

**AN EVALUATION OF THE IMPACT OF  
MONETARY POLICY  
ON A SMALL AND OPEN ECONOMY:  
THE CASE OF THE  
REPUBLIC OF SOUTH AFRICA, 1960 - 1997**

by

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# ABSTRACT

**TITLE:** AN EVALUATION OF THE IMPACT OF MONETARY POLICY  
ON A SMALL AND OPEN ECONOMY: THE CASE OF THE  
REPUBLIC OF SOUTH AFRICA, 1960 - 1997.

**CANDIDATE:** Victor Sesinyi Khabo  
**SUPERVISOR:** Prof. C Harmse  
**CO-SUPERVISOR:** Prof. J H Van Heerden

The purpose of this study is to evaluate the impact of monetary policy on stimulating the economy of a small and open economy, in the light of the fervent and ongoing debate between Structuralists and Neo-liberal or Orthodox economists. Structuralists argue that monetary policy is ineffective in stimulating the economic growth of a small and open economy, which is said to be determined by the economic growth levels of its large and developed trading partners. Money supply and inflation are considered to be insignificantly related to economic growth. It is further argued that the monetary authorities cannot control money supply *changes* as desired, namely, to keep them *within the set money supply guidelines*, because of foreign external forces flowing out of international trade conducted with these large and developed partners.

By contrast, the Neo-liberal or Orthodox counter-argument affirms the efficacy of the money supply and inflation in influencing the economic growth of a small and open economy. Monetary authorities are said to be capable of controlling money supply via the bank rate (*repo rate*), that the *current level* of money supply is significantly related to that of the previous period. It is also argued that the *interest-elasticity* of foreign investment is too low to counteract or neutralise monetary policy objectives significantly.

In the case study of South Africa as a small and open economy, the empirical findings confirm the Neo-liberal or Orthodox arguments that the economic growth of a small and open economy is significantly related to changes in money supply and inflation, and that ability of monetary authorities to control money supply is constrained by external factors. While monetary policy is ineffective in controlling changes in the money supply, keeping it *within set target limits* or *guidelines*, it is able to influence the current level money supply by operating on that of the previous period.

The Structuralist argument that the monetary authorities of a small and open economy *cannot control* money supply changes, i.e. keeping them *within set target guidelines*, is confirmed. The basis of this argument is said to be the unfair terms of trade faced in dealing with large and developed countries. This is despite the significant relationship between the current level of money supply and that of the previous period.

## CHAPTER ONE

### INTRODUCTION

#### 1.1 BACKGROUND TO THE PROBLEM STUDIED

The Keynesian/Monetarist debate on the effectiveness of monetary policy in stimulating the economy is an ongoing one. According to Mohr and Fourie (1998: 581), the experience during the Great Depression (1929 – 1933), when the income level of the world's economies did not significantly change even though monetary authorities expanded the money supply, sparked Keynesian doubt about the potency of monetary policy. Events during and after World War II, when fiscal policy appeared more effective than monetary policy, further deepened this doubt. Extremist Keynesians argued: “money does not matter” in stimulating the growth of the economy. The monetarist school, led by Milton Friedman, which became popular in the sixties, represented the other side of the debate. To monetarists, monetary policy is effective in stimulating economic growth, thus: “money matters”. The controversy between Keynesians and monetarists remains unresolved (Mohr & Fourie 1998:581).

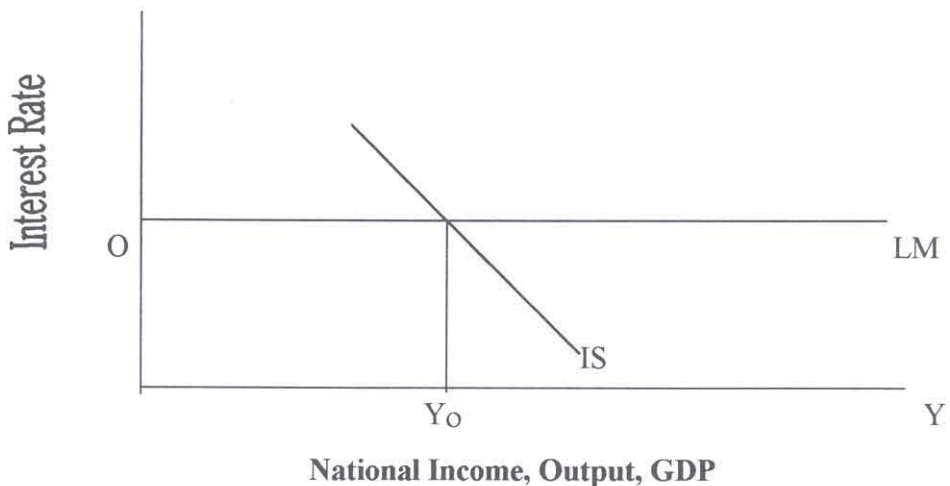
The pivotal debate amongst Keynesians and monetarists is the monetary transmission mechanism. Keynesians regard the link between the monetary sector and the real sector of the economy as very tenuous. However, an indirect link is suggested, with the interest rate as the crucial element. This crucial link connecting changes in money supply and economic activity via the interest rate is considered to be a two-stage process. In the first stage, an increase in the money supply ( $M^s$ ) above the demand for money ( $M^d$ ) causes an excess supply of money ( $M^s > M^d$ ), at the prevailing interest rate and the level of income. To reduce this excess, money-holders to buying other financial such as bonds. The demand for these assets thus increases, and they command higher prices. Given the inverse relationship between the prices of financial instruments like bonds and their yield, this portfolio disequilibrium caused by an excess supply of money, leads to a drop in the interest rate ( $i/r$ ). In the second stage, a drop in the interest rate causes an increase in aggregate demand resulting in an increase in investment (I).

Consequently, the increase in investment leads to an increase in national income or Gross Domestic Product (Froyen 1995:120). This can be represented as follows:

$$M^s \rightarrow (M^s > M^d) \rightarrow \downarrow i/r \rightarrow \uparrow I \rightarrow \uparrow \text{GDP} \quad (1)$$

Thus, according to the Keynesians, the transmission mechanism only operates when an increase in money supply causes a portfolio imbalance resulting in a drop in the interest rate ( $i/r$ ), which in turn effects an increase in aggregate demand. By implication, if the portfolio imbalance caused by an increase in money supply does not cause significant changes in interest rates, the transmission mechanism becomes inoperative. This situation is the so-called Keynesian liquidity trap, in which the money market equilibrium condition is represented by a horizontal LM curve. This liquidity trap is said to occur when money supply is interest-inelastic and people are indifferent between holding money or financial instruments, like bonds, when interest rates, thus rendering monetary policy ineffective in stimulating the economy. Graphically, Figure 1.1 represents the liquidity trap as follows:

**FIGURE 1: THE LIQUIDITY TRAP:**



**SOURCE:** Dornbusch, Fischer, Mohr & Rogers 1996: 165.

where IS = real sector equilibrium. The only increase in economic growth, i.e. national income, will occur through movements in IS via fiscal policy (Dornbursch, Fisher, Mohr, & Rogers 1996:165). On the contrary, monetarists consider the monetary transmission

mechanism to be direct. They take the Irvin Fisher's equation of exchange, stated as follows:

$$MV \equiv PQ, \tag{2}$$

where

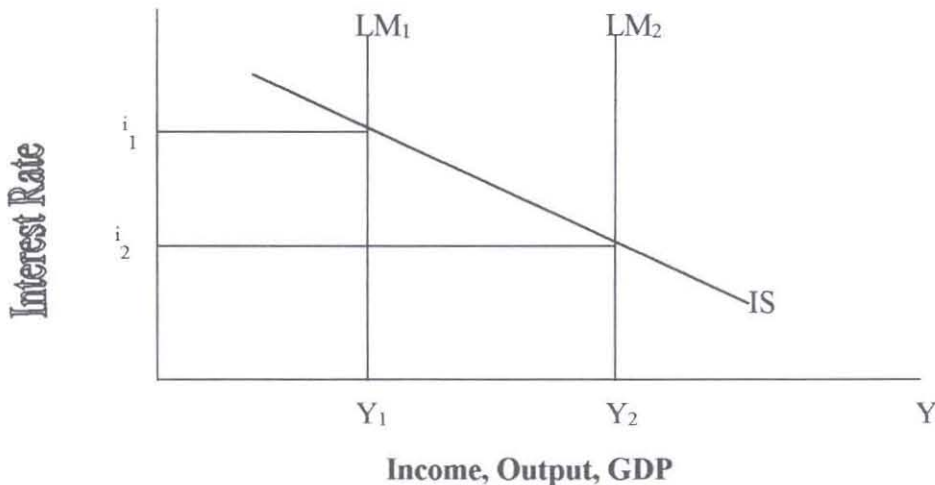
M	=	the quantity of money
V	=	the velocity of money
P	=	the average (or general) price level
Q	=	the real value or physical quantity of goods and services produced,

and convert it into the quantity theory of money. In terms of this theory, velocity of money in circulation (V) is assumed to be constant or stable, transforming the equation of exchange into:

$$MV = \overline{PQ} \tag{3}$$

If V is constant, then changes in money, M, result in an equi-proportional change in total production or output or income, PQ. This gives a direct monetary transmission mechanism, with changes in money supply directly changing the economy. As opposed to the Keynesian liquidity trap, monetarists consider the LM curve to be vertical rather than horizontal. This is the classical case is graphically represented by Figure 2 as follows:

**FIGURE 2: THE CLASSICAL CASE**



**SOURCE:** Dornbusch, Fischer, Mohr & Rogers 1996: 167

According to the classical case, demand for money depends solely on the level of income



and not on the interest rate. Thus, changes in national income are said to be better brought about by shifts in the LM curve rather than the IS curve. Consequently, monetarists consider maximum effect on the level of national income or economic growth to take place via monetary policy (Mohr & Rogers 1996:165).

The economic problem addressed in this study flows directly from the Keynesian/Monetarist debate outlined above. Whereas Keynesians consider the monetary transmission mechanism to be indirect, while monetarists regard it to be direct, the emphasis is somewhat shifted in the case of the problem under examination. The focus in this study is on whether or not monetary policy via the transmission mechanism can stimulate the economic growth of a small and open economy. Just as the Keynesian revolution came about as a result of the ineffectiveness of monetary policy during the Great Depression, the failure of the market economy to address the socio-economic problems in Latin America sparked an economic school of thought called structuralism. The structuralist theory, also known as the Latin American School of Development, developed as an alternative to what was considered the failure of orthodox economics, referred to as neo-liberalism by structuralists. The Latin American countries, which were undergoing socio-political transformation, made little economic progress. These countries began to question the dependence of their developing economies on those of large developed western economies, which are said to benefit at the expense of the small developing countries with which they trade. The structuralist theory is based on the belief that the problems of small economies trading with large developed economies are structural rather than economic. Accordingly, markets are distrusted and disfavoured by structuralists, who instead advocate government intervention.

The champion of the Latin American structuralist school is Raul Prebisch from Argentina, who was the Executive Secretary of the Economic Commission for Latin America (ECLA), a United Nations agency founded in 1947 and located in Chile. The major purpose of ECLA was economic development, with social problems like poverty receiving close attention. Emerging liberation sentiments contended that large and developed western countries impoverished those small and developing countries with which they traded. Domestic monetary policy is thus said to be ineffective, because the economic growth problem faced is not monetary but structural (Bruce 1980:33).

Structuralists argue that because domestic monetary authorities in an open and small economy cannot control money supply, they cannot control or stabilise the interest rate, through which the real sector is influenced. For instance, intended expansionary policy to reduce interest rates will be undermined by outflows of foreign capital as interest rates drop, resulting in a contraction of money supply. On the contrary, contractionary policy to increase interest rates is said to attract inflows of foreign assets, thereby increasing money supply and neutralising or reversing the intended contraction of money supply (Pinto & Knakal 1973:22).

Furthermore, Structuralists do not consider inflation to be primarily a monetary phenomenon controllable by monetary authorities. Instead, inflation is said to be inherited from the large developed western countries with which small and open countries trade, with no impact on economic growth. Accordingly, changes in the money supply have no impact on portfolio balances, with no influence on interest rates. Consequently, domestic investment is said to depend neither on the interest rate, nor on monetary policy, but on the economic growth of those developed economies with which international trade is conducted. It is also argued that exports are not a monetary phenomenon, and have nothing to do with economic growth via foreign exchange. Because the economic growth problem of small and open economies, such as that of South Africa, is structural and not monetary, monetary policy is said to be ineffective in stimulating economic growth (Rodriguez 1977:3).

Parallel with the pursuit of economic growth by structuralists, are social reform, income redistribution and political reform. It is argued that industrial revolution has rewarded western countries and relegated developing countries to be producers of raw materials. As such, inward-looking policies with import substitution are advocated, as a means of circumventing the shortage of foreign exchange and unfair terms-of-trade. This is contrary to orthodox theory which calls for austere monetary policies and outward-looking economies, supported by the International Monetary Fund and the World Bank, who are blamed for this advocacy.

As opposed to structuralists, neo-liberalists consider monetary policy to be effective in stimulating the economic growth of a small and open economy, such as that of the Republic of South Africa. Neo-liberalists argue that monetary authorities can control the domestic money supply of a small and open economy thereby stabilising the interest rate. The basis of this argument is the interest elasticity of short-term capital movements. When restrictive monetary policy is pursued and domestic interest rates rise, the impact on the inflow of foreign assets is said to be smaller than that of the reduction of the money supply. Similarly, when expansionary monetary policy is implemented, the impact on the drop of domestic interest rates is said to necessitate an outflow of foreign assets lesser than that of the growth in money supply. Consequently, because of the low interest-elasticity of short-term capital movement, the monetary authorities are said to be able to control or change money supply in a small and open economy as desired. Accordingly, the monetary transmission mechanism is said to operative. Also, inflation and exports are said to be mainly monetary phenomena, influenced by changes in money supply, that is, monetary policy, thereby impacting on the economic growth of a small and open economy. The foregoing structural considerations.

