ULC (Pty) Ltd.	7.7	12.65	2.09	0.93	4.492641
Commercial Bank of Malawi	13.27	26.85	8.84	1.22	8.715811
Fincom Bank of Malawi	6.48	31.04	5.61	1.12	2.746953
First Merchant Bank	22.89	30.66	10.36	3.79	7.896473
National Bank of Malawi	21.95	33.35	8.67	1.83	8.183179
Bank of Baroda	3.58	25.4	1.67	n/a	1.103784
Barclays Bank	10.98	36.21	3.98	0.97	1.610284
Habib Bank	1.87	14.71	3.43	0.21	4.324791
HSBC Mauritius	2.9	41.54	2.14	1.02	2.363973
State Bank of Mauritius Group	4.51	29.75	20.96	0.81	2.861394
The Delphis Bank	3.9	26.7	2.6	0.1	1.271855
The Mauritius Commercial Bank	3.83	18.29	3.21	5.31	1.789415
Bank Windhoek Ltd	7.5	25.86	4.65	1.3	3.585327
Commercial Bank of Namibia	5.28	36.38	4.16	1.27	3.151099
First National Bank of Namibia	7.63	34.77	5.4	0.94	5.200914
Standard Bank of Namibia	6.39	35.9	4.13	0.04	3.937156
First National Bank of Swaziland	9.17	38.13	8.87	0.73	1.630867
Nedbank Swaziland	7.12	30.08	7.04	1.61	1.514209
Standard Bank Swaziland	6.78	36.77	6.97	1.53	2.934094
Swaziland Development and Savings Bank	4.57	10.3	8.57	n/a	2.171254
ABSA Group Ltd	4.18	3.07	4.47	0.86	1.589253

African Bank Investments Ltd	24.6	4.98	9.68	3.59	14.88575
Bank of Taiwan SA Ltd	2.91	0.99	2.75	1.36	3.314917
BOE Ltd	4.23	2.76	3.12	0.67	2.036564
FirstRand Banking Group	5.28	3.44	4.2	1.21	1.75826
Imperial Bak Ltd	4.04	1.95	2.33	0.53	1.066776
Investec Group Ltd	1.52	2.01	2.01	0.88	1.766315
Nedcor Ltd	3.28	3.15	3.13	0.8	2.514183
PSG Investment Bank	18.78	6.15	5.75	0.75	8.167992
Standard Bank Investment Corporation Ltd	4.37	3.67	4.33	0.83	2.150222
TEBA Bank Ltd	14.78	5	1.7	n/a	6.76259
VBS Mutual Bank	7.75	0.32	6.4	1.86	2.47093
Akiba Commercial Bank Ltd	8.6	33.02	8.8	n/a	2.212972
Diamond Trust Bank	9.47	29.62	5.76	4.39	3.654963
International Bank of Malaysia	10.39	9.42	8.31	1.09	1.113392
Kenya Commercial Bank	10.99	27.48	8.61	n/a	2.62918
Mufindi Community Bank	6.44	0.28	0.06	0.04	-0.27153
Stanbic Bank	7.04	38.43	4.44	n/a	2.938744
Standard Chartered Bank	8.17	34.85	5.14	5.49	4.733725
Tanzania Investment Bank	13.18	66.9	12.86	108.41	1.364957
Tanzania Postal Bank	8.68	28.49	10.5	8.35	1.847447
Barclays Bank of Zambia	22.85	43.97	12.12	n/a	7.01206
Citibank of Zambia	5.53	43.47	6.18	n/a	9.917011
First Alliance Bank	26.19	34.33	14.18	n/a	9.602886
New Capital Bank Pic	12.75	86.71	9.72	n/a	3.263231
Stanbic Bank Zambia	10.09	46.25	8.67	n/a	5.236953
Standard Chartered Bank Zambia	16.34	44.55	10.7	n/a	9.358966
ABC Holdings	8.6	56.64	7.01	1.39	3.775199
Barclays Bank of Zimbabwe	22.58	42.88	13.56	3.24	12.4197
Beverley Building Society	23.07	1.36	5.37	n/a	13.63195
Central Africa Building Society	18.64	1.85	4.93	0.02	13.41171
Century Holdings Ltd	18.05	16.8	9.28	0.54	5.579972
Commercial Bank of Zimbabwe	10.74	43.52	6.83	1.56	2.117903
Fincor Finance Corporation	26.35	1.4	7.61	5.48	43.05762
First Banking Corporation	18.2	40.1	10.84	1.14	4.76303
First National Building Society	9.18	19.69	3.96	n/a	4.602591
Founders Building Society	19.03	1.1	8.1	0.3	7.789547
Global Investments House	14.96	27.16	4.23	n/a	8.496333
Interfin Merchant Bank	0.94	153.48	2.22	3.7	0.346694
Intermarket Discount House	20.71	n/a	7.15	n/a	5.960457
Kingdom Financial Holdings	17.59	37.09	7.98	0.48	10.55645
Merchant Bank of central Africa	62.32	45.7	9.7	4.1	14.90436
National Discount House	15.5	4.47	6.89	n/a	5.609985
NMBZ Holdings	16.07	60.1	6.34	0.86	12.62802
Rapid Discount House	17.6	0.66	3.41	n/a	6.334242
Stanbic Bank Zimbabwe	18.95	37.95	7.68	-0.23	8.556604
Stanbic Finance Zimbabwe	22.17	0.38	6.98	1.05	13.64258
Standard Chartered Bank Zimbabwe	22	41.4	11.6	2.4	10.7961
Tetrad Securities	29.03	34.56	10.81	n/a	20.8589
Trust Merchant Bank	8.71	78.49	4.02	0.96	5.612863
Zimbabwe Building Society	14.3	4	4.1	n/a	0.313899

Source: KPMG Africa Banking Survey - 2001

8.8 EMPIRICAL RESULTS

Regression equation (8.4) above was used to estimate the determinants of *ex post* interest rate spreads (net interest margin). The first group of variables are bank specific variables from bank balance sheet and income statement data. As shown in equation 8.3 above, that the NIM can be decomposed into its constituent parts, before-tax profits, non-interest income, operating expenditures and general provisioning for bad debts.

In table 8.10 below, the results are shown when each of the variables is regressed individually on the NIM.

Table 8.10 – Bank characteristics
Dependent variable : Net interest margin

Variable	Coefficient	Std. Error of regression	t-Statistic	R-squared	Durbin-Watson
Before-tax profits/ TA	0.98	7.08	7.27***	0.41	1.99
Net profit/ TA	1.36	7.29	6.89***	0.39	1.90
Noninterest income / Total Income	-0.06	9.16	-1.37	0.02	1.53
Operating expenses/ TA	1.19	8.21	4.50***	0.21	1.59
General provisions / Total advances	1.43	9.62	1.87*	0.06	1.00
Non performing loans / TA	-0.04	9.92	-0.29	0.00	0.97
Return on equity	0.17	7.56	6.10***	0.33	1.97
Return on assets	0.35	8.59	3.47***	0.14	1.63

* Significant at the 10 percent level.
** Significant at the 5 percent level.
*** Significant at the 1 percent level.

Several profit variables were used, i.e. before-tax profits as a ratio of total assets, net profit as a ratio of total assets, return on equity and return on

assets. The first two variables were calculated from the individual income statement data while the last two, were reported by the banks. All four variables are significant at the 1% level. Before-tax profits/TA has the highest t-stat value and will be used in the regressions below. Non-interest income is not related to the NIM (insignificant t-stat). Operating expenses as a ratio of total assets are positively correlated with the NIM (also significant at the 1% level). Higher expenses leads to higher spreads, also indicating high levels of inefficiency. Two measures of provisioning for bad debts were used, general provisions as a ratio of total advances and non-performing loans as a ratio of total advances. General provisions are significant at the 10% level. The regression results of the components of the NIM (equation 8.3) are shown below:

Table 8.11 – Regression results

Dependent variable: Net interest margin

Constant	1.31 (0.47)
Before-tax profit (BTP/TA)	0.82 (4.84)***
Non- interest income (NII/TA)	0.002 (0.04)
Operating expenditure (OE/TA)	0.84 (2.78)***
General provision for bad loans (GPL/TA)	0.10 (0.16)
$R^2 = 0.49$ Adjusted $R^2 = 0.44$ Durbin-Watson = 1.71 Number of observations = 55	

(t-stats in parentheses)
* significant at the 10 percent level
** significant at the 5 percent level
*** significant at the 1 percent level.

Data on all 76 banks were included. Data on general provision for bad loans were only available for 55 banks, the adjusted sample becoming 55.The

method used was ordinary least squares. Profits are highly significant, as shown above (table 8.11). Non-interest income was included in the model, as banks also engage in non-lending activities, such as investment banking and brokerage services. In some other empirical studies (Demirguc-Kunt&Huizinga,1999), this was a meaningful variable, but in the current regression analysis it did not give meaningful results, and was not significant. The higher the operating expenditure (as a ratio of total assets), the higher the NIM. General provisions for bad debts are not significant.

The adjusted coefficient of determination ($R^2 = 0.49$) is not very high. This is however not much lower than comparable studies. In a study on interest rate spreads in the Eastern Carribean, the reported R-squared was 55 percent. The explanatory variables were: provision for doubtful debts, economic growth, savings deposits/ total deposits, share of commercial bank public sector loans and operating expenses as a percentage of average total assets. The economic growth variable was not significant and had a negative sign (Perez&MacKenzie,1999:33). In another study on interest rate spreads, using data for 80 countries (Demirguc-Kunt&Huizinga,1999), the R-squared was 0.63.

Interest rate spreads are better explained by adding the macro-economic and institutional data described above (Tables 8.6 and 8.7). The macro-economic data were regressed individually on the NIM and the results are shown below in table 8.12.

Table 8.12 – Macro-economic variables

Dependent variable: Net interest margin

Variable	Coefficient	Std. Error of regression	t-Statistic	R-squared	Durbin-Watson
Per capita GDP growth	-2.16	8.42	-3.96***	0.17	1.86
Savings/Deposits	0.05	9.25	0.51	0.003	1.55
GDP growth	-0.23	9.26	-0.27	0.001	1.53
Loan/ reserve ratio	-0.29	8.7	-3.16***	0.11	1.73
Real interest rate	-0.82	8.69	-3.17***	0.12	1.77

* Significant at the 10 percent level.
** Significant at the 5 percent level.
*** Significant at the 1 percent level.

It is not surprising that the GDP growth variable does not give good results. GDP growth has the right sign, but a very low t-statistic (-0.27). Because of the small open nature of these economies, GDP growth is assumed to be negatively related to the interest rate spread. In none of the regressions (either in the literature or in the current regressions) was a significant GDP growth variable found. The better variable is real per capita GDP growth. This is a static model, as the individual banking data were for the year 2000 and most of the macro-economic data were also for the same year. In any such model there is a time dimension with long lags that are not accounted for. Data availability was a problem, as there were only nine countries in the total sample. Observations for only three years were available from the KPMG dataset. The best choice, given the data limitations, was a cross-sectional analysis to try and identify the factors that determine interest rates.

For the variable real per capita GDP growth, data were used for 1999, allowing for the fact that interest rate spreads are related to GDP growth in the previous year. This variable is highly significant and inversely related to the net interest margin (NIM), at the 1% level. The ratio of savings to deposits

was not significant. The loan/reserve ratio is also an indicator of financial deepening and this was inversely related to the NIM. The real interest rate is significant, but has a negative sign. This is surprising, as theory presumes that high real interest rates produce high interest rate spreads.

When the macro-economic variables are added to the bank variables, the following results are obtained:

Table 8.13 – Regression results

Dependent variable: Net interest margin

Constant	5.33 (2.33)**
Before-tax profit (BTP/TA)	0.73 (5.41)***
Operating expenditure (OE/TA)	0.64 (2.73)***
Real GDP per capita growth	-0.96 (-2.14)**
Loan/reserve ratio	-0.10 (-1.37)
$R^2 = 0.54$ Adjusted $R^2 = 0.52$ Durbin-Watson = 2.08 Number of observations = 76	

(t-stats in parentheses)
* significant at the 10 percent level
** significant at the 5 percent level
*** significant at the 1 percent level.

The R-squared value is higher ($R^2 = 0.54$), but the t-statistics of the loan/reserve variable is not significant. Finally, the institutional variables were examined and the results are reported in table 8.14 below.

Table 8.14 – Regression results

Dependent variable: Net interest margin

Variable	Coefficient	Std. Error of regression	t-Statistic	R-squared	Durbin-Watson
M2/GDP	-0.18	8.31	-4.24***	0.19	1.85
Stock market capitalisation/GDP	-0.009	9.09	-1.68*	0.03	1.61
CR3	-0.19	8.29	-4.28***	0.19	1.97
HHI	-0.003	8.34	-4.17***	0.19	1.87

* Significant at the 10 percent level.
** Significant at the 5 percent level.
*** Significant at the 1 percent level.

The M2/GDP variable is significant (at the 1% level) and has the correct sign. Countries with more developed financial systems have higher ratios of M2/GDP, and lower interest rate spreads. The stock market capitalisation to GDP ratio was significant at the 10% level and has the correct sign. Both concentration ratios (CR3 & HHI) had significant t-values, but the wrong sign. Economic theory predicts that the banking sector in less developed countries has higher concentration ratios than in developed countries. High concentration ratios in the banking sector could be interpreted as low levels of competition and inefficient behaviour. The data above do not support this notion, since the negative sign implies that high concentration ratios are associated with low spreads. Since all the countries had highly concentrated banking sectors, this is probably a sampling error.

Table 8.15 – Regression results

Dependent variable: Net interest margin

Constant	4.63 (1.89)*
Before-tax profit (BTP/TA)	0.60 (4.28)***
Operating expenditure (OE/TA)	0.59 (2.75)***
M2/GDP	-0.07 (-2.01)**
Return on equity (ROE)	0.07 (2.59)

$R^2 = 0.58$
Adjusted $R^2 = 0.55$
Durbin-Watson = 2.13
Number of observations = 76

(t-stats in parentheses)
* significant at the 10 percent level
** significant at the 5 percent level
*** significant at the 1 percent level.

When an institutional variable (M2/GDP) is added, the regression results are improved ($R^2 = 0.58$). The results show that the net interest margin can be explained by bank specific factors, such as costs and profit levels, and there is also a significant relationship between the level of financial sector development (M2/GDP) and the net interest margin. Banks in more advanced financial systems have lower spreads. The results of the White test for heteroskedasticity were also comforting, with the F-statistic = 0.72 (p=0.666) and the Obs*R-squared = 6.07 (p=0.638).

Finally, banks without data on loan-loss provisions were eliminated from the total sample. In the above equation no significant relationship was found between loan loss provisions and interest rate spreads. In most of the studies on interest rate determinants, this was a significant variable. The sample was reduced to 52 banks, eliminating banks where loan-loss provisions were not available. This meant that no banks from Zambia were included, since none had data on loan loss provisions.

Further examination of the data found that better results would be obtained by omitting Zimbabwe altogether. There were various reasons for this. Zimbabwe has been going through a period of high instability. All the figures were for 2000 and these figures were severely distorted by the instability in the

country. There were also data available on 24 banks in Zimbabwe. This contributed to the distortion as Zimbabwe contributed to a large portion of the available data. This may be the explanation for the wrong signs of the HHI variable, shown in table 8.14 above. When Zimbabwe is omitted, the sample is reduced to 39 banks. The results are shown below.

Table 8.16 – Regression results
Dependent variable: Net interest margin

Constant	-9.81 (-2.41)**
Before-tax profit (BTP/TA)	1.70 (8.49)***
Cost/Income ratio	0.14 (3.14)***
General provision for bad loans (GPL/TA)	0.05 (2.17)**
Real interest rate	0.22 (1.75)*
M2/GDP	-0.04 (-1.72)*
HHI	0.001 (1.81)*
$R^2 = 0.82$ Adjusted $R^2 = 0.78$ Durbin-Watson = 1.99 Number of observations = 34	

(t-stats in parentheses)
* significant at the 10 percent level
** significant at the 5 percent level
*** significant at the 1 percent level

This equation gave much better results, with a R-squared value of 0.82. M2/GDP is negative and significant, as expected from the hypothesis explained above, higher financial development leads to lower interest rate spreads. The HHI is now positive and significant. This is probably due to the omission of Zimbabwe (which had a perverse effect as the HHI was relatively low, because of the high number of banks included). The general provision for bad loans/TA is also positive, in accordance with the hypothesis. The cost to

income ratio is also positive and significant. The macroeconomic variable, real interest rates, is now positive and significant. One expects interest rate spreads to move with real interest rates.

From the revised sample, some conclusions can be drawn about the determinants of interest rate spreads in the SADC countries. Bank characteristics have a strong influence on the interest rate spread. Provisions for bad debts increase the interest spread, as does the cost-to-income ratio. Operating expenditures are also important. Finally, profits (before-tax profits as a ratio of total assets) are important determinants of the interest rate spread.

Finally, the structure of the financial sector determines the size of interest rate spreads. The HHI has a positive and significant relationship with interest spreads. Higher levels of competition in the banking sectors of these countries will lead to lower interest rate spreads.

8.9 CONCLUSION

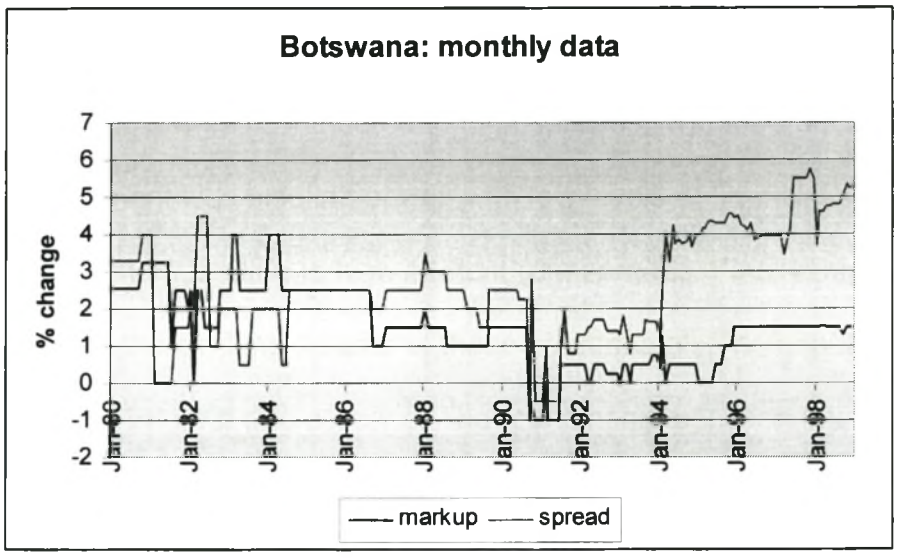
The structuralist views of pro-cyclical interest mark-ups and counter-cyclical interest spreads were tested in this chapter by looking at data from selected SADC countries. An examination of monthly data for both interest rate mark-ups and spreads did not yield conclusive evidence of pro-cyclical mark-ups or counter-cyclical spreads. Using a var model, there seemed to be a positive reaction of mark-ups to a change in real GDP. The same model showed that

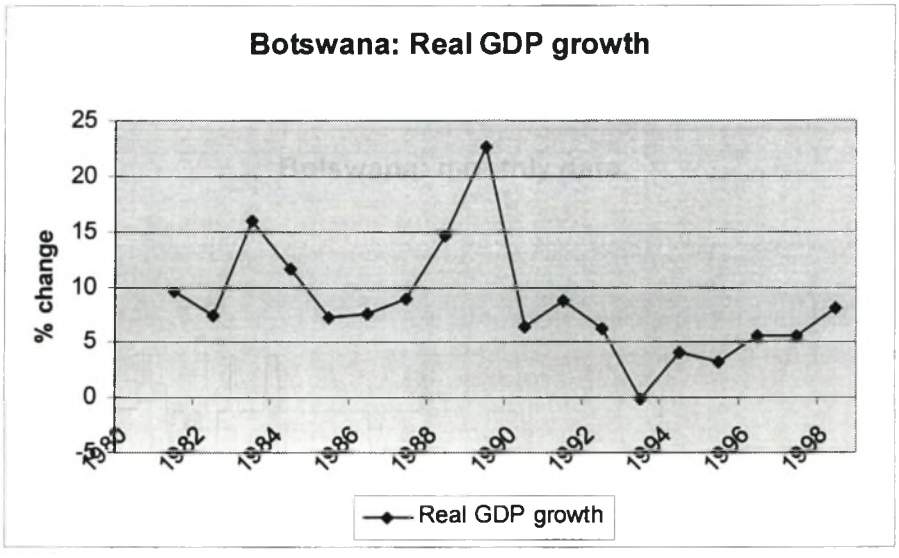
interest rate spreads react negatively to a change in real GDP. This provided some evidence of liquidity preference causing interest rate mark-ups and spreads to vary over the cycle.

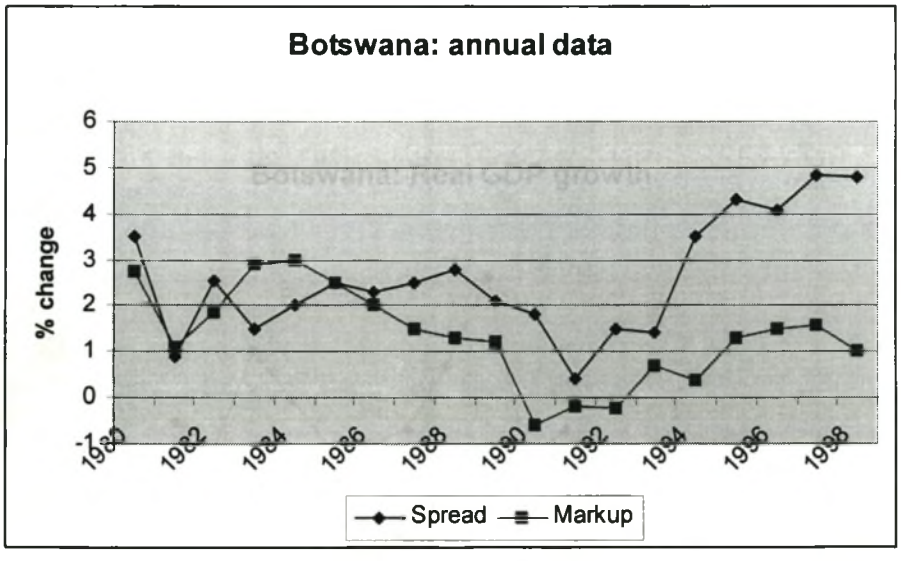
The stability of both mark-ups and spreads were also examined for the SADC countries. Generally, more developed countries have lower mark-ups, while some of the less developed SADC countries had high mark-ups and high variances in these mark-ups. Mark-ups became increasingly unstable over the period. The only countries where mark-ups became more stable were Mauritius, South Africa and Swaziland. This seems to confirm the observation made in Chapter 7 that there is a relationship between an endogenous money supply and the level of financial development in a country.

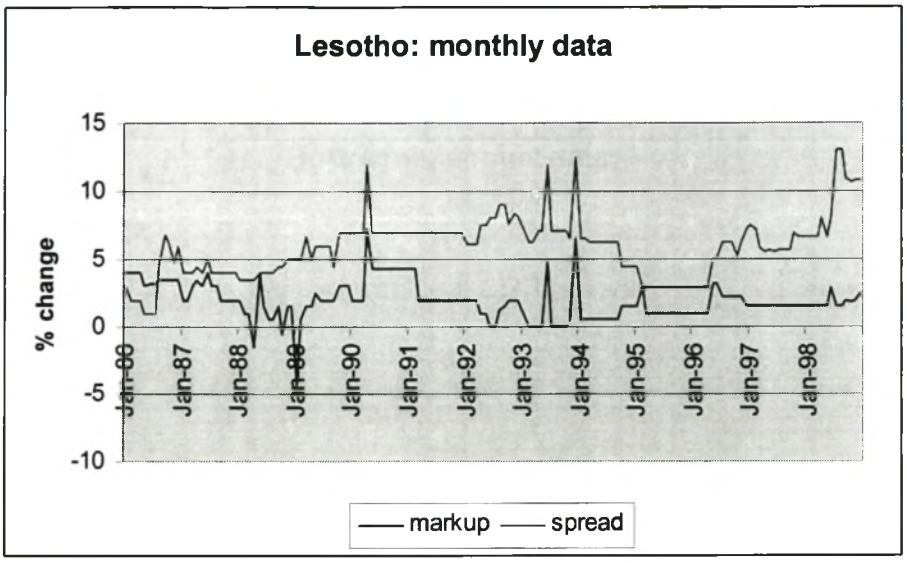
The worrying factor was the high (and increasing) levels of interest rate spreads. In order to address this problem, more information on the determinants of these spreads is required. A regression model was developed to look at these determinants. Micro-level banking data were used to examine why spreads are high in less developed countries. It was found that bank interest rate spreads are mainly a function of bank operating costs. Provisions for bad debts also contributed to high spreads. The macroeconomic environment was also important, with low levels of financial sector development leading to high interest rate spreads. Finally, high concentration levels in the banking sectors of these countries also contributed significantly to higher interest rate spreads. The relationship between interest rate spreads and economic growth will be explored in the next chapter.

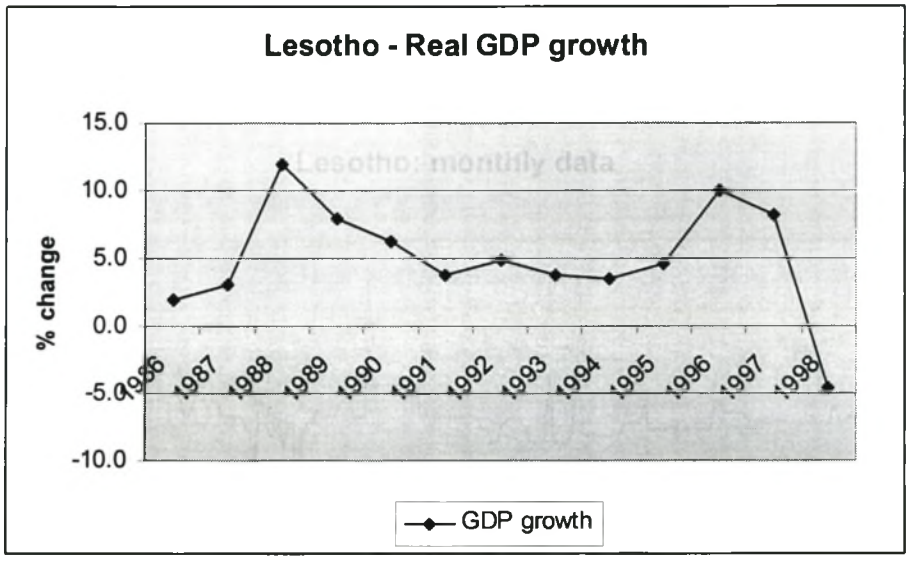
APPENDIX 8.1 – INTEREST RATE MARK-UPS, SPREADS AND REAL GDP GROWTH.