## **1.2 STATEMENT OF THE PROBLEM: THE CONFLICT BETWEEN STRUCTURALIST AND NEO-LIBERAL/ORTHODOX THEORIES**

According to structuralists, monetary policy is ineffective in stimulating economic growth in small and open economies. *Small economies* are those in which neither the supply of exports nor the demand for imports has a noticeable impact on the world prices of these commodities and services. Economies are *open* in that trade or capital flows across their borders in sufficient quantity to influence the domestic economy, particularly prices and money supply (Gills, Perkins, Roemer & Snodgrass 1992:580). The monetary transmission-mechanism, through which changes in money supply lead to changes in economic growth, via changes in domestic interest rates, foreign exchange rate and aggregate demand, is said to be non-operative. Expansionary monetary policies to decrease money supply in order to decrease domestic interest rates, or contractionary policies to reduce money supply in order to increase domestic interest rates, are said to achieve, instead, the opposite of the desired effects. In other words, i.e. there is no

significant relationship between current money supply levels and those of the past.

Orthodox or neo-liberal theory contends that monetary policy is effective in stimulating the economic growth of a small and open economy. Accordingly, changes in money supply are said to disrupt portfolio balances, leading to changes in domestic interest rates and the foreign exchange rate which in turn cause changes in aggregate demand, thus impacting on economic growth. The monetary transmission mechanism is thus said to be operative.

The problem remains that while there is extensive literature on structuralist and neo-liberal/orthodox theories, the debate as to whether monetary policy is effective or not in stimulating economic growth in a small and open economy, via the transmission mechanism, is still ongoing, fervent and unresolved.

### **1.3 PURPOSE OF THE STUDY**

The purpose of this study is to undertake a comparative analysis of two contending economic views, that is structuralist and neo-liberal theories and to apply it to the South African economy. According to the structuralist view, monetary policy can do little to promote growth because of the external factors constraint. Deflationary policies, via changes in the money supply, are said to accentuate the downswing in income, resulting from a fall in exports. This is held to be equivalent to accepting economic depression and a period of slow growth. Structuralists, further postulate that offsetting the deficit in external demand is likely to result in further imbalance in the foreign sector, since imports accelerate with the pace of domestic demand. Consequently, an inward-looking policy of import-substitution is considered an effective alternative to outward-looking export-promoting policy, for harnessing the external sector in the long term and insulating the domestic economy against foreign shocks in the short term.

Allied to the structuralist view is the advocacy of industrialisation policies. The goal here is to reduce dependence on the agricultural exports of developing countries, which face inelastic foreign demand. So how should the direct effect of fluctuations in agricultural output due to adverse weather conditions be treated? Once again, monetary policy

actions are said to be impotent in overcoming the agricultural cycle and the deteriorating terms of trade for agricultural products. Import substitution policies are again advocated. Underlying the structuralist view are similar twin-theories, the "trade engine" theory and the "two-gap" theory. According to the former theory, by generating the foreign exchange required for imports of capital goods by developing countries, is considered the only way for developing countries to break out of the "vicious circle of poverty" in which they are trapped by the insufficiency of domestic savings.

The "two-gap" theory modulates the "trade engine" theory, asserting that domestic savings could be sufficient, but if they cannot be converted into foreign exchange required for important capital goods, they are of no avail. It is thus argued that the inflow of foreign savings must simultaneously fill two gaps, that is, the gap between the desired level of investment and the attainable level of domestic savings, and that between the required level of imports and the exogenously dictated level of exports. Foreign savings would, for them to stimulate economic growth. The latter gap, called the "foreign exchange gap" is said usually to be the larger of the two gaps, thus imposing a more binding constraint on the economic growth of developing countries. In short, the "two gap" theory stresses the inflow of foreign savings, while the "trade engine" theory emphasises the promotion of exports. In terms of the "two gap" theory, exports are exogenously determined. "Trade engine" theory maintains that foreign capital flows are a given, while exports are externally determined.

The contending neo-liberal view regards financial development as almost a prerequisite for growth. It is argued that the misuse of factors of production and inefficient allocation of resources, are a result of the fragmentary nature of markets, especially capital and money markets, in developing countries. The prescriptions for growth, according to this school of thought are:

- (1) to design a non-inflationary monetary policy
- (2) to encourage flexibility of interest rates to respond to market forces

Both prescriptions pivot around a policy of high real interest rates, with simultaneous

execution of financial stabilisation and liberalisation of portfolio and interest rate regulations, in both the short run and the long run. This differs from orthodox or monetarist doctrine on stabilisation policy, which has been called a policy of “shock treatment”. The monetarist doctrine only takes into account the necessary restriction of money supply, which frequently results in a severe credit crunch during the initial stages, with adverse social and political consequences. However, with financial reform, authorities are said to have no fears in attempting to reduce the inflation rate, otherwise considered to impact adversely upon investment and production. Higher interest rates tend to stimulate total saving and increase the degree of financialisation, acting as a conduit for investment. With domestic financial reform under way, it is asserted that governments would undertake sensible reforms without jeopardising political and social goals.

This study will conduct an empirical comparison of the two views, to evaluate both the structuralist and the neo-liberal theories on the effectiveness of monetary policy on the economic growth of a small and open economy, in this case South Africa. Since in South Africa, the goal of monetary policy has been to protect the value of the Rand and to control inflation by changing the levels of money supply (M3), the first aim of this study, is to determine whether or not monetary authorities can control changes in M3 (The recent shift to inflation targeting has of course changed and reduced the emphasis on money supply). Related to this aim is the concurrent determination of whether or not the level of money supply in the current period,  $M3_t$ , is significantly determined by the level of the previous period,  $M3_{t-1}$ . Because curbing inflation, CPI, is of primary concern to the monetary authorities in South Africa, while Structuralists argue that it is imported and cannot be controlled by changes in money supply, the other aim of this study is to determine whether or not CPI is dependent on changes in M3. Lastly, the overarching aim is to determine whether or not both M3 and CPI determine economic growth (GDP). Here the distinction between nominal and real GDP is, of course, very important.

The empirical results of this study will make a contribution towards resolving the ongoing debate between structuralists and neo-liberal economists, by revealing some new empirical information that will either confirm or disprove the economic theories underlying their arguments. The findings of the study will have significant implications for the monetary

authorities in the small and open economy of South Africa, especially if it can be found that these authorities cannot control changes in M3, and that economic growth is related to M3 and CPI. The significance and importance are derived from the argument that domestic problems faced by developing countries are said to be complicated by external factors, which further inhibit and constrain their efforts at economic development.

Rising oil prices caused steep declines in the prices of other primary commodities of developing countries, in turn adversely affecting their terms of trade and pushing real interest rates extremely high. Consequently, those countries that continued to incur foreign debt faced serious problems in servicing such debt. These countries may have continued the borrowing spree, because the jump in real interest rates was not anticipated, with a lagged effect. Commercial banks became reluctant to advance voluntary loans, putting added pressure on many developing countries. This is the balance of payments constraint faced by the monetary authorities of a small and open economy.

#### **1.4 THE SCOPE OF THE STUDY**

The primary focus of this study has to determine how monetary policy can contribute to stimulating sustained economic growth in South Africa. Lessons for South Africa will hopefully find application in most developing and industrialising countries. The motivation for the study has the remarkable growth rate achieved by a number of developing countries such as Singapore, Taiwan and Malaysia, while South Africa is lagging behind. If these countries and others can manage to grow, while the global economy is slowing down, this suggests a possibility for others to grow as well.

In order to establish the tenability, or lack thereof, of the postulated hypotheses and to gain an understanding of the underlying problems, a study of theories of monetary policy and economic growth, that is, transmission-mechanisms, was undertaken, as well as a brief study of the strategic management of technology and human capital, privatisation of public assets, global competition and change management. This was followed by an empirical analysis, using an econometric model for the South African economy. The study was concluded with recommendations for growth through

monetary policy.

In terms of scope, this study was limited to the evaluation of the effectiveness of monetary policy, or lack thereof, in stimulating economic growth, without entering into an analysis of the underlying reason. The period covered by this study covers is from 1960 to 1997, that is, monetary policy before the election of 1994, the bank rate period, and the post-1994 elections up to 1997 - the Stals era. While the period from 1998 to 2001, the repo era, falls outside the scope of this study, it will be covered in evaluating the controllability of money supply, relative to money supply targeting.

## **1.5 THE OBJECTIVE OF THE STUDY**

The primary objective of this study was to empirically evaluate the impact of monetary policy of a small and open economy, that of South Africa in this case, in stimulating economic growth using monetary targets or guidelines. The opposing structuralist and orthodox or neo-liberal economic theories were used a framework within which the evaluation was undertaken. According to the structuralists, monetary authorities cannot control money supply changes and economic growth (GDP) is said to have no significant relationship to money supply (M3) and domestic inflation (CPI), which is said to be imported. Instead, the GDP of such a small and open economy is said to be determined by those of large countries with which international trade is conducted. Orthodox or neo-liberal economists take opposing positions to these structuralist arguments. The obtained results of the study will contribute towards the assessment of the effectiveness of monetary policy in South Africa, which is criticised for the almost exclusive focus on protecting the value of the Rand, the domestic currency, and on inflation, via changes in money supply. This monetary policy is said to be too restrictive, responsible for the relative high domestic interest rates, which discourage investment and exacerbate the already high level of unemployment.

In addition, the results of the empirical analysis and evaluation will cast further light on and contribute towards a resolution of this on-going debate between the structuralist and



neo-liberal/orthodox economic theories. The obtained results will in turn suggest policy implications of the official macroeconomic policy of the Republic of South Africa, that is, Growth, Employment and Redistribution (GEAR).

## 1.6 THE AIMS OF THE STUDY

- (1) To examine the extent to which monetary authorities can *control* changes in money supply
- (2) To determine whether or not money supply in the current period is significantly related to that of the previous period
- (3) To establish whether GDP is determined by M3 or CPI, and if so, whether that relationship is predicated upon *controllability* of money supply changes

## 1.7 UNDERLYING PROBLEMS AND QUESTIONS

In order to achieve the above objectives a number of problems and questions have to be addressed. The problem areas includes, *inter alia*, the following:

- (1) Is economic growth influenced by changes in money supply?
- (2) Can employment be created without sound monetary policy?
- (3) Can monetary policy stimulate growth and thereby address socio-economic problems?
- (4) Is the economic growth strategy of South Africa, Growth Employment and Redistribution (GEAR), influenced by monetary policy?

- (5) Do labour movement wage demands influence growth?
- (6) Is inflation caused by changes in money supply?
- (7) Can monetary policy determine current level money stock, by operation on the previous period's stock?

Solutions to the above problems will also answer the following questions:

- (1) How do different economic schools of thought postulate monetary policy?
- (2) What the link is between economic growth and monetary policy?
- (3) Does inflation affect growth?
- (4) Is current money supply related to that of the previous period?
- (5) Which are the socio-political and economic factors said to influence economic growth?
- (6) Can monetary policy protect the value of the Rand via controllability of money supply, thereby curbing inflation?
- (7) Do money supply and inflation significantly relate to economic growth?
- (8) What is the impact of exchange rate changes on money supply?
- (9) What measures are taken to protect the value of the Rand and the exchange rate?

## 1.8 THE HYPOTHESES OF THE STUDY

Using the debate between structuralist and orthodox or neo-liberal economists as a framework, the opposite of the structuralist and orthodox core arguments are used as the null hypotheses to test their validity. If these arguments cannot be rejected, then they must be accepted. These arguments are:

- (1) Null Hypothesis for Structuralist Argument -- The monetary authorities, the central bank (SARB in South Africa) *can* control changes in the money supply, M3;

NB: The alternative hypothesis: The monetary authorities in South Africa *cannot* control changes in money supply, M3. Thus, if the null hypothesis is rejected, then the alternative hypothesis must be “accepted”, confirming the structuralist argument. The opposite is the case when the null hypothesis, which is one of the orthodox economists core arguments, cannot be rejected, thereby validating the orthodox argument.

- (2) Null Hypothesis for The Structuralist Argument -- *Previous* period money supply,  $M3_{t-1}$ , *does* determine that of the current period,  $M3_t$ ;

NB: Again, the alternative hypothesis, is a core orthodox argument and the argument in (i) applies *mutatis mutandis*.

- (3) Null Hypothesis for Structuralist Argument -- Money supply, M3, and domestic inflation, CPI, are *significantly related to* economic growth, GDP.

NB: The alternative hypothesis is a core orthodox argument, and the argument in (1) also applies here.

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## 1.9 RESEARCH METHODOLOGY

The ordinary least squares (OLS) regression technique was used to test the tenability or correctness of the two contending economic theories, namely structuralist theory and neo-liberal/orthodox theory, on the role of monetary policy in stimulating economic growth in a small and open economy. A single-equation model was used, to which commonly used measures, namely the coefficient of determination,  $R^2$ , the adjusted coefficient of determination,  $\bar{R}^2$  (called R-Bar-Squared), and the correlation coefficient,  $r$ , were applied to determine how well the estimated equations fitted the actual data. OLS was used because it is commonly used and not because it is the only technique. The main reason for OLS's popularity is the useful properties of the estimates it generates, which are mean zero and constant variance. To fulfil the assumption of normally distributed error terms, the time series used have to be stationary, with joint and conditional distributions being time-invariant. This will produce error terms, which satisfy the assumption, thereby allowing the use of t-test and F-test to test the hypotheses propounded.

However, most time series are not stationary. Consequently, performing ordinary regression on non-stationary time series will “..... often lead to a problem of spurious regression, whereby the results obtained suggest that there are statistically significant relationships between variables in the regression model when in fact all that is obtained is evidence of contemporaneous correlation rather than meaningful caused relations” (Harris 1995:14). Accordingly, to avoid spurious correlation from the regression analysis, the co-integration of non-stationary time series was tested. The error correction model (ECM) approach was not followed, because the purpose of this study was to establish the *presence* or *absence* of a significant relationship between economic variables. Short-run models or ECMs are important from a forecasting perspective, which has not been part of this study (Harris 1995:23). “The economic interpretation of co-integration is that if two (or more) series are linked to form an equilibrium relationship spanning the long-run, then even though the series themselves may contain stochastic trends (i.e. be non-stationary) they will nevertheless move closely together over time and the difference between them will be stable (i.e. stationary). Thus the concept of co-integration mimics the existence of a long-run equilibrium to which an economic system converges over time.” (Harris 1995: 22).

## **1.10 THE OUTLINE OF THE STUDY**

This study is divided into three parts. The first part, theoretical framework, has three chapters. Chapter one is the introduction, which briefly outlines the problem of whether or not monetary policy is effective in stimulating the economic growth of a small and open economy. This chapter also covers the purpose, scope and method of this study. Chapter two presents the literature survey on the different views postulated by both structuralist and neo-liberal/orthodox theories on the impact of monetary policy in stimulating economic growth in a small and open economy. In chapter three, a brief exposition of the literature on monetary policy theories is given.