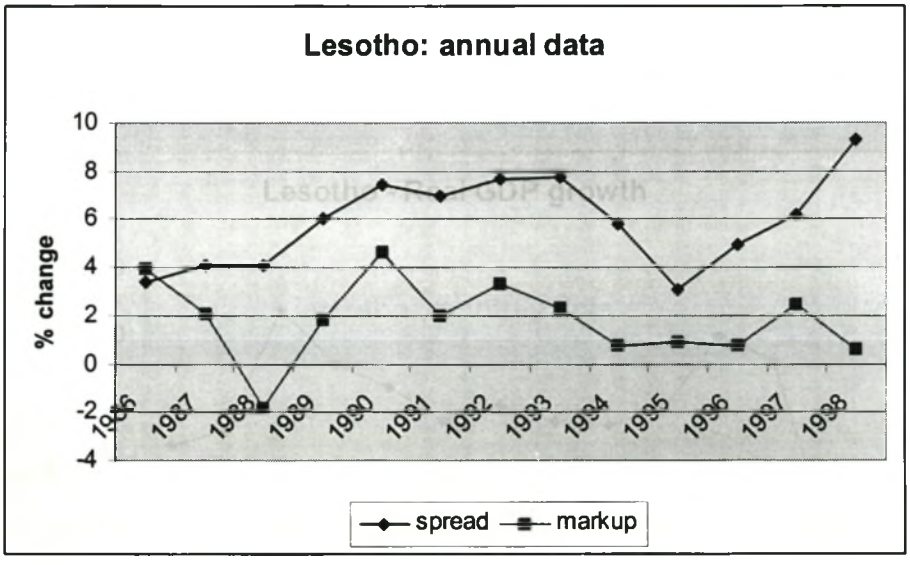


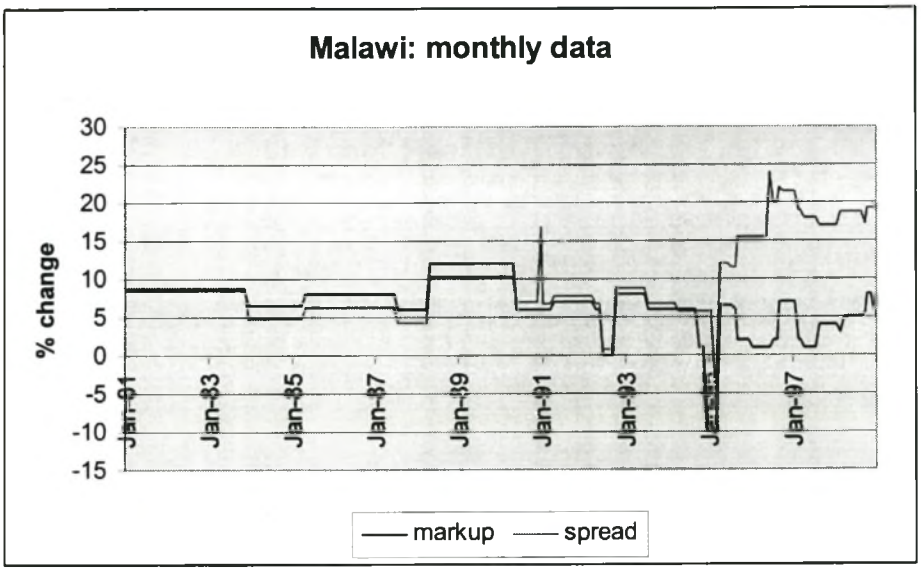


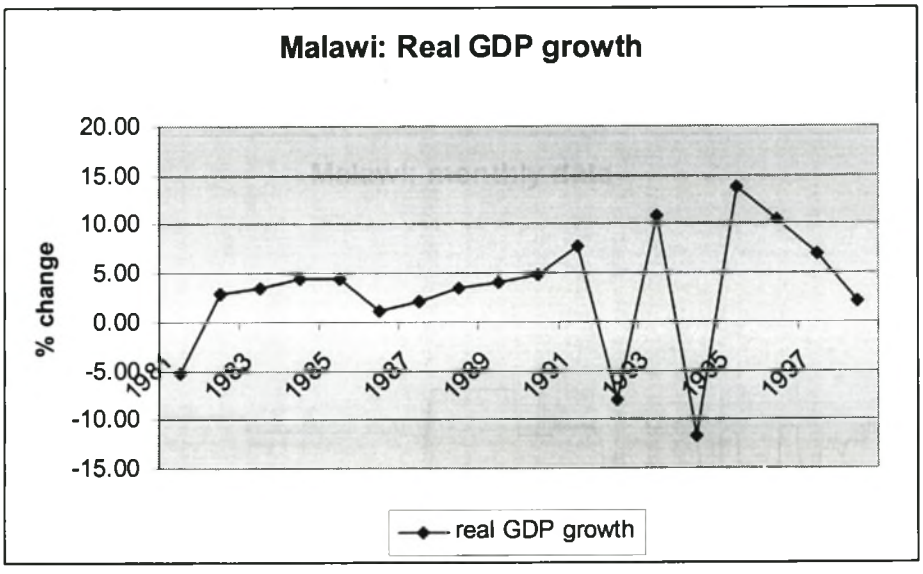


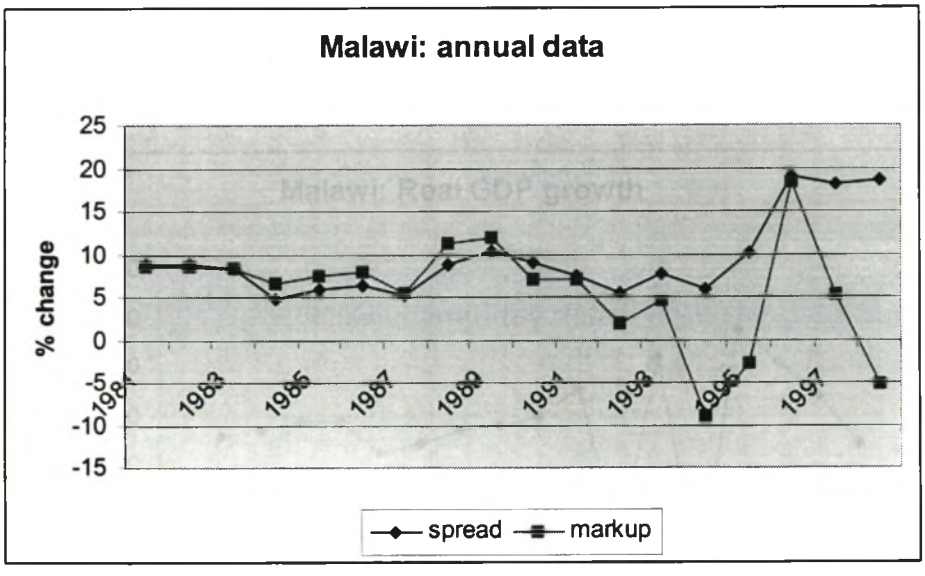


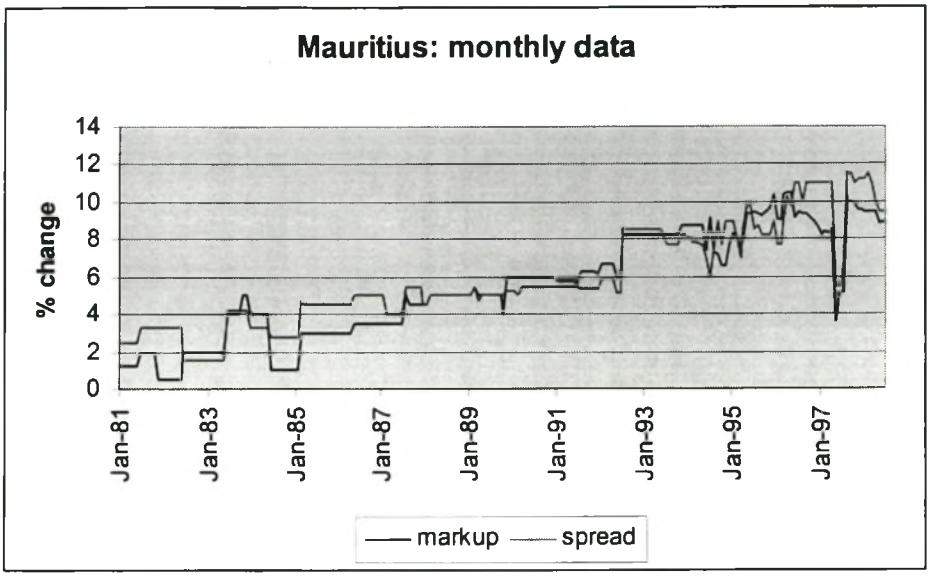


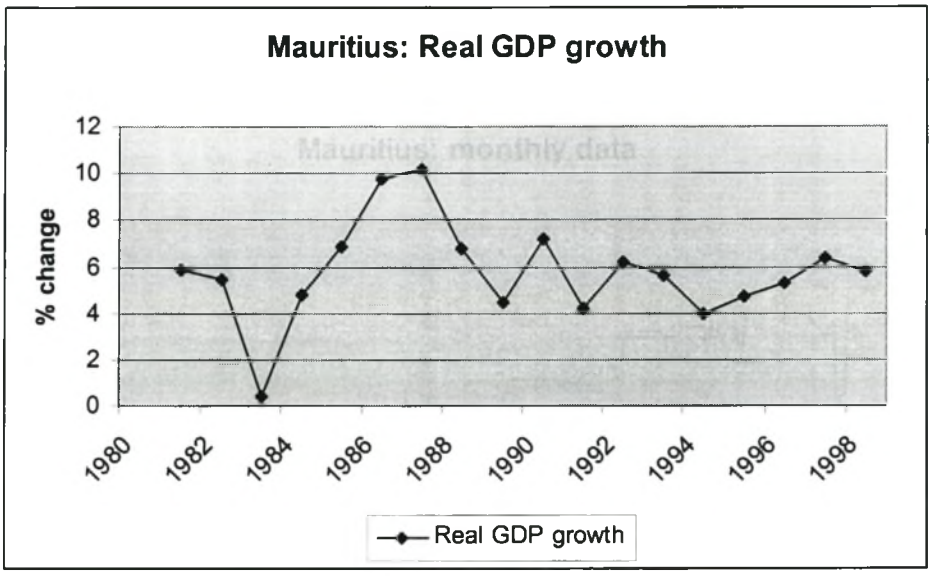


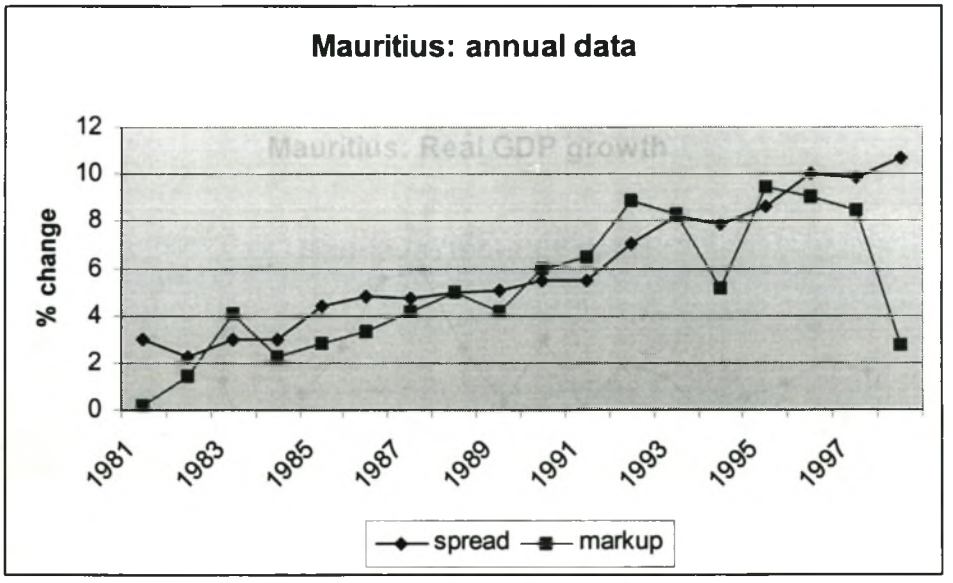


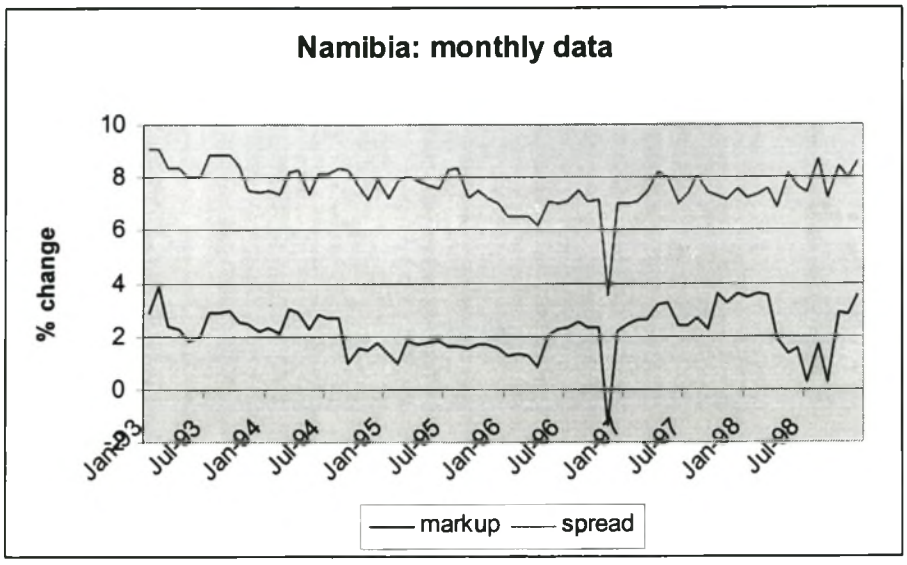


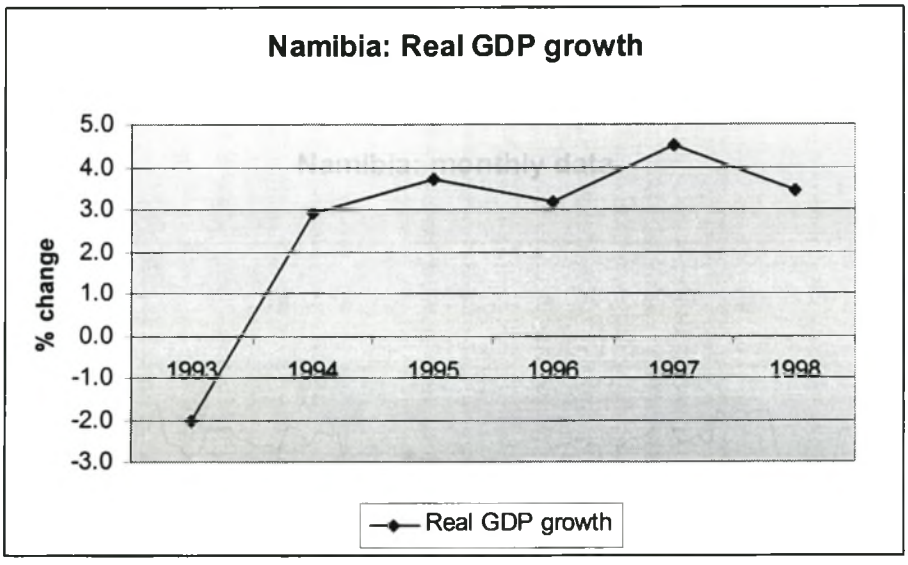


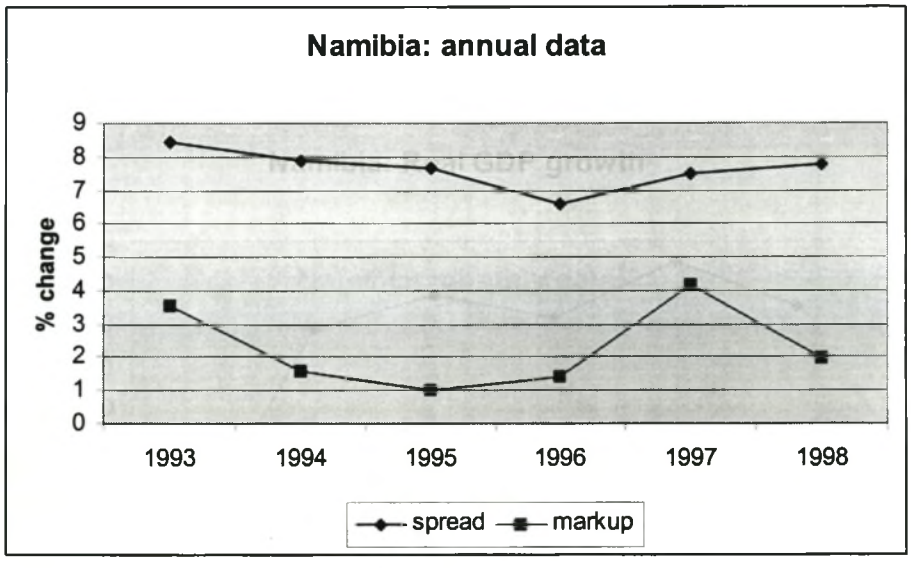


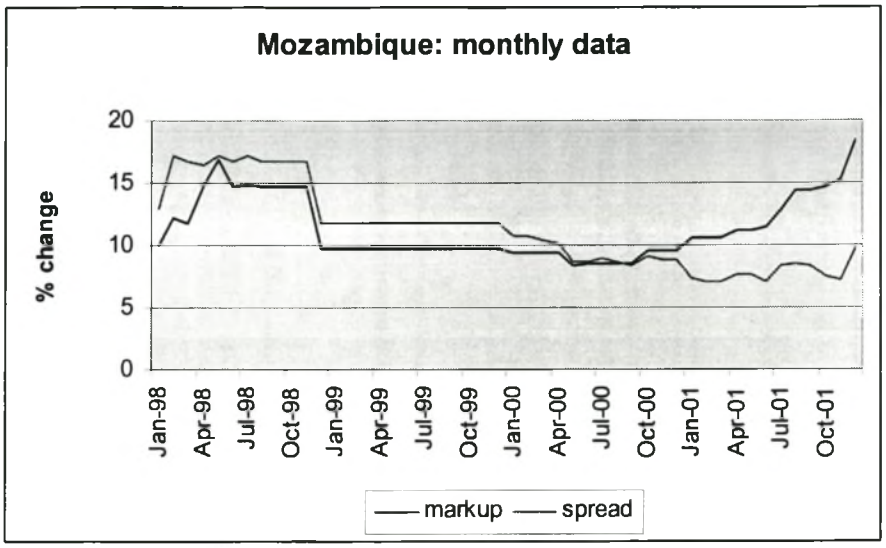


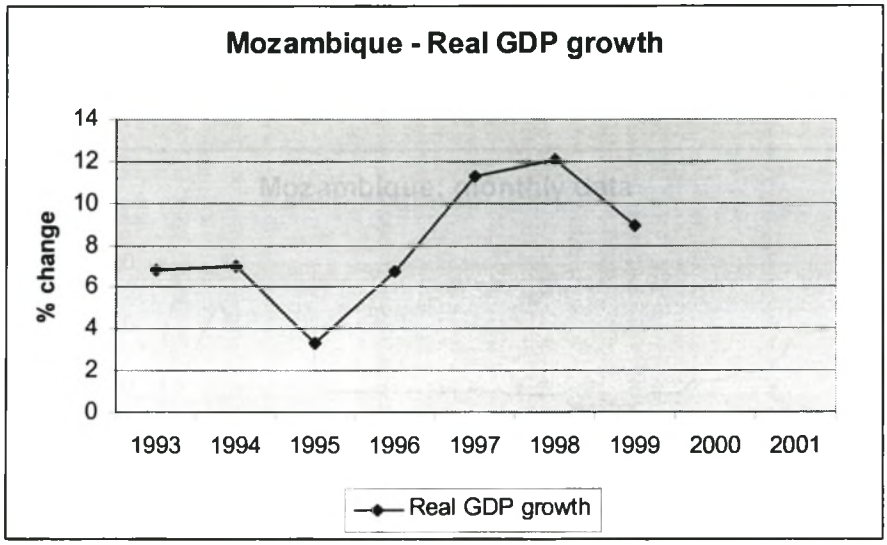


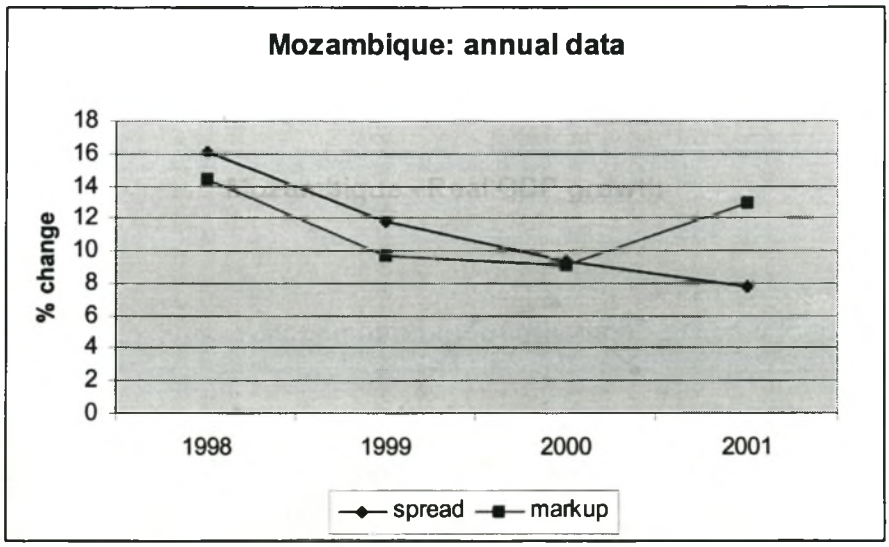


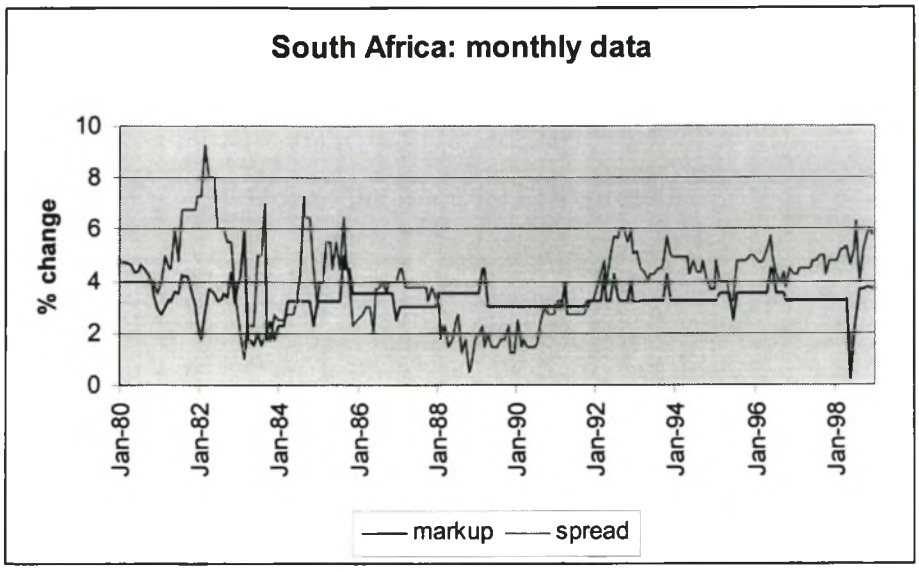


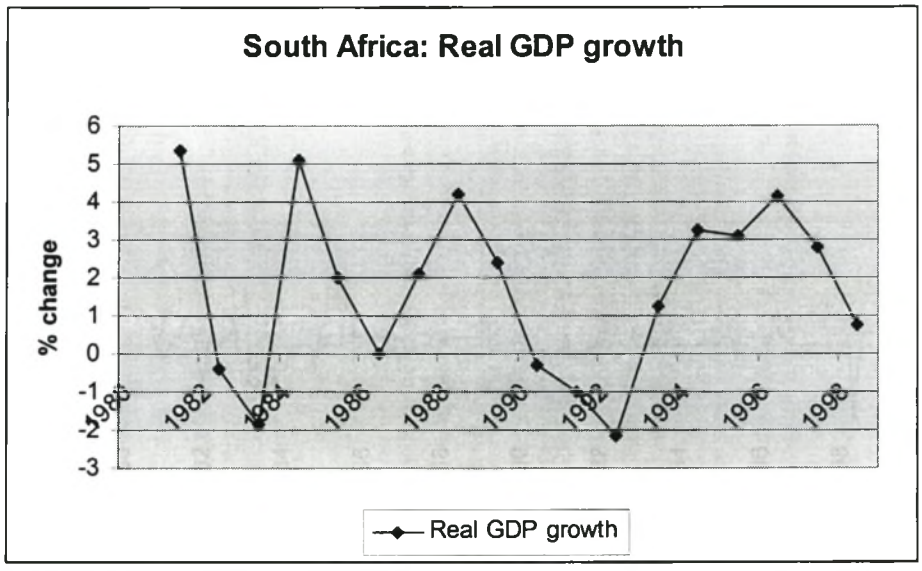


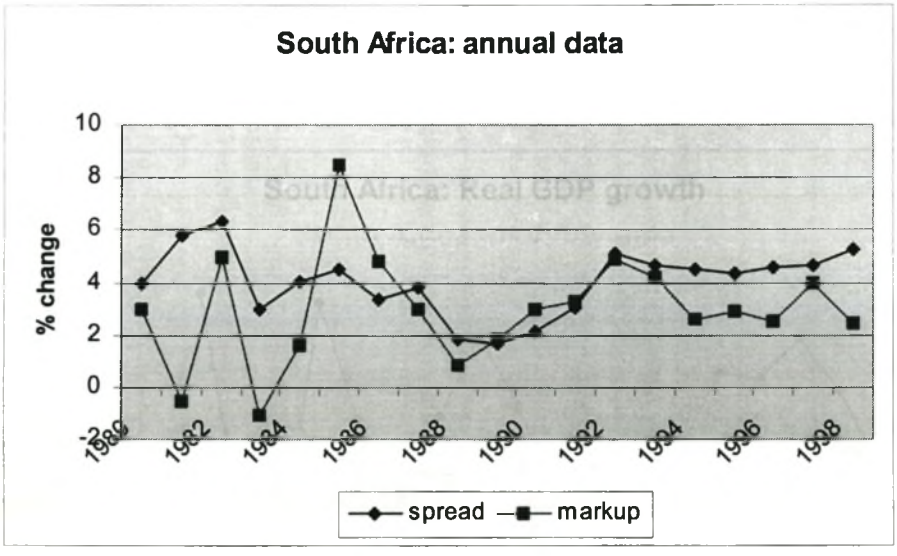


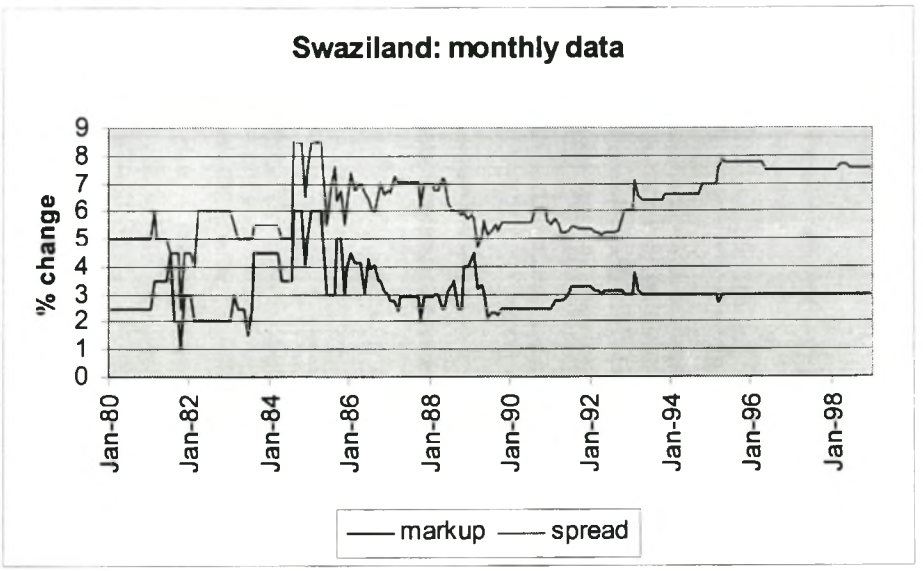


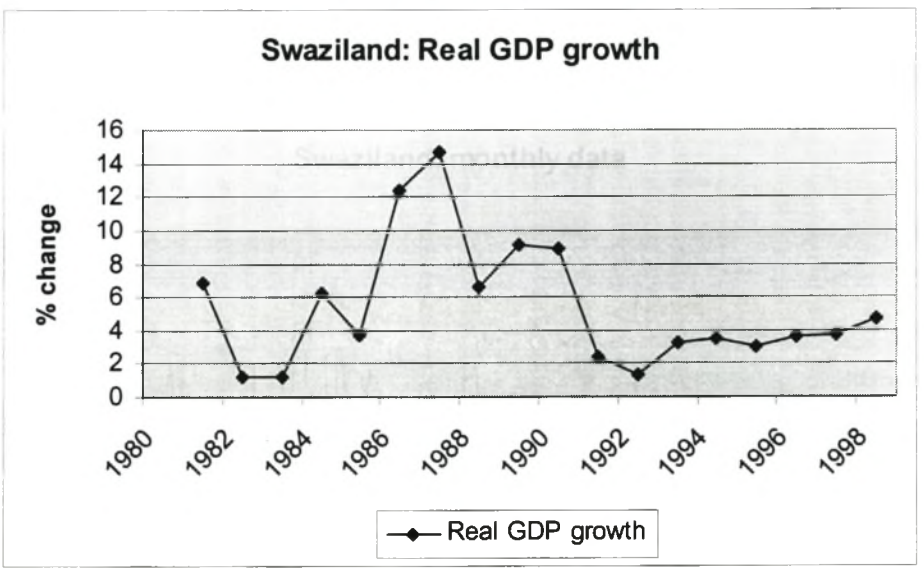


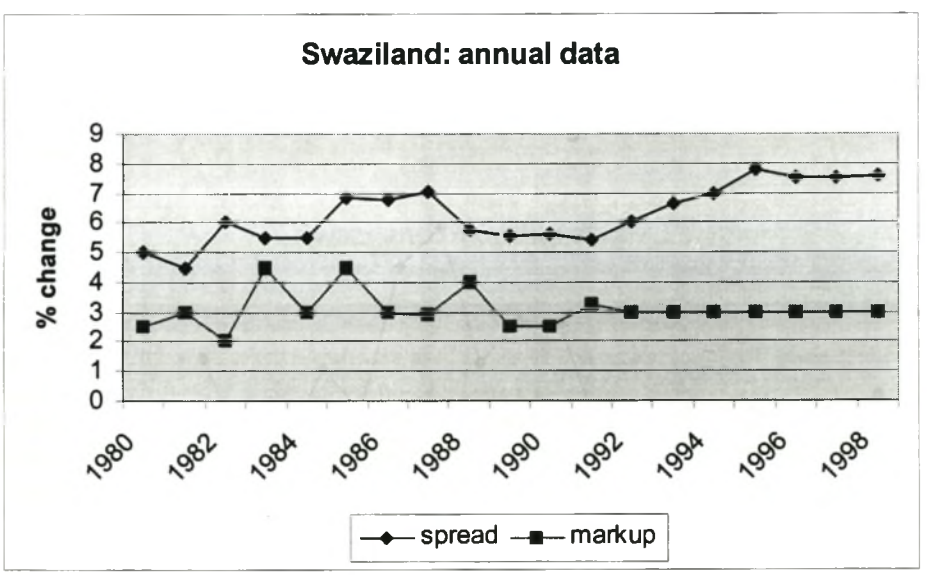


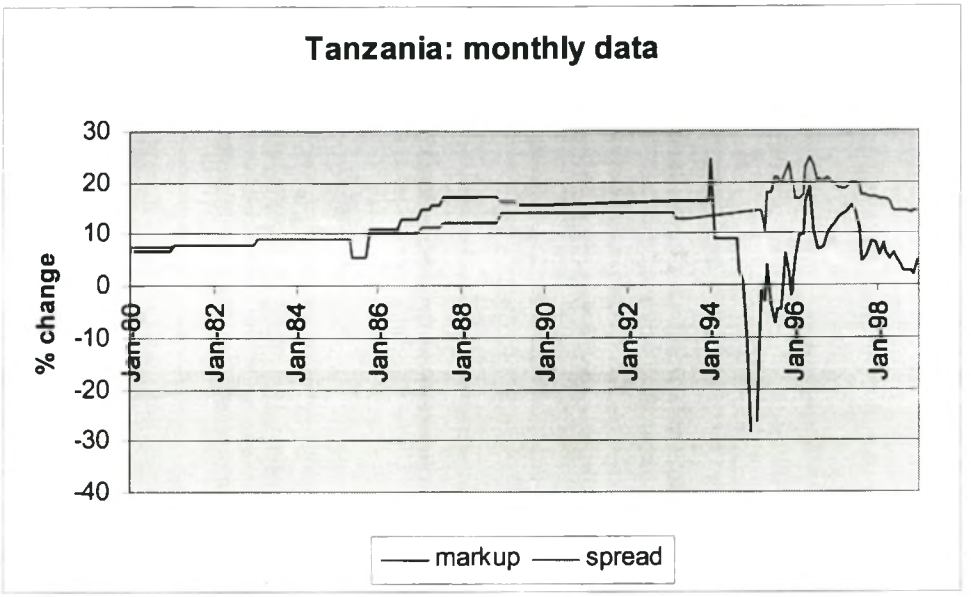


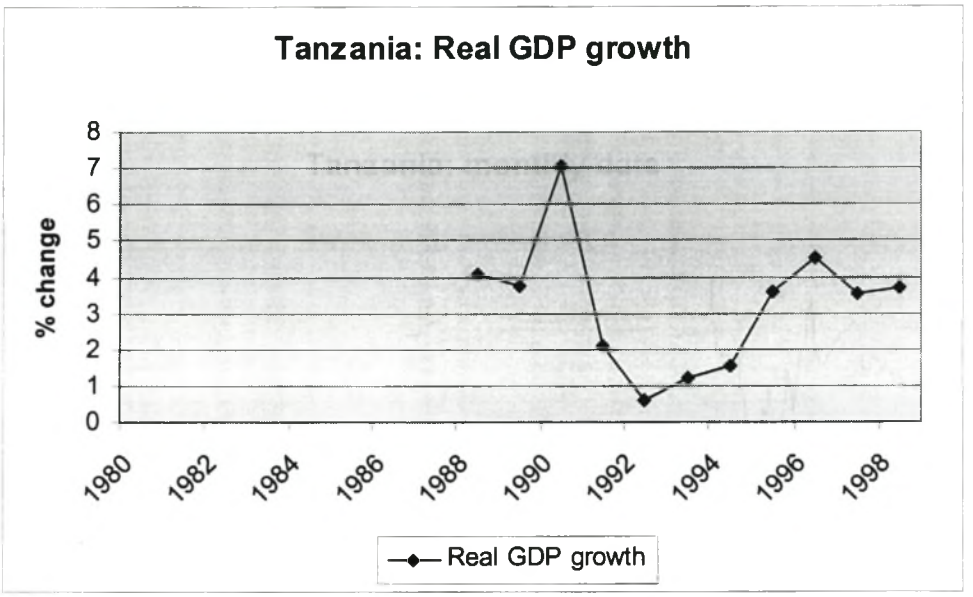


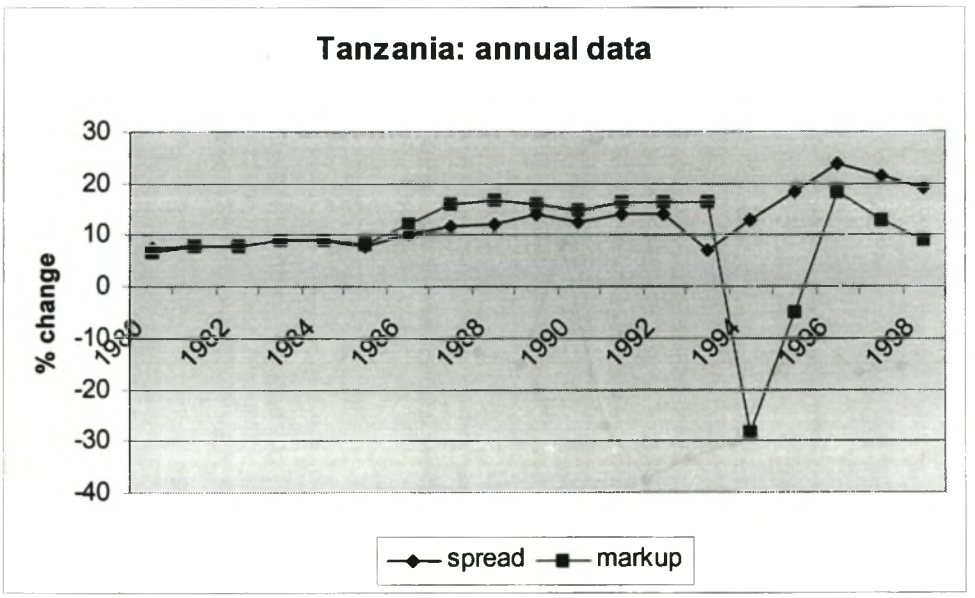


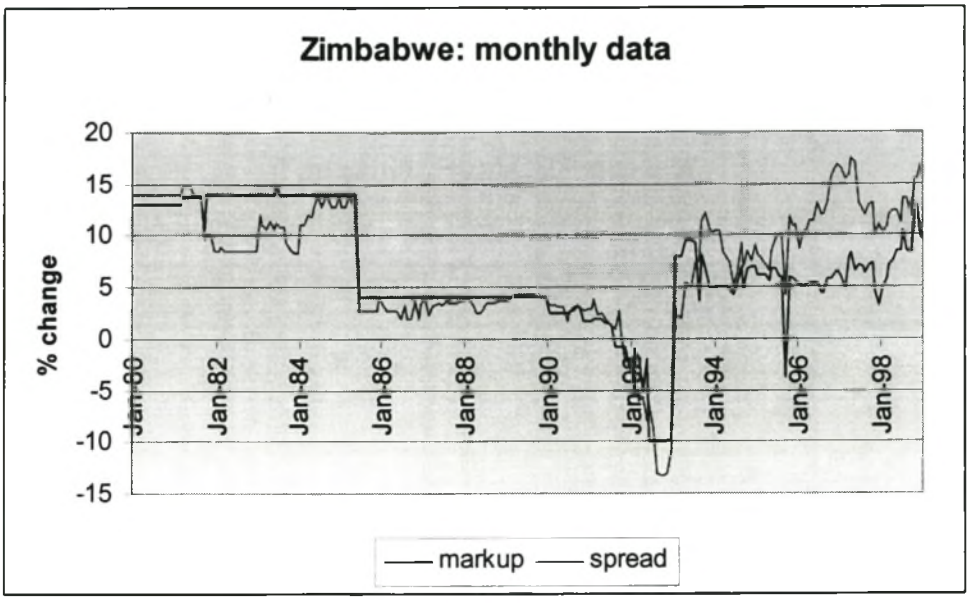


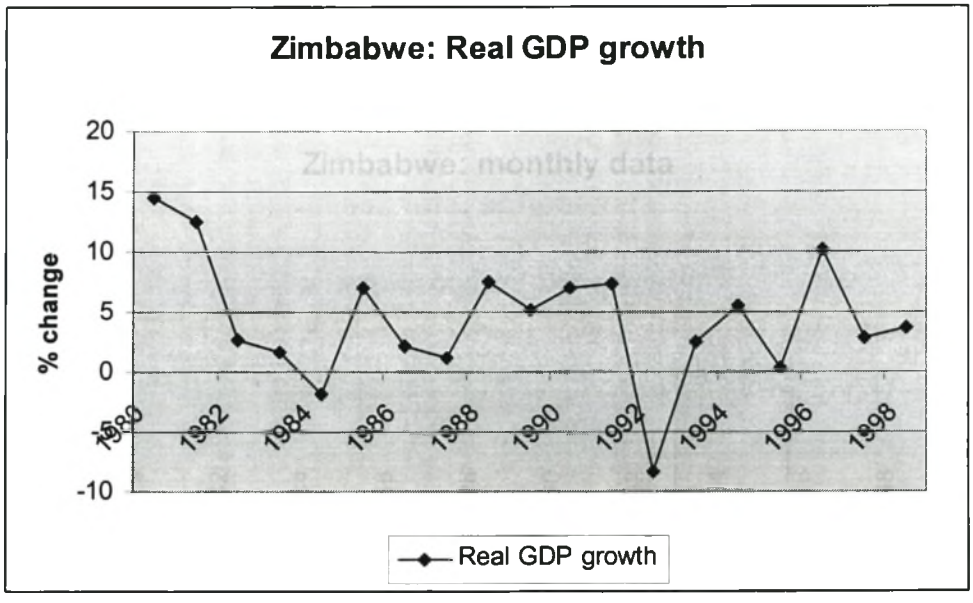


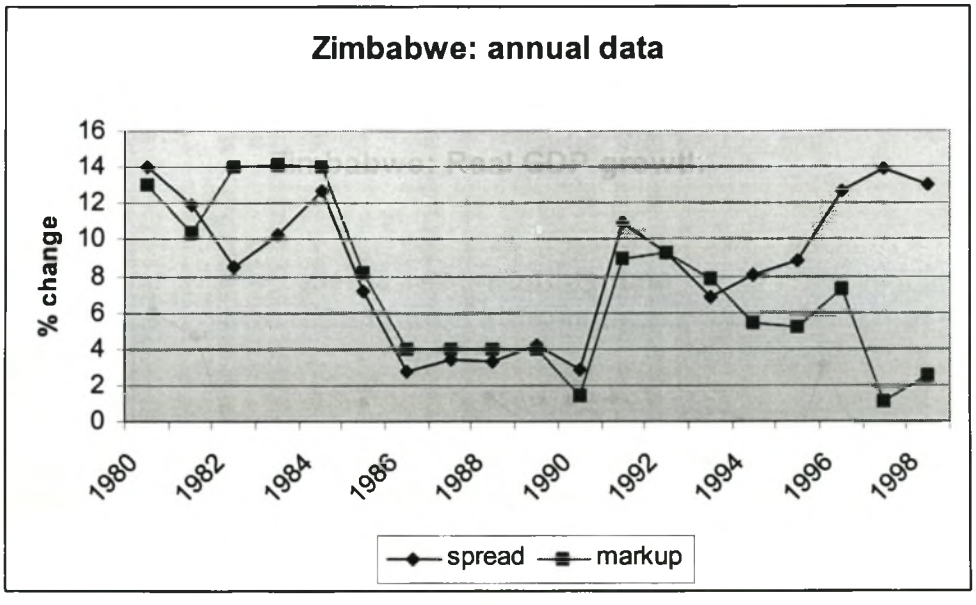


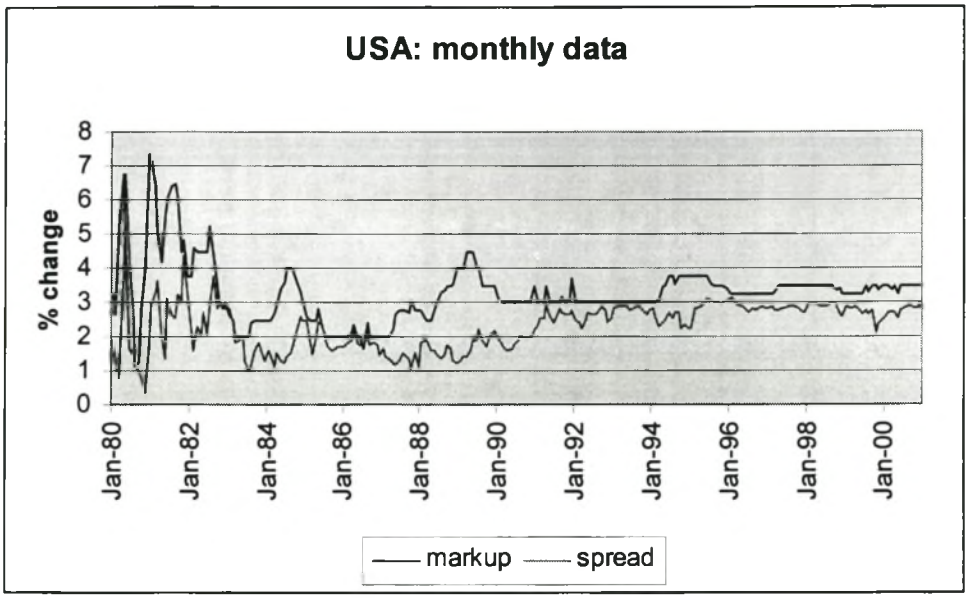


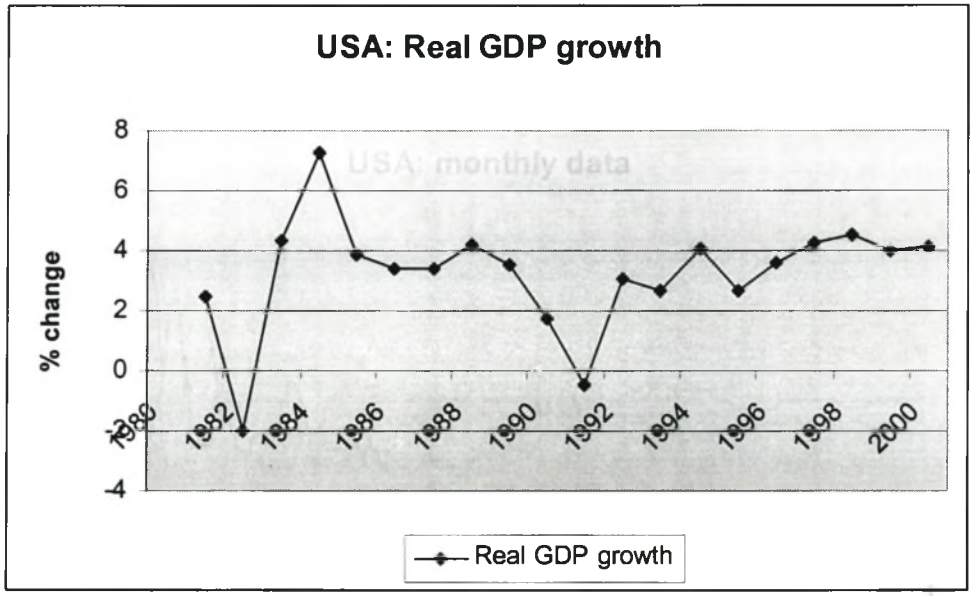


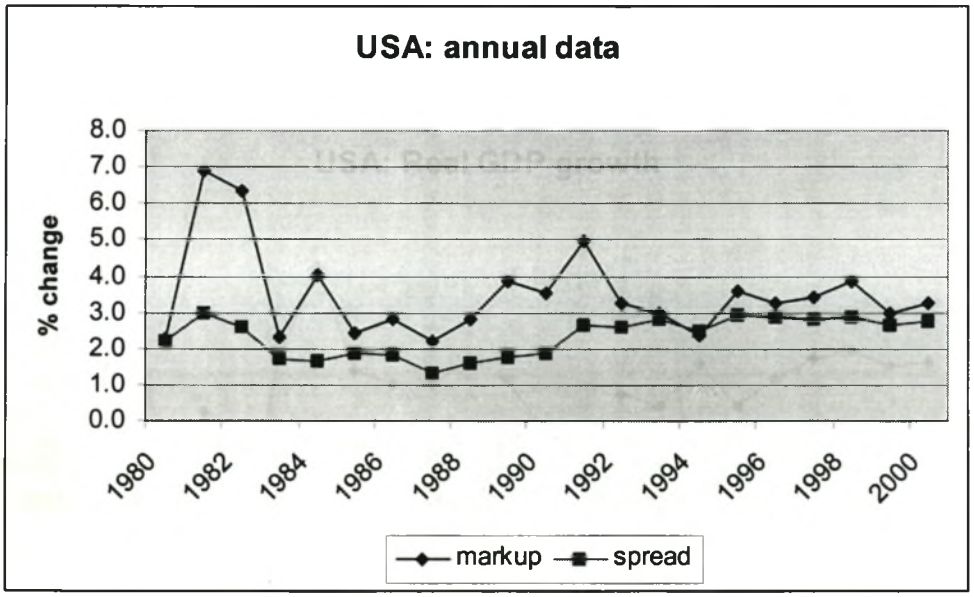


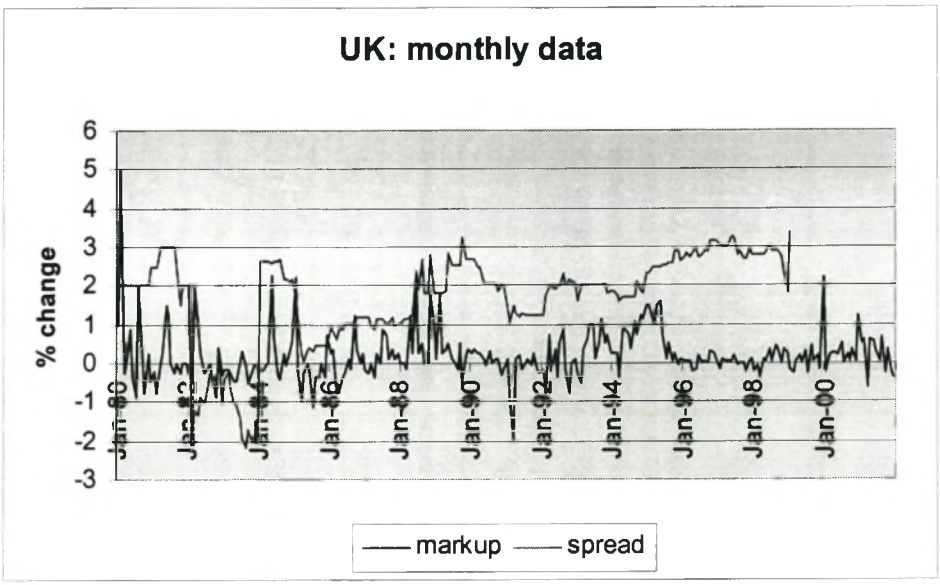


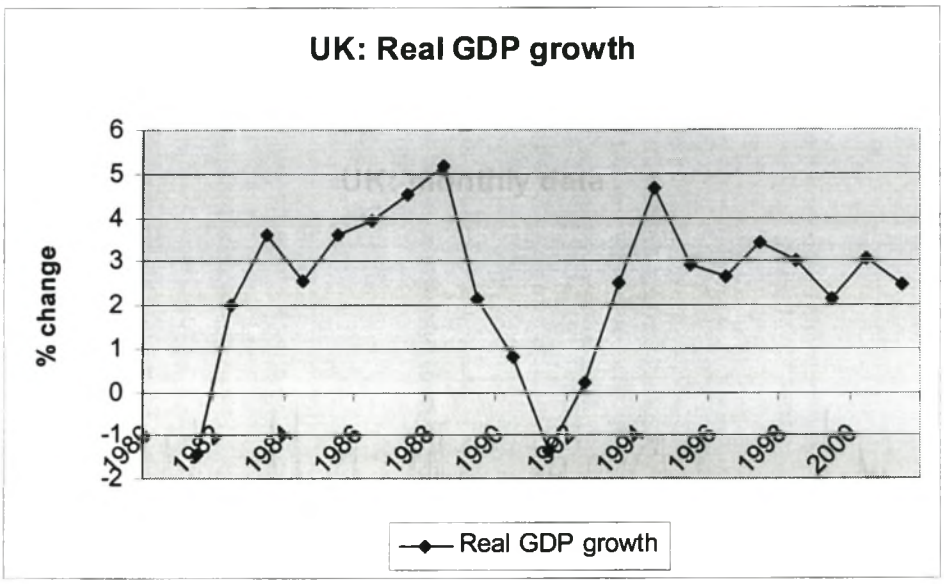


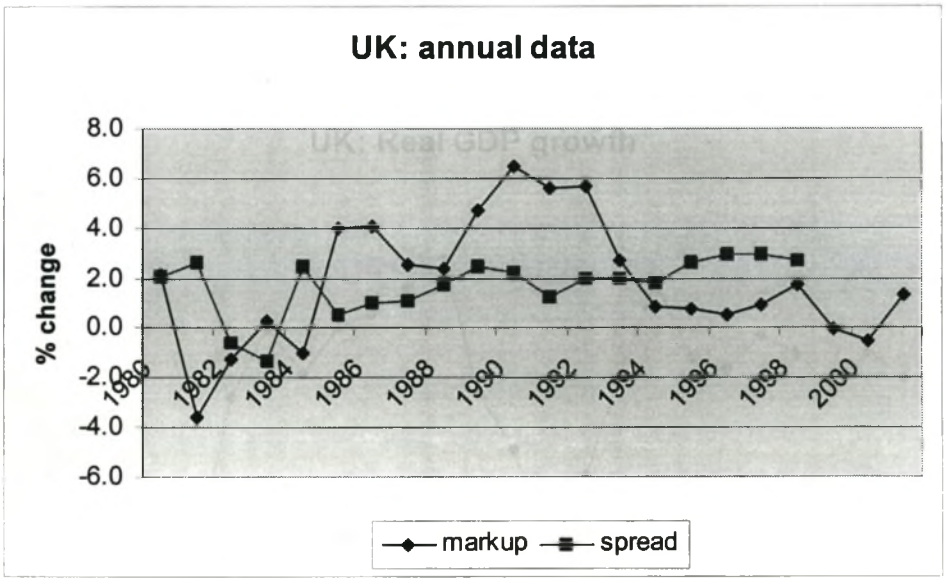












CHAPTER NINE

FINANCIAL DEVELOPMENT AND GROWTH

Perhaps the invisible hand guides the economy in normal times, but the invisible hand is susceptible to paralysis. Events, like the Great Depression require a different theory, a theory capable of explaining market failure on a grand scale (Mankiw & Romer,1993).

9.1 INTRODUCTION

A developed and well-functioning financial sector is a key component of an economy, facilitating the exchange of goods and services, mobilizing savings, allocating resources, and helping diversify risks. A growing body of literature in economics has affirmed the importance of financial development to economic growth. The initial research results were those of McKinnon and Shaw (1973). Later studies by Levine (King & Levine 1993; Levine & Zervos 1998; Beck, Demirguc-Kunt & Levine1999) established the link between indicators of financial development and economic growth.

This field of research has not been fully explored by Post Keynesian economists. Much of the current growth literature focusses on supply side measures (e.g. Solow growth models, new Classical real business cycle models, etc.). These supply-side models are in fundamental conflict with Keynes's central vision of a demand driven economy that can get stuck at less than full employment positions for extended periods of time.

Research is therefore necessary into the implications of an endogenous money supply for economic growth. In a credit money world, where credit money is supplied on demand, the links between financial sector development and economic growth are vitally important. The aim of this chapter is to examine the causal relation between monetary change and the change in aggregate demand and economic growth for a sample of 49 developed and less-developed countries during the period 1980-1999. It will be shown that there are sufficiently strong links between selected financial deepening indicators, capital growth rates and economic growth rates, to conclude that the level of financial development of a country is important for the level of economic growth it can expect to attain.

The first part of the chapter deals with some theoretical issues regarding growth theories and recent developments in growth models. The second part introduces and describes the variables used in the study, and presents some summary statistics for groups of countries. The final part presents the findings of the econometric model as well as some general conclusions and policy implications.

9.2 FINANCIAL DEEPENING AND ECONOMIC GROWTH

Considerable debate exists in economic literature on the relationships between the financial system and economic growth. Historically, economists researching this link have concentrated on the role of banks as financial

intermediaries. Some of the most important empirical findings in this field can be attributed to the work of Robert G. King and Ross Levine (1993) who showed that the level of financial intermediation is a good predictor of long-run rates of economic growth, capital accumulation, and productivity improvements. More recent research includes the level of stock-market development as an added explanatory variable (Levine & Zervos 1998; Gelbard and Leite 1999; and Beck and Levine 2002). There is currently a debate whether greater stock market liquidity encourages a shift to higher-return projects that stimulate productivity growth, or discourages productive investments by increasing portfolio risk. This remains a relatively unexplored area of growth research.

More traditional growth models have generally ignored the demand side of the economy, and the influence of financial development on demand. Neoclassical models focused primarily on supply-side factors. There is a need for more demand-side models.

It is not possible to mention demand-side growth models without reference to Keynes. In his earlier writings during the 1930s, Keynes disagreed strongly with the neoclassical view that private market forces could be relied on to ensure that the economy would reach a position of full employment. He emphasized the central importance of fundamental uncertainty in investment decisions, and held that governments must manage the level of aggregate demand (AD) to ensure that the level of macroeconomic activity was equal to the full employment capacity of the economy.

Keynes argued that since market forces could not be relied upon to consistently produce a level of full employment output, it was the responsibility of governments to manage the level of aggregate demand in pursuit of full employment. He also maintained that most market economies were typically demand-constrained due to fallacious concepts of fiscal prudence and monetary conservatism.

The recommendations of Keynes's demand-side management theories became official government policy in the market economies during the Post-War period. Most economists subscribed to this view as a result of the increasing popularity of the so-called neoclassical synthesis. Yet, even though the central importance of Keynesian counter-cyclical monetary and fiscal policy recommendations became accepted mainstream theory, the emphasis on demand-side measures was not retained. Mainstream economics has continued to develop theories of economic growth that offer neoclassical supply-side explanations, which are irreconcilable with Keynes's original ideas.

Solow's well known growth model derived a steady-state 'natural' output growth rate dependent exclusively on supply-side forces, the rate of population growth and the rate of labour-augmenting technical progress: "The new wrinkle I want to describe is an elementary way of segregating variations in output per head due to technical change from those due to changes in the availability of capital per head" (Solow,1957:312). In the Solow model,

increases in the saving rate raise the rate of capital accumulation, the level of capital stock per worker, and the level of potential output, but do not alter the 'natural' rate of growth. Changes in the steady-state rate of per capita growth are explained exclusively by changes in the rate of technical progress, exogenous to the model. The Solow growth models are essentially neoclassical, with an implicit acceptance of Say's Law, and long-run full employment is simply assumed.

More recently, new classical real business cycle models have been developed that generate business cycles. New classical economists argued persuasively that Keynesian economics was theoretically inadequate, and that macroeconomics must be built on a firm microeconomic foundation. These theories, arguing that Keynesian economics should be replaced with macroeconomic theories based on the classical assumptions that markets always clear and that economic actors are always rational, evolved in the 1980s into real business cycle theory. These real business cycle models are Walrasian general equilibrium models, and they imply that the invisible hand always guides the economy to the efficient allocation of resources (Mankiw & Romer,1993:1).

The new classical view embraces the classical view of the world, where agents always maximize, prices adjust to clear markets and markets are efficient without interference. This is in sharp contrast to the Keynesian view of market failures and cyclical fluctuations. Real business cycle theories are derived from the classical view, fluctuations (which are only temporary) are

caused by large fluctuations in technology, and by individuals altering their labour supply through intertemporal substitution. The emphasis therefore remains on supply-side factors and it strongly embraces the classical dichotomy, where there is no link between monetary and real variables (King and Plosser,1984): "The resulting real business cycle approach simply denies that there is in fact any significant effect of monetary policy on output; observed money-output correlations are said to be the consequence of 'reverse causation', i.e., responses of the money stock to output fluctuations. These fluctuations are brought about, to finish the story, by random real shocks to technology" (McCallum,1988:464).

New Keynesian models similarly derive a 'natural' growth rate as the centre of long-run gravitation. Actual output is assumed eventually to converge to potential output. The role of monetary and fiscal policy is simply to stabilise the path of actual output around potential output by minimizing fluctuations in AD. If actual output is subject to a large negative or positive 'shock', monetary and fiscal policy may speed up the process of adjustment.

According to Mankiw (a prominent New Keynesian): "Like Keynes, new Keynesians begin with the premise that persistent unemployment and economic fluctuations are central and continuing problems: recessions and depressions represent market-failure on a grand scale. Coming in the wake of the new classical revolution, new Keynesians also place a renewed emphasis on microeconomic foundations. They are attempting to build macroeconomic theories from new developments in the microeconomics of goods, labor, and

capital markets" (1993:3-4). New Keynesian economists shifted the focus to rigidities in nominal wages and prices. Romer (1993) emphasized the complementarity between real and nominal rigidities. Greenwald and Stiglitz (1993) focused on the existence of imperfect markets as a result of imperfect information. In this way they could explain how small disturbances can cause large fluctuations. King (1993) extended this debate by asking the question of how to incorporate expectations into New Keynesian models. His approach is a demand-side one: "In this essay, the focus is on aggregate demand, as in fact was standard in the old Keynesian tradition. Both the new and old Keynesians are trying to answer a question of the 1950s and 1960s: why are prices sticky? But the question that needs to be asked is: why are prices sticky in certain historical episodes and rapidly adjusting in others?" (King,1993:70). The New Keynesian approach with its emphasis on credit rationing as a result of imperfect information, is a valuable contribution to the Post Keynesian work on endogenous credit money. However, most New Keynesian research continues to be focused on supply-side factors such as risk averse firms, menu costs and labour markets affected by efficiency wages, implicit contracts and insider-outsider theories.