Part two of the study deals with monetary policy and economic growth in South Africa. The three chapters that make up this part are on the socio-economic environment of the South African economy; monetary policy as applicable in South Africa; and the characteristic features and problems of the South African economy. In chapter four, the socio-economic characteristics of the South African economy reflect the context within which the economy operates. Chapter five gives an overview of the historical application of monetary policy in South Africa. Chapter six deals with the unique economic features of the South African economy, which help to shed light on the empirical analysis that is covered in part three.

The empirical evaluation of part three explains, in chapter seven, the techniques used to conduct the empirical study. Chapter eight covers the evaluation and the analysis. In this chapter the results of the empirical analysis of real data collected to test the hypothesis, that is the central arguments postulated by the structuralist and neo-liberal/orthodox theories, on the effectiveness of monetary policy in stimulating economic growth of a small and open economy (that of the Republic of South Africa) are presented. Chapter nine, the final chapter, presents the conclusion of the study.

## **1.11 SUMMARY**

The purpose of the study has to determine what makes an economy grow, particularly in developing countries. While no two countries are exactly alike, the thesis of this

study is that an extrapolation of the results will have application in most developing countries. A further thesis of this study is that external constraints should not be used as an excuse for poor economic growth, and the implementation of bad policies. Thus, the structuralist argument that external constraints inhibit the growth of developing countries was tested, since all developing countries are searching for solutions to their economic problems.

The results on such tests should be compared with the contention of the neo-liberalists that the recipe for growth is low inflation and flexible interest rates, responsive to the market forces. In opposition to the structuralist view, the misuse of factors of production and inefficient allocation of resources, are held to be inhibitors of growth by neo-liberal or orthodox economists. Developing countries, structuralists claim, are characterised by fragmented markets, especially capital and money markets, which is not conducive to growth. This school differs from the neo-liberal school, which is based on the monetarist doctrine of stabilization policy, and which instead propagates simultaneous financial stabilisation and liberalisation of portfolio and interest rate regulations. High interest rates, it is held, tend to stimulate savings and increase financialisation, as a conduit for investment. Given the South African past, with vast and elaborately inefficient application of resources, for of political reasons, a careful understanding of the neo-liberal view is crucial, especially given the vicious attacks on its official macroeconomic policy.

Experience does not seem to support the structuralist view, since a number of developing countries, as stated above, have posted and are still posting impressive growth rates. This study has therefore proved instructive in that it has pointed to a successful policy for growth, in the light of both the structuralist and the neo-liberal views. The study does not pretend to comprehensively cover all the aspects of the debate between the structuralists and neo-liberal or orthodox economists. The empirical results of this study are instructive in suggesting effective monetary policy for the economic growth of developing countries in general, and South Africa in particular.

## CHAPTER TWO

### STRUCTURALIST VERSUS ORTHODOX ECONOMIC THEORIES OF GROWTH

#### 2.1 INTRODUCTION

By giving an overview of the debate between the structuralist view and the orthodox view, or what structuralists call neo-liberal economics, this chapter formulates the framework within which this study was conducted, namely the effectiveness of monetary policy, in a small and open economy in stimulating economic growth. This chapter outlines the key premises of the orthodox theory and of the structuralist school of thought or the Latin American school of development, as it is sometimes called. The purpose of this brief overview of the different views adopted is to test them against the South African objective reality. Structuralist theory evolved as an attempt to solve the Latin American economic growth problems, because the orthodox economic approach had not been successful.

#### 2.2 STRUCTURALIST VIEW OR LATIN AMERICAN SCHOOL OF DEVELOPMENT

The main, if not exclusive, emphasis of the structuralist view is that the economy of small and less-developed countries, considered to be the periphery, is said to be rendered inflexible and constrained by economic activity in the large developed countries, regarded as the core. Accordingly, the price-mechanism operating through the markets is distrusted and disfavoured, and government intervention is advocated instead. This structuralist view does not accord with the orthodox and neo-classical economic



domestic manufacturing will be promoted, it is argued. This should be accompanied by measures to promote domestic savings. Underpinning this view is the desire to break away from the dependence on foreign economic conditions, which is considered detrimental to the domestic economic growth of developing countries. State participation in spearheading the growth process, considered essential to allow developing countries to modernise and industrialise, is also a must for addressing inequities in economic arrangements. When a reformist government came to power in Latin America, the United States of America launched its New Deal with Latin America, known as the Alliance for Progress. The emphasis was on what came to be known as "redistribution with growth", which was criticised in a report written by Levinsin and de Onis (1970). The United States had to launch the programme in an attempt to contain the spread of reform sentiment after Cuban-style revolution.

### **2.3 IMPORT SUBSTITUTION, INDUSTRIALISATION AND THE TERMS OF TRADE**

The close economic interaction between the periphery and the core, according to the structuralists, is characterised by a gap created by the industrial revolution, which increased the productivity of the factors of production for western developed countries and not for less developed countries. The core is said to have internalised the new technology by developing an industrial capital-goods sector, while spreading the improved technology to all economic sectors. In contrast, less developed countries have largely imported the new technology, which was not spread to other sectors of the economy. Instead the technology was confined to primary commodity production in the export sector. This led to a dualistic economy, with an export sector and a subsistence sector, with a continuous labour surplus. Consequent low wages are said to prevent gains from technology, since productivity increases in the export sector are largely transferred to the developed countries, owing to the deterioration in the terms of trade (Rodriquez 1977:3).

The structuralist argument is that the industrial revolution has transformed the western countries into industrial economies, while relegating the small developing countries to the role of producers of primary commodities, either agricultural or mineral. For

developing countries to be successful in pursuing outward-looking policies that are export-led, export earnings have to grow quickly and at a rate in excess of national income, since demand for imported industrial products rises faster than income that is the income elasticity of demand for industrial commodities is greater than one. This is said to be improbable for small developing countries, which face increasingly severe foreign exchange constraints as a result of deterioration in the terms of trade.

This argument is contrary to conventional international trade theory, which holds that comparative advantage and economic specialisation lead to mutual benefits for both developed and developing countries. According to orthodox theory, the income gap between developed and developing countries should diminish as perfect mobility of labour, capital or products interact to equalise prices and distribute the benefits of technology more equally between trading countries. The observed widening of the income gap between developed and developing countries is said, in an article written by Prebisch (1950), to be due to a prevailing international division of production and trade, confining developing countries to production of commodities. Since in the long-term the prices of primary goods tend to decline relative to the prices of manufactured goods, developing countries have to increase the quantities of raw materials they produce to be able to continue importing the same quantity of industrial goods. The deterioration in the terms of trade at the expense of the developing countries, the so-called "borrowing countries", and in favour of the developed countries, the "investing countries", is said to be due to what is known in the literature as the "Prebisch-Singer Thesis" (Singer 1982:181).

The reason given for this deterioration in the terms of trade, from the demand side, is that imports of primary products from developing countries by developed countries rise at a lower rate than national income. In contrast, imports of industrial commodities from developed countries by developing countries rise at a higher rate than national income. Numerous factors are cited to explain the low income-elasticity of demand of developed countries. These include the following: as income increases a smaller proportion is spent on food; technical progress develops new ways of producing commodities requiring fewer raw materials, etcetera. On the other hand, the developing countries' income-elasticity of demand for imports is high because they mainly import industrial products, the demand for which rises proportionately more than income. On the supply side, the argument is based on a differential effect on the economic cycle. Whereas during an economic upswing, the

producers of primary goods are in a favourable position, their suffering is greater when the economic cycle is on a downswing. During business-cycle upswings, wages grow substantially in developed countries, while they hardly rise in developing countries, because of the existing labour surplus. During downswings, the fall in wages in developed countries is limited by trade union pressure. In developing countries, the downswing leads to a substantial drop in prices and wages, since producers can obtain cheap labour (Prebisch 1950:7).

Structuralists focus on the analysis of the terms of the trade that underlies part of their challenge of conventional international trade, proposing an alternative industrialisation approach. Industrialisation is believed to increase productivity and income, thereby reducing unemployment and raising low wages. Sustained increases in productivity are further believed to be a means of staving off a further decline in the prices of commodities and raw materials. It is argued that a relevant comparison is not between industrial costs and import prices, but between the increase in income obtained by employing the factors of production in industry and their alternative employment in the export sector. Thus, a protectionist policy must be pursued to promote survival and growth of the vulnerable fragile and infant industries of developing countries. The argument is that this should continue until the levels of productivity between developed and developing countries are even, or the differential is compensated for by wage differentials. However, the lowering of wages as an alternative to protectionism is not preferred, since it is to reduce the price of export commodities, further reinforcing the deterioration in the terms of trade. Excessive protectionism is also not favoured, since it is considered an inhibitor of agricultural production and industrial efficiency. Instead, "balanced growth" is preferred (Prebisch 1969:2).

"Balanced growth" is defined as "a means of getting out of the rut, a means of stepping up the rate of growth when the external forces are adverse, with trade expansion and foreign capital sluggish or inoperative" (Nurkse 1953: 13-15). "Balanced growth" is explained as a synchronised application of capital to a wide range of industries. On the other hand advocates of "unbalanced growth" maintain that it maximises induced decision-making and takes advantage of forward and backward linkages in the production process (Hirschmann, 1971:3). Industries with "backward linkages" make use of inputs from other

industries. For example, automobile manufacturing uses products of machinery and metal-processing plants, which in turn use large amount of steel. Thus the building of automobile manufacturing plants will create demand for machinery and steel. Although initial inputs will be imported, the eventual result is that local entrepreneurs will experience a ready market for domestically made machinery and steel, which in turn stimulate the setting up of plants. Therefore, backward linkages are said to stimulate production in the largest number of additional sectors. With "forward linkages" what industries produce become inputs into other industries. Instead of starting with automobiles, a steel mill is set up, because of an existing supply of steel. Entrepreneurs are stimulated to put up factories that use steel, such as automobile assembly plants. Linkages suggest pressures that lead to creation of new industries. The ultimate objective is a degree of balance in the development programme. Thus, planners of growth have a choice between maintaining balance throughout the development process, or first creating imbalances with the understanding that eventually the linkage pressure will create the balance (Gills, Perkins, Roemer & Snodgrass 1992:135-139).

The implication of the above structuralist argument for industrialisation are that as long as the capital goods sector does not exist, underdeveloped countries have no choice but to import technology, even if it is not appropriate. This would dampen the employment gains from industrialisation, since the penetration of technology would create a capital-intensive economy, which would increase unemployment. Furthermore, there is the problem of lack of income and savings to finance a high rate of capital accumulation to absorb the surplus labour because of the high capital intensity of technology and high population growth. Thus, the inflow of foreign capital is welcomed, to promote growth and create jobs. However, by the 1960s it was becoming evident that import-substitution policies were ineffective. It became accepted that such policies aggravated the economy's external vulnerability, rather than ease them, leading to increasing denationalisation of industrialisation.

## **2.4 THE STRUCTURALIST ANALYSIS OF INFLATION**

The structuralist challenge to orthodox economics is mainly directed against

“monetarism”, and is partly responsible for the structuralist school’s view of inflation. The Structuralist position on inflation is a reaction to the stabilisation policies pursued by Latin American governments on the advice of the International Monetary Fund (IMF). These policies were considered harmful rather than merely austere and growth promoting (Sunkel 1969:6). Structuralists, unlike monetarists, place greater emphasis on social and political origins of economic events. They also advocate government innovation to promote economic development and remove market deficiencies. These deficiencies were seen as the major cause of high inflation in these countries. Thus, the main requirement of economic development for structuralists is *structural reform*, which is both socio-political and economic in nature. While structuralists advocate an inward-looking and self-reliant development strategy, monetarists propagate an outward-looking development driven by the international market.

The problem of inflation, for structuralists, resides within the development problem of underdeveloped countries, but monetarists are less inclined to share this view. Accordingly, structuralists underestimate the role of price stability as a requirement for development, which to monetarists is essential. The structuralist position represents inflation as a result of socio-political tension, sectoral imbalances and expectations generated by the process of development itself. To monetarists, the inflationary process is the major obstacle to economic growth (Noyola 1984:16). Furthermore, structuralists challenge monetarism for its alleged failure to locate the problem of inflation within the world economy. Structuralists ascribe one of the sources of the problem of inflation in developing countries to the transition from taking an “outward-looking” or “export-oriented” development approach to taking one which is “inward-looking”, and in the stagnation of the purchasing power of primary exports owing to the deterioration in the long-term terms. Above all, the insufficiency of growth in demand by developed countries for the primary products of developing countries - the foreign exchange constraint – is at the core of the structuralist challenge of monetarism. It is further argued that because new local industries are less efficient and productive, their production costs are higher than those of western developed countries, the suppliers of imported industrial goods, resulting in a rise in prices. Accordingly, the industrialisation process is seen as leading to inflationary consequences, because of the described structural vulnerability of developing countries. The differences or debate between structuralists and monetarists is

concerns inflation. Whereas monetarists regard inflation a monetary phenomenon, arising from excessive demand, namely "too much money chasing too few goods", to structuralists inflation has its origin in structural adjustments and rigidities in the economic system. In rejecting the notion that inflation is a monetary phenomenon, structuralists regard inflation as the outcome of real disequilibria, reflected as increases in the general level of prices (Noyola 1984:16). In other words, structuralists emphasise supply factors, while monetarists stress demand conditions.

Structuralists distinguish between "basic" or "structural" pressures and the "propagating mechanisms" of inflation. These two types of pressures can vary from country to country, with inflexibilities in the agricultural and foreign trade sectors behind the "basic" or "structural" pressures. The growing population is said to be putting pressure on agriculture, which cannot meet the growing demand. It is claimed that the resultant rise is failing to stimulate sufficient increase in agricultural output. This supply elasticity is explained in terms of the traditional and unequal land tenure structure. Most agricultural land is concentrated in the hands of a few estate owners (latifundistas) who are largely absentee renters and are unresponsive to market conditions. On the other hand, owners of small subsistence farms (minifundistas) do not have the resources to expand production and have weak links with the market. In the foreign trade sector, foreign exchange earnings are said to have not grown enough owing to the inelastic supply of this sector and the deterioration of commodity terms of trade. On the contrary, imports have become inflexible because they consist largely of raw materials, spare parts and the capital goods required to support import substitution industrialisation and food imports. The resulting foreign exchange gap is said to lead to periodic devaluations, resulting in internal price hikes (Sunkel 1977:8).

Structuralists regard what monetarists consider to be the cause of inflation as to be solely "propagating mechanisms" and not the origins of inflation. The first "propagating mechanism" cited is fiscal deficit, arising from the shortfall in government revenues to cover government expenditure. This is said to be caused by dependence on foreign trade and the regressiveness and inefficiency of the tax-collection system. To finance the fiscal deficit, as social pressure mounts, the government is compelled to resort to borrowing, revaluation of money reserves, printing new money and raising taxes.

These actions create inflationary pressures leading directly (through price increases in public goods or services) or indirectly (through an increase in the money supply) to higher prices. Thus, they are considered means that propagate inflation (Pinto & Knakal 1973:22). The second "propagating mechanism" is said to relate to the readjustment of salaries and wages. As the cost of living increases, employees and workers demand higher wages and salaries, to maintain their purchasing power. Real incomes of employees and workers are said to be constantly eroded as the prices of foodstuffs, public goods and service, taxes, etcetera increase. The devaluation of the currency increases the prices of imported goods. The hardest-hit are the low-income groups. Where trade unionism is strong, pressure is put on employers to raise wages and salaries, which fuels inflation (Noyola 1984:43). The third "propagating mechanism" is said to result from the readjustment in prices owing to increases in costs. Faced with higher wage costs, higher input prices and higher taxes, entrepreneurs in turn pass the burden to their customers, by increasing the prices of their commodities (Prebisch 1971:6). Another type of inflationary pressure postulated by structuralists is the so-called "cumulative" pressure, induced by the inflationary process itself and intensifying it (Sunkel 1960:10).

Structuralist measures to combat inflation are necessarily long-term since they involve structural changes in production systems, economic infrastructure and distribution of income, because of their "structural" nature. Radical changes are said to be required to reform the agrarian structure and the taxation systems (Seers, 1962:14). For the causes of inflation arising from the foreign-exchange constraint, increasing and diversification of exports is seen as a solution (Sunkel 1960:10). Another proposal is to boost of industrial exports. However, structuralists also propose shorter-term cures for dealing with the "propagating mechanisms" of inflation. It has been suggested that a mixture of monetary and fiscal policies could curb demand factors of inflation.

The IMF-type and monetarist anti-inflationary policies for combating inflation are attacked for not dealing with the basic causes of inflation, instead causing economic stagnation, unemployment and income inequality. Structuralists maintain that both the demand and the supply factors must be tackled in order to fight inflation, accusing monetarists and the IMF for only dealing with the demand factors (Pinto 1973:22). Above all, structuralists hold that national consensus is required to achieve stability and

economic development. They claim that such national consensus, could only be achieved through the strong will of a political majority in a democratic society. It is believed that in the presence of favourable external or foreign conditions, the task would be simpler (Sunkel, 1977:8).

## 2.5 ORTHODOX ECONOMIC GROWTH THEORY

According to orthodox theory, changes in prices bring about substitution in production and consumption, at home and abroad. Trade is considered important in allocating national resources more efficiently, in terms of the costs and benefits of production and consumption at the margin. This contrasts with the structuralist view, which regards trade as being determined by the level of foreign demand for the primary-goods of developing countries (Riedel, 1987:19-22). The external economic element is also covered by the orthodox theory, although differently. It is argued that international trade is crucial for economic efficiency, brought about by division of labour and specialisation. International trade is said to extend a nation's markets, thereby allowing it to specialise in the production that gives comparative advantage. Growth, it is argued, results from the accumulation of capital and other productive resources. Thus, in as far as trade allows for greater national income, it is considered to expand accumulation and hence growth.

According to Adam Smith's theory, trade and growth hinge upon efficiency between trade and income, income and investment, and investment and growth, which still represents the current orthodox view. However, the concept of comparative advantage reflecting the gains of trade flowing from economies of scale is added to the efficiency gains. The classical economists propagated the labour theory of value, regarding international differences in relative prices as the result of differences in the productivity of labour. On the other hand, neo-classical economists explain international differences in relative prices in terms of both supply and demand. In addition, technological differences relative to labour productivity and variations in tastes and preferences by different countries are considered determinants of trade. The most important factor as part of production, which determines the nature of trade, is capital relative to labour. The neo-classical argument is postulated by the so-called Heckscher-Ohlin theory (Du Plessis, Smit & McCarthy 1998:47-63).



The differences in gains from trade are explained in terms of differences in relative factor endowments, efficiency and scale of production, developed markets and availability of capital. Developing countries, as opposed to developed countries, are said to have a relative abundance of labour and scarcity of capital, and limited domestic markets, which preclude the attainment of an efficient scale of production in the absence of international trade (Corden 1971:117-143). Thus, according to neo-classical theory, the connection between trade and growth is indirect. Economic efficiency is the key determinant of the capacity to save, invest and hence to grow for developing countries, and not the external economic forces in the developed countries as held by structuralists.

## **2.6 ORTHODOX INWARD-LOOKING DEVELOPMENT THEORY**

The inward-looking approach of structuralists in which growth is stimulated and domestic production is substituted for imports of manufactures, is condoned by orthodox economists. However, it is condoned if the protection that is given to promote the import-substitutes is moderate and temporary, aimed at international competitiveness (Bruton 1970: 123-146). This is possibly condoned in recognition of the fact that it is a helpful path which is also taken by currently industrial countries, following England after the Industrial Revolution, the United States in protecting American manufactures from cheap British imports and Germany in the mid-nineteenth century. This path has also been traversed by Japan (Gills, Perkins, Roemer & Snodgrass 1992:440-443). The rationale for import-substitution is said to be simple, based on firstly identifying the domestic markets indicated by substantial imports over the years. After that is ensured local manufacturers can master the technology or foreign investors can transfer the required skills. Thereafter barriers are erected, either tariffs or quotas on imports. Behind this approach is the so-called "infant-industry" protection argument. It is maintained that once import substitution has taken place, a return to free trade can always improve welfare compared with both the initial position without protection and the position during the subsistence of protection. However, most governments are said to impose tariffs, which pass the cost on to domestic consumers. In such cases, even the temporary tariff or subsidy is not justifiable if the establishment of the new industry is at the expense of society, that is if the benefits of the establishing the new industry are less than the cost of protection (Johnson 1965: 3-34).

## 2.7 ORTHODOX THEORY OF EXPORT-LED GROWTH AND THE TERMS OF TRADE

From the above arguments of structuralists, it appears that primary exports by developing countries cannot promote or stimulate economic growth, because of the deterioration in the terms of trade, as a result of these countries' dependence on the economic conditions of developed countries. Neo-classical economists emphasise the market-oriented features of outward-looking policies. According to the neo-classical view, it is the market and prices which determine allocation, with the government only being permitted to interfere when the market collapses (Gills, Perkins, Roemer & Snodgrass 1992:109-117). The structuralist view on deteriorating terms of trade is criticised for using the net barter terms of trade,  $T_n$  that say nothing about income or welfare. The income terms of trade,  $T_i$ , should have been used in the Prebisch-Singer hypothesis, to give any credence to the structuralist argument. If for example a country increases its copper exports and causes world prices to fall, but less than proportionately to the increase in volume, that is where demand elasticity is greater than 1, then the copper revenue will increase and, in the absence of import price changes, the income terms of trade will rise. It is argued that income terms of trade of developing countries rose almost 6 percent a year from 1954 to 1988, contrary to the structuralist argument (Gills, Perkins, Roemer & Snodgrass 1992: 428).

On protective tariffs, orthodox economists prefer subsidies, whereby governments are restrained from interfering with the free-market mechanisms. The reason advanced is that subsidies are more precisely targeted than protective tariffs, and can be paid to offset high production costs. On the contrary, protective tariffs are said to compensate for the high cost only by raising the domestic price of output. As to exchange rate management, it is argued that an outward-looking regime structures price incentives that encourage investment in export industries. Building of investor confidence is emphasised. The real

exchange rate, RER, is given as:

$$RER = R_o P_w / P_d, \quad (4)$$

where  $R_o$  = index of nominal or official exchange rate, determined by the central bank;  $P_w$  = index of world prices, that is weighted average price in foreign currency of a country's imports, and  $P_d$  is an index of domestic prices, that is either the wholesale or the consumer price index.

Appreciation of the real exchange rate through rapid inflation leads to a decrease in the profitability of firms producing tradable goods, that is exports or import-competing goods. Thus, it is the appreciation of the real exchange rate which concerns investors. The central bank has policy instruments for managing the real exchange rate, that is used either to change the nominal or the effective rate or to contract money supply, in order to contain domestic price inflation if the budget deficit is under control. However, the central bank is not always successful in lowering the rate of inflation, which necessitates periodical devaluation of the official exchange rate (Gills, Perkins, Roemer & Snodgrass, 1992: 462-467), or to allow foreign capital to flow out and domestic interest rates to rise in the case of flexible exchange rates.

## 2.8 ORTHODOX THEORY ON INFLATION, INTEREST RATES AND ECONOMIC GROWTH

Real interest rates are crucial to our understanding of the role of monetary policy for economic growth, via the monetary transmission mechanism (see pages 3 and 4). In South Africa, for instance, the *bank rate* and later, the *repo rate*, are used by the Reserve Bank to provide 'accommodation' to commercial banks. This rate is determined by the wishes of the Reserve Bank and not by the money market, and it is announced to the market. This 'announcement effect' is meant to signal the intentions of the Reserve Bank regarding the increase/decrease of interest rates or these days, inflation targets relative to increases/decreases in money supply (Fourie 2001: 43-44). This empirical relationship between the repo rate (bank rate) and the money supply is tested in chapter nine. The nominal interest rate on loans is the stated rate agreed upon by lender and borrower at the

time the loan is made. It is an obligation to pay or the right to receive interest at a fixed rate regardless of the rate of inflation. Nominal interest rates are those quoted by banks on loans and deposits. On the contrary, real interest rates are nominal interest rates adjusted for inflation.

Theoretically, in evaluating the impact of financial policy on economic growth, a distinction is drawn between the implications of real interest rates for consumption-saving decisions and for decisions about the uses of savings. Consumption-saving decisions involve interest-elasticity of savings and decisions concerning the uses of savings involve demand-elasticity of liquid assets. With both elasticities zero, monetary policy can only play a minimal role in the growth process. Where both elasticities are high and positive, financial policy can substantially stimulate growth. It held that real interest rate has a significant impact on the demand for liquid assets (Giovanni 1983: 601-608). However, the role of real interest rates in influencing the demand for liquid assets is established even for developing countries. It should be noted that, according to Structuralists, in most developing countries an informal credit market co-exists with modern financial institutions for structural reasons. These markets arise in many forms. The savings of relatively wealthy individuals, like business people, generally finances informal credit. However, as modern credit institutions develop, they draw customers away from the informal market (Giovanni 1983; 601-608). These formalised actions then become more dependent on the real interest rates.

With regard to sources of inflation, considered "propagating mechanisms" by structuralists, orthodox economists refer to two components of money supply in developing countries, namely the domestic, (DC) and international, (IR) components, giving money supply, M, as:

$$M = DC + IR \quad (5)$$

Developing countries with open economies are said to operate under fixed exchange rates, which means that monetary expansion is no longer under the complete control of domestic monetary authorities. Thus, countries with fixed exchange rates are said to be sharing essentially the same money supply, because the money of each can be converted

into that of the others at a fixed parity rate. The central bank of a developing country can thus control domestic assets, DC, but has only limited control over net foreign assets, IR. Thus, attempts to keep inflation at home below the world inflation rate through restrictive monetary policy will not succeed. If world inflation is caused by monetary expansion abroad, it will initially exceed the domestic level of inflation. This will increase exports, lower imports and move the balance of payments of developing countries towards surplus, resulting in a rise in foreign reserves. Thus, the international reserve component of the money stock will rise, which will hamper the effort to prevent the importation of world inflation.

However, this is said not to confirm the structuralist argument of the foreign constraint on domestic development, for such a situation cannot continue for long. It is the excessive expansion of money and credit which should be seen as the cause of domestic inflation, since such excess will spill over into the balance of payments via increased imports, which in turn will reduce foreign reserves and lead to exchange rate problems. Thus, inflation has its origins from the workings of the world economy and/or domestic policies. Various anti-inflationary monetary policy instruments are available, like open-market operations; reserve requirements; credit ceilings; interest rate regulation; and moral suasion. It is said that open-market operations instruments are not available for most developing countries (Gill, Perkins, Roemer & Snodgrass 1992: 968).

## 2.9 CONCLUSION

Structuralists hold the view that growth in developing countries is directly dependent on growth in developed countries. It is argued, that developing countries are constrained by external demand for their exports and access to foreign savings determined purely by external supply. In response, the economic growth policy of "self-reliance" is advocated, whereby the increase in domestic savings, import substitution to reduce the scarcity of foreign exchange and the promotion of industrialisation are propagated. To structuralists, trade is an "engine of growth" for developing countries, despite the rejection of orthodox free-market mechanism in determining the ruling price. This is contrary to orthodox theory, which assumes that changes in prices bring about substitution in production both

abroad and in domestic markets (Lewis 1980: 555-564).

As stated above, the main substantive argument between structuralists and orthodox economists or neo-liberals is based upon whether money supply in a small and open economy is exogenous, according to the monetarist (orthodox) view, or whether money supply is endogenous, according to the structuralist view. Based on the monetarist view that money supply is exogenous, monetarists therefore conclude that monetary authorities can control it. Structuralists take the opposite view, namely, that money supply is endogenous and uncontrollable by monetary authorities, because when they intend to pursue an expansionary (contractionary) policy, they instead end up with the opposite effects, that is contractionary (expansionary) results. Thus, current period money supply,  $M3_t$ , is not related to the previous period money supply,  $M3_{t-1}$ . Accordingly, monetary policy is said to be ineffective in stimulating growth. Exogenous and endogenous money supply is covered in greater detail in chapter four.

Whereas orthodox theory links trade and growth indirectly, structuralists maintain that the growth of developing countries is directly dependent on their ability to export and import. Trade is considered an autonomous "engine of growth" in developing countries. Developing countries, accordingly to the structuralist view, are said to have dualistic economies, a subsistence sector and a small export sector, with the subsistence sector caught in a "vicious circle of poverty" - poor because it cannot invest and unable to invest because it is poor. On the basis of the development model (Todaro 1982:86-101), growth is said by structuralists to be possible to the extent that the small export-sector is able to expand exports.