All supply-side growth models are in fundamental conflict with Keynes's vision of an economy that comes to rest at a point less than full employment equilibrium for long periods of time. Keynes emphasized the centrality of effective demand, caused by the volatility of investment spending due to swings in 'animal spirits'. The latter were the result of the existence of

fundamental uncertainty, and the resulting inability of firms to predict accurately their future level of aggregate demand.

Neoclassical growth models (Solow), gradually evolved into the so-called new endogenous growth (NEG) theories. For almost three decades, the work of Solow was *the* accepted growth model (for this contribution he received the Nobel Prize in 1987). One of the implications of Solow's growth model was the 'convergence hypothesis'. According to this theory, technology flows between countries will cause growth rates to converge over time. All countries with the same capital-labour ratio will grow at the same pace. This assumption was challenged by later researchers, and thus the new endogenous growth models were born. In the work of Romer (1994), Solow's assumption of decreasing returns to scale was replaced by a theory of increasing returns to scale. Countries can continue to grow at different rates, because growth is endogenously caused by the accumulation of physical and human capital, knowledge, productivity and specialization.

In NEG theories monetary and fiscal policies impact on aggregate demand, and affect not merely the flow of investment spending and the level of output, but also the technological change and the growth rate of output. Expansionary AD policies are consistent with increases in both the level and the growth rate of AS, while restrictive AD policies that create excess supply can reduce the growth rate. In NEG theory the accumulable factors of production, physical and human capital do not, as in the Solow model, exhaust their contribution to production at the margin (decreasing returns to scale). As a result it is

possible to sustain the growth rate merely through a steady process of accumulation. Given the conventional neoclassical hypothesis that saving causes investment, anything that affects the saving rate thus affects the long-run rate of growth. Effective demand failures are impossible and autonomous shortfalls in AD impact on the utilization of resources only in the short-run, due to expectational errors or nominal rigidities.

This was acknowledged by Solow himself in his Nobel Lecture: "There was one bad by-product of this focus on the description of technology. I think I paid too little attention to the problems of effective demand" (Solow,1988:xiv).

Post Keynesian economists have long maintained that the focus of any growth model should be on the demand-side of the economy. Factors that determine demand (or rather cause a lack of effective demand) can have real and lasting influences on economic growth rates. The principle of effective demand as developed by Keynes is the major conceptual distinction between Keynesian economics on the one hand and neoclassical economics on the other. Keynes viewed capitalism as an open complex system, in which investment spending and the level of economic activity are in essence indeterminate. Investment spending is the key element driving aggregate demand, and its relative autonomy is the proximate source of openness in the Keynesian system. While there exists a causal relationship between changes in investment and changes in income, this can not be reduced to a mechanical multiplier 'law of motion' from which the evolution of future income can be deduced and predicted. The long run is an inter-temporal sequence of

short runs, in each of which autonomous demand-side forces determine the level of economic activity.

The earlier supply-side Solow models were clearly irreconcilable with Keynesian demand-side theory. There has, however, more recently been a move to try and find some common ground between new growth theory and Post Keynesian economics. Palley (1996) attempted a synthesis between Keynesian and new growth approaches. This is a difficult task, as growth in the NEG models is determined by a production function in which labour grows at a rate of growth determined by the exogenously given supply of labour, although capital grows according to investment demand. Effective demand is introduced into the model by specifying that changes in effective demand growth are caused by deviations of output growth from excess demand growth, and by assuming that the investment rate depends on the growth of effective demand. Both saving and investment functions play a role in determining output and its growth (Palley). This view is not consistent with the Post Keynesian notion that saving is the accounting record of investment. According to Moore (2002:5), "Increases in volitional saving rather imply a reduction in consumption spending, and so in aggregate demand. The result is to depress the level of expected future demand, and lead to a fall rather than a rise in current investment spending."

The focus of Post Keynesian growth literature has been mainly on the role of technological change. Much research has been devoted to the pursuit of finding common ground between new endogenous growth theory and Post

Keynesian growth models. The negative effect of this focus is that many demand-side aspects of the growth process have been neglected by Post Keynesians: "While technological change is important, the arguably excessive focus of new growth theory should not divert the attention of post-Keynesian growth theory from other aspects of the growth process. Many such issues come to mind, **such as the role of financial factors**, which have been swept under the rug by new growth theorists arguably because they are relegated to the short and medium run aspects of macroeconomics" (Dutt,2001:32).

The aim of this chapter is to contribute to the Post Keynesian growth theory, by focusing explicitly on the role of financial development in the growth process.

9.3 MEASURING FINANCIAL DEVELOPMENT

Post Keynesian monetary theory argues that the money supply is endogenous, and credit is supplied to creditworthy borrowers on demand. It was shown in earlier chapters that the money supply becomes increasingly endogenous as a country's financial system develops. This endogenous money supply is therefore related to advanced levels of financial and institutional development. The aim of this chapter is to examine the link between the level of financial development and growth.

In order for some units to deficit-spend and others to surplus-spend, financial intermediation must guarantee the effective flow of financial resources. This

requires a well-developed financial sector with competitive bank and non-bank financial intermediaries. As Moore (2002:6) explains: "In a credit money economy bank loans provide the finance that permits economic units to deficit spend. In order for aggregate demand to increase over time, economic units on balance must spend more on currently produced goods and services in the present period than their total income in the previous period." A growing body of research has affirmed the importance of financial development in economic growth. One question that remains, is how to best measure financial development: "Since financial development is not easily measurable, studies attempting to link financial deepening with growth, savings and investment have chosen a number of proxies; most have used monetary aggregates, with mixed results" (Gelbard & Leite,1999:3).

Some of the monetary aggregates most frequently used are; the ratio of narrow to broad money (M1/M2), the ratio of M2 to GDP, the share of private sector credit in total credit, and the ratio of private sector credit to GDP. The most appropriate financial deepening indicator seems to be the ratio of credit to the private sector to GDP (Gelbard & Leite,1999:5). Later studies (e.g. Levine & Zervos 1998) included measures of stock exchange liquidity (total value of shares traded divided by GDP and the turnover ratio).

Many articles have expanded on the earlier work of King and Levine (1993) by adding more comprehensive indicators of financial development. Levine and Zervos (1998) have found *stock market liquidity* - as measured both by the value of stock trading relative to the size of the market and by the value of

trading relative to the size of the economy - is significantly and positively correlated with current and future rates of economic growth, capital accumulation, and productivity growth. They also find that the level of banking development – as measured by bank loans to private enterprises divided by GDP – enters the growth regressions significantly. They found no evidence of any correlation between market size, international integration, and growth.

To improve on the traditional financial deepening indicator M2/GDP, Levine and Zervos (1998) constructed a more informative private credit variable. One of the problems with M2/GDP is that it does not measure whether the monetary liabilities are those of banks, the central bank, or other financial intermediaries. Levine and Zervos refined this by using the value of loans made by commercial and other deposit-taking banks to the private sector divided by GDP. This provides a better indicator of *Bank Credit* (1998:542).

In a comprehensive study, Beck, Demirguc-Kunt & Levine (1999) constructed a new comprehensive database on financial development and structure. The database forms part of a broader research project that examines the determinants of financial structure and its importance for economic development. In order to facilitate this research, the authors compiled a comprehensive database, including a wide variety of indicators that measure the size, activity and efficiency of financial intermediaries and markets. It is an improvement on previous research, as it introduces indicators of the size and activity of non-bank financial institutions and presents measures of bond and

primary equity markets. Some of the variables from this dataset are used in the regressions below.

Levine, Loayaza and Beck (1999), use panel data techniques to examine the relationship between financial development and growth. The authors construct a new dataset and improve again on the traditional M2/GDP variables, by measuring not only the overall size of the financial sector, but also whether commercial banking institutions, or the central bank, conduct the intermediation. This approach sheds new light on the question of the influence of financial development on growth, by measuring the banking sector more comprehensively, and carefully distinguishing who is conducting the intermediation and where the funds are flowing.

This chapter draws from each of the above sources. A number of traditional measures of financial deepening, e.g. credit/GDP, M3/GDP, were used. Indicators of stock market development were also included, using data from the sources mentioned above. The following section describes the variables and sources.

9.3.1. VARIABLES AND SOURCES

In order to assess the relationship between economic growth and financial development, including both the banking sectors and stock markets, data from a variety of sources were used. These are described below.

A. Financial sector development

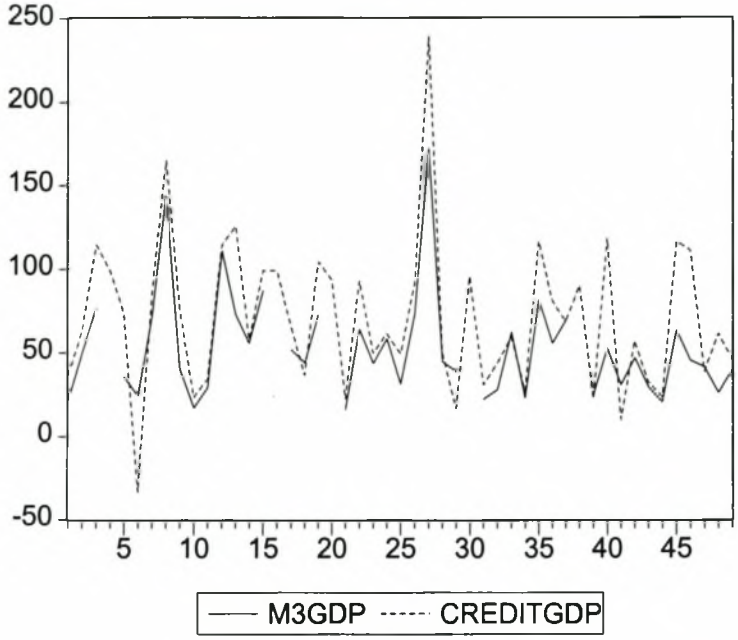
There is a growing literature that deals with the links between financial sector and banking development and economic activity. Measuring financial sector development across a broad spectrum of countries has proven difficult, since no standardized indicators are readily available. Researchers have been forced to rely on broad indicators of financial sector development as proxies for banking sector involvement and development. Typically, indicators like the ratio M2/GDP have been calculated from IMF data.

The approach below starts with the traditional measures, e.g. credit to GDP, M3/GDP, etc. (using IMF sources). These are extended by including other financial deepening indicators obtained from the World Bank Development Indicators dataset. Some further indicators on the banking sector compiled by Beck, Demirguc-Kunt & Levine (1999) are also included.

1. Financial deepening indicators

All indicators have been normalized by using a scale variable. Most are expressed as a percentage of GDP. Three variables published by the World Bank have been used as indicators of financial depth. The two more commonly used variables are **Domestic credit provided by the banking sector/GDP** and **Liquid liabilities as % of GDP (M3/GDP)**.

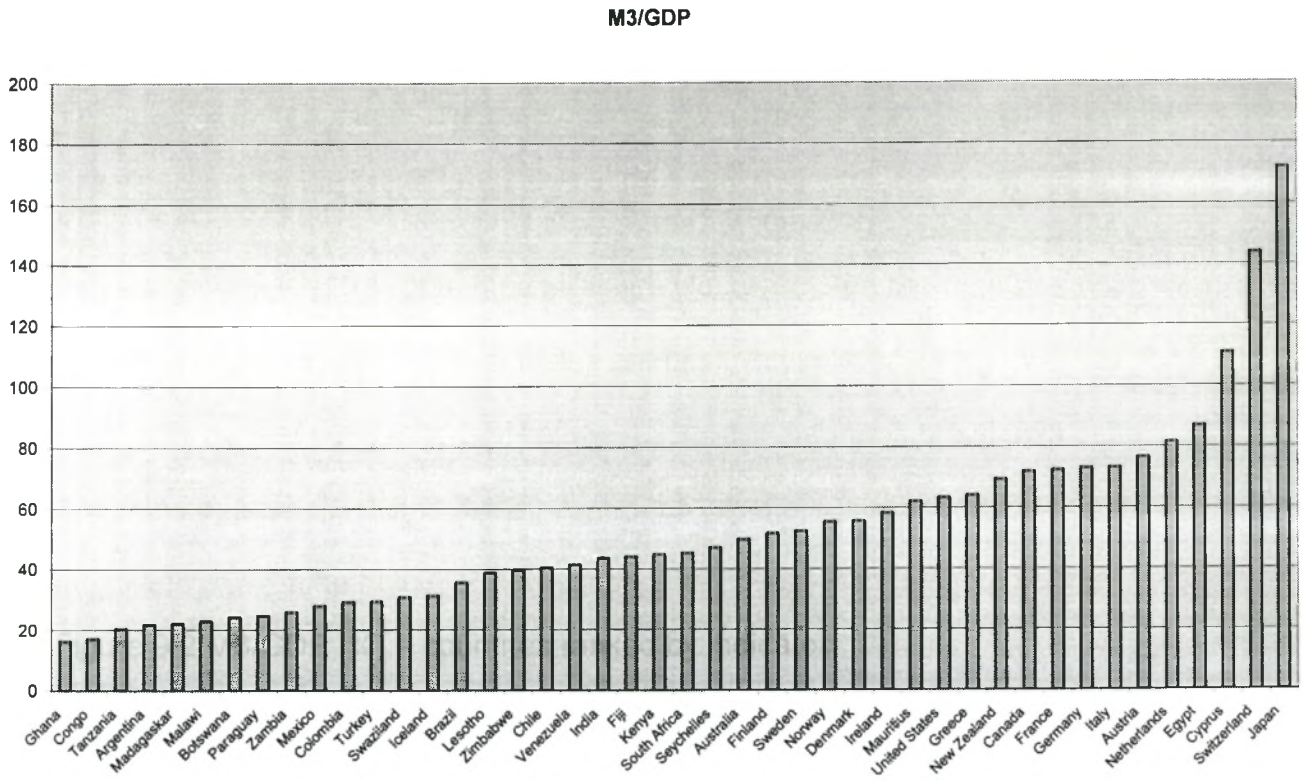
Figure 9.1 Domestic credit provided by the banking sector and liquid liabilities (both as %GDP)



Source: World Bank Development Indicators, Various years.

As seen from figure 9.1, both measures are closely related for the 49 countries in the sample. Both variables are positively related with growth (as measured by real per capita GDP growth). [Scatter diagrams are shown in the Appendix (figures 9.1.1 and 9.1.2)]. In order to gain a better understanding of the distribution of the M3/GDP ratio among the countries in the sample, the countries were ranked and the results are shown below in figure 9.2.

Figure 9.2 M3/GDP (%) – countries ranked by indicator.



Source: World Bank Development Indicators, Various years.

It is clear from figure 9.2 that the countries with lower levels of M3/GDP are the less developed countries.

Another financial deepening indicator from the World Bank dataset, the ratio of **bank liquid reserves to bank assets** was used. This variable is negatively related with growth. The amount of required reserves serves as a tax on banking, specifically in less developed countries. A higher ratio is associated with lower levels of banking sector development. This relationship is shown in figure 9.1.3. in the Appendix.

The relationship between the financial deepening indicators and growth rates across income groups are shown in Appendix 9.2 (Figure 9.2.2). Appendix 3 lists the countries included in the sample, and their division into the four income categories (using WDI categories).

Three other measures of financial deepening (calculated by Beck, Demirguc-Kunt & Levine 1999) were used. The first variable measures **Deposit Money Bank Assets/GDP** ('Dby'), defined as 'claims of deposit money banks on non-financial domestic sectors as share of GDP'. The second one is **Bank credit/ GDP** ('Priv'), defined as claims of deposit money banks on the private sector as share of GDP; and the third one measures the **Overall size of the financial system/GDP** ('Oversize'), defined as deposit money bank assets and stock market capitalization as share of GDP. All three these variables are positively related to real per capita GDP growth (see Appendix 9.1, figures 9.1.4, 9.1.5. & 9.1.6). The distribution across income groups is shown in Figure 9.2.2 (Appendix 9.2).

Table 9.1 – Summary statistics for financial deepening indicators.

	CREDIT/GDP	M3/GDP	RESERVES/ ASSETS	OVERSIZE	PRIV	DBY
Mean	72.68961	52.49047	12.05941	0.833003	0.392201	0.493634
Median	64.41770	45.02698	10.21372	0.797924	0.285145	0.417111
Maximum	239.3342	171.9069	42.21773	2.394454	1.435538	1.543116
Minimum	9.980305	16.25214	0.037308	0.128969	0.031693	0.052129
Std. Dev.	43.05696	31.74423	11.19145	0.560190	0.293458	0.332667
Skewness	1.271107	1.794211	0.908227	1.040498	1.269022	1.008763
Kurtosis	5.965316	6.980067	2.879664	3.661396	4.752827	3.660895
Jarque-Bera	30.51190	52.64912	6.766056	8.343986	19.02814	9.014383
Probability	0.000000	0.000000	0.033945	0.015421	0.000074	0.011029
Observations	49	44	49	42	48	48

Notes: Credit/GDP = Domestic credit provided by the banking sector (% of GDP); M3/GDP = Liquid liabilities (M3) as % of GDP; Reserves/assets = Bank liquid reserves to bank assets; Dby = Claims of deposit money banks on non-financial domestic sectors as share of GDP; Priv = Bank credit (Claims on private sector by deposit money banks as share of GDP); Oversize = Overall size of the financial system/GDP.

Table 9.1 presents summary statistics of the six financial deepening indicators. The summary statistics show substantial variance among the countries in terms of financial deepening. Many less developed countries have indicators significantly below the median values. Ghana has the lowest values for bank credit and claims of deposit money banks on non-financial sectors (Dby) and M3 to GDP: 5.2%, 3.1% and 16.2% of GDP respectively. At the other side of the spectrum, Switzerland has the highest ratios of Dby (154%) and bank credit (143%). This is expected of a country that serves as an important financial centre with a very sophisticated banking system, but a relatively small GDP. When one considers credit/GDP and M3/GDP, there is also substantial variance, with the standard deviation for the former equal to 43 and the latter 32. In both categories Japan has the highest levels. The liquid reserves/assets ratio is an indicator of the level of financial development, where lower values indicate higher levels of financial deepening. Luxembourg has a value of 0.03%. It is also the country with the highest per capita income in the world. Luxembourg also has the largest overall size of the financial system as percentage of GDP (239%).

2. Credit distribution

The degree of credit availability in an economy provides an overall indication of the level of financial development. A set of variables was calculated to show how credit is distributed among various sectors of the economy. Data were obtained from the *International Financial Statistics (IFS)* database (published by the IMF). The data come from the IMF's monetary survey and

include **Domestic Credit**, **Claims on Central Government** and **Claims on the Private Sector**. Data from the section 'Monetary Survey' were used, as this is a consolidation of the monetary authorities' and deposit money banks' data. For example 'Claims on Central Government' includes both claims on central government by the monetary authorities and claims by deposit money banks. This figure is reported as 'net claims on central government', which equals claims on central government, less central government deposits. It is therefore possible that this figure can have a negative value. 'Claims on the Private Sector' is calculated in the same manner. **Domestic credit** is a more comprehensive measure and includes claims on central government, claims on local government, claims on non-financial public enterprises, claims on private sector and claims on other financial institutions. For some countries, only claims on private sector and claims on central government are shown in the IFS survey. Domestic credit could therefore have a larger value than the sum of its reported parts.

In the IFS database these variables are reported in local currencies. The percentage share of government and private sector in total credit were also calculated. The division of credit between the public and private sectors shows a definite trend across income groups. The average share of government credit as a percentage of total credit is as high as 67% for low income countries (implying that there are serious crowding-out effects at work in less developed countries). For the other three income groups it varies between 11% and 27%. Similarly, the private sector receives only one quarter of total credit in the lowest income countries (25%). Domestic credit (the most

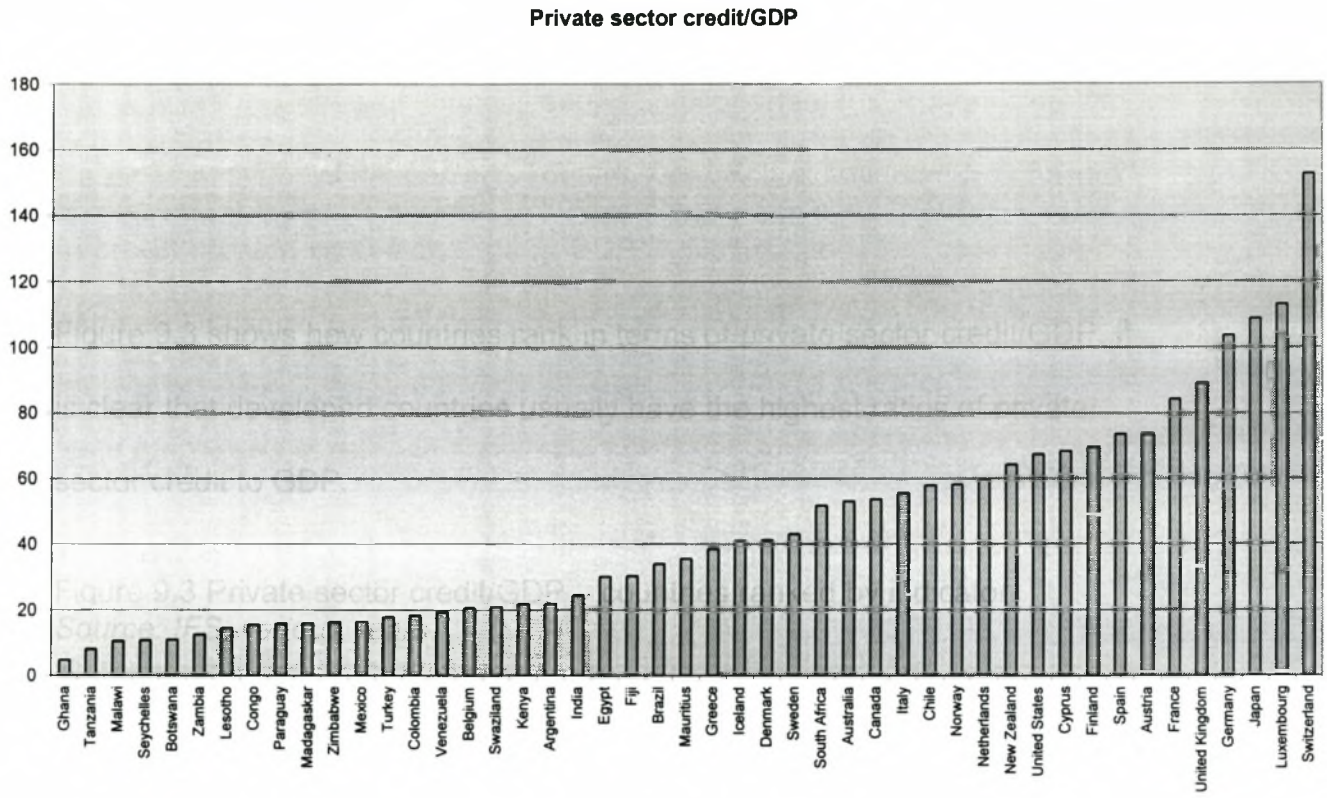
comprehensive credit indicator) has an average of 78% (as percentage of GDP) for high-income countries and 49% for upper-middle-income countries. For the lower-income groups it lies between 25 and 32%. (See appendix, figure 9.2.3).

Two other variables, private sector credit as % of GDP and domestic credit (more comprehensive measure) as % of GDP, are shown in figure 9.2.5. (appendix). The share of private sector credit averages 69% for high-income countries, falling to an average of 14% for low-income countries. Domestic credit follows the same trend. Both these indicators are positively related to real per capita GDP growth rates. The relationship between growth and private sector credit (%GDP) is shown as a scatter diagram (figure 9.1.7).

Not only are the levels of financial deepening important for economic growth. Changes in financial deepening variables were also examined. The **change in credit divided by the change in GDP** was calculated from data in the IFS dataset. The same pattern is observed when change in credit divided by change in GDP is shown together with the ratio of credit to GDP, across income groups. The change in credit is high (average 194%) for the high income groups (see figure 9.2.6). This is also associated with higher real per capita GDP growth rates. For the lower income groups, the ratio was around 40%.

Figure 9.3 shows how countries rank in terms of private sector credit/GDP. It is clear that developed countries usually have the highest ratios of private sector credit to GDP.

Figure 9.3 Private sector credit/GDP – countries ranked by indicator
Source: IFS, various years



3. Banking sector development

There are alternative ways of measuring levels of development in the banking sector. One indicator is the ratio of **total assets of bank-like institutions** to GDP. This variable is also calculated in the database compiled by Beck, Demirguc-Kunt and Levine (1999). Various groups of financial institutions are included in this variable. It includes deposit money banks, which is defined in the IFS database as: "...commercial banks and other banks that accept transferable deposits, such as demand deposits" (IMF, 2000:xvii). It also

includes other banklike institutions, which comprise institutions that accept deposits, but do not provide transferable deposit facilities, intermediaries that finance themselves mainly through issuance of negotiable bonds, development banks and offshore units (Beck, Demirguc-Kunt & Levine,1999:4). This variable therefore provides a comprehensive view of the level of development of all bank-like institutions in an economy. [1]

It is desirable to have a measure of the efficiency with which commercial banks fulfil their function as financial intermediaries. The **Net interest margin** provides such a measure, representing the accounting value of a bank's overhead costs as share of its total assets. It is calculated by dividing net interest revenue by total assets. The data used were the average values over 1990-95. The average value for the high-income countries is significantly lower than those of the other income groups. The net interest margin is a low 2,6% for the high-income group and varies between 5,7% and 6,4% for the other three income groups (figure 9.2.7). There is a wide gap between the high-income groups, but other income groups have similar levels of banking sector efficiency.

A last variable indicating banking structure and development is the **concentration ratio**. This is defined as the ratio of the three largest banks' assets to total banking assets. A highly concentrated banking sector may be associated with lower levels of growth, if the lack of competitive pressure reduces the efficiency of banks as financial intermediaries. Savings might not

[1] The positive relationship between this variable and real per capita GDP growth is shown in figure 9.1.8 (appendix).

be channeled into profitable investment opportunities, if there is little competition in the commercial banking sector. This concentration index was obtained by averaging data over the period 1990-1995. The CR3 (concentration ratio of the three largest banks as a percentage of total assets), was 84% for the low-income groups. The other three income groups also had relatively high CR3 ratios, varying between 60% and 65% (see figure 9.2.8). This indicates that banking is an industry with increasing returns to scale, and is usually dominated in most countries by a few large commercial banks. However, the very high CR3 ratio (85%) for low-income countries, shows a serious lack of competition in the banking industries of those countries.

B. Stock market indicators

Most of the research done on the relationship between financial development and growth has focused on traditional indicators of financial deepening (e.g. total amount of money and bank assets as % of GDP). Only recently have indicators of stock market activity and development been included in these models. One of the first articles to include stock market indicators, was that of Levine and Zervos (1998). They found that both stock market liquidity and banking development positively predict growth: "The results are consistent with the views that financial markets provide important services for growth, and that stock markets provide different services from banks" (Levine & Zervos,1998:537). Three indicators of stock market activity were included in the present model.

The first is the ratio of **stock market capitalization to GDP**. This is equal to the value of listed shares divided by GDP. To measure activity or liquidity of the stock markets, the ratio of **total value traded on the stock market** to GDP is used. This is defined as the total value of shares traded on the stock exchange divided by GDP. The last measure is the **turnover ratio**, an indicator of the efficiency of a stock market. It is defined as the ratio of the value of total shares traded to market capitalisation. A small but active stock market has a high turnover ratio, while a large but less liquid stock market has a lower ratio. All three variables were obtained from the Beck, Demirguc-Kunt and Levine dataset. All variables are simple 15 year averages for the period 1980-1995.

Table 9.2 Summary statistics: Stock market and banking sector development

	CONC	MCAP	NETINTER	TOR	TVT	BIA
Mean	0.668052	0.298790	0.043167	0.306839	0.098423	0.255971
Median	0.700955	0.166367	0.036043	0.241310	0.043971	0.150421
Maximum	1.000000	2.141658	0.120351	1.691111	0.975436	1.309558
Minimum	0.182142	0.007516	0.007214	0.010449	0.001217	0.006656
Std. Dev.	0.216174	0.388243	0.027052	0.306698	0.169982	0.316001
Skewness	-0.301961	3.104939	1.078237	2.449193	3.703015	2.011829
Kurtosis	2.201657	14.02223	3.747162	11.29870	18.64248	6.446142
Jarque-Bera	1.837135	280.0911	9.332133	158.6404	511.7083	36.25156
Probability	0.399090	0.000000	0.009409	0.000000	0.000000	0.000000
Observations	44	42	43	41	41	31

Notes: Conc=CR3 concentration ratio (assets of 3 largest banks), Mcap=Stock market captalisation as a share of GDP, Netinter=Net interest margin, Tor=Turnover ratio, Tvt=Total value traded as percentage of GDP, Bia=Total assets of bank-like institutions as a percentage of GDP.

Most low income countries included in the sample show low levels of efficiency in the banking sector. Congo has only 3 banks which makes the

CR3 concentration ratio equal to 1. The minimum value (CR3 = 0.18) is the United States, a country characterized by strong competition in the banking sector. The median value (0.70) shows high average levels of concentration in the banking industry for the 44 countries included in the sample. Another factor that has to be considered is whether the banks are domestic or foreign banks. In the case of Botswana (0.94) and Swaziland (0.94) the main banks are merely subsidiaries/ branches of South African banks. The net interest margin tells the same story. The country with the lowest margin (i.e. highest efficiency) is Luxembourg (0.007) and the one with the highest margin is Brazil (0.12).

The stock market indicators once again show the richest per capita income countries at the top of the list. Switzerland has both the highest turnover (Tor =1.69) and total value traded ratios (Tvt = 0.97), while Luxembourg has the highest market capitalisation ratio (mcap = 2.14). Paraguay has the lowest market capitalisation and total value traded ratios.

C. Interest rates and inflation

Interest rates are not normally included in the studies on financial development and growth. In the more recent article by Levine, Loayza and Beck (1999), real interest rates were included in the dataset. However, this variable does not appear in any of the regressions. It presumably was not significant when combined with the financial deepening indicators.

The traditional approach is extended here to include various indicators of interest rates. In previous chapters it was explained that interest rate spreads and mark-ups are important indicators of efficiency and competitiveness in the Post Keynesian approach. High interest rate spreads are indicative of underdeveloped financial markets and will therefore be negatively related to growth. Interest rate spreads are published in the *World Bank Development Indicators* as an indicator of financial depth. The spreads used in this model were obtained from the World Bank database. To check for consistency, spreads were also calculated by subtracting the deposit rate from the lending rate, using IMF data. If inconsistencies were found, the calculated value was used. Both nominal and real interest rates were included in the present study.

There is a clear relationship between interest rate spreads, mark-ups and nominal interest rates across income groups. Figure 9.2.10 (appendix) shows clearly that the average interest rate spread and mark-up both increase markedly from the high- to the low-income countries. The spread is as low as 4% for high-income countries and the markup 2.8% for the same group of countries. In figure (9.2.11, appendix), average nominal bank rates and inflation rates are shown across income groups. There is a large difference between the high-income group and the other three income groups. The high average figures for the upper-middle-income group are easily explained when the countries included in this income group are considered (see Appendix 3)[2].

[2] Most of the high inflationary South American countries fall into this income group. The exceptions are Mauritius, Seychelles and South Africa, with much lower rates.

Figures 9.1.10, 9.1.11 and 9.1.12 (appendix) show that interest rates spreads, nominal interest rates (bank rate) and real interest rates are negatively related to per capita growth rates. The real interest rate is negatively related to growth, after the outliers have been removed. The average real interest rate for the low income groups has a surprisingly low value of 2.9%. The reason for this low rate is that many less developed countries had negative average real interest rates over the sample period, as they had high and fluctuating inflation rates. The following table provides summary statistics for interest rate spreads, mark-ups and nominal rates.

Table 9.3 Summary statistics – Interest rates and inflation

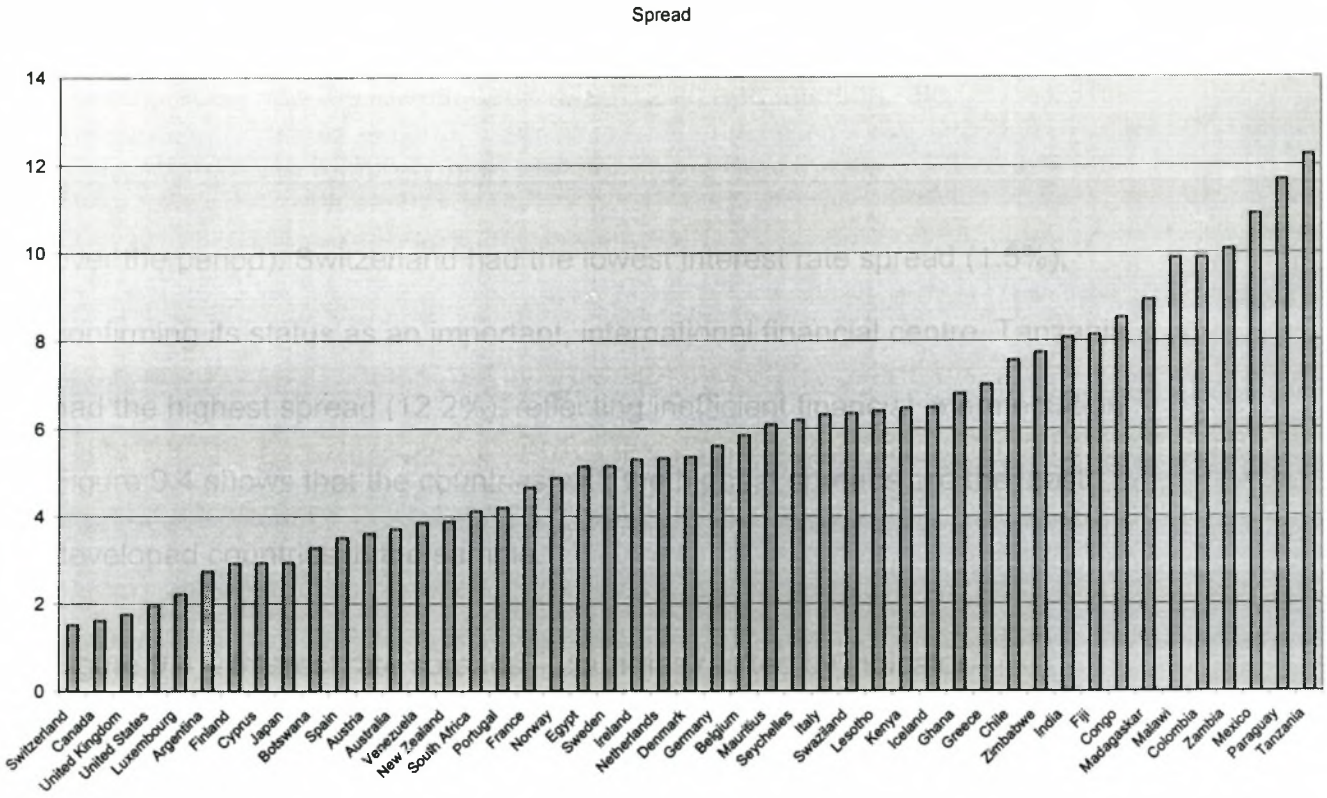
	BANKRATE	INFLATION	MARKUP	SPREAD
Mean	19.31095	18.73827	3.833745	5.792441
Median	11.10300	7.495777	3.278558	5.349750
Maximum	269.0000	180.6739	12.60000	12.23400
Minimum	3.262500	1.727667	-5.571166	1.506417
Std. Dev.	37.77298	32.53154	3.196578	2.777753
Skewness	6.081146	3.806181	0.596823	0.464437
Kurtosis	40.62582	17.68966	4.995755	2.453896
Jarque-Bera	3192.399	558.8742	10.36500	2.273693
Probability	0.000000	0.000000	0.005614	0.320829
Observations	49	49	46	47

Notes: Bankrate=Nominal interest rate, Markup=Lending rate minus bank rate, Spread=Lending rate minus deposit rate.

The average nominal bank rate in Argentina was 269% over the sample period 1980-1999. This value was excluded to remove the perverse effects of such outliers when testing for the relationships with growth. Even with such high nominal rates, Argentina had a real average interest rate of 9.5% over the period. Hyper-inflation was present over most of the sample period. Argentina managed only 0.2% average real per capita growth over the sample period. Japan had the lowest bank rate (3.2%) and inflation rate (1.7%). This is associated with relatively high real per capita growth rates (average 2.2%

over the period). Switzerland had the lowest interest rate spread (1.5%), confirming its status as an important, international financial centre. Tanzania had the highest spread (12.2%), reflecting inefficient financial intermediation. Figure 9.4 shows that the countries with the highest spreads are the least developed countries in the sample.

Figure 9.4 – Interest rate spreads – countries ranked by indicator



Source: IFS, various years.

D. Channels to growth

Besides examining the relationship between financial development indicators and long-run real per capita growth, other factors that contribute to economic growth were also included in the present model. Since growth is a dynamic

process, much information is lost when averaging data over a 20-year period. The advantages are however considerable, in eliminating short-run fluctuation. In most long-run cross-sectional growth studies of this type, the R^2 is about 50%. Levine and Zervos found R^2 values of between 45% and 50%: "The growth regression R^2 of 0.50 is consistent with other cross-sectional growth studies (e.g., Barro and Sala-i-Martin,1995)" (Levine & Zervos,1998:546).

The financial deepening indicators are positively related to growth rates over the sample period. In the final cross sectional growth regression, these financial variables are combined with other macroeconomic variables to control for their contribution to economic growth. Most macroeconomic variables were obtained from the database compiled by Beck, Demirguc-Kunt and Levine (1999).

Government expenditure as a share of GDP is an indication of the size of government involvement in the economy. It was assumed that greater government involvement in the economy was associated with greater inefficiencies. But, when this relationship was examined for the entire period for the 49 countries, no significant relationship emerges. One significant indicator of economic growth is the **growth rate of real per capita capital**. This variable is calculated as an average over the period 1980-1992, as a regression coefficient from an OLS regression. Economic theory has long posited a significant positive relationship between capital formation and economic growth (e.g. Fisher 1930, Jorgenson 1971). This relationship is

shown for the 49 countries in the sample in figure 9.1.13 (appendix). The simple OLS regression of real per capita capital growth rates on per capita growth, gives a R^2 value of 0.49. This is a clear indication of the importance of capital growth rates for economic growth.

The next indicator of growth used, was the **average years of schooling** in the total population over 25. Unfortunately this variable was only available for 1990. No averages were available for the entire period, which reduces the significance of this variable. While there was a positive relationship between this variable (school90) and real per capita GDP growth, this relationship was not significant in the regressions.

An indicator of **private saving rates** was included. Higher saving rates are correlated with higher levels of capital formation and investment and economic growth. The variable used is defined as the ratio of gross private saving to gross private disposable income, averaged over 1980-1995. Figure 9.1.15 (appendix) shows that there is a strong positive relationship between saving rates and real per capita growth. There is also a strong, significant and positive relationship between saving rates and capital growth rates (figure 9.1.16).

Two other indicators were included to give an indication of risk levels associated with investment in a country. These are important in the low-income countries (especially Africa) where property rights are not properly policed and corruption is rife. The first variable ('govrep') is an indicator of **repudiation of contracts by governments**. This is an indicator of the "risk of

a modification in a contract taking the form of a repudiation, postponement, or scaling down due to budget cutbacks, indiginization pressure, a change in government, or a change in government economic and social priorities" (Beck, Demirguc-Kunt & Levine,1999). Scores are allocated on a scale of 0-10, with lower scores for higher risks. Data were averaged over the period 1982-1995. The final indicator in this category, is the **level of corruption** ('corrupt'). This is also measured on a scale 0-10, with 0 an indication of high levels of corruption. Both of these indicators are highly intercorrelated (see appendix, figure 9.1.17). They are also individually correlated with per capita growth, government repudiation showing a stronger positive relationship with growth than the corruption index.