It is argued by the structuralists that the subsistence or traditional sector specialises in primary goods for which demand is inelastic. The deterioration of the terms of trade is advanced as a justification for taking an inward-looking approach to advocating growth policies for developing countries. Underlying the structuralist view is the emphasis on the dualistic economic nature of developing countries, which negates the role of prices and the indirect link between trade and growth. While external factors affect the domestic economic performance of developing countries, they cannot be solely blamed for poor domestic economic performance. The blame is shared by imprudent domestic policies,

misallocation of scarce resources and corruption. Thus, the structuralist view has merit in factoring socio-political factors impinging upon economic growth, but a balance should be struck, by putting equal emphasis on the monetary discipline.

Accordingly, the next chapter presents monetary policy theory, which is required for the analysis of the problem studied, namely the structuralist approach versus orthodox or neo-liberal theories on the role of monetary policy in stimulating the economic growth of a small and open economy, in this case the Republic of South Africa.

## CHAPTER THREE

### MONETARY POLICY THEORY

#### 3.1 INTRODUCTION

This chapter sets the scene for the major hypothesis of the study, namely that the role of monetary policy is to induce economic growth in the Republic of South Africa (RSA), by creating a conducive climate. This entails, inter alia, the implementation of sound policies aligned with overall economic objectives, the creation of a developed financial infrastructure and the ability of the monetary authorities to act independently, unimpeded by political aspirations. That is in accordance with the structuralist approach (see paragraphs 2.7 and 2.8). The question to be answered is what the role of monetary policy is. "Since monetary policy is part of total public economic policy, its broad objectives must be the same as those of public policy generally. As in most other countries, these objectives in South Africa include high levels of employment, rapid economic growth, and domestic and external monetary stability" (Lombard, 1993: 27). In the RSA, monetary policy is applied by the Reserve Bank, and the sign of monetary stability is price stability.

The South African Reserve Bank plays an essential role in contributing to real economic growth, by helping preserve stability in the economy (De Kock 1985:13). Price stability maintenance by the Reserve Bank seeks to contain inflation, has created a headache for the South African monetary authorities. The view that low levels of inflation can stimulate economic growth was not supported by central bankers in the early 1970s, when it was rejected outright in South Africa, the influence of inflation on the gold mining industry (De Jongh 1971: 11). Since then the debate in South Africa on monetary policy can be described as lying between the orthodox quantity of money school, which preaches that "money matters" and the other extreme, the structuralist approach, that believes "money does not matter", since no connection is seen between the control of money supply, and



changes in national output and prices (Lombard 1970: 32; Fourie 2000:119-121; Mollentze 2000:S 32-36). Those who maintain, "money does not matter", argue that the demand for money is very variable, implying that the quantity of money demanded adjusts to the quantity supplied without having much effect on the real sector (Fleming 1972:367-379). Thus, it is argued that money supply has become less important as a key variable of monetary policy (Mollentze, 2000:S -19). The intention of this study is to test the outcome of this debate empirically.

The debate during the 1980's and 1990's changed when the Reserve Bank moved away from regarding the money supply as an important variable for effective monetary control, instead of seeing interest rate management as the sole variable for monetary control (Mollentze, 2000:S -10). Economists who reject the importance of money supply control (i.e. the orthodox position) in favour of interest rate management policies, the other side of the debate (as postulated by structuralists), base their argument on the ineffectiveness of monetary authorities in containing inflation in South Africa. While they recognise that direct controls to limit bank credit and liquid asset requirements have rendered monetary policy ineffective in South Africa, they still do not impute blame to these measures (see the empirical testing in chapter 9). Instead, to them "money does not matter" (Whittaker 1992:53-73). It is argued that the "credit multiplier", through which banks can create money, is non-existent and fallacious, since it is held that new deposits in banks are not automatically lent out. Furthermore, it is argued that the expansion in money supply and currency issue, which accompanies inflation, is a result, and not a cause of inflation. Inflation instead is considered to be a result of holding the cost of borrowing, that is the interest rate at too low a level, and not a consequence of and excess supply of money (Whittaker 1992: 69). It is the intention of this study, however, to establish whether "money matters" or not and whether the central bank can, by expanding its credit, supply the banking sector with additional reserves, through which this sector can create more money or near-money, thereby causing inflation. During inflationary periods, the reverse is true, when the central bank contracts its credit and limits the money-creation process (De Kock 1985:6). The South African experience will be fully covered in subsequent chapters, where it will be shown that inflation became rampant in South Africa, not because "money does not matter", but because the monetary authorities pursued mistaken policies. The alternative hypothesis will also test whether the change in the money supply affects

economic growth and development. The outcome of these results should establish the link between monetary policy, price stability, growth and development (see chapters 7 to 9).

## 3.2 MONEY SUPPLY THEORIES: AN ANALYTICAL SURVEY

The money supply theories presented in this section are meant to formulate a framework within which this study is conducted, and not to be tested. It should also be noted that various theories will share some similarities and because they are propounded by different authorities in the field, the equations they use will obviously not be the same, albeit similar.

### 3.2.1 Pre-war developments

It is unnecessary to attempt to trace the origins of money supply theory. However, it is safe to regard JS Mill's text, *Principles of political economy* (1920), as a fore-runner. Mill lived during an era when all writings on money supply theory were couched in terms of gold. The price of gold was professed to be a function of its cost, the wealth propensity of its holders and the international flow of specie. Taking the real price level, as the real opportunity cost of holding nominal money, Mill in his book (1920) argues that an increase in the real price will stimulate the demand for nominal money expressed in gold, imparting a positive short-run elasticity to the supply of money gold, in line with the non-linear money supply hypothesis equation, given as:

$$M = mB, \quad (6)$$

where  $M$  = money stock;  $m$  = money multiplier and  $B$  = monetary base or high-powered money.

In terms of this equation, increases in  $M$  will occur as a result of increases in  $m$  or  $B$ . The money multiplier, as a multiplicative component of the above non-linear money supply hypothesis equation, incorporates all possible relevant factors concerning the banking

sector, private sector, and various different types of money (demand deposits, time deposits and currency). It is the interaction of the private sector and the banking sector, in dividing their assets, that leads to variations in the money multiplier. Assuming that the private sector holds currency in some fixed ratio,  $k$ , to demand deposits, and the banking sector's demand for reserves as a ratio of demand deposits,  $r$ , is constant, we get:

$$m = 1 + k/r + k. \quad (7)$$

Substituting for  $m$  in the equation  $M = mB$ , we get:

$$M = (1 + k/r + k) B. \quad (8)$$

Setting the private sector's currency demand to zero, the multiplier becomes the familiar reciprocal of required reserves:

$$m = 1/r. \quad (9)$$

However, if the private sector's currency demand ratio,  $k$ , is non-zero, the lower multiplier,  $1 + k/r + k$ , implies a lesser response of money supply to an exogenous injection of reserves. This is so because, part of the new supply of reserves leaks out of the banking sector, which limits the money creating power of banks. With reduced credit availability, investment is reduced, thus limiting the rate of growth.

Grick (1951) developed the theory further, by introducing commercial banks' reserves and changes in bank deposits, as banks seek to maximise profits. He also considers the question of monetary policy effectiveness, by examining the extent to which central banks can control the quantity of deposits via variations of statutory required reserves,  $r$ , in the multiplier,  $m$ , where:

$$m = 1 + k/r + b. \quad (10)$$

Grick further examines the constancy of the money multiplier, by focusing on the stability of  $r$ . It should be noted in passing, that the Classical-Keynesian duel pivots around this

constancy issue of the multiplier, with monetarists regarding the multiplier fairly stable, while Keynesians consider it highly volatile (Grick 1951:4-53).

Holding the stability assumption, monetarists (orthodox approach) concentrate their efforts on the monetary base for purposes of controlling the supply of money. In contrast, fiscalists (structuralists) do not pay much attention to the monetary base, instead propagating policies directed at controlling the interest rate, via free reserves. This latter position was the one pursued in South Africa during the 1980s and recommended by the De Kock Commission of Inquiry into the Monetary System and Monetary Policy in South Africa (De Kock Commission 1985: 214). In terms of this policy, the monetary base is subordinated to interest rate stabilisation programmes and balance of payments considerations.

Another point of concern is the perceptual difference that exists between bankers and economists. Bankers contend that they can only lend the cash they have received, whereas economists believe that banks, via the multiplier effect, can create deposits by lending. The bankers' argument is based on the consideration of a sole bank seeking to maximise its profits, while constrained by the cash reserves that have to be maintained against deposits. Economists, on the other hand, take a broader view, considering the entire banking sector, rather than a single bank. According to Grick's analysis,  $r$  is dependent upon the liquidity preferences and opportunity costs, because the adjustment process that takes place when reserves or deposits enter the banking sector follows the adjustment of interest-bearing assets in banks. Because banks will only hold desired reserves, lending out the excess, which in turn increases deposits, the stability of the money multiplier,  $m$ , is contingent on that of  $r$  (Grick 1951:4-54).

Grick's theory is further developed by Meade (1951:54-62), who examined the British monetary system for the period between 1925 and 1930. It was during this period, that currency convertibility for gold was terminated in the Western World. Meade's approach incorporated a more sophisticated money multiplier analysis, which facilitated the determination of the effects of change in the ratio parameters on the money stock. His approach concerned the behavioural relationships of the Central Bank in dealing with the banking and private sectors. Meade examined the Bank of England, which is assumed to

be the sole issuer of bank notes, with no circulation of gold or coins, under three regimes:

- (1) where the Bank of England is assumed to back issues of notes and deposit liabilities of the banking sector with gold reserves. Using symbol  $L$  as ratio of note-issue to gold,  $L$  is considered not to be equal to  $M$ , symbolising the ratio of deposit-liabilities to gold reserves;
- (2). then,  $L = M$ ; and
- (3). when a fiduciary note-issue is introduced as an asset of the Central Bank.

If  $r$  is cash reserves to deposit ratio, and  $q$  currency to money ratio, the money multiplier,  $m$ , becomes:

$$m = m(r, q). \quad (11)$$

Meade (1951:45-62) also introduces a ratio for vault cash to demand deposits as  $v$ , and distinguishes between time and demand deposits. In addition, he incorporates private sector wealth behaviour into the analysis. That gives:

$$r = r_t + r_d, \quad (12)$$

where  $r_d$  is reserve requirements on demand deposits and  $r_t$  is reserve requirements on time deposits, and:

$$r = r_t + d(r_d - r_t), \quad (13)$$

where  $d$  is the ratio of demand to total deposits, that is  $D/(D + T)$ , with  $D$  being demand deposits and  $T$  time deposits. Thus, the money multiplier becomes:

$$m = m(r, q, v, d), \quad (14)$$

In defining the money aggregate,  $M$ , as the sum of gold stock and fiduciary note-issue, Meade's contribution constitutes a foundation of the modern monetary base. By including time deposits in his money supply analysis, his approach to money supply analysis closely

resembles contemporary monetarists' approach to money supply analysis (Brunner & Meltzer 1964:56-63).

### **3.2.2 Post-war developments**

Economic theory in the post-war was marked by two basic modifications. Firstly, additional explanatory variables were added to account for the financial behaviour of economic participants and secondly, behaviour postulates were further added to render the multiplier co-efficient dependant upon endogenous factors. Hicks (1951) suggested what became to be known as the "marginal revolution", while Tobin (1961) and Friedman (1968) propounded a theory of optimum portfolio selection. As a response to the "marginal revolution" of Hicks, the Keynesian liquidity preference theory was developed into a general theory of determination of different types of financial assets (Tobin 1961). Accordingly, the sets of relative prices of assets in the financial markets are said to be determined by preferences of economic units and relative qualities of assets with differing risk characteristics. This was later translated by Tobin and others, who developed the theory of optimum portfolio diversification in a multi-asset world (Tobin 1961:65-86).

For the purposes of exposition of the literature on monetary policy's role in affecting the money supply, further theoretical developments, namely the credit view; the monetarist approach; the "new view"; or the balance of payments approach to money supply are discussed next.

### **3.2.3 Credit view**

The credit view is succinctly articulated by the work of Brunner and Meltzer (1964) on free reserves and the role of the Federal Reserve Bank in the United States of America. The Federal Reserve Bank did not have any coherent theory or deliberate approach towards the money supply process. The position of the Federal Reserve was reflected by the pronouncements and writing of staff members of the system. The writings of the time were focused on the availability of credit or "credit shortage", which was thought to determine aggregate demand. Emphasis was placed on interest rates and bank credit, said

to be determined by the supply of credit by banks, where supply is a function of interest rates and reserves. It should be observed that still in the 1980s South Africa, as indicated by above-mentioned Report of the De Kock Commission (1985, RP70/1984), had long been surpassed by the United States. This will be demonstrated in the next chapter.

Free or discretionary reserves are the difference between excess reserves and borrowed reserves, or the residual from total reserves, when the sum of required and borrowed reserves is deducted. In paying attention to free reserves, it is maintained that changes in the balance sheet items of the monetary authorities are responsible for bank borrowing, that is, bank borrowing is not determined by the desire of banks to borrow. The rationale for this conviction is that bank borrowing is dictated by the reserve position and not so much by a bank's profit motive (Riefler 1936:52-70).

A brief notion of the Riefler-Burgers hypothesis is that the volume of bank borrowing is not determined by interest rates, but is a consequence of changes in balance sheet items. In line with this notion, is the belief that open market purchases have a decreasing impact on bank borrowing. According to this contention, open market purchases pump money into the economy, with the resultant impact of rising prices. Because of the inverse relationship between prices of interest bearing assets and the interest they yield, the increase in price means a decrease in the yield of these assets. The impact of this drop in value induces holders of such assets to get rid of them or exchange them for more attractive assets. Consequently, banks get stuck with increased interest-bearing assets and deposit liabilities (Riefler 1936:52-70).