Table 9.4 Summary statistics – growth related variables

	GOVEXP	GOVREP	CAPGROLS	PSR_CA	CORRUPT	SCHOOL90
Mean	16.77288	7.604872	1.170110	0.215173	4.332432	6.441333
Median	15.88134	7.947916	1.709373	0.226387	4.392857	6.250000
Maximum	40.21134	10.00000	6.117996	0.385093	6.000000	12.00000
Minimum	7.381497	3.045455	-6.880267	-0.042803	1.285714	2.310000
Std. Dev.	6.351548	1.935963	2.191922	0.081614	1.342530	2.763308
Skewness	1.175505	-0.528234	-1.219345	-0.923545	-0.217220	0.156508
Kurtosis	5.363271	2.169352	5.651335	4.828063	1.842898	1.829359
Jarque-Bera	21.29857	3.311184	26.49427	12.38152	2.800642	2.753211
Probability	0.000024	0.190979	0.000002	0.002048	0.246518	0.252434
Observations	46	44	49	44	44	45

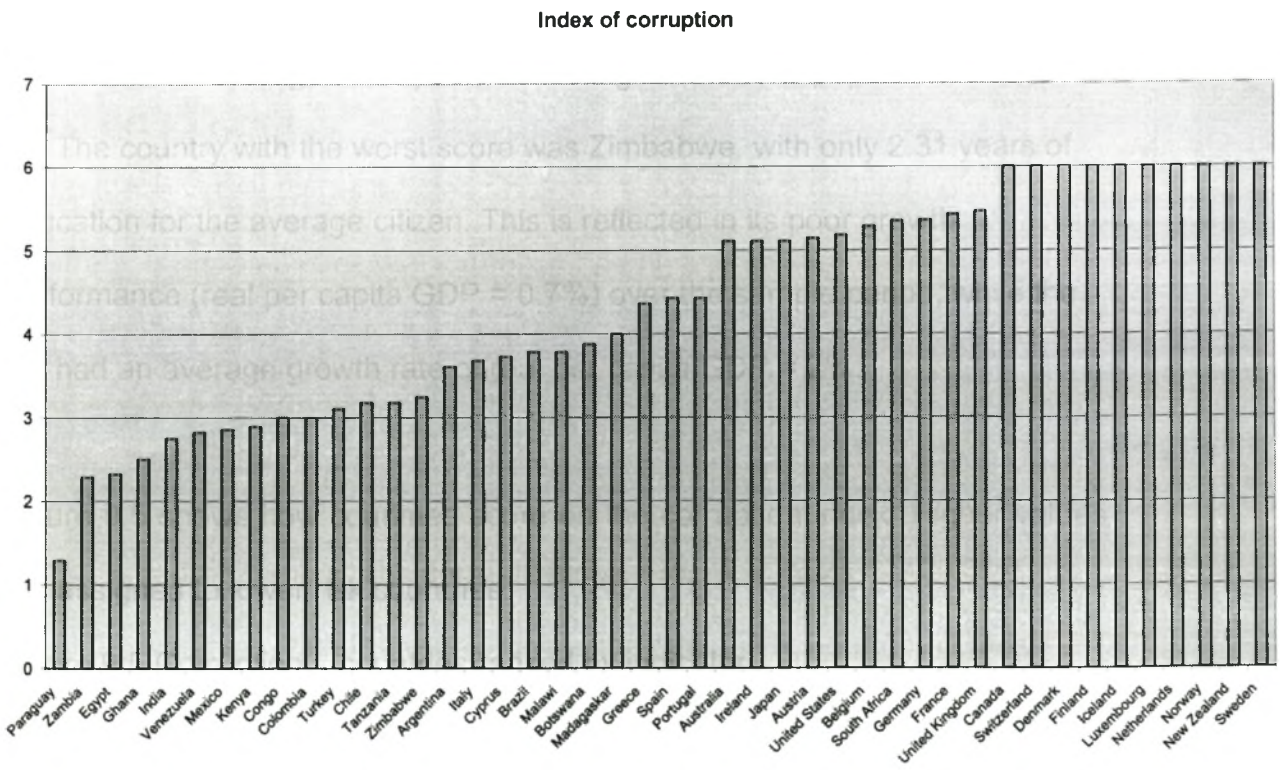
Notes: Govexp=Government expenditures as a share of GDP, Govrep=Repudiation of contracts by governments, Capgrols=Growth rate real per capita capital, Psr_ca=Private savings, Corrupt=index of corruption, school90=average years of schooling in total population over 25 in 1990.

When these variables (as defined above) are included, a common picture emerges. High rates of capital formation and private saving are associated with high per capita growth rates and per capita income. Luxembourg has the highest saving ratio (0.38) of the whole sample, and the lowest saving ratio

(-0.04) is that of Zambia. The corruption score for most of the developed countries was high, with Paraguay having the dubious honour of the most corrupt (the lowest score of 1.2). The United States had the highest school90 score, with an average of 12 years schooling for the total population above 25. The country with the worst score was Zimbabwe, with only 2.31 years of education for the average citizen. This is reflected in its poor growth performance (real per capita GDP = 0.7%) over the sample period, while the US had an average growth rate of real per capita GDP = 2%.

Figure 9.5 shows how countries score on the corruption index. Higher values are assigned to lower risk countries.

Figure 9.5 Corruption – countries ranked by indicator.



Source: Beck, Demirguc-Kunt & Levine, 1999

E. Openness and trade

It is widely acknowledged that openness to trade has important effects on economic growth rates. Three variables were used to indicate the openness of a country. Two were calculated from the IFS database. The first is the ratio of **foreign exchange/ imports**. The level of foreign exchange is published in dollars by the IMF, under the heading 'international liquidity'. This figure was multiplied by the exchange rate, because both imports and exports are published in the local currency. The ratio of the **balance of payments** (Bop) to imports was calculated by dividing the Bop (as published by the IMF) by imports.

A '**trade**' variable was also used from the Beck, Demirguc-Kunt and Levine dataset, the sum of real exports and imports as a share of real GDP, using the average over 1980-95.

Each of these variables is positively related to growth. The higher the ratio of foreign exchange reserves to imports, the less constrained an economy is in its growth path. The same is true for the surplus/deficit of the balance of payments. Positive figures on the balance of payments are associated with higher growth rates. The 'trade' variable (sum of real exports and imports as a ratio of real GDP) shows that more openness leads to higher growth rates. A number of countries in the sample have 'trade' values above 100, e.g. Luxembourg with the highest value of 181%. It is significant to note that all four countries in the sample with real per capita growth rates exceeding 4% the highest per capita growth rates, also have 'trade' values of more than

100%. These are Cyprus (103%), Mauritius (116%), Botswana (113%) and Ireland (106%).

9.4 FINANCIAL DEEPENING AND ECONOMIC GROWTH – REGRESSION RESULTS.

In this section the variables introduced above are used in a simple OLS regression model to test the correlation between per capita growth, indicators of financial deepening, and the other 'channels to growth'. Cross-country regressions are used and the variables are averaged over the entire sample period, 1980-1999 (data permitting), yielding one observation per country. This approach, i.e. using growth and explanatory variables averaged over long periods, is common in the traditional growth literature. It has been criticised by various authors, since it cannot account for the effects of common shocks to both dependent and explanatory variables. It also cannot account for the potential endogenous co-determination of growth and explanatory variables (Levine & Zervos,1998).

These shortcomings are acknowledged in the present model. But the approach followed does eliminate some of the common problems with time series data and unit roots. By using average values for all the variables, short-run fluctuations and autocorrelations of variables are eliminated. In a recent paper by Beck and Levine (2002) on the relationships between stock markets, banks and growth, more advanced panel data techniques are used. They constructed a panel with data averaged over five-year intervals from 1976-

1998 to abstract from business cycle relationships, using both this panel econometric approach as well as a traditional OLS approach. They found that the results were similar, despite the weaknesses of the OLS approach: "As we will see, the sizes of the coefficients in the simple OLS regressions are very similar to the results we obtain using more sophisticated dynamic panel estimators" (2002:11).

To provide a more complete picture of the relationship between financial development and growth, single variable regressions are reported for 10-year and 5-year sub-periods (where applicable).

9.4.1 FINANCIAL DEEPENING INDICATORS:

The indicator of financial development traditionally used in the literature is M3/GDP (King & Levine,1993). The single variable OLS regression results are shown in appendix 9.1. Financial development indicators are given in table 9.1.1. M3/GDP is significant at the 5% level. Another financial development variable, domestic credit/GDP, was used from the IFS database. This variable consists of private sector credit and government credit. Private sector credit/GDP is found to be significant in many studies (Beck & Levine,2002). Both domestic credit/GDP and private sector credit/GDP were significant. The net interest margin was significant at the 1% level.

Table 9.5 reports the results for the different sub-periods, for three financial deepening indicators. M3/GDP is significant over the 20-year period, but only in some of the sub-periods. Reserves/assets is negative and significant at the

5% level over the 20-year period, and some of the sub-periods. This variable showed the greatest stability over the sub-periods and was therefore chosen as the variable indicating financial development. This is a novel approach, as most of the other studies examining financial development and growth use either M3/GDP, credit/GDP or private sector credit/GDP. Both domestic credit/GDP and private sector credit/GDP are significant at the 5% level (table 9.6). But are not significant in most of the sub-periods.

Table 9.5 – Financial deepening
Dependent variable: Per capita GDP growth

	Coefficient	t-statistic	R^2	Durbin Watson
20 year averages: 1980-1999				
Credit/GDP	0.005	1.15	0.02	2.00
M3/GDP	0.01	2.35 **	0.11	1.91
Reserves/Assets	-0.04	-2.43 **	0.11	1.99
10 year averages: 1980-1989				
Credit/GDP	0.01	2.08 **	0.08	1.76
M3/GDP	0.01	1.76 *	0.07	1.84
Reserves/Assets	-0.04	-2.122 **	0.09	1.82
10 year averages: 1990-1999				
Credit/GDP	0.003	0.71	0.01	2.00
M3/GDP	0.01	1.55	0.05	2.17
Reserves/Assets	-0.03	-1.41	0.04	2.02
5 year averages: 1980-1984				
Credit/GDP	0.005	0.54	0.006	2.29
M3/GDP	0.01	1.25	0.03	2.24
Reserves/Assets	-0.05	-2.44 **	0.11	2.34
5 year averages: 1985-1989				
Credit/GDP	0.007	0.96	0.01	2.01
M3/GDP	0.01	1.77*	0.07	2.11
Reserves/Assets	-0.01	-0.57	0.007	1.99
5 year averages: 1990-1994				
Credit/GDP	-0.00	-0.07	0.00	2.41
M3/GDP	0.00	0.87	0.01	2.50
Reserves/Assets	-0.01	-0.35	0.002	2.42
5 year averages: 1995-1999				
Credit/GDP	0.00	1.16	0.02	1.46
M3/GDP	0.01	1.64	0.06	1.49
Reserves/Assets	-0.04	-1.75 *	0.06	1.45

* Significant at the 10 percent level.
** Significant at the 5 percent level.
*** Significant at the 1 percent level.

Table 9.6 Credit distribution

Dependent variable: Per capita GDP growth

	Coefficient	t-statistic	R^2	Durbin Watson
20 year averages: 1980-1999				
Government credit/GDP	-0.01	-1.22	0.03	2.01
Private sector credit/GDP	0.01	2.26 **	0.10	2.14
Domestic credit/GDP	0.01	2.29 **	0.10	2.03
Change in credit/Change in GDP	0.001	0.48	0.006	2.20
10 year averages: 1980-1989				
Government credit/GDP	-0.02	-0.79	0.01	1.84
Private sector credit/GDP	0.018	1.50	0.05	1.87
Domestic credit/GDP	0.02	2.44 **	0.15	1.99
Change in credit/Change in GDP	0.00	0.20	0.001	2.3
10 year averages: 1990-1999				
Government credit/GDP	0.005	0.45	0.005	2.69
Private sector credit/GDP	0.004	0.73	0.01	2.477
Domestic credit/GDP	0.006	1.06	0.03	3.13
Change in credit/Change in GDP	0.001	0.65	0.01	3.00
5 year averages: 1980-1984				
Government credit/GDP	-0.01	-0.32	0.002	2.45
Private sector credit/GDP	0.01	0.87	0.01	2.43
Domestic credit/GDP	0.01	0.60	0.009	2.61
Change in credit/Change in GDP	0.004	0.69	0.01	2.49
5 year averages: 1985-1989				
Government credit/GDP	-0.01	-0.46	0.005	1.95
Private sector credit/GDP	0.01	1.38	0.04	1.89
Domestic credit/GDP	0.02	1.99 *	0.10	2.41
Change in				

credit/Change in GDP	0.00	0.41	0.004	2.57
5 year averages: 1990-1994				
Government credit/GDP	-0.01	-0.93	0.02	2.40
Private sector credit/GDP	0.00	0.09	0.00	2.40
Domestic credit/GDP	0.00	0.20	0.00	2.92
Change in credit/Change in GDP	0.00	0.05	0.00	3.00
5 year averages: 1995-1999				
Government credit/GDP	0.002	0.20	0.0009	1.93
Private sector credit/GDP	0.003	1.49	0.04	1.78
Domestic credit/GDP	0.005	1.03	0.02	0.03
Change in credit/Change in GDP	0.002	1.16	0.03	1.98

* Significant at the 10 percent level.
** Significant at the 5 percent level.
*** Significant at the 1 percent level.

9.4.2. INTEREST RATES.

Data on the bank rate, real interest rate, interest rate spread and markup, were calculated for the 10-year and 5-year sub-periods. All four variables were significant over the 20-year period, with the interest rate spread significant at the 1% level. During the 1980s, only bank rate is significant, while both bank rate and spreads are significant during the 1990s. For the 5-year periods, all the variables are significant in the 1995-1999 period. This might be due to data availability. Data on the first 10-year period (1980-1999) were incomplete, while the quality and availability of data improved in the following period (1990-1999).

Table 9.7 Interest rates, spreads and markups

Dependent variable: Per capita GDP growth

	Coefficient	t-statistic	R^2	Durbin Watson
20 year averages: 1980-1999				
Bank rate	-0.05	-2.41 **	0.11	2.10
Real interest rate	-0.13	-2.01 *	0.08	2.53
Spread	-0.22	-3.03 ***	0.17	1.62
Markup	-0.14	-1.85 *	0.07	2.10
10 year averages: 1980-1989				
Bank rate	-0.04	-1.71 *	0.06	1.56
Real interest rate	-0.06	-0.77	0.01	2.11
Spread	-0.18	-1.35	0.05	1.71
Markup	-0.004	-0.12	0.00	1.56
10 year averages: 1990-1999				
Bank rate	-0.06	-2.53 **	0.13	2.12
Real interest rate	-0.09	-1.14	0.03	2.51
Spread	-0.24	-3.48 ***	0.22	1.83
Markup	-0.00	-0.11	0.00	2.46
5 year averages: 1980-1984				
Bank rate	-0.04	-0.95	0.02	1.61
Real interest rate	-0.14	-1.60	0.07	1.84
Spread	-0.28	-1.89 *	0.09	1.76
Markup	-0.01	-0.25	0.001	1.08
5 year averages: 1985-1989				
Bank rate	-0.04	-1.83 *	0.07	1.65
Real interest rate	-0.20	-2.35 **	0.13	2.63
Spread	-0.02	-0.18	0.00	2.05
Markup	-0.006	-0.05	0.00	1.57
5 year averages: 1990-1994				
Bank rate	-0.08	-1.87 *	0.08	2.64
Real interest rate	0.09	0.89	0.01	2.85
Spread	-0.19	-1.68 *	0.06	2.70
Markup	0.11	1.26	0.03	2.50
5 year averages: 1995-1999				
Bank rate	-0.03	-1.75 *	0.06	1.66
Real interest rate	-0.21	-3.99 ***	0.26	2.07
Spread	-0.07	-2.39 **	0.11	1.44
Markup	-0.08	-2.13 **	0.10	1.81

* Significant at the 10 percent level.
** Significant at the 5 percent level.
*** Significant at the 1 percent level.

9.4.3. TRADE AND OPENNESS

Table 9.8 shows data for the sub-periods for the trade variables. Foreign exchange/imports is the only variable that is significant over the 20-year

period, and was also significant in most of the sub-periods. Although the other two variables were significant in some of the sub-periods, they were not included in further regressions.

Table 9.8 Trade and openness

Dependent variable: Per capita GDP growth

	Coefficient	t-statistic	R^2	Durbin Watson
20 year averages: 1980-1999				
Foreign exchange/Imports	1.34	2.20 **	0.09	1.97
Balance of Payments/Imports	1.71	1.44	0.04	1.57
Current account/Imports	-1.07	-1.52	0.04	2.14
10 year averages: 1980-1989				
Foreign exchange/Imports	0.99	1.10	0.02	1.79
Balance of Payments/Imports	1.45	0.84	0.01	1.79
Current account/Imports	-0.05	-0.05	0.00	1.99
10 year averages: 1990-1999				
Foreign exchange/Imports	1.35	1.99 *	0.08	1.90
Balance of Payments/Imports	2.18	1.89 *	0.08	1.92
Current account/Imports	-0.90	-1.23	0.03	2.09
5 year averages: 1980-1984				
Foreign exchange/Imports	-0.01	-0.007	0.00	2.15
Balance of Payments/Imports	0.52	0.27	0.001	2.17
Current account/Imports	-0.29	-0.22	0.001	2.32
5 year averages: 1985-1989				
Foreign exchange/Imports	1.53	1.75 *	0.64	2.05
Balance of Payments/Imports	3.18	1.78 *	0.07	2.12
Current account/Imports	-2.12	-2.22 **	0.09	2.22
5 year averages: 1990-1994				
Foreign exchange/Imports	1.59	2.54 **	0.12	2.29
Balance of Payments/Imports	2.65	2.04 **	0.09	2.19

Current account/Imports	-0.85	-1.02	0.02	2.44
5 year averages: 1995-1999				
Foreign exchange/Imports	0.49	0.52	0.00	1.57
Balance of Payments/Imports	2.63	2.22 **	0.10	1.46
Current account/Imports	-0.33	-0.39	0.00	1.53

* Significant at the 10 percent level.
** Significant at the 5 percent level.
*** Significant at the 1 percent level.

9.4.4. FINANCIAL DEVELOPMENT AND GROWTH – REGRESSION MODEL

The basic regression used takes the following form:

$$GROWTH_i = \alpha + \beta FINANCE + \gamma\,[CHANNELS\ TO\ GROWTH] + \varepsilon_i,$$

where the dependent variable GROWTH, equals real per capita GDP growth. FINANCE equals <u>either</u> one of the financial deepening indicators and CHANNELS TO GROWTH represents a combination of the other variables associated with economic growth, as discussed above. Table 9.9 below shows the regression output.

The variable chosen to represent financial deepening (or repression) was the ratio of reserves to assets (as explained above). This variable was always significant, even when other factors were included to control for their influence on growth. Regression results are reported in table 9.9.

Table 9.9 Financial Deepening and Growth, Cross-Country Regressions, OLS

Dependent variable: Real per capita GDP growth

Regressors	*(1)*	*(2)*	*(3)*	*(4)*	*(5)*
Constant	2.03 (6.64)***	1.13 (2.44)	0.65 (1.42)	0.462 (1.245)	0.77 (1.80)*
Ratio of reserves to assets	-0.04 (-2.43)**	-0.04 (-2.71)***	-0.06 (-3.58)***	-0.03 (-2.46)**	-0.04 (-2.84)***
Trade		0.01 (2.64)**	0.01 (2.92)***	0.009 (2.30)	0.008 (2.14)**
Ratio of foreign reserves to imports			1.65 (3.13)***	1.10 (2.53)**	1.12 (2.57)**
Growth rate of real per capita capital				0.36 (4.90)***	0.40 (4.85)***
Real interest rate					-0.04 (-1.38)
R^2	**0.11**	**0.23**	**0.39**	**0.62**	**0.65**
Adjusted R^2	0.09	0.20	0.34	0.58	0.61
Durbin-Watson stat	1.99	1.82	1.58	2.00	2.07
Number of countries	49	47	45	45	43

(t-stats in parentheses)
* Significant at the 10 percent level.
** Significant at the 5 percent level.
*** Significant at the 1 percent level.

The financial development (repression) variable (reserves/assets) explains 11% of real per capita GDP growth (R^2 = 0.11). The next variable was 'trade' which also has a strong positive relationship with growth. This variable was defined above as the sum of real exports and imports divided by real GDP. Another variable indicating openness to trade was introduced, the ratio of foreign exchange reserves to imports. This variable was also significantly related to growth, which confirms the theoretical point made above that countries are constrained by levels of foreign exchange in their participation in trade. As shown above in the basic growth regression equation, only one of the financial deepening indicators is included, because they are all correlated (as shown by the scatter diagrams in Appendix 1). All the financial deepening

indicators used, have positive correlations with real per capita GDP growth. The only negative relationship was that between the ratio of bank liquid reserves to bank assets. This is an indicator of financial repression, not commonly used in the traditional growth regressions (which usually rely on some measure of M3 or bank credit to GDP). It confirms that countries with underdeveloped financial systems have higher liquid reserves to assets ratios. As the money supply becomes endogenous and the central bank fulfills it role as lender of last resort, the need for banks to hold high levels of reserves diminishes. This variable therefore shows that an underdeveloped financial system serves as a form of a 'tax' which negatively affects financial intermediation. The real interest rate was also included as an explanatory variable and enters the regression with the correct sign, but the t-statistic was not significant. The final R^2 value is 0.65 which shows that real per capita GDP growth is well explained by the variables included in the model.

9.5 FINANCIAL DEEPENING AND GROWTH IN SELECTED SADC COUNTRIES

This thesis has examined the nature of the money supply process in the countries of the SADC region. It was argued in earlier chapters that the financial structure is related to the way the money supply is determined within a country. The more developed the financial system (as measured by a range of indicators), the more likely it is that the money supply is determined endogenously. This link was examined in detail in earlier chapters.

The current chapter attempted to link these indicators of financial development (and money supply determination) to levels of growth. In the econometric model above it was shown that financial development is significantly positively related to economic growth. Other variables affecting growth were also included. In this sample of 49 countries, 9 countries were from the SADC region. Most fall into the lower income categories, with the exception of Mauritius and South Africa. These two countries exhibited consistently higher levels of financial development, measured by a variety of indicators.

Empirical studies have repeatedly illustrated that deeper, broader, and better functioning financial markets are associated with higher rates of economic growth. Studies dealing specifically with African countries are limited, but results from existing empirical work support the view that financial development is associated with economic growth (Ndikumana,2002; Gelbard and Leite,1999).

Gelbard and Leite (1999) made an important contribution to the literature on finance and growth in Africa. Using Sub-Sahara African countries, they constructed an index of financial development for 38 countries, and combined a variety of indicators to construct this index: "A thorough assessment of a financial system should consider at least six areas: (a) the market structure and competitiveness of the system; (b) the availability of financial products; (c) the degree of financial liberalisation; (d) the institutional environment under which a system operates; (e) the degree of integration with foreign financial

markets (financial openness); and (f) the degree of sophistication of instruments of monetary policy" (1999:8). According to their results, the countries with the most developed financial systems in 1997 were South Africa, Mauritius, Ghana, Kenya, Zambia and Namibia.

Gelbard and Leite (1999) use this financial development index in a simple OLS model to test whether it is related to per capita GDP growth. They found that, when combined with several other contributors to growth, the financial development index was positively and significantly related to country growth rates. The indicators compiled by Gelbard and Leite are highly informative for cross-country variations in the overall level of financial development, and on differences in certain institutional features.

In the model developed in this chapter, financial development was also significantly correlated with growth. This model included 9 SADC countries. It is not statistically possible to extend this approach (using long-run averages) for these 9 countries (insufficient observations). But it can be concluded from the model that the general conclusions are applicable to the 9 SADC countries included in the sample.

The SADC countries included in the model (with the exception of South Africa), showed lower levels of financial development for almost all variables. Per capita income was lower for 4 of these 9 countries in 1990s than in the 1980s. These statistics illustrate what has become known as Africa's 'growth tragedy'. Table 9.10 shows average levels of financial development and real

per capita growth for the 1980s and 1990s. The countries in bold letters had lower ratios of both M3 to GDP and Bank credit to GDP, in the 1990s than they had in the 1980s. The exceptions were Mauritius, South Africa and Zimbabwe (comparative figures for Tanzania were not available). Botswana and Mauritius are the two success stories of the SADC region. Both countries had average per capita growth rates above 4% (only 2 other countries out of the 49 included had average growth rates exceeding 4%, i.e. Ireland and Cyprus). As seen in Table 9.10, Botswana experienced a decline in average per capita growth rates over the 1990s, but the average figure for the whole period was still high (>4%).

Table 9.10 Financial deepening and per capita growth (averages by decade), 1980-1999.

Country	Bank credit as % of GDP		M3 as % of GDP		Real GDP per capita growth (% p.a.)	
	1980s	1990s	1980s	1990s	1980s	1990s
Botswana	**-17.4***	**-50.2***	**24.7**	**24.0**	**6.7**	**2.1**
Lesotho	**31.8**	**1.4**	**43.5**	**34.1**	**1.7**	**1.9**
Mauritius	55.3	62.9	50.1	74.2	4.8	4.0
Malawi	**36.2**	**18.0**	**24.4**	**21.3**	**-1.3**	**1.2**
Swaziland	**16.1**	**3.9**	**31.6**	**30.0**	**2.8**	**0.2**
Tanzania	-	22.9	-	21.7	-	0.4
South Africa	89.8	131.8	47.9	42.6	-0.9	-0.7
Zambia	**63.2**	**59.3**	**33.9**	**18.0**	**-1.9**	**-2.3**
Zimbabwe	42.7	48.5	40.3	39.1	0.7	0.7

*Note: 'Claims on Central Government' includes both Claims on Central Government by the monetary authorities and claims by deposit money banks. This figure is reported as 'net claims on central government', which equals claims on central government, less central government deposits. It is therefore possible that this figure can have a negative value.

Source: IFS & World Bank Development Indicators.

Ndikumana (2002:10) found that for the whole Sub-Saharan Africa region, aggregate indicators of financial development have on average either stagnated or declined. The same is true for the 9 countries included here from the SADC region. For the SADC countries, the average size of the financial system (as measured by M3 to GDP), was lower in the 1990s compared to the 1980s. The ratio of M3 to GDP for the 9 countries averaged 37% for the 1980s, and fell to 34% for the 1990s.

The data highlights the predominant role of the South African financial system. The average bank credit to GDP ratio for the 9 SADC countries over the whole sample period (1980-1999) was 35% when South Africa is included (with a value of 110%), and 26% when it was excluded. The difference is even more spectacular when one considers the overall size of the financial system (as measured by the sum of deposit money bank assets and stock market capitalisation as share of GDP). When South Africa is included (with a value of 187%) the average is 67%, but falls dramatically to 37% when South Africa is excluded. It is primarily through the supply of credit that financial intermediation stimulates real economic activity. Credit supplied upon demand (i.e. an endogenous money supply) facilitates economic relations and stimulates economic growth. The decline in credit supply in the SADC countries has been a contributing factor to the poor economic performance of the region over the past two decades.

Although South Africa has a highly developed financial sector, this was not sufficient to ensure high growth rates over the period. South Africa performed

dismally over the 20 years (1980-1999), with an average annual real per capita growth rate of –0.81%. Only 3 countries (Zambia, Venezuela and Madagascar) performed worse out of the 49 countries. But this low growth rate for South Africa must be attributable to other factors. South Africa had negative annual real per capita growth rates throughout the 1980s and up to 1994, mainly as a result of international sanctions and isolation, debt repayment commitments and an adverse political environment.

It was seen from the regression results above that financial development is one contributor to growth. Other institutional and structural factors also have to be considered (as shown by Gelbard & Leite (1999)). The diversity in financial development across countries is also illustrated in high concentration indices for the banking sector. The average CR3 ratio calculated for the 9 SADC countries in the sample, is a very high 89% (increasing to 91% if South Africa is excluded). This shows that there is scope for more competition in the banking sector, which could lead to more efficient financial intermediation. This is also reflected in the average interest rate spread, which is 7%. South Africa and Botswana are the only two SADC countries with average spreads lower than 5%. Both Tanzania and Zambia have average spreads higher than 10% for the period. These results are also found by Gelbard and Leite (1999:15) in their study of 39 Sub-Sahara African countries: "At mid-1997, only five countries (Botswana, Gabon, Niger, South Africa and Togo) had interest spreads below 6 percent, and no country had spreads below 4 percent. In another 13 countries, the spread was between 6 percent and 10 percent. The large spreads appear to be directly related to the degree of bank

concentration, the share of nonperforming loans, and the lack of openness of the financial system".

Another important aspect of factors affecting growth is a country's the openness to trade. Most of the countries in the SADC region are small, open economies. The average value for the 'trade' variable (the sum of real exports and imports as a share of real GDP), is 103%. When one looks at the foreign exchange constraint, these countries cannot grow as fast as they would like. The average value of foreign exchange divided by imports, is 36%. This means that countries have relatively low levels of foreign exchange to imports. This is reflected in both the current account (divided by imports) and the balance of payments (divided by imports). Both indicators have negative average values for the sample of 9 SADC countries. The average value for the current account deficit is –0.24 and for the BoP –0.10.

When the institutional environment is considered, these countries are characterised by high levels of corruption. The average value for the SADC countries is 3.2 (with corruption measured on a scale of 0 (high level of corruption) to 10 (low level). South Africa (value of 5.3) is the only country in the sample with a value higher than 3.8 (Zambia having the worst value of 2.2).

9.6 CONCLUSION

There is an important link between the level of financial development and growth. This is important for growth literature in general, since most traditional models focused on the supply side. Post Keynesian economists are primarily concerned with demand-side factors. But, Post Keynesians have not traditionally focused on the links between demand factors and economic growth. The role of the financial sector in the growth process has not been fully explored.

49 countries were examined to test for common relationships between financial development and growth. It was found, using an OLS regression model, that there is a positive and significant correlation between financial development and growth. Other indicators of financial structure, openness to trade and institutional aspects were also included. Combined with the financial deepening indicators, they **explained 92% of growth** for the 49 countries, averaged over the period 1980-1999.

This approach was then extended to the SADC countries. The sample of 49 countries included 9 countries from the SADC region. It was shown that average levels of financial deepening declined over this period. The ratio of M3 to GDP was lower in the 1990s that in the 1980s. This lack of financial development is one explanation why African countries (and SADC) had such dismal growth records. An improvement in financial intermediation, and

greater availability of credit (more endogenous money supply) to prospective borrowers will lead to higher growth rates.

APPENDIX 9.1

A. FINANCIAL DEVELOPMENT INDICATORS:

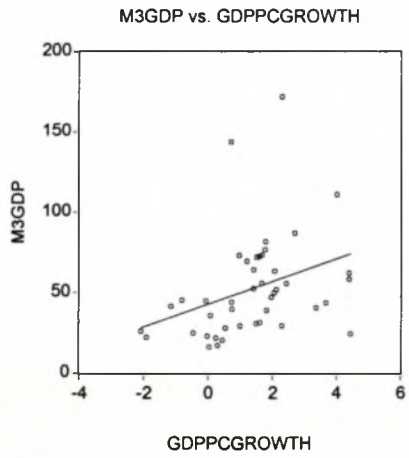
Table 9.1.1 Single variable regressions

Dependent variable: Real per capita GDP growth

Variable	Coefficient	t-statistic	R^2	Durbin-Watson
Credit/GDP	0.005	1.15	0.02	2.00
M3/GDP	0.01	2.35 **	0.11	1.91
Reserves/Assets	-0.04	-2.43 **	0.11	1.99
Oversize/GDP	0.40	1.03	0.02	1.98
Bank credit/GDP	1.02	1.36	0.03	2.05
Bank assets/GDP	1.03	1.56	0.12	2.06
Domestic credit/GDP	0.01	2.29 **	0.10	2.03
Net interest margin	-29.81	-3.76 ***	0.25	2.07
Government credit/GDP	-0.01	-1.22	0.03	2.01
Private sector credit/GDP	0.01	2.26 **	0.10	2.14
Change in credit/change GDP	0.001	0.48	0.006	2.20
Concentration ratio	-0.99	-0.89	0.01	1.93

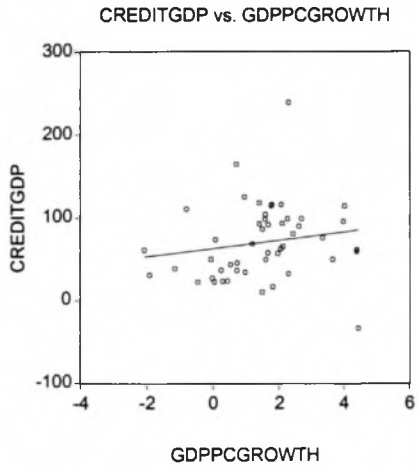
* Significant at the 10 percent level.
** Significant at the 5 percent level.
*** Significant at the 1 percent level.