For a country like South Africa, where the interest rate, that is the prime rate, has been linked to the discount rate, the Riefler-Burgers approach in its neglect of the role of excess reserves, can frustrate the policy measures pursued, as was the case during the depression of the 1930's. As a measure to remedy this deficiency, the free reserves would facilitate bank credit and prompt banks to search for alternative investment opportunities, rather than remain with idle cash balances. In turn, the money supply would be increased, which leads to deposit creation being permitted by these free reserves. As a result, the supply of credit will also increase, with the ultimate decline in interest rates and stimulation of investment, thus promoting economic growth. Accordingly, given the fractional money

supply reserve system, bank borrowing has a contractionary effect, since it reduces the required reserves at the disposal of banks to “create money”. On the other hand, the repayment of debt is expansionary because that increases the bank reserves which permits additional loans, thereby increasing the money stock. According to the Report of the Commission on Money and Credit in the United States (1963:7), “The Federal Reserve restrains (or encourages) bank credit expansion by reducing (or increasing) the banks’ primary liquidity”. However, the free reserve doctrine did not prove satisfactory.

The credit view is taken to improve the free or discretionary reserve doctrine (Brunner and Meltzer 1964:95-118). The credit view broadens the free reserves doctrine by taking into account the rate of increase in bank credit, the treasury bill rate, and the distribution of free reserves among member banks of the Federal Reserve. Free reserves are said to play an important role in determining the portfolio of earning assets position of banks. An increase in free reserves is expected to induce an increase in bank portfolios or the retirement of debt. In contrast, a decrease in free reserves is said to have the opposite effect. The Brunner-Meltzer hypothesis will be discussed in detail under a separate section later.

Because of the importance of free or discretionary reserves, monetary policy aims to control the level of these reserves. This can be accomplished by changing the level of reserves required by statute against various types of liabilities of banks (demand and time deposits). Such changes in the level will in turn affect the reserve ratio, a component of the money multiplier. Thus, the change is ultimately transmitted to the multiplier. Assuming there is no need to borrow from the Federal Reserve Bank, the so-called rush to the “window”, a change in free reserves will necessitate the re-adjustment of the bank's portfolio position. To permit the empirical testing of such a sequential process, the expanded version of the free reserves doctrine had to be modified, hence the Brunner-Meltzer response (Brunner & Meltzer 1968:1-37).

In his contribution Meigs (1962: 66); negates the free reserves doctrine's position that bank borrowing is independent of interest rates. His study reveals that banks adjust their holdings of free reserves in response to market conditions. The disparity between the actual and the desired levels of free reserves generates a portfolio readjustment process,



which in turn affects the money supply and interest rates. The difference between the desired and actual levels of free reserves is eliminated or narrowed by the impact of changes in interest rates on bank behaviour. In contrast, Brunner and Meltzer's study revealed no significant relationship between bank credit and money supply, and showed that the levels of free reserves do not explain changes in these aggregates. There are important theoretical lessons for South Africa, but testing these theories falls outside the scope of this study. Another theoretical progression is the monetarist approach, which will be discussed next discussion.

### 3.3 THE MONETARIST APPROACH

Three approaches will be discussed under this heading, namely the Friedman-Swartz approach, the Cagan Approach and the Brunner-Meltzer hypothesis.

#### 3.3.1 The Friedman-Swartz approach

Friedman and Swartz (1963:32-64) in their study of the money supply process in the United States, define money stock,  $M_s$ , in broad terms, as a multiplicative product of the money multiplier,  $m$ , and the monetary base or high-powered money,  $H$ . This relationship is expressed by the following equation:

$$M_s = mH, \quad (15)$$

where:

$$M = \frac{D/R(1+D/C)H}{D/R+D/C} \quad (16)$$

where  $D/R$  is deposit to reserve ratio, and  $D/C$  is deposit to currency ratio. In this form, the ratios move directly with the change in money stock,  $M_s$ , otherwise when they are given in the traditional form, i.e. their reciprocals of the form  $R/D$  and  $C/D$ , they cease to move directly with the change in money stock.

The monetary base or high-powered money is the liability of the monetary authorities,

$$H = R + C, \quad (17)$$

where R is bank deposits with the Federal Reserve System and C is currency held by the public.

The deposit to reserve ratio,  $D/R$ , is a function of reserve requirements, interest rates and currency flows. On the other hand, the deposit to currency ratio depends on interest rates, income and public desire to hold currency. These ratios reveal the inter-relationship between the behaviour of the monetary authorities on the one hand, and the public and banking sectors on the other. The public and banking sector react to measures taken by monetary authorities, by re-adjusting their position in terms of policies adopted (Friedman & Swartz 1963:32-64).

In the responses of banks and the public sector, the motive is to attain desired positions. The reactions are reflected by the money multiplier,  $m$ , and the monetary base,  $H$ , components of the money supply equation,  $M_s = mH$ . According to the Friedman-Swartz study, high-powered money or monetary base was the dominant factor affecting the money stock from 1875 to 1960 in the United States (Friedman & Swartz 1963).

### 3.3.2 Cagan's Approach

Phillip Cagan's study (1965:26-40) follows similar approach to that of Friedman-Swartz, with a slight difference in the ratios he uses. In explaining money stock,  $M$ , as a product of money multiplier,  $m$ , and the monetary base,  $H$ , he uses the following equation to portray the relationship:

$$M = mH, \quad (18)$$

where:

$$M = \frac{1}{C/M + R/D + (C/M \times R/D)} \quad (19)$$

Substituting for  $m$ , in  $M = mH$ , we get:

$$M = \frac{1}{C/M + R/D - (C/M \times R/D)} H \quad (20)$$

where,  $C/M$  is the currency to money ratio and  $R/D$  is the reserves to deposits ratio.

Although Cagan's study involved a detailed analysis of the elements determining the money supply, he nevertheless reached a similar conclusion as that of Friedman and Swartz; namely that high-powered money or monetary base was the principal factor in determining the stock of money. An additional conclusion reached by the Cagan study was that the  $C/M$  ratio was pro-cyclical and that this ratio was in turn influenced by economic activities. In the short-run, the  $R/D$  ratio was found to reflect movement in economic conditions (Cagan 1965:26-40).

The Friedman-Swartz and Cagan analyses came under fire, and were criticised for being of the after-the-effect or ex post variety, not providing explicit hypothesis. Fierce criticism came from Brunner (1965). To offer an alternative, the Brunner and Meltzer hypothesis was postulated, which now follows.

### 3.3.3 The Brunner-Meltzer Hypothesis

As an improvement on the Friedman-Swartz approach, Brunner and Meltzer (1968:56-63) propounded their hypothesis. The present study has drawn much from this hypothesis. In terms of this hypothesis, the money supply process is studied in the light of the interdependence of the behaviours of the public sector, banking sector and the monetary authorities. This inter-connection is explained by the money stock,  $M_s$ , money multiplier,  $m$  and the monetary base,  $B_a$ :

$$M_s = mB_a. \quad (21)$$

The monetary base is obtained by consolidating the balance sheet items of the Federal Reserve Bank and the Treasury. Two angles on the monetary base are described as the uses side and the sources side. The use side of the monetary base is found by adding bank reserves to the Federal Reserve and the total amount of currency in circulation. In

equation form, this is represented as:

$$B_a = R + C_p, \quad (22)$$

where R is total reserves with the Federal Reserve and C<sub>p</sub> is currency held by the public.

The sources side, on the other hand, comprises the Federal Reserve's credit, Treasury cash outstanding (TC), gold stock (U), less Treasury deposits at the Federal Reserve (td), float (FI), foreign deposits at the Federal Reserve (fd), Treasury cash (tc) and other deposits (od). The relationship is captured by the following equation:

$$B_a = S + A + A_d + FI + U + TC - (tc + td + fd + od), \quad (23)$$

where S is government securities (including those bought outright by the Federal Reserve banks and those held under repurchase agreement by the Federal Reserve banks); A is bankers' acceptances; and A<sub>d</sub> represents discounts and advances. The items in parenthesis constitute the negative factors of the monetary base (Weintraub 1979:136-160).

The monetary base is regarded a strong policy instrument, by reason of the fact that most of its components are under the direct control of monetary authorities. It should be mentioned in passing, that monetary authorities in South Africa have historically rejected this approach (De Kock Commission 1985:13). Instead, in South Africa money supply has been considered an intermediate target of monetary policy, with the emphasis on interest rate stabilisation programmes. By definition, the injection of monetary base into the economy increases money stock. However, it will be seen that such increases in the growth rate of money are counter-acted by variations of the money multiplier. All the same, when money is injected into the economy, the public and private sector behaves accordingly, thus allocating such supplies among themselves. In South Africa, the monetary base (MB), also represented as K, is defined as follows:

$$MB = R + B - S + W, \quad (24)$$

where: R = gold and foreign exchange reserves of the SARB

B = SARB's holding of bonds and securities

$S$  = government deposits with SARB

$W$  = residual of other assets and liabilities

Those determinants of money supply and the effect of changes in the repo rate, which replaced the bank rate, will be tested empirically in chapter nine.

The impact or contributions of the money multiplier to changes in the money stock are also considered; the Brunner-Meltzer money multiplier is given as:

$$M = \frac{1+k}{(r+e-b)(1+d+t)+k} \quad (25)$$

where  $k$  is public currency holdings to demand deposits ratio;  $r$  is weighted average or reserve requirements to deposit liabilities;  $e$  is excess reserve to total deposits ratio;  $b$  is borrowing relative to total deposits ratio;  $d$  is Treasury deposit demand and  $t$  is time deposits to demand deposits ratio.

Currency is held in favour of demand deposits, for three main reasons:

- (1) to minimise transactions costs
- (2) to pay for transactions
- (3) to satisfy preferences for liquidity and safety

These underlie the size of  $k$ , which in turn affects the money multiplier,  $m$ . Differentiating  $m$  with respect to  $k$ , gives us:

$$\frac{\delta m}{\delta k} = \frac{[(r+e-b)(1+d+t)+k] - (1+k)}{[(r+e-b)(1+d+t)+k]^2}, \quad (26)$$

where:  $\delta m / \delta k > 0$ , provided  $(1+k) > [(r+e-b)(1+d+t)+k]$

or  $(r+e-b) < 1$ .

The changes in the t-ratio are transferred to the reserve ratio,  $r$  as shown below:

$$r = \frac{rdD^* + rtT}{1 + t}, \quad (27)$$

where  $rd$  is required reserves to total demand deposits ratios;  $rt$  is required reserves to total time deposits ratio, and  $D^*$  is the ratio of total demand deposits to the public's demand deposit claims,  $D_p$ . An increase in  $t$  will reduce  $r$ , provided  $rt < rdD^*$ , as can be seen from:

$$\frac{\delta r}{\delta t} = \frac{(1 + t) rT - (rdD^* + rtT)}{(1 + t)^2}, \quad (28)$$

However, the drop in  $r$  is less than the rise in  $t$ , in terms of percentages, because  $t$  appears in both the numerator and the denominator. Consequently, a rise in  $t$  is certain to decrease the money multiplier  $m$ , even if such decline is mitigated by the fall in  $r$ , as  $t$  rises. In contrast, a decline in  $t$  leads to an increase in  $m$ , which increase is attenuated by the rise in  $r$ .

While currency is favoured over demand deposits, for the reasons stated above, time deposits were held to earn interest income. Demand deposits were, however, still held even if they did not earn any interest. Among other reasons, such deposits were held to foster bank relationships, which in turn determined lines of credit opened to clients, compensating balances to hold, etcetera. The size of time deposits increases as wealth increases; that is the t-ratio will rise with wealth. Also, in absolute terms, increases in the rate of interest on time deposits increased the t-ratio. These changes in the t-ratio affected the money stock,  $M$ , via the money multiplier,  $m$ . An increase in the t-ratio led to a decrease in money stock,  $M$ , holding the monetary base constant. Conversely, a decrease in t-ratio caused the opposite effect. This inverse relationship is reflected by the differentiating  $m$  with respect to  $t$ :

$$\frac{\delta m}{\delta t} = \frac{[(r + e - b)(1 + d + t) + k]}{[(r + e - b)(1 + d + t) + k]^2} \quad (29)$$

The t-ratio also induces changes in the e-ratio, of a negative kind. This is the case because demand deposits are withdrawn more frequently from banks than time deposits. In response to this phenomenon, experience has dictated that reserves held against demand deposits,  $rd$ , should be more than those held against time-deposits,  $rt$ . In formula form, the e-ratio is expressed as follows:

$$e = \frac{rdD^* + rtT}{1 + t} \quad (30)$$

The e-ratio will tend to rise with a fall in  $t$ , provided  $rt$  is less than  $rd$ . Again, the fall in  $e$ , associated with an increase in  $t$ , is as large as the rise in  $t$ , because  $t$  appears both in the numerator and the denominator. Factors influencing the b-ratio, on the other hand, are interest rates on earning assets and the discount rate.

The important role played by the ratio-parameters of the money multiplier in the non-linear hypothesis is further described by Weintraub (1970:136-160). To summarise, the ratio relationship of the multiplier in the Brunner-Meltzer hypothesis is as follows:

$$\delta m / \delta k, \delta m / \delta r, \delta m / \delta e, \delta m / \delta d, \delta m / \delta t < 0, \text{ and } \delta m / \delta b > 0.$$

The Brunner-Meltzer approach, which is monetarist in outlook, was challenged and attacked for its alleged over-emphasis on the role of money. This opposition was labelled the "new view", to which we now turn.

### 3.4 THE "NEW VIEW" HYPOTHESIS

Tobin challenged the Brunner-Meltzer approach because of what he called the textbook bank multiplier approach (1958:65-86). The "New View" focused on the difficulty of defining money, given other forms of "near money", the similarities between banks and other financial intermediaries, and the inter-relationship of banks, the public sector and the monetary authorities in the process of money supply.

Tobin in showing the similarity between banking and other financial intermediaries, which

only differed in terms of legal restrictions, contrasted two systems: one with reserve requirements and ceilings on rates and the other free from such constraints. The conditions of the type of system, namely credit and deposit expansion, would be restricted by the supply of assets which yield enough to reward banks for costs incurred in attracting and holding corresponding deposits. With restrictions, expansion falls short of competitive equilibrium, because the marginal yield of bank loans and investments is greater than the marginal cost of deposits to the banking system. This leads to profits, which permit the acquisition of additional assets: "The expansion process lowers interest rates ... but ordinarily not enough to wipe out the bank's margin between the value and cost of additional deposits" (Tobin, 1963: 416).

The "New View" hypothesis assigns a dominant role to the banking and public sector and not to the monetary authorities. The Humean perspective on flow mechanism contributed to this approach, in that it repudiated the Mercantilism obsession for accumulation of precious metals within a country, as a balance of payments surplus objective. Translating the Humean perspective into current terms, this is analytically demonstrated by the amount of money in a country that is adjusted automatically to the demand for it, via deficits or surpluses in the balance of payments, induced by the effects on relative national money price levels of excess demand for or excess supplies of money .