Figure 9.1.1. Growth and M3 as %GDP



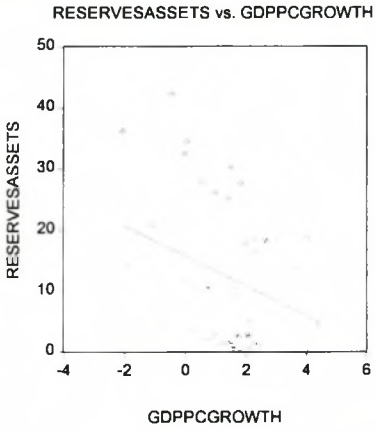
Source: *World Bank Development Indicators*, various years.

Figure 9.1.2. Growth and domestic credit provided by the banking sector (%GDP)



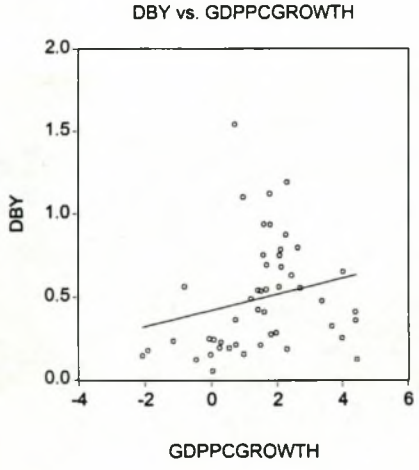
Source: *World Bank Development Indicators*, various years.

Figure 9.1.3. Growth and bank liquid reserves to bank assets ratio



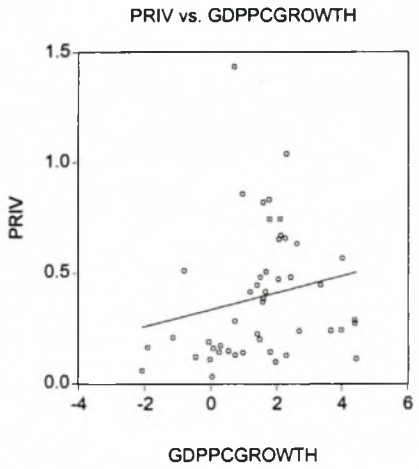
Source: *World Bank Development Indicators*, various years

Figure 9.1.4. Growth and claims of deposit money banks on non-financial domestic sectors (%GDP)



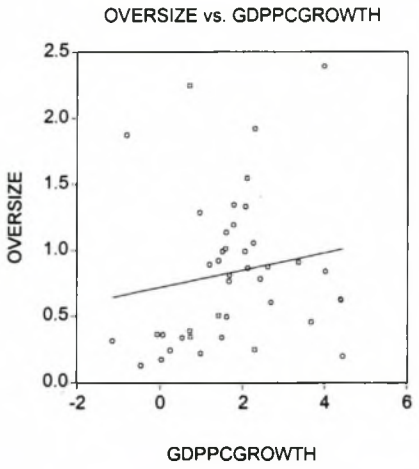
Source: Levin, Loayza, Beck dataset (1999)

Figure 9.1.5. Growth and claims of deposit money banks on private sector (%GDP)



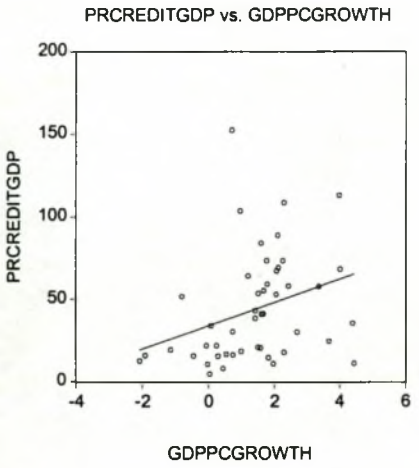
Source: Levin, Loayza, Beck dataset (1999)

Figure 9.1.6. Growth and the Overall size of the financial system



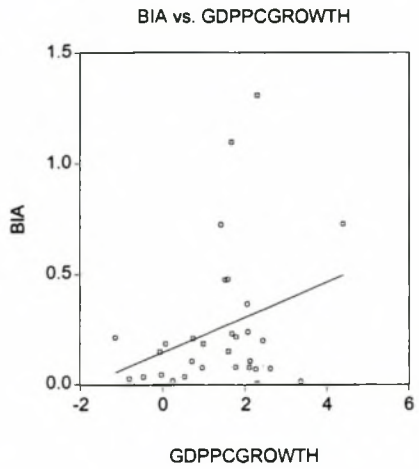
Source: Levin, Loayza, Beck dataset (1999)

Figure 9.1.7. Growth and Private credit (% GDP)



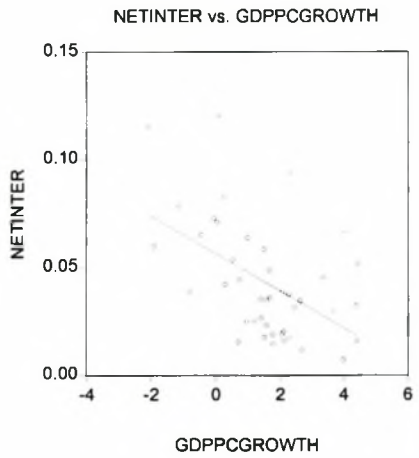
Source: *IFS*, various years.

Figure 9.1.8. Growth and the total assets of banklike institutions (%GDP)



Source: Beck, Demirguc-Kunt & Levine (1999)

Figure 9.1.9 Growth and the net interest margin



Source: Source: Beck, Demirguc-Kunt & Levine (1999)

B. STOCK MARKET INDICATORS, INTEREST RATES AND INFLATION

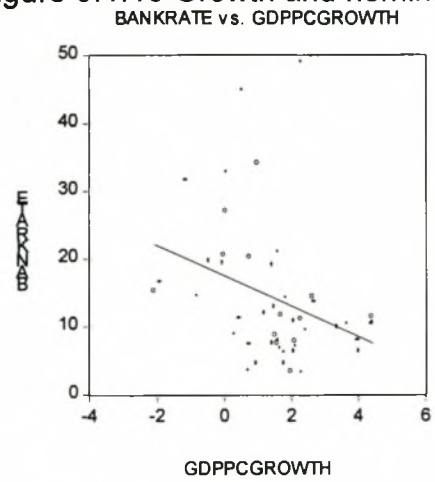
Table 9.1.2 Single variable regressions

Dependent variable: real per capita GDP growth

Variable	Coefficient	t-statistic	R^2	Durbin-Watson
Market capitalisation/GDP	0.51	0.92	0.02	2.01
Total value traded/GDP	-0.44	-0.34	0.002	2.03
Turnover ratio/GDP	-0.19	-0.26	0.001	2.00
Bank rate	-0.05	-2.41 **	0.11	2.10
Real interest rate	-0.13	-2.01 *	0.08	2.53
Spread	-0.22	-3.03 ***	0.17	1.62
Markup	-0.14	-1.85 *	0.07	2.10
Inflation	-0.01	-2.54 **	0.12	1.97

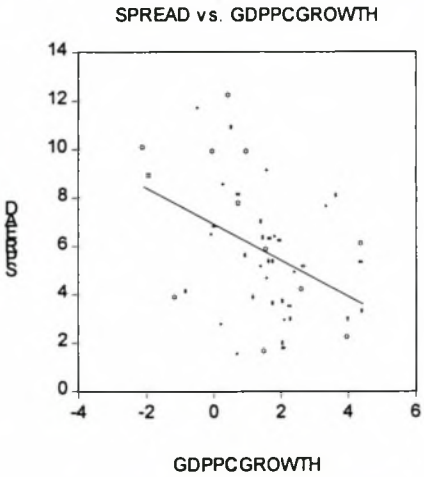
* Significant at the 10 percent level.
** Significant at the 5 percent level.
*** Significant at the 1 percent level.

Figure 9.1.10 Growth and nominal interest rates



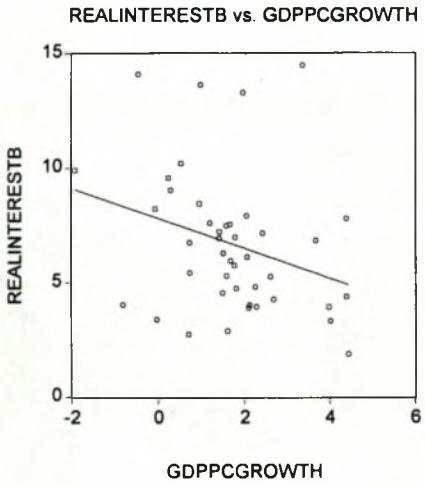
Source: *IFS*, various years

Figure 9.1.11 Growth and interest rate spreads



Source: *World Bank Development Indicators* and *IFS*, various years.

Figure 9.1.12 Growth and real interest rates



Source: *World Bank Development Indicators*, various years.

C. GROWTH RELATED VARIABLES AND OPENNESS TO TRADE

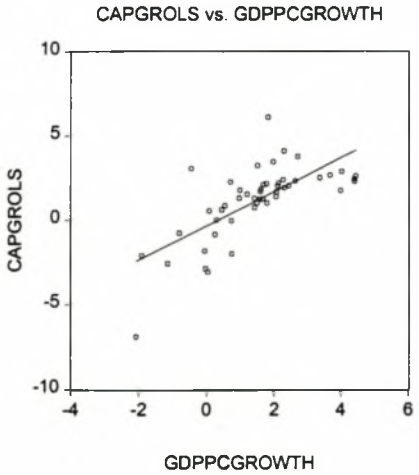
Table 9.1.3 – Single variable regressions

Dependent variable: real per capita GDP growth

Variable	Coefficient	t-statistic	R^2	Durbin-Watson
Government expenditure/GDP	0.01	0.29	0.001	2.13
Growth of real per capita capital	0.48	6.76 ***	0.49	2.48
Average years of schooling (1990)	0.09	1.22	0.03	2.07
Private savings rates	9.85	4.11 ***	0.28	1.72
Repudiation of government contracts	0.40	3.82 ***	0.25	2.04
Levels of corruption.	0.35	2.12 **	0.09	2.11
Foreign exchange/Imports	1.34	2.20 **	0.09	1.97
Balance of Payments/Imports	1.71	1.44	0.04	1.57
(Exports + Imports)/GDP	0.01	2.36	0.11	1.87

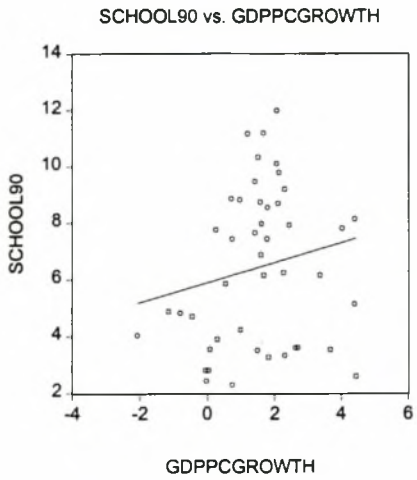
* Significant at the 10 percent level.
** Significant at the 5 percent level.
*** Significant at the 1 percent level.

Figure 9.1.13 Growth and real per capita capital growth rates



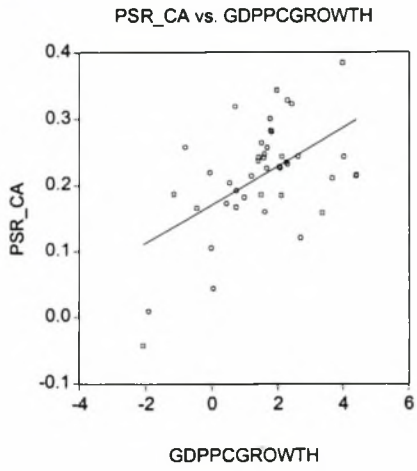
Source: Beck, Demirguc-Kunt & Levine (1999)

Figure 9.1.14 Growth and average years of schooling (1990)



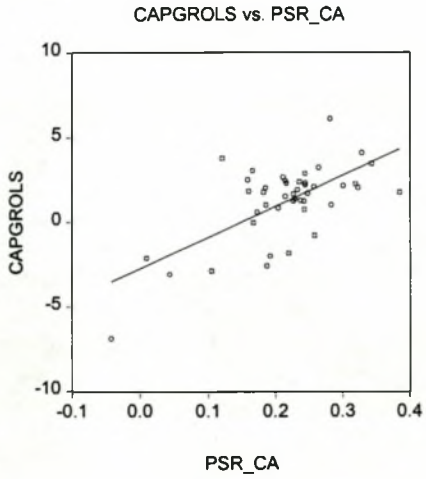
Source: Beck, Demirguc-Kunt & Levine (1999)

Figure 9.1.15 Growth and private saving rates



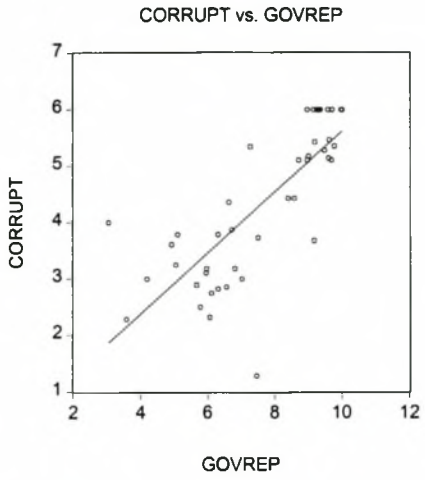
Source: Beck, Demirguc-Kunt & Levine (1999)

Figure 9.1.16 Saving rates and capital growth rates



Source: Beck, Demirguc-Kunt & Levine (1999)

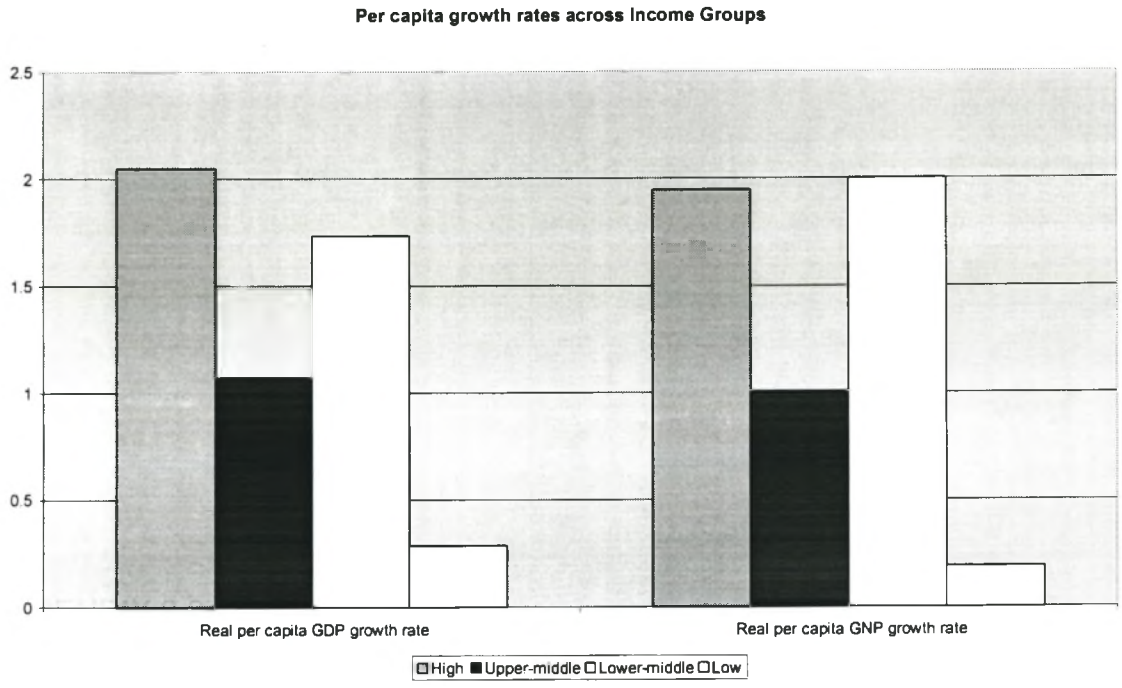
Figure 9.1.17 Correlation between government repudiation of contracts and levels of corruption



Source: Beck, Demirguc-Kunt & Levine (1999)

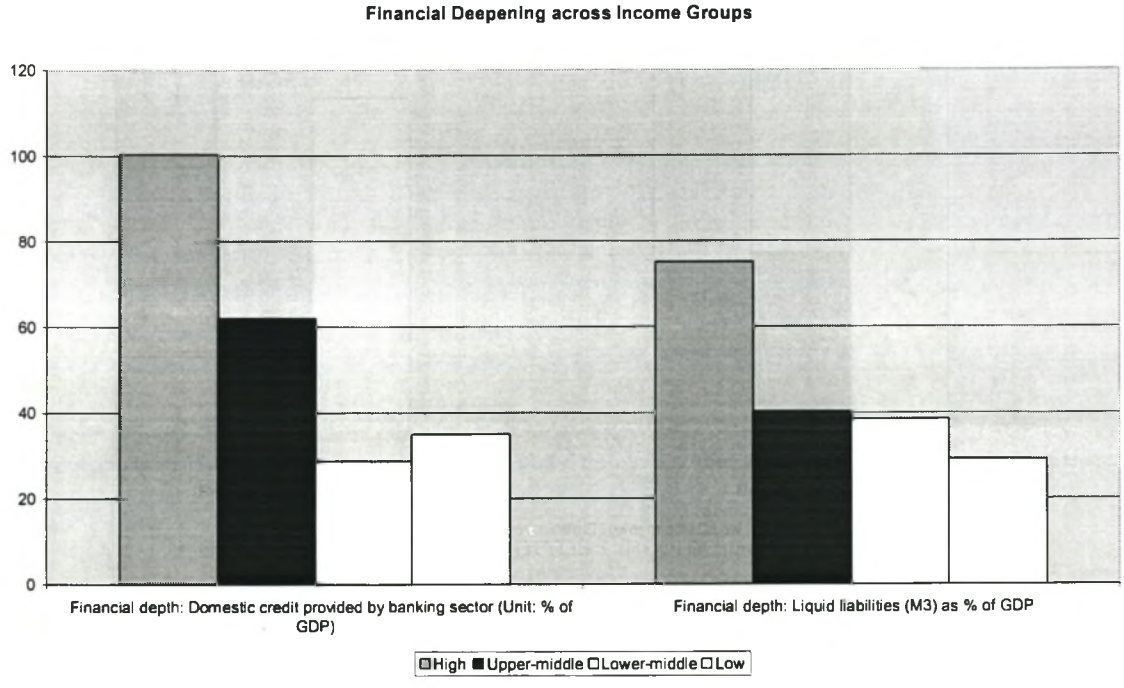
APPENDIX 9.2.

Figure 9.2.1. Per capita growth rates across income groups



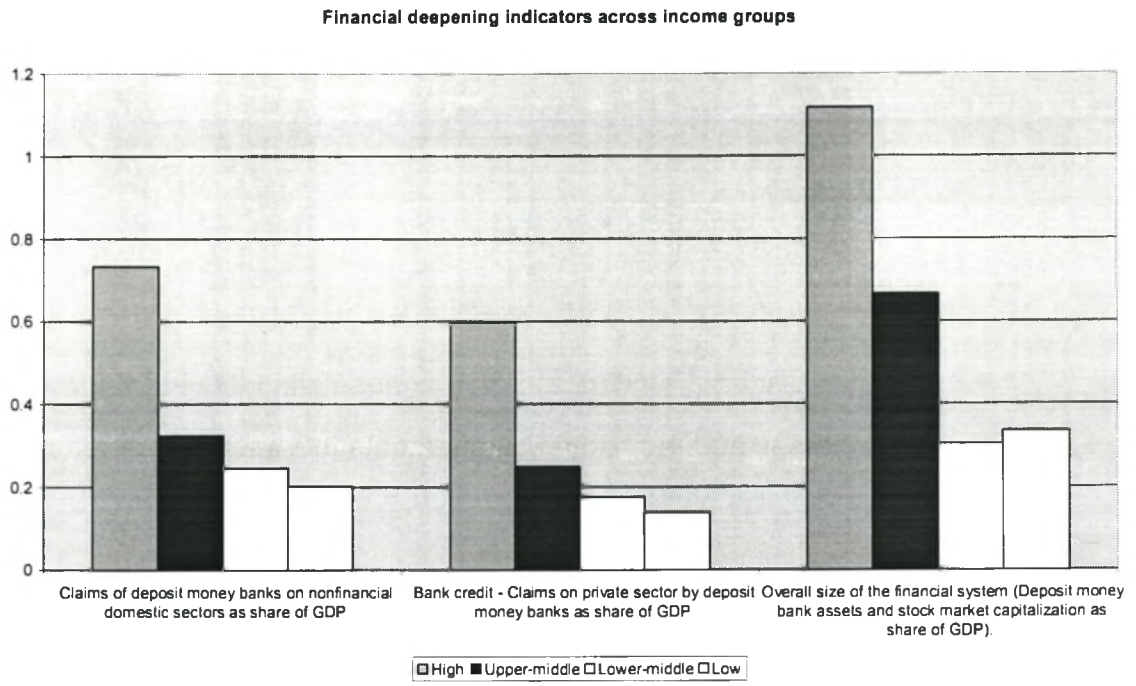
Source: Beck, Demirguc-Kunt & Levine, 1999.

Figure 9.2.2. Financial deepening across income groups



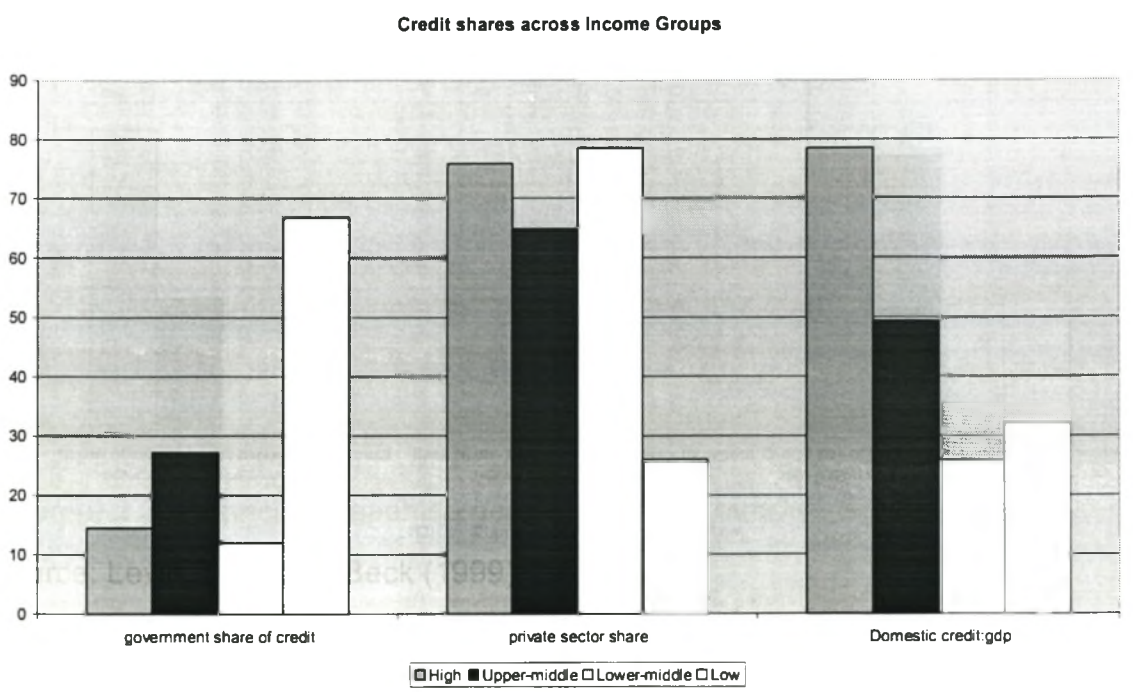
Source: *World Bank Development Indicators*, various years.

Figure 9.2.3. Financial deepening across income groups



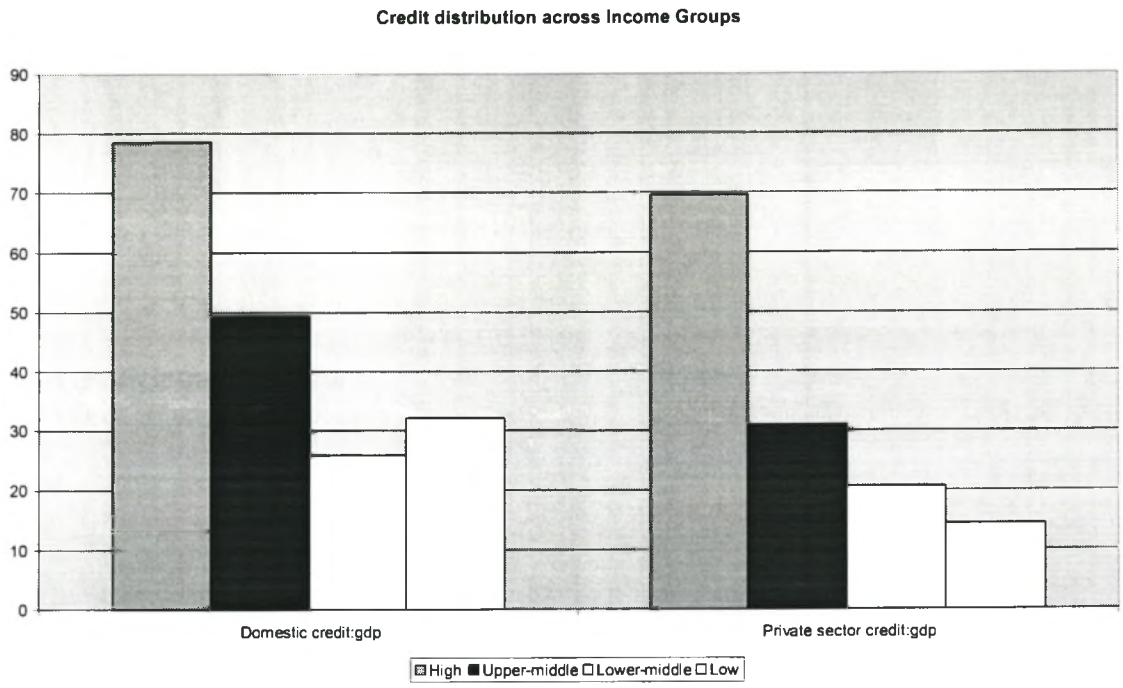
Source: Levin, Loayza & Beck (1999).

Figure 9.2.4. Credit shares across income groups



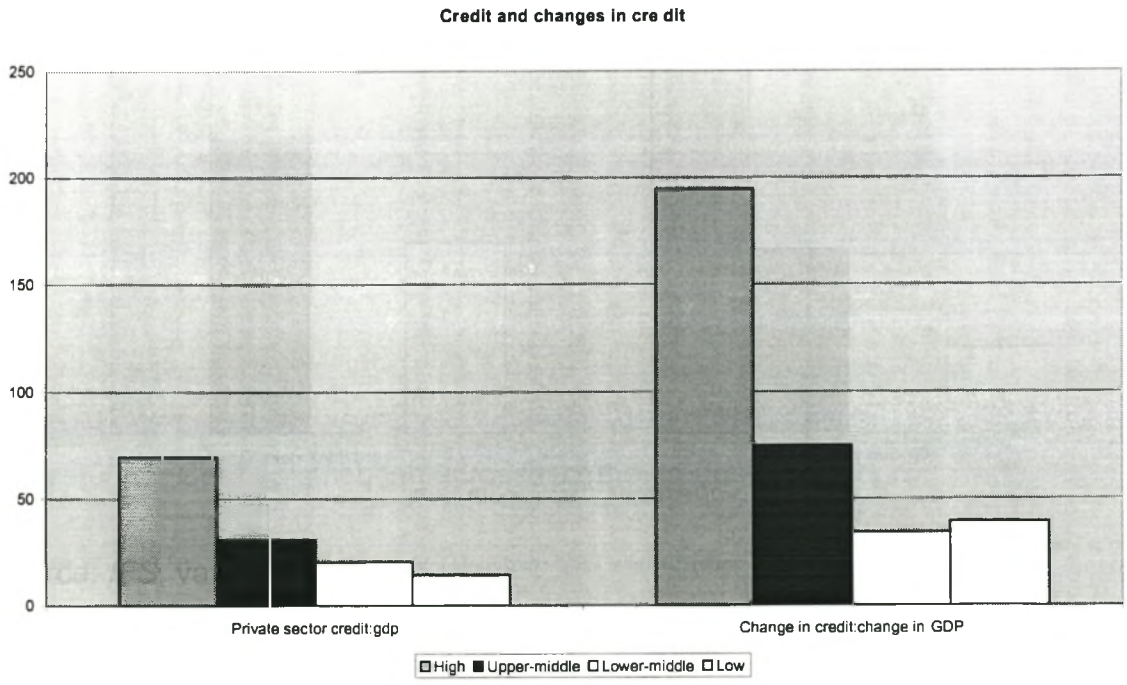
Source: *IFS*, various years.