Hume's price-specie-flow mechanism can be discussed in terms of the following three points:

- (1) It assumes that all money is "outside" money (precious metals), that is all money is backed by international reserves, regarding domestic money and international reserves as being the same thing.
- (2) The mechanism of adjustment focuses on international transactions in gold, as distinguished from securities.
- (3) Domestic prices can vary from purchasing-power parity under the influence of imbalances between money demand and money supply, but such variations lead to changes in trade flows which alter the balance-of-payments and thus the domestic stock of money in the longer run.



This approach places emphasis on the influence of excess demand for or supply of money on the balance between income and expenditure, and thus on the overall balance-of-payments. Also, this Humean analysis subscribed to the automatic mechanism of international adjustment emanating from money flows and the impact of such on national money price levels. Up until the 1930s, this formed the general basis of the theory, with additions to account for the then emerging credit money made available by commercial banks and the role of central banking relative to international reserve holdings, concluding the influence of interest differentials on international short-term capital movements.

However, with the collapse of the international regime of fixed exchange rates, the emergence of mass unemployment and the eruption of the Keynesian revolution, automatic international adjustment gave way to a perception of the process as a policy problem for governments. The classical wage and price mobility with full employment was replaced by the Keynesian rigidities with mass unemployment. With wage rigidity, devaluation would change the real price of domestic goods relative to foreign goods in both the foreign and the domestic markets. As a result, production and consumption substitution occur. On the mass unemployment assumption, the impact of these substitutions on demand for domestic output could be assumed to be met by changes in output and employment, with any impact on the balance-of-payments being secondary. As such, the Keynesians, concerned with the short-run, refuted any connection between the balance-of-payments and money supply, and between money supply and aggregate demand. Instead, the emphasis was placed on the "elasticity conditions" required for the impact-effect of a devaluation as an improvement of the balance-of-payments. These conditions were that the sum of the elasticities of the home and foreign demand for imports should exceed unity, that is the Marshall-Lerner condition (Yeager 1976). This condition is based on the assumption of perfectly elastic supplies and initial balance of trade. However, in the real world, we seldom start from a condition of equilibrium in the balance of trade. The Marshall-Lerner condition is also seen as an exchange stability condition surrounded by two unstable equilibrium positions. Using the Walrasian adjustment process:

$$\delta p / \delta t = p = g \text{ (excess demand)}$$

where  $p$  is price and  $t$  is time. Using Say's Law we get:

$$p = g(D_2 + D_2^* - X_2 - X_2^*), \quad (31)$$

where  $D_2$  is domestic demand for commodity two and  $X_2$  is domestic supply of commodity two, while the asterisks show foreign demand and supply. In a two-commodity model, in accordance with international trade theory, Say's and Walrasian Laws imply excess demand for commodity one, as well (Chick: 1983). We then get:

$$p = g(M_2 - E_2^*), \quad (32)$$

with  $g(0) = 0$  and  $g' > 0$ .

Stability requires that:

$$\delta(M_2 - E_2^*)/\delta p < 0, \quad (33)$$

as the price of commodity two increases, excess demand should become smaller.

From the balance-of-payments constraint of the rest of the world, the value of exports equals imports:

$$pE_2^* = M_1^*, \quad (34)$$

which leads to:

$$E_2^* = M_1^*/p. \quad (35)$$

And because what is exported must be imported by another

$$E_2^* = M_2. \quad (36)$$

Thus:

$$\begin{aligned}
 \delta(M_2 - M_1^*) &= \delta M_2 / \delta p - 1 \delta M / P \delta p + M_1^* / \delta p^2 \\
 &= M_1^* / p^2 [p / M_2 \delta M_2 / \delta p - p (\delta M_1 / M_1^* \delta p + 1)] < 0 \\
 &= -\varepsilon + \varepsilon^* + 1 < 0,
 \end{aligned} \tag{37}$$

where:

$$\varepsilon = -P / M_2 \delta M_2 / \delta p \tag{38}$$

is the elasticity of import demand of the home country, and

$$\varepsilon^* = P / M_1^* \delta M_1^* / \delta p \tag{39}$$

is the elasticity of import demand of the rest of the world. By re-arranging, we therefore get:

$$\varepsilon + \varepsilon^* > 1, \tag{40}$$

which is the Marshall-Lerner condition.

Turning to the traditional balance of payments theory, the balance of payments has to be in equilibrium, after all international transactions of a country have been taken into consideration. An imbalance or disequilibrium is explained, as discussed below, in various sections of Mundell's book (1968), in terms of the "accommodating" or "induced" international transactions, as opposed to "autonomous" international transactions. "Autonomous" international transactions are those transactions that are undertaken freely and out of voluntary choice by individuals, regardless of the economic conditions operating at the time they are transacted. On the contrary, "accommodating" or "induced" international transactions are those undertaken by foreign exchange authorities to reconcile and modify the free choice of individual residents. The foreign exchange authority operates in the foreign exchange market through the use of official reserves, with the objective of influencing the exchange rate. The ultimate aim is to maintain the strength of the country's currency relative to those of other countries. Mundell argues that this is

so, because an imbalance is associated with the disparity between foreign receipts and foreign payments of residents of the country. Defining the balance of payments is defined as:

$$B = R - P, \quad (41)$$

where  $R$  represents aggregate receipts and  $P$  aggregate payments. Two possibilities exist, when  $R > P$  or  $R < P$ . In the former case, where receipts exceed payments, we get a surplus, while in the latter there is a deficit; that is receipts do not cover payments. The formulation of the balance of payments deficit in terms of excess aggregate payments by residents over aggregate receipts was the starting point of the "absorption approach" sometimes known as the "balance of payments approach" (Mundell 1963:517).

According to Mundell's argument, the balance of payments deficits necessarily imply two possible situations. In the first case, the cash balances of residents are running down, since domestic money is transferred to the foreign exchange authority, so as to receive foreign currencies to make the foreign payments. This process will only continue as long as cash balances of the community exceed their desired minimum holdings. As soon as this minimum is reached, the process ceases and in turn corrects the deficit, for less foreign payments are now being made. Thus, when a deficit is financed by dis-hoarding, as time goes on, it becomes self-correcting. This self-cure comes via rising interest rates, tighter credit conditions, reduction of aggregate expenditure and possibly an increase in aggregate receipts. In spite of this, monetary authorities might not have the leverage to allow the self-correcting process to run its course, for international reserves at their disposal relative to domestic money supply might be low. In such a case, the monetary authorities would take action to reinforce and accelerate the effects of diminishing money balances.

It is on this basis that the existence of international reserves, as part of domestic money supply would facilitate the self-correcting process of financing a deficit through dis-hoarding. Meade (1951:54-62) is one of the chief proponents of this approach. Larger reserves are said to allow the monetary authorities more time to make adjusting corrections to the balance-of-payments problems. However, this reserves-argument did not go unchallenged. A counter-argument was presented in book form by a prominent

adversary, Friedman (1953). Friedman argued that there was no presumption that a longer time period would be a magic wand in the hands of monetary authorities that would guarantee balance-of-payments corrective policies.

Secondly, Friedman argues that the cash balances of residents are replenished by open market purchases, in a way similar to interest rate pegging or re-lending to residents. Thus, domestic money supply would be maintained by the creation of credit. In this case, excess aggregates and foreign payments over aggregate receipts could continue indefinitely, until there was a change in policy. In both cases, where international reserves relative to money supply are low to allow self-correction of the deficit, and where monetary authorities finance the deficit credit creation, the problem is fundamentally that of the ability of monetary authorities to create money that has no internationally acceptable backing.

It is crucial to distinguish between two types of decisions, namely "stock" and "flow" decisions. "Stock" decisions involve a point in time changes, whereas "flow" decisions are period changes. As such, a "stock" deficit is inherently temporary in the sense that it does not cause a deterioration in the balance of payments. When this type of deficit sets in, to discourage substitution of stocks of goods for domestic currency, the authorities may either raise the cost of holding stock by credit restriction or reduce its attractiveness by currency devaluation. The impact of both policies is uncertain, to the extent that controls are suggested as an alternative. In South Africa, the Blocked Rand was introduced after the Sharpeville episode of 1960, to avoid a flight of capital out of the country; the Securities Rand served the same purpose in 1976, as did the Financial Rand in 1979 (Kahn 1992: 74-98).

In contrast, "flow" deficit, on the contrary, according to Mundell's argument above, is explained in terms of international capital movements. Considering the current account, and defining the balance of payments as the difference between the value of the country's output (i.e. national income),  $Y$ , and its total expenditure,  $E$ , we can write:

$$B = Y - E. \quad (42)$$

It follows that correction of the current account deficit can be attained by increasing output,  $Y$ , or decreasing expenditure,  $E$ . And since output is determined by its demand, changes in  $Y$  can be effected by expenditures on domestic output. In contrast, expenditure reduction, minimisation of  $E$ , can be attained by diverse means which include monetary restriction, budgetary policy or direct controls. Such policy will be attractive if the country is concurrently plagued by inflation, for such policy tends to reduce income and employment. However, a policy of that nature would be unpopular in cases of high unemployment. Therefore, policy measures will be dictated by the inflationary-deflationary situation of the economy. Furthermore, since they involve a reduction and/or an incentive for domestic producers in comparison with their foreign counterparts, expenditure-reducing policies may lead to expenditure-switching effects. There are two types of expenditure-switching policies, namely devaluation and trade controls. The main objective of devaluation is to switch domestic and foreign expenditure towards domestic output, whereas that of controls on imports is to switch domestic expenditure away from imports towards home goods. It should be stated that controls are at times used to stimulate export trade, rather than to discourage imports, in which case the objective is to switch foreign expenditure towards domestic output. Both policies may have direct impact-effects on residents' expenditure. Devaluation may cause an increase in expenditures from the initial income level via the "terms-of-trade effect" of an adverse terms-of-trade movement in reducing real income and therefore the proportion of income saved (Johnson 1976:147-167).

Johnson argues that on the contrary, the trade-controls effect is via the reduction of income resulting from the reduced choice of goods. These policies pre-suppose that expenditure switching occurs in the desired direction and that there is capacity for additional output to meet the additional demand. It should be noted that export promotion will divert foreign expenditure money from the country's output if the foreign demand is inelastic, while import restriction will divert domestic expenditure abroad if demand for imports is inelastic, in which case, the foreigner benefits from the increased value of imports which was added to dissuade residents from importing (Johnson 1976).

Furthermore, Johnson also considers the situation in which the above conditions are not

satisfied. He uses the equation (42), which is the same as explained above, from which he argues that it follows that if direct effects on expenditure from initial income levels are neglected, devaluation can worsen the balance of payments only if it reduces total world demand from the country's output. Johnson says such a country's output would in a sense imply a "Giffen case" in world consumption, and that the market for at least one of the commodities it produces is in unstable equilibrium. A second problem stated by Johnson is related to the source of additional domestic output relative to additional demand following expenditure-switching policies. In this regard, two cases are distinguished, that in which the economy is underemployed and that in which it is at the full-employment level. In the former case, required additional output can be provided by tapping the unused resources, which increases employment and income. The domestic price level will be inclined to increase, as a result of the increase in output, because of increased marginal real costs of production. These additional costs have a depressing effect on foreign prices, which results in mitigation of the price level. In the case of full-employment, according to Johnson, required additional output cannot be obtained through increased production, but through reduction of real expenditure,  $E$ , in the above equation. If expenditure-switching policy is not accompanied by an expenditure-reducing policy, that will create an inflationary excess of aggregate demand over supply, leading to price increases that tend to counter-act the policy's expenditure-switching effects. What is important is that these effects depend on factors that are monetary in nature.

Johnson (1976:147-167) distinguishes between "expenditure-reducing" and "expenditure-switching" policies, a combination of which is considered by Meade (1951:103) to be the ideal policy. This constitutes another opposed version to the "elasticity approach". According to Meade, a country needs two policy instruments if it is to simultaneously achieve internal and external balance, namely full-employment and balance-of-payments equilibrium. These instruments are said to be demand managed by fiscal and/or monetary policy and the exchange rate. Management by means of rigid wages, controls and exchange rate changes, dictated by national and international political considerations, fiscal expansion and money stock increase has the same effect on the current account and opposite effects on the capital account. On the current account, this kind of management increases imports and possibly decreases exports, whereas on the capital account, fiscal

expansion increases interest rates and attracts capital inflow and monetary expansion leads to a drop in interest rates and an outflow of capital. Thus, the two policies can be "mixed" to attain capital account surplus, which amounts to current account deficit or surplus at the level of full-employment of the economy. For the sake of completeness, I should mention that the fiscal-monetary policy mix approach is propagated and advanced by Mundell (1960:227-257; 1961:153-170; 1962: 70-77; 1963:509-517; 1971:cp.9; 1991:21-51), whose model sought to bridge barter and monetary models on the one hand and classical and Keynesian models in international economics, on the other.

### 3.5 NEO-CLASSICAL VIEW

Orthodox economists or neo-liberals economists are mainly neo-classical and they take a different view from structuralists, who are mainly Keynesians, on whether or not market economies have the capacity to self-adjust or self-correct. In this section the focus is on the neo-classical view, covering the Keynesian perspective in the next section. According to the neo-classical school of thought, markets left to themselves function efficiently and will adjust to full employment levels, should they be disturbed. Accordingly, government intervention is seen to be unnecessary, since deviations from equilibrium output and employment levels are said to be temporary. This neo-classical argument is based on four assumptions (Nattrass 2000:15-16). These are :

- (1) All agents are rational and maximize utility and profits
- (2) All markets are perfectly competitive
- (3) All agents have perfect information and stable expectations
- (4) Trade only takes place when market-clearing prices have been established in all markets by a fictitious auctioneer, the Adam Smith "invisible hand"

To neo-classical economists, the aggregate supply (AS) curve depicts the relationship between output ( $y$ ) and the price level ( $P$ ) as determined by the labour market and the production function. Nominal wages are assumed to adjust quickly and efficiently,



thereby clearing the labour market at the equilibrium real-wage level. The production function is the technological relationship between inputs - usually labour, capital, land and technology - and real output.