Figure 9.2.5. Credit distribution across income groups



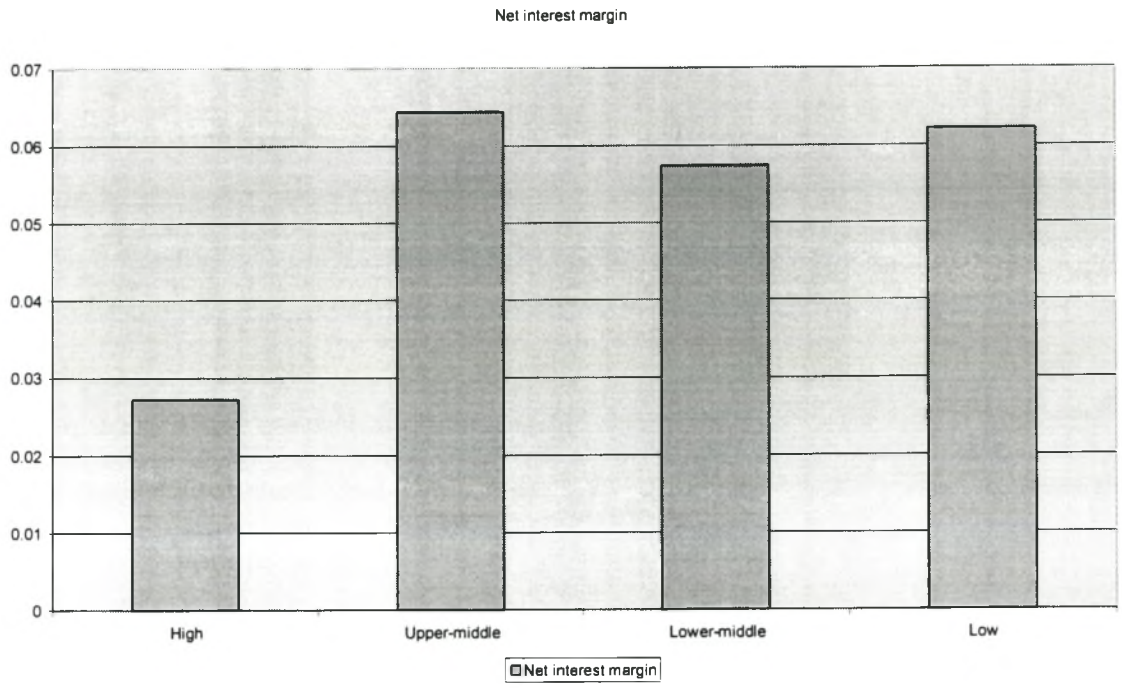
Source: *IFS*, various years

Figure 9.2.6. Credit and changes in credit



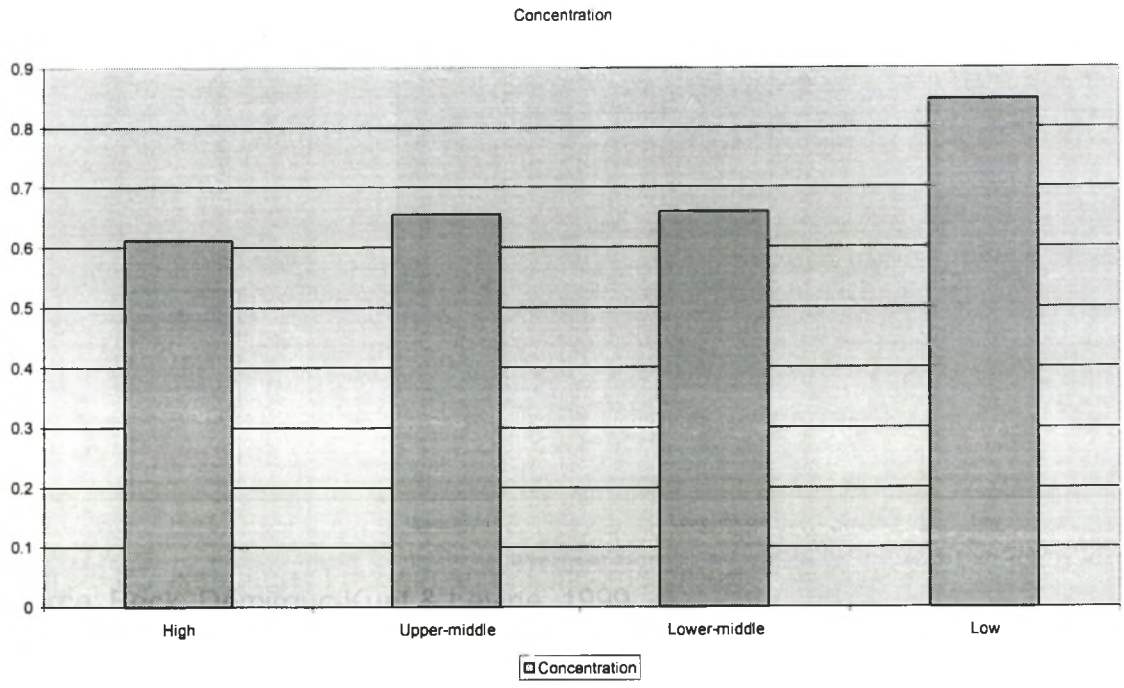
Source: *IFS*, various years.

Figure 9.2.7 Net interest margin across income groups



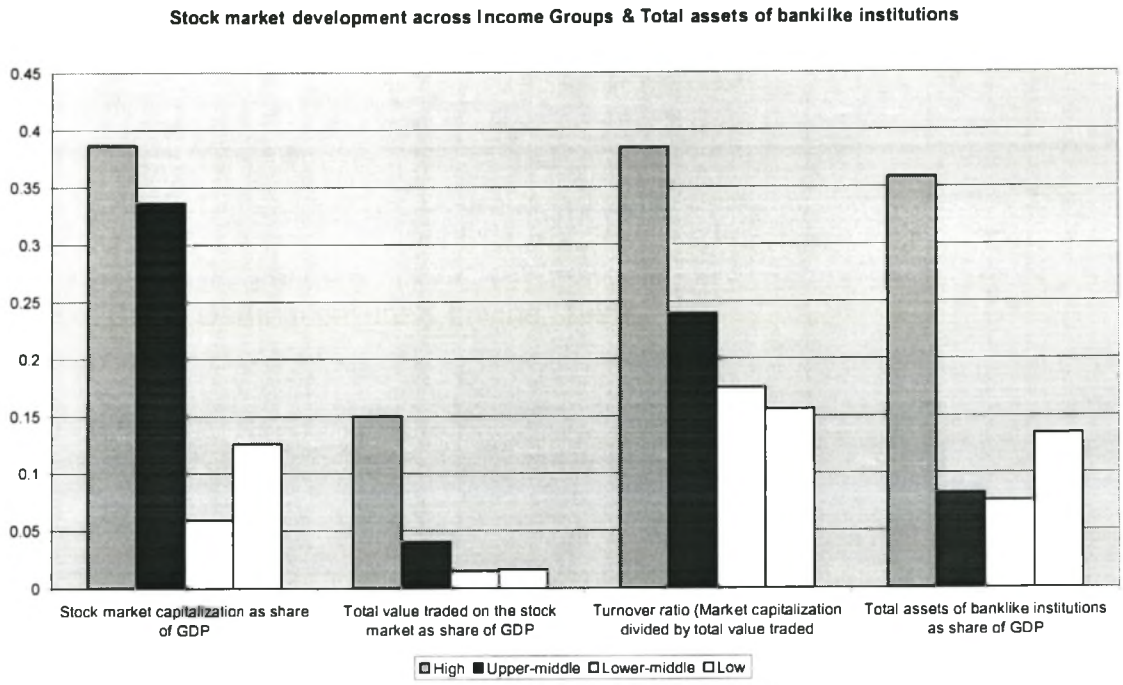
Source: Beck, Demirguc-Kunt & Levine, 1999.

Figure 9.2.8 Concentration ratio (CR3) across income groups



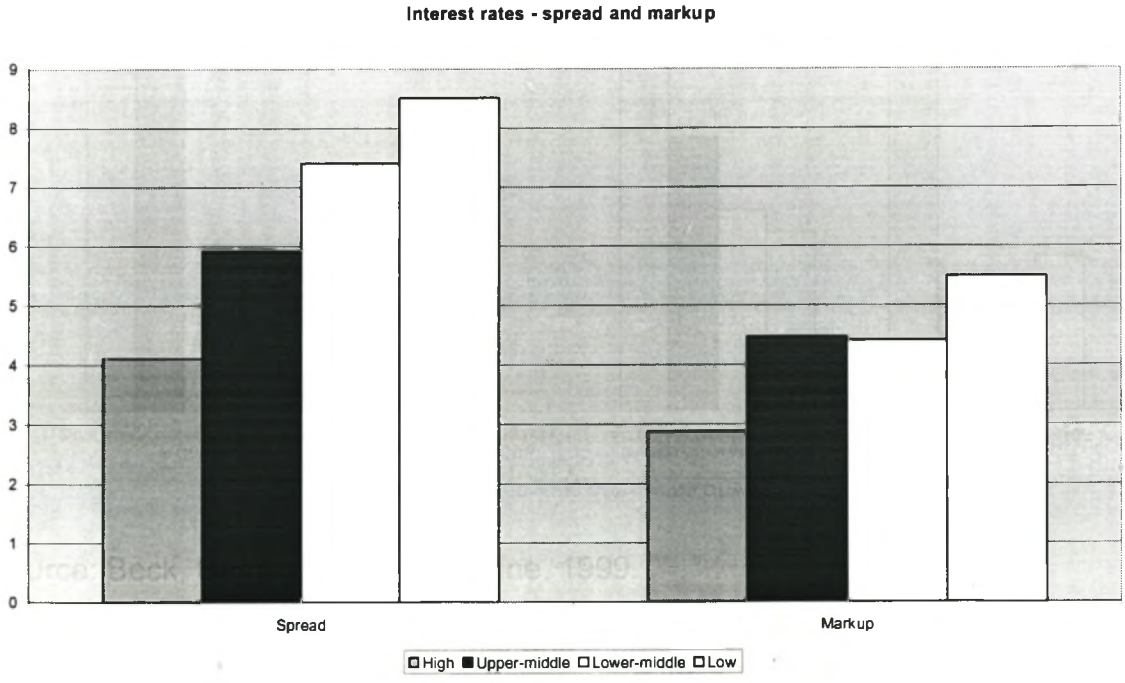
Source: Beck, Demirguc-Kunt & Levine, 1999.

Figure 9.2.9. Stock market development across income groups and total assets of banklike institutions as % of GDP



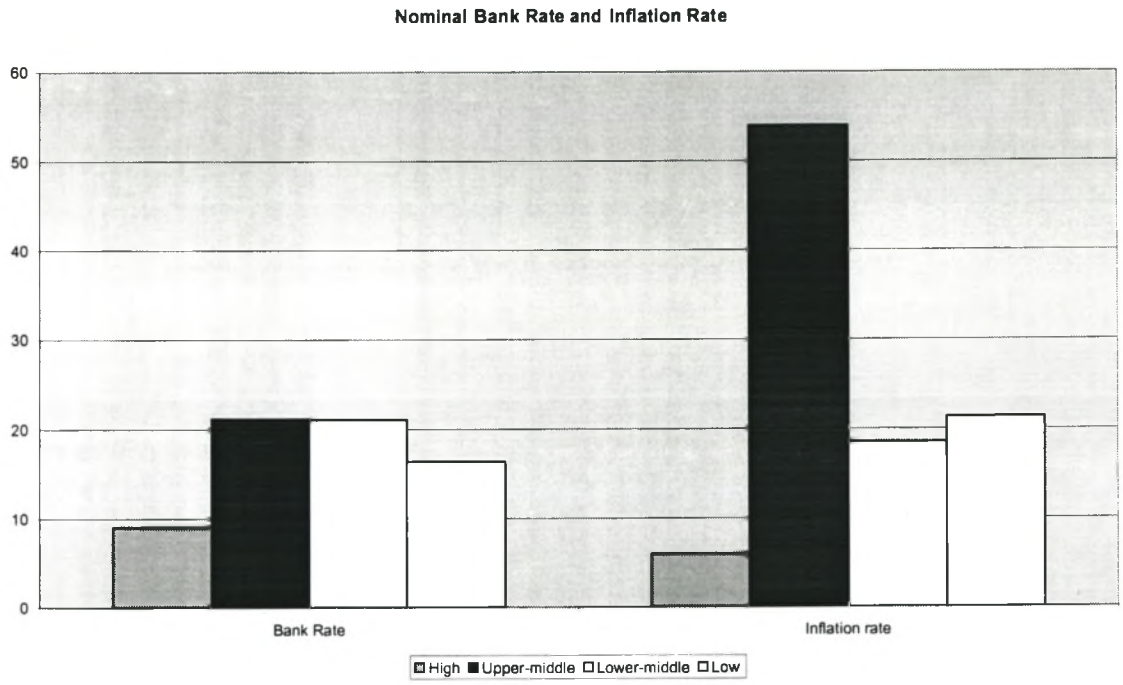
Source: Beck, Demirguc-Kunt & Levine, 1999.

Figure 9.2.10. Interest rates – spread and mark-up



Source: *IFS* various years.

Figure 9.2.11. Nominal interest rates and inflation rates across income groups



Source: *IFS*, various years; Beck, Demirguc-Kunt & Levine, 1999.

APPENDIX 9.3 LIST OF COUNTRIES AND INCOME GROUPS

50 Countries were selected from the World Bank database, 25 developed and 25 less-developed countries. However, the data from Zaire were so incomplete that it was finally excluded, leaving the 49 countries listed below. The income groups and classifications are those published in *the World Bank Development Indicators*.

Income group 1 = High-income countries

Income group 2 = Upper-middle-income countries

Income group 3 = Lower-middle-income countries

Income group 4 = Low-income countries.

Country	Income Group
Argentina	2
Australia	1
Austria	1
Belgium	1
Botswana	3
Brazil	2
Canada	1
Chile	2
Colombia	3
Congo	4
Cyprus	1
Denmark	1
Egypt	3
Fiji	3
Finland	1
France	1
Germany	1
Ghana	4
Greece	1
Iceland	1
India	4
Ireland	1
Italy	1
Japan	1
Kenya	4
Lesotho	4
Luxembourg	1
Madagaskar	4

Mexico	2
Mauritius	2
Malawi	4
Netherlands	1
Norway	1
New Zealand	1
Paraguay	3
Portugal	1
Seychelles	2
South Africa	2
Spain	1
Swaziland	3
Sweden	1
Switzerland	1
Tanzania	4
Turkey	3
United Kingdom	1
United States	1
Venezuela	2
Zambia	4
Zimbabwe	4

CHAPTER TEN

CONCLUSION

10.1 INTRODUCTION

The aim of this thesis was to examine the endogeneity of credit money in LDCs. The focus was on the money supply process in developing countries, specifically twelve countries from the SADC region. After examining the theoretical basis of endogenous money in detail, aspects of the financial system in each of these countries were examined. Some general conclusions can be made from the individual country studies.

10.2 THE ROLE OF MONEY

The classical economists considered money as neutral. Money did not affect the productive (real) side of the economy. Policy prescriptions were limited to the role of the State in facilitating economic exchange. Keynes managed to escape from the orthodox view of money and recognised that money could also be seen as a store of value as well as a medium of exchange. His conversion was a gradual process. In his famous work, the *General Theory of Employment, Interest and Money* (1936), he still treated money as exogenous. It is only in his Post-General

Theory works (and to a degree in his earlier *Treatise on Money (1935)*) that he began to treat money as endogenous.

The work of Keynes initiated a line of research that is still active today. Since the time of Keynes, monetary policy has gained prominence. During the Post World War II years Keynesian monetary theory became the reigning orthodoxy of the time. The Neoclassical synthesis forced monetary policy to play second violin to fiscal policy. This was drastically changed by Milton Friedman, with his emphasis on the central role of money. Friedman revived the classical idea of exogenous money. The long-run neutrality of money became a central aspect of the Monetarist school. Other schools of thought following in the wake of Monetarism, also subscribed to the idea of exogenous money. New Classical economists developed this idea to the extreme, in their policy ineffectiveness proposition, which became known as the *super-neutrality* of money. New Keynesians, reviving the original ideas of Keynes argued that money plays a powerful role in the economy and can affect levels of production and output. The money supply was assumed to be under the control of the central bank.

Post Keynesians gave new meaning to the non-neutrality of money. They view the economy as essentially demand driven. In a modern credit-driven world the money supply adjusts to the demand for finance. The money supply is endogenous and central banks do not control the nominal quantity of money.

As shown in Chapter 3, Post Keynesians are a diverse group of economists, who are not all in agreement as to what endogenous money means. The Post Keynesian school can be broadly divided into four groups, the 'accommodationists', 'structuralists', 'circuitists' and 'institutionalists'. All agree that the money supply is endogenous, but disagree about the degree of endogeneity. Accommodationists argue that the money supply is always fully endogenous. The money supply curve is horizontal in money-interest space. Where the orthodox exogenous money approach does not incorporate the market for bank loans, accommodationists argue that banks can create credit in a modern economy. This approach is associated with the work of Kaldor, Lavoie, Moore and Rochon.

The structuralists agree, but add financial innovations of modern banks, such as asset and liability management and securitization. Banks have a choice about the composition of their assets and liabilities. They maintain that accommodation is only partial and that the loan supply curve can be positively sloped during certain periods. This view is associated with Palley, Dymski, Pollin, Wray etc. Wray followed Minsky that the money supply was a step function. During 'normal times' the money supply curve is horizontal, but it can become positively sloped or even vertical, during crises, e.g. during a credit crunch. Circuitists emphasize the flow of money in the monetary circuit, with banks taking centre stage in the

money creation process. This school includes authors like Rochon, Graziani and Parguez.

Institutionalist Post Keynesians argue that the nature of the money supply depends on the level of institutional development of the financial system. In a rudimentary financial system, the money supply is assumed to be fully controlled by the central bank. As the financial system develops and banks become competitive and innovative, money can be created by 'the stroke of a pen'. The proponents of this view are Niggle, Chick and Dow.

In this thesis the Institutionalist view was used to examine the money supply process in the SADC countries. The institutional framework of each country was discussed, to determine whether they have reached the stage where credit money is supplied on demand. It was shown that South Africa is the only country in the SADC region with a fully developed system where credit can be supplied on demand. But it was also shown that this option is only available to a minority of South Africans who have access to formal credit markets.

10.3 MONEY AND CREDIT - DEMAND AND SUPPLY

According to the accommodationist Post Keynesians there is no such thing as an independent demand for money curve. The orthodox view where a money demand curve intersects a vertical money supply to determine the equilibrium

quantity of money, is not applicable to a credit money economy. Demand and supply functions are not identifiable, since they are interdependent. In the endogenous view there is no independent supply of money function that exists independently of the demand for money. There can be no excess money supply as all money supplied is always demanded. This view has become synonymous with the idea of 'convenience lending'. Any increase in the supply of money creates its own demand in the form of an increase in convenience lending of fiat money to the banking system. Loans therefore create deposits.

Accommodationist Post Keynesians have been criticized for lacking a money demand theory. This thesis argued that the demand for money is an important aspect in the developing country context. In order to ascertain whether credit is supplied on demand, more information is needed on the nature of the demand for money. Post Keynesians maintain that it is the supply of *credit* money that creates its own demand through 'convenience lending' of wealth holders.

The hypothesis tested in this thesis was that the demand for money in developing countries stems mainly from the transactions motive. Most of the SADC countries have undeveloped credit markets and remain cash based economies. They have high ratios of cash / demand deposits and cash / M2. In such economies credit is not supplied on demand.

Another important aspect of the demand for credit in Post Keynesian work, is the notion that firms are the dominant borrowers. Firms have access to credit lines and overdraft facilities. As capital markets develop, firms can choose whether they want to finance production by retained earnings, bank funds or by raising funds on capital markets. It was shown in Chapter 4, that in the UK households have replaced firms as the dominant borrowers.

To test whether the financing needs of firms explain changes in private sector credit, econometric tests were performed. Data on the components of firms' demand for credit were only available for South Africa. It was found that the non-government wage bill, changes in inventories and interest rates explain changes in private sector credit well. Firms had the larger share of private sector credit in South Africa. In the other SADC countries, except for Namibia and Botswana, firms also had the larger share. Households generally had low shares in private sector credit (10% in Zambia). It was argued that in these countries with undeveloped capital markets, both firms and households are bank dependent. Firms may have access to formal credit, but most households do not have a credit history and are largely dependent on informal credit markets for finance. The demand for credit is not the same as in developed countries where firms have access to credit lines or can access funds through capital markets.

It was shown in Chapter 5 that both firms and households in developing countries are subject to credit rationing. Credit rationing is essentially a New Keynesian

concept. It was argued that credit rationing is fully compatible with the concept of endogenous money. The accommodationist Post Keynesians emphasize the fact that credit is supplied on demand to *creditworthy* borrowers. New Keynesians argue that *in equilibrium* loan markets may be characterized by credit rationing. Concepts such as 'adverse selection' and 'asymmetric information' are especially important in developing economies. Because of adverse selection, banks ration the total supply of credit rather than raising interest rates. If credit rationing is present, credit is not supplied on demand. The supply of credit is restricted on non-price grounds.

One way of testing the endogenous supply of credit money is to examine the relationship between changes in the money supply and changes in private sector credit over time. This was done for the SADC countries. Chapter 5 showed that in five of the 10 countries examined, there was some evidence of the money supply being credit driven. South Africa was the only country with a highly significant positive relationship between changes in M2 and private sector credit. Lesotho, Mauritius, Swaziland and Zambia also had positive relationships, but they were much weaker than in South Africa. In the five other countries, Botswana, Malawi, Namibia, Tanzania and Zimbabwe, there was no correlation between changes in the money supply and changes in private sector credit. Regressions were run using both quarterly and annual data. There were fewer countries with significant relationships when annual data were used. Lesotho, Mauritius and South Africa were the only countries where the money supply (M2)

and private sector credit were significantly and positively related. South Africa had the strongest correlation, when both quarterly and annual data were used. The conclusion is that in the majority of the SADC countries the money supply is not credit driven. South Africa is the only country where the money supply is credit driven, as shown by the high correlation between changes in the money supply and private sector credit.

Central to the theory of credit accommodation, is the existence of credit lines and overdraft facilities. Demand for credit is accommodated by central banks in developed countries. Data on the use of credit lines and overdrafts were only available for South Africa. It was shown that credit card and overdraft utilisation ratios correspond to levels found in developed countries. The credit card utilisation ratio varied between 30% and 40% between 1993 and 2000. The overdraft utilisation ratio fluctuated around 50%. Research on overdraft utilisation ratios in the USA also found ratios averaging 50%. This means that the central bank cannot restrict the growth of the money supply as banks have to accommodate all credit demand as borrowers draw down funds. The central bank has to supply reserves as ultimate supplier of system liquidity.

It was also shown in Chapter 5 that although SA has an overdraft utilisation ratio comparable to that of developed countries, it has a large informal sector where credit rationing exists. Only borrowers with access to credit card facilities (3.1% of the SA population), or owners of real estate, have access to the main sources

of household credit: mortgage finance and credit card finance. Data from the individual banks in SA showed that Black South Africans who use banking services mainly have savings accounts or ATM cards. These facilities do not qualify for overdrafts and such borrowers do not have automatic access to credit. It was also argued that the large informal micro-finance market in South Africa is evidence of an excess demand for credit. Many borrowers are credit rationed and pay higher interest rates in informal credit markets. Banks are unwilling to bear the risk, even at higher interest rates.

It was argued in Chapter 6 that the two most important monetary transmission channels for developing countries are the exchange rate and credit channels. The existence of the credit channel is closely linked to the phenomenon of credit rationing. In developing countries the traditional interest rate and money channels of monetary transmission are less important. Most of the SADC central banks focus on the interest rate channel as the primary channel of monetary transmission. This focus is misplaced, as there are a variety of factors that cause this channel to lose some of its potency. These include direct controls and reserve requirements, government intervention in credit markets, high concentration levels in the banking sector, undeveloped stock exchanges and capital markets.

10.4 INSTITUTIONAL APPROACH

The institutionalist ideas of Minsky, Niggle, Chick and Dow were used in Chapter 7 to examine the nature of the money supply process. These authors argue that the money supply becomes increasingly endogenous as an economy develops. In the early stages of financial development, the money supply is exogenous. An endogenous money supply can only be present in a country with an independent central bank and competitive commercial banks that use techniques such as asset and liability management and securitisation. In the description of the institutional frameworks of the individual countries, it was shown that most SADC countries have highly concentrated and undeveloped banking sectors.

Niggle argued that the final stages of financial development, characterised by a fully endogenous money supply, were only reached in the US during the 1970s and 1980s. This argument was used to show that most of the SADC countries, with the exception of South Africa, have not yet reached the stage where the money supply is fully endogenous. To facilitate comparison of different levels of financial development, a financial institutional development index was constructed. Variables such as concentration in the banking sector, bank credit/GDP, interest rate spreads, stock market capitalization/GDP, M3/GDP, etc. were used to construct the index. The results confirmed the conclusions of the previous chapters. Only South Africa's financial institutional environment could be classified as a 'largely developed'. Mauritius was classified as 'somewhat

developed', while Botswana, Tanzania, Swaziland, Zimbabwe and Zambia were classified as 'minimally developed'. Malawi had the lowest index value and was classified as 'undeveloped'.

The financial development index provided an indicator, which could be used to compare individual countries. It was interpreted as an indicator of the degree of money endogeneity. South Africa was the only country where the money supply was fully endogenous. While this does not mean that the money supply is fully exogenous in the other countries, it does indicate that credit is not necessarily supplied on demand. To examine whether these indicators have improved over time, several variables were considered. It was found that the ratio of cash to demand deposits has decreased in most of the countries. The ratio of cash to M2 also showed a downward trend between 1985 and 1998, in the majority of SADC countries. The ratio of M3 to GDP and interest rate spreads, paint a darker picture. In the majority of countries there was a *reduction* in the M3 to GDP ratio and interest rate spreads *increased* in all the countries, between the 1980s and the 1990s.

10.5 EXOGENOUS INTEREST RATES

Post Keynesian monetary theory has become synonymous with the notion of 'endogenous money, exogenous interest rates'. When spending rises, the demand for and the supply of money increase. The money supply responds automatically to the rise in the demand for credit, and there is no necessity for interest rates to increase. This is the accommodationist Post Keynesian view.

Structuralist Post Keynesians argue that banks set lending rates, but that the mark-up over the base rate is not constant. The mark-up varies over the business cycle to reflect changes in liquidity preference of banks. Many Post Keynesian authors (Dow, Wray, Chick, etc.) developed theories where the liquidity preference of banks enters the picture. When the demand for credit increases, banks first try to innovate and stretch reserves before raising rates. Banks can choose whether they want to raise rates or not. Banks will allow the debt / equity ratio to increase with the business cycle, but at some stage they will be concerned with the risk level of their loan portfolio and will react by increasing lending rates. This increases the mark-up over the base rate. A var model was used in Chapter 8 to test this hypothesis. Data on interest rate mark-ups were used together with changes in GDP to see whether mark-ups vary procyclically. The var models seemed to indicate a positive response in mark-ups when there was a shock to GDP. The data range was limited (20 observations) and no clear conclusions could be made about the variation of mark-ups. It was found that

mark-ups became increasingly unstable in most of the SADC countries between 1980 and 2001.

Interest rate spreads were also examined using a var model. Structuralist Post Keynesians expect interest rate spreads to vary counter-cyclically. Once again, there was some evidence of counter-cyclical spreads, but nothing conclusive. The general observation was that interest rate spreads are much higher in developing countries than in developed countries. A banking model was developed to examine the determinants of interest rate spreads at the micro-level.

Data were used for a total of 76 banks in nine SADC countries. Using a simple OLS cross-sectional model, it was shown that interest rate spreads are positively related to variables such as operating expenses / total assets, general provisions for non-performing loans / total assets, return on equity and before tax profits. Macro-economic and institutional variables such as M2 / GDP, the loan / reserve ratio and per capita GDP growth also showed significant and positive correlations with interest rate spreads. These variables were combined to explain high interest rate spreads in developing countries.

10.6 FINANCIAL DEVELOPMENT AND ECONOMIC GROWTH

In Chapter 9, an econometric model was used to examine the links between financial development and growth. It was shown earlier in the thesis that the degree of endogeneity of the money supply can be linked to the level of financial institutional development. The money supply becomes increasingly endogenous as financial systems develop. South Africa is the only country that has reached this stage, as indicated by the financial institutional development index calculated in Chapter 7. This was combined with the findings of Chapter 8 where it was shown that interest rate spreads are higher in developing countries than in developed countries.

To be able to make conclusive observations, 49 developed and developing countries were included in the sample in Chapter 9. This included nine SADC countries. Data for the 20-year period 1980-1999 were used. Many indicators of financial development were included in the model. Significant and positive relationships were found between M3 / GDP and real per capita growth rates. Real per capita GDP was also significantly and positively related to Domestic credit / GDP, the Net interest margin and Private sector credit / GDP. The ratio Reserves to Assets had a significant, but negative relationship to real per capita GDP. Most previous studies on the links between financial development and growth, chose a financial development indicator such as M3 / GDP or domestic credit / GDP. All these variables were also examined for the 5-year and 10-year

sub-periods. The ratio of Reserves to Assets was found to be stable over most of the individual sub-periods. It has a negative relationship with economic growth and can be interpreted as an indicator of financial repression. This variable was the financial variable chosen for the regression analysis, as the effect of financial repression on growth is especially important in the developing country context.

A number of stock market indicators, interest rates and inflation rates were also examined. Bank rates, real interest rates, interest rate spreads, mark-ups and inflation were all significantly and negatively related to real per capita GDP. None of the stock market indicators were significant. Growth related variables that were significant and positively related to real per capita GDP, included growth of real per capita capital, private saving rates, repudiation of government contracts, levels of corruption and the ratio of foreign exchange / imports. The financial repression indicator (ratio of reserves / assets) explained 11% of real per capita GDP. When combined with macro-economic and other growth related variables, the final model has a R^2 = 0.65. It was shown that financial development indicators are important explanatory variables for real per capita growth.

The implications for development are clear. The less developed the financial institutional structure, the lower economic growth will be. To increase real per capita economic growth rates, countries have to ensure that the financial system evolves into a well developed financial system where credit is supplied on

demand and both households and firms have access to formal credit markets. The banking sector has to become more competitive to ensure low interest rate spreads. High interest rate spreads lead to lower economic growth, as the cost of financial intermediation negatively affects economic growth rates. Banks should also be free from government intervention, quantitative constraints and high statutory reserve requirements. As the financial system develops, the money supply becomes increasingly endogenous and this stimulates economic growth.

10.7 FURTHER RESEARCH QUESTIONS

This thesis aimed to examine the nature of the money supply process in selected developing countries. The theory of endogenous money was tested for the SADC countries. It was seen from theory that an endogenous money supply responds automatically to the credit needs of the economy. Money supply creates its own demand.

In the case of the SADC countries it was found that this is not necessarily true. South Africa was the only SADC country in the study where the money supply was fully endogenous. In five out of ten countries examined, there was no correlation between money growth rates (M2) and changes in private sector credit. But these countries often had large fluctuations in M2.

The question that arises from this is what determines the volume of bank intermediation in LDCs if it is not credit driven? Is the supply of credit money driven by the financing needs of governments? This remains an important area for future research.

BIBLIOGRAPHY

Adam,C.S. (1999). "Asset portfolios and credit rationing: evidence from Kenya". *Economica*, 66:97-117.

AMPS (1998). "All Media and Products Survey", in *The Value of Afrikaans*, Naspers, Cape Town.

Arestis,P.(1988). *Post-Keynesian Monetary Economics*. Edward Elgar, England.

Arestis,P.(1996)."Post-Keynesian economics: towards coherence". *Cambridge Journal of Economics,* 20(4):111-135.

Arestis,P. & Bain,K. (1995)."The independence of central banks: a nonconventional perspective". *Journal of Economic Issues*, 29(1):161-175.

Arestis,P. & Howells,P. (1992). "Institutional developments and the effectiveness of monetary policy". *Journal of Economic Issues,* 26(1) 135-158.

Arestis,P & Howells,P. (1996)."Theoretical reflection on endogenous money: the problem with 'convenience lending'". *Cambridge Journal of Economics,* 20(5):539-551.

Arestis,P & Howells,P.(1999)"The supply of credit money and demand for deposits: a reply". *Cambridge Journal of Economics,* 23(1):115-119.

Arestis,P. & Biefang-Fris,M.I. (1995). "The endogenous money stock: empirical observations from the United Kingdom." *Journal of Post Keynesian Economics*, 17(4):545-560.

Arestis,P & Skouras,T.(1985). *Post Keynesian Economic Theory – A challenge to Neo Classical Economics.* Wheatsheaf Books, Sussex.

Arestis,P. Demetriades,P. Fattouh,B. & Mouratidis,K. (2002). "The impact of financial liberalisation policies on financial development: evidence from developing economies". *Working Paper,* The Business School, South Bank University, London.

Azali,M.,Lee,H.A., Habibullah,M.s. & Azman-Saini,W.N.W. (2000). "Monetary dynamics in selected developing countries: does cost of credit matter?" *Paper presented at a seminar*, *University Putra*, Malaysia.

Bacchetta,P. & Gerlach,S. (1997). "Consumption and credit constraints: International evidence. *Journal of Monetary Economics*, 40:207-238.

Bank for International Settlements (1999). "Payment systems in the Southern African Development Community". *BIS*, Basel, CH.

Bank of England. (1998) "Inflation Targeting in practice: the UK experience". *Quarterly Bulletin*, November.

Bank of England. (1999)."The transmission mechanism of monetary policy". The Monetary Policy Committee, London, UK.

Bank of England. (2002). Private Sector Credit data, available online: [http://www.bankofengland.co.uk/mfsd/abst/abzt9_7.xls].

Bank of Swaziland. (2001). "Monetary Policy Issues in Swaziland". *Paper presented at the SARB Conference on Monetary Policy Frameworks in Africa*, September 17-19, Pretoria, South Africa.

Bank of Zambia (1999). *Annual Report*. Lusaka, Zambia.

Bank of Zimbabwe (2001). "Monetary Policy Framework in Zimbabwe". *Paper presented at the SARB Conference on Monetary Policy Frameworks in Africa*, September 17-19, Pretoria, South Africa.

Barajas,A. Steiner,R & Salazar,N. (1999). "Interest spreads in banking in Colombia, 1974-1996". *IMF Staff Papers*, 46(2):196-224.

Beck,T. & Demirguc-Kunt,A. (2000). "A new database on the structure and development of the financial sector". World Bank Review, available online:[http://legacy.csom.umn.edu/WWWPages/FACULTY/RLevine/newdatabase.pdf]

Beck,T & Levine,R. (2002). "Stock Markets, Banks, and growth: panel evidence". *NBER Working Paper*, Cambridge, Massachusetts.

Berger,A.N. Kyle,M.K. & Scalise,J.M. (2000). "Did U.S. bank supervisors get tougher during the credit crunch? Did they get easier during the banking boom? Did it matter to bank lending?" *NBER Working Paper Series/w7689*. Cambridge, Massachusetts.

Berger,A.N. & Udell,G.F. (1992). "Some evidence on the empirical significance of credit rationing". *Journal of Political Economy,* 100(5):1047-1078.

Bernanke,B.S. (1993). "Credit in the Macroeconomy". *Quarterly Review (Federal Reserve Bank of New York)*, 18(1):50-71.

Bernanke,B.S. (1995). "A conference panel discussion: what do we know about how monetary policy affects the economy?" *Review (Federal Reserve Bank of St Louis)*, 77(3):127-131.

Bernanke,B.S. & Blinder,A. (1988). "Credit, money and aggregate demand". *American Economic Review*, 78(2): 435-439.

Bernanke,B.S.& Blinder,A. (1992). "The Federal Funds Rate and the channels of Monetary Transmission". *American Economic Review*, September. 82(4), 901-21.

Bernanke,B.S. & Campbell,J.Y. (1990). "U.S. Corporate Leverage: developments in 1987 and 1988". *Brookings Papers on Economic Activity*, 1:255-287.

Bernanke, B.S., & Gertler, M. (1995). "Inside the Black Box: The credit channel of monetary policy transmission". *Journal of Economic Perspectives*, 9(4): 27-48.

Bernanke,B.S. & Lown,C.S. (1991). "The credit crunch". *Brookings Papers on Economic Activity*. Issue 2:205-249.

Berthelemy,J. & Soderling,L. (1999). "The role of capital accumulation, adjustment and structural change for economic take-off: empirical evidence from African growth episodes". *OECD Development Centre, Technical Papers*, no. 150, Paris.

Blanchard,O. (2000). "What do we know about Macroeconomics that Fisher and Wicksell did not?" *NBER Working Paper Series/w 7550*. Cambridge, Massachusetts. Bordo,M.D. (2002). "Charles Goodhart's contribution to the history of monetary institutions". *NBER Working paper/w8717*. Cambridge, Massachusetts.

Borensztein,E. & Lee,J. (2000). "Financial crisis and credit crunch in Korea: evidence from firm-level data". *IMF Working Paper*, WP/00/25.

Brummerhof,W. (1998). "South Africa in the finance and investment sector of the Southern African Development Community (SADC)". *SARB Quarterly Bulletin*, December, Pretoria.

Casteleijn,A.J.H. (2001). "South Africa's Monetary Policy Framework". *Paper presented at the SARB Conference on Monetary Policy Frameworks in Africa*, September 17-19, Pretoria, South Africa.

Carter,M.R. (1988). "Equilibrium credit rationing in small farm agriculture". *Journal of Development Economics,* 28, 83-103.

Catao,L. (1997)."Bank credit in Argentina in the aftermath of the Mexican crisis: supply or demand constrained?" *IMF Working Paper*, WP/97/32.

Chick,V. (1985). "Chapter 4: Keynesians, Monetarists and Keynes: The End of the Debate – or a Beginning?" in *Post Keynesian Economic Theory*, edited by Arestis, P. & Skouras,T.

Chick,V. (1997). "Some reflections on financial fragility in banking and finance". *Journal of Economic Issues,* 31(2): 535-542.

Chick,V. & Dow, S. (1988). "A Post-Keynesian perspective on the relation between banking and regional development", in Arestis,P.(1988). *Post-Keynesian Monetary Economics.* Edward Elgar, England

Chick,V. & Dow,S. (1996). "Regulation and differences in financial institutions". *Journal of Economic Issues.* 30(2):517-524.

Chien-Hui Ma & Smith,B.D. (1996). "Credit market imperfections and economic development: Theory and evidence". *Journal of Development Economics,* 48:351-387.

Clower,R.W.(1965)."The Keynesian Counter-revolution : A Theoretical Appraisal". *The Theory of Interest Rates by Hahn,F.H. & Brechling, F.P.R.* London, MacMillan.

Cottrell,A. (1994). "Endogenous money and the multiplier". *Journal of Post Keynesian Economics,* 17(1):111-121.

Cunningham,S.R. & Vilasuso,J. (1994-95). "Is Keynesian demand management policy still viable?" *Journal of Post Keynesian Economics,*17(2):187-210.

Daley,A. (2001). Telephone interview. Information Trust Corporation, Johannesburg, SA.

Dalziel,P. (1996). "The Keynesian multiplier, liquidity preference, and endogenous money". *Journal of Post Keynesian Economics,*18(3):311-332.

Daniels,R (2001). "Financial intermediation and the Micro-Finance Sector". *Trade & Industry Monitor*, 20:17-22.

Davidson,P.(1967)."A Keynesian View of Patinkin's Theory of Employment". *The Economic Journal,* 77:559-578.

Davidson,P.(1978) *Money and the real world.* MacMillan Press, London

Davidson,P.(1991). *Controversies in Post Keynesian Economics.* Edward Elgar, UK.

Davis,E.P. & Henry,S.G.B. (1994). "The use of financial spreads as indicator variables: evidence for the United Kingdom and Germany". *IMF Staff Papers,* 41(3):517-525.

De Bondt,G. (1999). "Credit channels and consumption in Europe: Empirical evidence". *BIS Working Papers*, no. 69, Basle CH.

Demirguc-Kunt,A & Huizinga,H (1999)."Determinants of Commercial Bank interest margins and profitability: some international evidence". The World Bank Economic Review, 13(2):379-408.

Dickens,E. (1999). "A political-economic critique of Minsky's financial instability hypothesis: the case of the 1966 financial crisis. *Review of Political Economy,* 11(4).

Dornbusch,R. & Fischer (1992). *Macroeconomics*, Mac Millan, UK.

Dougherty,C. & Jorgenson,D.W. (1996). "International Comparisons of the sources of economic growth". *American Economic Review,* 86(2):25-28.

Dow,S.C.(1996)."Horizontalism: a critique." *Cambridge Journal of Economics,* 20 (5):497-508.

Dow,S.C. (1997). "The Scottish political economy tradition and modem economics". *Scottish Journal of Political Economy*, 44(4):368-354.

Dow,S.C. & Smithin, J.(1999). "The structure of financial markets and the 'first principles' of Monetary Economics". *Scottish Journal of Political Economy,* 46(1):72-90

Dowd,K. & Lewis,M.K.(1992). *Current Issues in Financial and Monetary Economics*. Macmillan, London.

DRI-WEFA. (2002) Data Disc, 8 April.

Dymski,G.A. (1992) "A 'new view' of the role of banking firms in Keynesian monetary theory". *Journal of Post Keynesian Economics,* 14(3):311-320.

Dymski,G.A. (1993). "Keynesian uncertainty and asymmetric information: complementary or contradictionary?". *Journal of Post Keynesian Economics,* 16(1): 49-55.

Dymski,G.A. (1997). "Deciphering Minsky's Wall street paradigm". *Journal of Economic Issues,* 31(2):501-509.

Dutt,A.K. (2001). "New Growth theory, effective demand and Post-Keynesian dynamics. *Paper presented at a conference on 'Old and New growth theories: An assessment'*, Pisa, Italy.

Ebony Consulting International. (2000). "DTI Interest Rate Study". April, available online: [http://www.mfrc.co.za/info/interest%20rate%20report.asp].

Fand,D.I.(1988)."On the Endogenous Money Supply". *Journal of Post Keynesian Economics*, 10(3): 386-389.

Fazzari,S.M. (1999). "Minsky and the Mainstream: Has recent research rediscovered financial Keynesianism?" *Paper presented at the Hyman Minsky Conference on Financial Structure,* April 21-23. Washington University, St. Louis.

Fazzari,S.M & Variato,A.M. (1994). "Asymmetric information and Keynesian theories of investment". *Journal of Post Keynesian Economics,* 16(3):351-365.

Friedman, M. (1968). "The Role of Monetary Policy", *American Economic Review*, 58(1).

Friedman,M. (1991)."Monetary policy in a fiat world", reprinted in *Lloyds Bank Annual Review, vol. 4:Monetarism and the Keynesians.*

Friedman,M.& Schwartz,A.(1963). *A Monetary History of the United States, 1867-1960*. Princeton University Press, Princeton.

Gelbard,E.A. & Leite, S.P. (1999). "Measuring financial development in Sub-Saharan Africa". *IMF Working Paper*. WP/99/105. Washington.

Gerrard, B. (1996). "Competing schools of thought in macroeconomics – an ever-emerging consensus?", *Journal of Economic Studies*, 23(1): 53-69.

Ghatak,S.(1995). *Monetary Economics in Developing Countries*. St. Martin's Press, New York. 2nd edition.

Goldstein,M & Turner,P. (1996). "Banking crises in emerging economies: origins and policy options". *Bank for International Settlements Economic Papers*, no. 46, October, Basle, CH.

Greenwald,B & Stiglitz,J.(1993). "New and Old Keynesians". *Journal of Economic Perspectives,* 7(1):25-44.

Greenwald,B., Stiglitz,J.E. & Weiss,A. (1984). "Informational Imperfections in the Capital Market and Macroeconomic Fluctuations", *American Economic Review*, 74:194-200.

Goodhart,C.A.E.(1989)."Has Moore become too horizontal?" *Journal of Post Keynesian Economics*,12(1): 29-34.

Gujarati,D.(1999). *Essentials of Econometrics*. McGraw Hill, USA.

Hagen,E.E.(1966)."The Classical Theory of the level of Output and Employment", *Readings in Macroeconomics, N*ew York : Holt, Rinehart & Winston

Hawkins,P. (2001). "Liberalisation, Regulation and Provision: The implications of compliance with international norms for the South African financial sector". *A report for Trade and Industry Policy Strategies*, TIPS, Johannesburg.

Heise,A. (1992). "Commercial banks in macroeconomic theory". *Journal of Post Keynesian Economics.* 14(3), 285-296.

Hermes,N. & Lensick, R. (1996).*Financial Development and Economic Growth – Theory and experiences from developing countries.* Routledge, London.

Hicks,R.(1937). "Mr. Keynes and the Classics". *Econometrica.* Vol 5 no 2, 126-142.

Hicks,J.(1991)."What is wrong with monetarism", reprinted in *Lloyds Bank Annual Review, vol. 4:Monetarism and the Keynesians*

Howells, P.G.A. (1995). "The demand for endogenous money". *Journal of Post Keynesian Economics,* 18(1):89-106.

Howells,P.G.A. & Hussein,K. (1998). "The endogeneity of money: evidence from the G7". *Scottish Journal of Political Economy*, 45(3):329-339.

Howells,P.G.A. & Hussein,K. (1999). "The demand for bank loans and the 'state of trade'". *Journal of Post Keynesian Economics*, 21(3):441-454

IMF. *International Financial Statistics*, various years. Washington, D.C.

IMF(1993). *International Financial Statistic Yearbook*. Washington,D.C.

IMF(1999). "Angola: Selected Issues and Statistical Appendix". *IMF Staff Country Report* No. 99/25. IMF, Washington,D.C.

IMF(1999). "Botswana: Selected Issues and Statistical Appendix". *IMF Staff Country Report* No. 99/132. IMF, Washington,D.C.

IMF(1998). "Lesotho: Selected Issues and Statistical Appendix". *IMF Staff Country Report* No. 98/29. IMF, Washington,D.C.

IMF(1998). "Mauritius: Selected Issues and Statistical Appendix". *IMF Staff Country Report* No. 98/75. IMF, Washington,D.C.

IMF(1999). "Namibia: Selected Issues and Statistical Appendix". *IMF Staff Country Report* No. 99/9. IMF, Washington,D.C.

IMF(1999). "Swaziland: Selected Issues and Statistical Appendix". *IMF Staff Country Report* No. 99/13. IMF, Washington,D.C.

IMF(1998). "Tanzania: Selected Issues and Statistical Appendix". *IMF Staff Country Report* No. 98/5. IMF, Washington,D.C.

IMF(1999). "Zambia: Selected Issues and Statistical Appendix". *IMF Staff Country Report* No. 99/43. IMF, Washington,D.C.

IMF(1999). "Zimbabwe: Selected Issues and Statistical Appendix". *IMF Staff Country Report* No. 99/49. IMF, Washington,D.C.

Jaffe,D. & Stiglitz,J.(1988). "Credit Rationing", in Friedman,B.M. & Hahn,F.H., *Handbook of Monetary Economics*, 2:837-888.

Johnson,C.(1991)."Monetarism and the Keynesians", *Lloyds Bank Annual Review*, 4. Pinter Publishers. London.

KPMG (2001). *Banking Survey – Africa.* KPMG, Cape Town.

Kahn,M.S. & Senhadji,A.S. (2000). "Financial Development and Economic Growth: An Overview". *Paper prepared for the African Economic Research Consortium Meeting*, Nairobi, Kenya, December 3.

Kalyalya,D.H.(2001). "Monetary policy framework and implementation in Zambia". *Paper presented at the SARB Conference on Monetary Policy Frameworks in Africa,* September 17-19, Pretoria, South Africa.

Kaldor, N. (1970). "The New Monetarism", *Lloyds Bank Review,* July 1-17.

Kaldor,N.(1982). *The Scourge of Monetarism.* Oxford University Press, New York.

Kalenga,P.(2001). "Monetary Policy Framework in Namibia". *Paper presented at the SARB Conference on Monetary Policy Frameworks in Africa,* September 17-19, Pretoria, South Africa.

Kamin,S., Turner,P. & Van't Dack,J. (1998). "The transmission mechanism of monetary policy in emerging market economies: an overview". *BIS*, Basle.

Keynes, J.M. (1935). *A Treatise on Money.* Mac Millan, London.

Keynes,J.M.(1936).*The general theory of employment, interest and money.* Mac Millan, London.

Keynes, J.M.(1973). "The Collected Writings of John Maynard Keynes", Mac Millan, London. Volume XIV, *The General Theory and After, Part 2: Defense and Development.*

King,R.G. (1993). "Will the New Keynesian Macroeconomics resurrect the IS-LM model?" *Journal of Economic Perspectives*, 7(1):67-82.

King,R.G. & Levine,R. (1994). "Finance and growth: Schumpeter might be right. *Quarterly Journal of Economics*. p.715-737.

King,R.G. & Plosser,C.I.(1984). "Money Credit and Prices in a Real Business Cycle", *American Economic Review.*

Kitchen,R.L.(1986). *Finance for the Developing Countries.* John Wiley & Sons, England.

Kone,Z. (1997). "The transmission of monetary policy in Botswana – through Bank of Botswana Certificates", in *Aspects of the Botswana Economy*, Salkin et al.

Kovanen,A. (2002). "Reserve requirements on foreign currency deposits in Sub-Sahara Africa – Main features and policy implications". *IMF Working Paper*, WP/02/65.

Kregel,J.A.(1975).*The reconstruction of Political Economy. An Introduction to Post-Keynesian Economics.* Mac Millan, London.

Kregel,J.A. (1998). "Aspects of Post Keynesian theory of finance". *Journal of Post Keynesian Economics.* 21(1):111-134.

Laidler,D. (1994). *In:* Snowdon,B., Vane,H. & Wynarczyk,P.(1994). *A Modern Guide to Macroeconomics.* Edward Elgar Publishing, U.K.

Lavoie,M.(1996). "Horizantalism, structuralism, liquidity preference and the principle of increasing risk". *Scottish Journal of Political Economy.* 43(3):275-300.

Lavoie,M.(1997). "Loanable Funds, Endogenous Money and Minsky's Financial Fragility Hypothesis" in *Money, Financial Institutions and Macroeconomics by Cohen, Hageman & Smithin.* Kluwer Academic Publishers, USA.

Lavoie,M.(1999)."The credit-led supply of deposits and the demand or money: Kaldor's reflux mechanism as previously endorsed by Joan Robinson". *Cambridge Journal of Economics,* 23 no 1 January, 103-113.

Leijonhofvud,A.(1973)."Effective Demand Failures. (Chapter 6)" *Swedish Journal of Economics.* Vol 75, 27-48.

Levine,R, Loayza,N. & Beck,T. (1999). "Financial intermediation and growth: causality and causes". Working paper, available online: [http://legacy.csom.umn.edu/WWWPages/FACULTY/RLevine/Causes.pdf]

Levine,R. & Zervos,S. (1998). "Stock markets, Banks and Economic Growth". *The American Economic Review*, p. 537-558.

Maki,D.M.(1999)."The growth of consumer credit and household debt service burden". *Paper presented at the Credit Research Centre Conference, Arlington, VA, Nov. 3-4.*

Mankiw,G.N. & Romer,D. (1993)."Symposium on Keynesian Economics Today". *Journal of Post Keynesian Perspectives.* 7(1):1-17.

Masalila,K.S. & Phetwe,M. (2001). "Botswana's Monetary Policy Framework". *Paper presented at the SARB Conference on Monetary Policy Frameworks in Africa*, September 17-19, Pretoria, South Africa.

Masawe,J. (2001). "Monetary Policy Framework in Tanzania". *Paper presented at the SARB Conference on Monetary Policy Frameworks in Africa,* September 17-19, Pretoria, South Africa.

McCallum,B.T. (1988). "Postwar Developments in Business Cycle Theory: a moderately classical perspective". *Journal of Money, Credit and Banking*, 20(3): 459-471.

McCallum,J. (1991). "Credit rationing and the monetary transmission mechanism". *The American Economic Review*, 81(4):946-951.

Meltzer, A.H. (1995). "Monetary, credit and (other) transmission processes: A monetarist perspective", *Journal of Economic Perspectives*, 9(4):49-72.

Messori,M. (1997)."Keynesians, New Keynesians and the Loanable Funds Theory" in *Money, Financial Institutions and Macroeconomics by Cohen, Hageman & Smithin.* Kluwer Academic Publishers, USA.

Micro Finance Regulatory Council (MFRC). (2002). Industry Statistics, available online: [www.mfrc.co.za/MFRC Statistics25 August]

Minsky,H.P.(1982) *Inflation Recession and Economic Policy.* Wheatsheaf Books, U.K.

Minsky,H.P.(1986). *Stabilizing an Unstable Economy.* Yale University Press, New Haven.

Mookerjee,R. & Peebles,G. (1998). "Endogenous money in China: evidence and insights on recent policies". *Journal of Asian Economics,* 9(1), 139-159.

Moore,B.J.(1979)."The Endogenous Money Stock". *Journal of Post Keynesian Economics,* Fall.

Moore,B.J.(1983)."Unpacking the Keynesian Black Box". *Journal of Post Keynesian Economics,* 5(4):537-556.

Moore,B.J. (1985) "Contemporaneous Reserve Accounting: Can Reserves be Quantity Constrained?". *Journal of Post Keynesian Economics,* 7(1):103-13.

Moore,B.J.(1988). *Horizontalists and Verticalists* . Cambridge University Press.

Moore,B.J.(1988b)."The endogenous money supply". *Journal of Post Keynesian Economics,* 10(3):372-385.

Moore,B.J.(1988c)."The Endogenous Money Supply: Concluding Comments". *Journal of Post Keynesian Economics*, 10(3):398-400.

Moore,B.J. (1989). "On the Endogeneity of money once more". *Journal of Post Keynesian Economics,* 11(3):479-87.

Moore,B.J.(1989b)."Does money supply endogeneity matter ?" *South African Journal of Economics,* p. 194-200.

Moore,B.J.(1989c)."A Simple Model of Bank Intermediation". *Journal of Post Keynesian Economics*, 12(1):10-28.

Moore,B.J. (1991)."Money supply Endogeneity: 'Reserve Price Setting' or 'Reserve Quantity Setting'?" *Journal of Post Keynesian Economics*, 13(3):404-13.

Moore,B.J.(1991b)."Has the demand for money been mislaid?" *Journal of Post Keynesian Economics,* 14(1):125-133.

Moore,B.J. (1994). "The demise of the Keynesian multiplier: a reply to Cottrell". *Journal of Post Keynesian Economics,* 17(1):121-134.

Moore,B.J. (1997). "Reconciliation of the supply and demand for endogenous money". *Journal of Post Keynesian Economics,* 19(3):423-429.

Moore, B.J (1998). "Chapter 4: Unpacking the Post-Keynesian Black Box: Wages, Bank Lending and the Money Supply". In *Post-Keynesian Monetary Economics.*

Moore,B.J. (1998). "Accommodation to accommodationism: a note". *Journal of Post Keynesian Economics,* 21(1) 175-179.

Moore,B.J. (2000). "Saving, Investment and Interest Rates". *Paper presented at the biennial Post-Keynesian workshop*, Knoxville, Tennessee.

Moore, B.J. (2001). "Some reflections on Endogenous Money", in *Credit, Interest Rates and the Open Economy, Essays on Horizontalism*, edited by Rochon,L. & Vernengo,M. Edward Elgar, USA.

Moore,B.J. (2002). *Shaking the invisible hand*. (forthcoming). Edward Elgar.

Moore,B.J. & Smit, B.W. (1986). "Wages, Money and Inflation". The South African Journal of Economics, 54(1):80-94.

Moore,B.J. & Threadgold,A.R.(1985)"Corporate Bank Borrowing in the UK, 1965-1981. *Economica*. 52(1):65-78.

Morgan,B.(1978) *Monetarists and Keynesians.* Mac Millan London.

Moss,L.S.(1997)."Endogenous Money and Monetary Policy: A New View about an Old Problem", *American Journal of Economics and Sociology.* 56(3):367-368.

Mowatt,R. (2001). "Prospects for financial sector reform in the context of regional integration in SADC". *TIPS Working Paper*, Johannesburg.

Nakamura,L.I. (1993). "Information Externalities: why lending may sometimes need a jump start". *Business Review,* Jan/Feb. 3-15.

Natke,P.A. (1997/98). "Keynes' finance motive and firm behaviour: Empirical evidence". *Journal of Post Keynesian Economics*, 20(2):275-295.

Ndikumana,L (2001). "Financial Markets and economic development in Africa". PERI Working Paper Series, number 17, Massachusetts, USA.

Nel,H.F.(2000). "Minimum reserve requirements". *SARB Quarterly Bulletin.* December, Pretoria.

Nell,E.J. (2001). "Notes on Hicks on Money and Monetary Theory", in *Credit, Interest Rates and the Open Economy, Essays on Horizontalism*, edited by Rochon,L. & Vernengo,M. Edward Elgar, USA.

Nell,K.S. (2000). "The endogenous/exogenous nature of South Africa's money supply under direct and indirect monetary control measures". *Paper delivered at the Biennial Post Keynesian workshop*, Knoxville Tennessee.

Nelson,E.R. (1999). "Financial intermediation for the poor – survey of the state of the art". *African Economic Policy Discussion Paper*, number 10. USAID, Washington.

Niggle,C.J. (1990). "The evolution of money, financial institutions, and monetary economics". *Journal of Economic Issues,* 24(2):443-451.

Niggle,C.J. (1991). "The endogenous money supply theory: an institutional appraisal". *Journal of Economic Issues.* 25(1):137-152.

Norcic,O. & Lah,M. (1996). "Dual money endogeneity in transition economies". *Journal of Post Keynesian Economics*, 19(1):73-83.

Okeahalam,C.C. (2001). "Structure and Conduct in the Commercial Banking sector of South Africa. *Paper presented at the TIPS, 2001 Annual Forum*, Johannesburg.

Palley,T.I.(1988)."Bank Lending, Discount Window Borrowing, and the Endogenous Money Supply: A Theoretical Framework." *Journal of Post Keynesian Economics*, 10(2):282-303.

Palley,T.I.(1991)"The Endogenous Money Supply: Consensus and Disagreement". *Journal of Post Keynesian Economics,* 13(3):397-403.

Palley,T.I.(1996). *Post Keynesian Economics – Debt, distribution and the Macro Economy.* Mac Millan Press, London.

Palley,T.I. (1996). "Accommodationism versus structuralism: time for an accommodation". *Journal of Post Keynesian Economics*, 18(4): 585-594.

Palley, T.I. (1998). "Accommodationism, structuralism and superstructuralism". *Journal of Post Keynesian Economics*, 21(1): 171-173.

Patinkin,D.(1965)."The Model & the workings of the Model : Involuntary Unemployment." *Money, Interest and Prices.* Harper & Row, New York.

Peterson, W.C. & Estenson, P.S. (1992). *Income, Employment and Economic Growth.* London: Norton & Company, chapters 16, 17 & 18.

Phelps,E.S. (1990).*Seven Schools of Macroeconomic Thought. The Arne Ryde memorial Lectures.* Oxford University Press, New York.

Piegay,P. (1999). "The New and Post Keynesian analyses of bank behavior: consensus and disagreement". *Journal of Post Keynesian Economics,* 22(2):265-283.

Pierce, D.G., and Tysome, P.J. (1985). *Monetary Economics: Theories, Evidence and Policy* (2nd edition). Butterworths, London, chapter 3.

Pollin,R.(1991)."Two theories of money supply endogeneity : some empirical evidence". *Journal of Post Keynesian Economics,* 13 (3):366-396.

Pollin,R.(1997)."The relevance of Hyman Minsky". *Challenge.* 40(2):75-95.

Ramey,V. (1993). "How important is the credit channel in the transmission of monetary policy?" *Carnegie-Rochester Conference Series on Public Policy*, 39:1-45.

Randall,R. (1998). "Interest rate spreads in the Eastern Caribbean". *IMF Working Paper*, WP/98/59. Washington.

Reifschneider,D., Tetlow,R. and Williams,J. (1999). "Aggregate disturbances, monetary policy, and the macroeconomy: the FRB/US perspective". Federal Reserve Bulletin, available online: [http://www.federalreserve.gov/pubs/bulletin/1999/01991ead.pdf].

Rochon,L. (1999). "The creation and circulation of endogenous money: a circuit dynamique approach". *Journal of Economic Issues,* 33(1):1-22.

Rochon,L. (1999). *Credit, Money and Production – an alternative Post-Keynesian approach*. Edward Elgar, USA.

Rochon, L. (2001). "Horizontalism: Setting the Record Straight", in *Credit, Interest Rates and the Open Economy, Essays on Horizontalism*, edited by Rochon,L. & Vernengo,M. Edward Elgar, USA.

Rochon,L. (2001). "Horizontalism and New Keynesian Economics: The role of scarcity, savings and sticky prices", in *Credit, Interest Rates and the Open Economy, Essays on Horizontalism*, edited by Rochon,L. & Vernengo,M. Edward Elgar, USA.

Rogers, C. (1997). "Post Keynesian Monetary Theory and the Principle of Effective Demand", in *Money, Financial Institutions and Macroeconomics.* Kluwer Academic Publishers, USA.

Romer,D.(1993)"The New Keynesian Synthesis". *Journal of Economic Perspectives,* 7(1):5-22.

Romer,P.M. (1994). "The Origins of endogenous growth". Journal of Economic Perspectives", 8(1):3-22.

Rossi,S. "Endogenous Money and banking activity – some notes on the workings of modern payment systems". *Working Paper, no. 309.*

Rousseas,S.(1989). "On the endogeneity of money once more". *Journal of Post Keynesian Economics,* Spring. 11(3):474-8.

SADC, (2000). Data on individual countries available online: [www.sadc.int].

Sato, L.J. (2001). "Monetary Policy Frameworks in Africa: the case of Malawi". *Paper presented at the SARB Conference on Monetary Policy frameworks in Africa*, September 17-19, Pretoria, South Africa.

SARB (1993-2000). Total DI-900 forms. Available online: [http://www.reservebank.co.za].

SARB. *Quarterly Bulletin*, Various Issues, Pretoria, South Africa.

SARB (2000) "Chapter 3: Trends in South African Banks". *SARB Banking Supervision Annual Report*, available online: [http://www.resbank.co.za/bsup/ann20/Chap3.htm].

Schwartz,A.J.(1991)."Why money matters", reprinted in *Lloyds Bank Annual Review, vol. 4:Monetarism and the Keynesians.*

Seccareccia,M.(1997)."Early Twenty-Century Heteredox Monetary Thought" in *Money, Financial Institutions and Macroeconomics.* Kluwer Academic Publishers, USA.

Skaggs,N.T.(1997). "Henry Dunning Macleod and the Credit Theory of Money" in *Money, Financial Institutions and.* Kluwer Academic Publishers, USA.

Snowdon,B., Vane,H. & Wynarczyk,P.(1994). *A Modern Guide to Macroeconomics.* Edward Elgar Publishing, U.K.

Solow,R.M. (1957). "Technical Change and Aggregate Production Function". *Review of Economics and Statistics.* 39 (August): 312-320.

Solow,R.M. (1988). "Growth Theory and after: Nobel Lecture, 8 December 1987". Growth Theory: An Exposition: ix-xxvi. Oxford University Press.

Stiglitz,J. & Weiss,A. (1981). "Credit rationing in Markets with Imperfect Information". *American Economic Review*, 71(3), 393-410.

Stiglitz,J.E. & Weiss,A. (1981). "Credit rationing in markets with imperfect information". *The American Economic Review.*

Taylor, J.B. (1995). "The monetary transmission mechanism: An empirical framework", *Journal of Economic Perspectives*, 9(4): 11-26.

Trade and Industry Policy Strategies. (2002). Data available online: [www.tips.org.za].

Tobin,J.(1970). "Money and Income:Post hoc ergo propter hoc ?" *Quarterly Journal of Economics.* Vol 84, May, 301-317.

Trautwein, H.M.(1997)."The Uses of the Pure Credit Economy" in *Money, Financial Institutions and Macroeconomics.* Kluwer Academic Publishers, USA.

Van der Walt,S.J. (1997). "Bank credit to the private sector". *SARB Quarterly Bulletin*, June.

Van't Dack, J. (2001). "The Framework of Monetary Policy: an overview of the issues". *Paper presented at the SARB Conference on Monetary Frameworks in Africa*, September 17-19, Pretoria, South Africa.

Vera,A.P. (2001). "The endogenous money hypothesis: some evidence from Spain (1997-1998). *Journal of Post Keynesian Economics.* 23(3): 509-526.

Whalen,C.J. (1999). "Hyman Minsky's theory of capitalist development". *Working Paper, no. 277.* Institute for Industry Studies, Cornell University.

Whittaker,J. & Theunissen,A.J. (1987). "Why does the Reserve Bank set the interest rate?" *The South African Journal of Economics.* 55(1):16-34.

Wray,R.L. (1990). *Money and Credit in Capitalist Economies – The endogenous money approach.* Edward Elgar, England.

Wray,R.L. (1991). "Boulding's balloons: a contribution to monetary theory". *Journal of Economic Issues.* 25(1), 1-21.

Wray,R.L. (1992). "Commercial banks, the central bank, and endogenous money". *Journal of Post Keynesian Economics.* 14(3), 297-310.

Wray,L.R.(1995)."Keynesian monetary theory: Liquidity preference or black box?" *Journal of Economic Issues, March 1995.* 29(1):273-284.

Wray,R.L. (1997). "Deficits, Inflation and monetary policy". *Journal of Post Keynesian Economics,* 19(4), 543-572.

Wray,R.L.(1998). *Understanding Modem Money – The key to full employment and price stability.* Edward Elgar, UK.

Wray,L.R. (1999). "An irreverent overview of the history of money from the beginning of the beginning to the present". *Journal of Post Keynesian Economics*, 21(4):679-687.

Wolfson,M.H. (1996). "A Post Keynesian theory of credit rationing". *Journal of Post Keynesian Economics*, 18(3): 443-470.

Wolfson,M.H. (1999). "Financial instability and the credit crunch of 1996. *Review of Political Economy.*

Zeller,M.(1994). "Determinants of Credit Rationing: A study of informal lenders and formal credit groups in Madagascar". *World Development,* 22(12); 1895-1907.