Since output is a positive function of both the inputs, capitals and labour, increasing employment of either factor of production,  $N$  or  $K$ , will have a positive effect on growth. Because of logistical problems and the delays associated with increasing the stock of capital,  $K$ , economists usually assume that only labour,  $N$ , can be varied easily in the short run. Equilibrium in the labour market is at that point where workers are prepared to offer their services at the going wage. Departure from this point where demand for and supply of labour are equal, say because of a real-wage increase, will result in an excess supply of labour. Employers will demand fewer labourers and the real-wage will ultimately revert back to the equilibrium level, as the resultant involuntary unemployment force workers to take lower real-wages. Similarly, a fall in real-wages below the equilibrium level creates excess demand for labour. The shortage of labour ultimately pushes real-wages higher, back to the equilibrium level (Nattrass 2000:22-27).

Consequently, according to the neo-classical view, where markets function perfectly, money wages will always adjust to restore labour market equilibrium, and when the economy stagnates at less than full employment, real-wages are too high to ensure full employment. The monetary policy implication is to make the market more “flexible” and able to “adjust” both upwards and downwards, so as to clear the labour market. Given that government intervention is abhorred by neo-classical economists, optimal economic policy is said to be one which follows clear and steady rules, such as expanding money supply at a stable and predictable rate to accommodate growth while avoiding inflation. This policy is said to avoid business cycles. The neo-classical view, advocated in the articles edited by Lucas and Sargent (1981), reconfirms the dichotomy between the monetary and real sectors. It is argued, according to this view, that changes in technology may cause the marginal productivity of labour to fall, which in turn reduces the amount of labour demanded. Thus, it is said, as wages drop, people opt for leisure and reduce consumption.

Above all, it is the neo-classical view that attempts by government to boost the economy are, at best, ineffective and at worst, harmful according to Snowden, Vane, and Wynarczyk (1994:cps.6 & 8). The underlying neo-classical assumptions and arguments are challenged by neo-Keynesians, which is the subject of the next section.

### 3.6 NEO-KEYNESIAN VIEW

The neo-Keynesian school came into being in response to the neo-classical challenge to the Keynesian view that market economies left to themselves function imperfectly. This is in contradiction to the neo-classical view that market economies are self-correcting or self-adjusting towards full employment equilibrium levels. To gain a deeper understanding of the neo-Keynesian view, Keynesian beliefs are briefly discussed as a prelude. To Keynesians, there is no reason why savings should equal investment, or why market forces should result in full employment. Prices are said not to adjust quickly, instead adjustment tends to occur through changes in output and employment. Accordingly, market coordinated failures have to be explored, to determine intervention policies that will nudge the economy onto a path of full employment. The underpinning assumption is that market forces can easily generate perverse and socially undesirable outcomes such as extended and deep depressions. The neo-Keynesian view is in answer to the neo-classical demand to know what is causes the “market failure” postulated by Keynesians. This answer addresses the explanation why prices are “sticky” and why labour markets do not clear (Natrass 2000:38-50).

The Keynesian view gained prominence as the world experienced falling prices, falling profits and social distress. In response, the neo-classical criticism is that Keynesians treat the tail-end of the great depression and make it the central part of their argument about what caused it, as well as what could be done to cure and prevent it (Skidelsky 1992:538-615). Furthermore, Keynesians reject the neo-classical notion of perfect information, arguing instead that economic decision-making is profoundly structured by imperfect information, business confidence, risk and uncertainty. These points are restated and emphasised by neo-Keynesians, who say business neo-classical beliefs that Adam Smith’s “invisible hand” drives the economy towards some socially

optimal full employment position, and that perfect knowledge exists, are incorrect. Economic agents are also said to operate according to good, rather than perfect information rules of thumb and to be “near-rational” rather than rational. With lots of individuals in the economy who are “near rational”, working in an environment of less than perfect competition, the result, it is said, can very well be strong output and employment fluctuations (Snowdon, Vane & Wynarczyk 1994:chs.6 & 8).

According to neo-Keynesians, wages are “sticky” and persist at higher than market-clearing levels, resulting in unemployment. The reasons given for this include efficiency wages and insider-outsiders theories of wage determination. Efficiency wage theories argue that reducing wages does not work, because that is likely to spark a morale nose-dive and ultimately a drop in labour productivity. Yet, if wages are above market-clearing levels, workers are likely to be more cooperative and productive. Thus, lowering real wages during recessions is likely to harm relations on the shop floor, which can damage future relationships and attempts to gain worker-commitment. Also, some workers may opt to quit rather than take a wage cut. Replacing them involves the additional costs of hiring and training (Greenwald & Stiglitz 1993:33-34).

Insider-outsider theory, in contrast, pivots around turnover costs. It starts with the premise that there are turnover costs, to which is added the proposition that trained “insiders” are not perfect substitutes for untrained “outsiders”. This implies that employed insiders can to some extent protect their wages against undercutting by unemployed outsiders. Above all, given that employed insiders are used to train the newly hired, employers have an incentive to keep the already employed workforce, which could lead to the harassment of new recruits if employed at lower wages or if these recruits demand higher wages. Aligned to this argument, is the argument involving sticky prices or “nominal rigidities”. The basic contention is that firms are reluctant to change prices regularly and that small nominal rigidities at firm level add up to large macro-economic effects (Greenwald & Stiglitz 1993:33- 34). It must be noted that the project of providing a rationale to neo-classical economists for alleged rigidity of money wages and prices is rejected by a body of neo-Keynesian. In spite of that, Keynesian economics is again becoming popular and respected in the

economic profession, as is manifested by a recent book by Krugman (1999:chs.1-3). This surge in importance is also reflected by the current debate on inflation, covered in section 3.8, after the following brief discussion of supply-side economics.

### 3.7 SUPPLY-SIDE ECONOMICS

Theoretically, the supply-side economics is an extension of neo-classical theory. It became popular in the United States in 1981, during the Reagan administration, as a guiding principle behind tax cuts. Proponents of supply side economics take the classical view that output is determined by real variables on the supply-side of the economy, namely growth of factor supplies and changes in technology. Supply-side economists also adhere to the fundamental classical faith in the free-enterprise capitalist system, which abhors government intervention in the economy (Froyen 1996:403-433). The following are four important broad elements of the supply-side economics (Gilder 1981:15-16):

- (1) Output growth is predominantly supply-determined in the intermediate term, by growth rates in factor supplies and the rate of technological change
- (2) The rate of growth of the capital input is determined primarily by the incentives for saving and investment, the incentives being the *after-tax* returns to saving and investment
- (3) The rate of growth in the labour input, although determined in the long-term by demographic factors, can also be affected significantly by incentives, in this case by changes in the after-tax wage
- (4) Excessive government regulation of business has discouraged capital formation, contributed to the slow-down in the growth of labour productivity, and reduced growth rate

There are two separate groups of supply-side economists, the *moderate group*, which

includes Feldstein (1986:116-121) of Harvard, the former president of the National Bureau of Economic Research and past Chairman of the Council of Economic Advisers in the United States. This group stresses the role of the importance of tax incentives in promoting growth, by affecting savings and investment. It also analyses the effect of tax changes on labour supply and many other issues. The second group known as the *radical fringe*. It is because of this group's radical and fervent support of President Reagan's policies in 1981 and 1982 that their rhetoric became known as Reaganomics. The main aim of this group was to cut taxes, in the belief that government was too big and that government spending could be cut by denying tax revenues to the government to spend. The arguments were that tax cuts would rapidly increase economic growth and reduce inflation. The radical fringe supply-side predictions were criticised at the time by mainstream macroeconomists, on the grounds that tax reductions do affect incentives and increase output, but that there was no evidence that incentives would result in higher government revenue after a tax cut (Feldstein, 1986:116-121). However, the moderate supply-siders fall very much within the mainstream of orthodox "classical" economic theory. Their concern is with the impact of taxes and budget deficits on saving and investment and hence on the real rate of interest. Their analysis of saving and investment and the real rate of interest manifest their "classical" character, which assumes that wage and price flexibility restores the economy to its position of full employment and potential outputs. This can be contrasted with the neo-Keynesian view that saving and investment do not determine the rate of interest (Dornbusch, Fischer, Mohr & Rogers 1996:366-376).

### **3.8 THE CURRENT DEBATE ON INFLATION AND MONETARY POLICY**

At the heart of the debate between structuralists and neo-liberals or monetarists is the question of whether, or to what extent, money supply is exogenous or endogenous. To monetarists, the quantity or supply of money is exogenously determined by the monetary authorities. Closely related to this monetarist position is their theory of inflation, which postulates a positive relationship between changes in the quantity of

money and changes in the price level. Structuralists, on the other hand, contend that the positive correlation between changes in the quantity of money and changes in the price level is meaningless, since it does not say anything about causality. Structuralists challenge the monetarists view, that an expansionary monetary policy is inflationary, or that excessive monetary expansion is the sole or principle cause of inflation. Instead, they argue that inflation cannot occur in a money-less economy, so that it is a mere tautology for monetarists to assert that inflation is a monetary phenomenon. Put differently, a sustained increase in the supply of money is said to be a necessary condition for inflation, in the same sense that water is a necessary condition for drowning, and similarly, it cannot be said that drowning is caused by water (Dornbusch, Fischer, Mohr & Rogers 1996:346-353).

Accordingly, structuralists contend that the underlying factors that cause inflation have to be recognized and analysed if monetary policy is to be effective. These underlying factors are said to include a wide range of non-economic factors, which are, for example, social, political and historical, and which must be taken into consideration when analysing inflation. The structuralist approach is a challenge to both the monetarists' assumptions which transforms the Irving Fisher Equation of Exchange into a theory of price, and the Keynesian approach of demand-pull and cost push inflation. There are three key underpinning monetarist assumptions: that income velocity of money is fixed or at least stable; that the level of real-output or income is also fixed, at full employment level; and that nominal money stock is exogenously determined by the monetary authorities. These are said to be another way of asserting *the neutrality of money*. This is another way of stating that the quantity theory of money is based on the notion of a *vertical* aggregate supply curve at the full employment level of income (Dornbusch, Fisher, Mohr & Rogers, 1996: 346-353).

The first criticism of the Keynesian distinction between demand-pull and cost-push inflation by structuralists, is that what appears to be cost-push is always a delayed response to prior increases in aggregate demand. Secondly, it is argued that cost-push cannot be an independent cause of inflation, since it has to be accommodated by the monetary authorities by allowing an increase in the money supply. The third

argument is that inflation is a *process* and the dichotomy between demand-pull and cost-push does not help in the analysis of the process and the formulation of policy measures to reverse the process. Thus, structuralists in contending that non-economic factors should be considered in order to gain an understanding of inflation, argue that cognisance of the process whereby prices and wages are determined should also be taken. In terms of this argument, the structures of the goods market and the labour market should also be examined. Structuralists consider this to be critical, since “for the economist to disregard the socio-economic environment of his Economics would be indicative of a lack of perspicacity” (Sadie 1980 : 281).

The other aspect of the monetarist approach questioned by structuralists is the concept of the *neutrality of money*, which connotes that changes in the stock of money do not have an impact on real variables, such as real output or income and employment. Although most monetarists maintain that “money does not matter”, others argue that nominal or monetary variables, like interest rates and exchange rates, do affect real variables. In negating the neo-liberal or traditional views on inflation and their concomitant implications for anti-inflation policy, structuralists distinguish three interrelated sets of factors, the *underlying factors*, which are responsible for the economy’s inflationary bias; the *initiating factors*, which trigger or intensify a particular inflationary episode; and the *propagating factors*, which transmit the original impulse(s) through the economy over time, thereby generating or sustaining the process of rising prices (Dornbusch, Fischer, Mohr & Rogers 1996: 346-353).

### 3.9 CONCLUSION

This chapter covered the money supply theories that underlie monetary policy theory, both pre-war and post-war. In the pre-war era Mills is considered the enunciator of money supply theory. During this period, writings on money supply theory are couched in terms of gold, which reigned as the sole medium of exchange. Real price level, the inverse of nominal price level is considered the real opportunity cost of holding nominal money. According to the theory in the pre-war era, an increase in the real price will produce a demand for nominal money gold, thereby importing a positive short-run elasticity to the

supply of money gold.

The pre-war approach was further developed after the Second World War, by introducing commercial banks' reserves and changes in bank deposits. This is done by examining the extent to which central banks can control the quantity of deposits via variations in the reserves required by statute. Grick (1951) further examines the constancy of money multiplier by focusing on the stability of the reserves required by statute. To monetarists, the monetary base is important in controlling the supply of money, whereas fiscalists focus on controlling the interest rate, via free reserves. The fiscalist approach of subordinating monetary base control to interest-rate stabilisation programmes and balance of payments considerations was the earlier policy pursued in South Africa, as recommended by the De Kock Commission on the money supply system and monetary policy in South Africa (1985:13).

The chief proponent of the pre-war theory was Grick. Meade built on Grick's theory by using a more sophisticated money multiplier. Because time deposits are included in his money supply analysis, Meade's approach resembles that of Brunner and Meltzer. Two basic post-war modifications of the pre-war developments are, firstly, the additional explanatory variables added to account for the financial behaviour of economic participants and secondly, the behaviour postulates added to render the multiplier coefficients dependant upon endogenous factors. The Hicksian writings of the time became known as the "marginal revolution", while Tobin and Friedman were propounding the theory of optimum portfolio selection. Sets of prices of relative assets in the financial markets are said to be determined by the preferences of economic units and relative quantities of assets with differing risk characteristics.

Three further money supply theoretical developments are the credit view, monetarist approach and the "new view" or balance of payments approach to money supply. The credit view was advanced mainly by Brunner and Meltzer. The emphasis is placed on availability of credit, which is said to be determined by demand. The monetarist approach was developed by Friedman-Swartz, Cagan and Brunner-Meltzer. According to Friedman-Swartz, the monetary base, which they call high-powered money, is the dominant factor in determining money supply changes. Cagan, while sharing the same



view of Friedman-Swartz, also draws an additional conclusion that the currency to money ratio is pro-cyclical, influenced by economic activities. The monetarist approach has further developed by Brunner-Meltzer who highlighted the behaviour interdependence of the public sector, the banking sector and the monetary authorities. The monetary base is considered a strong policy instrument under the direct control of monetary authorities. The “new view”, with Tobin as the primary proponents, challenges this direct control of monetary base by monetary authorities. The challenge is based on the difficulty of defining money, given other forms of “near-money”. Instead, the “new view” assigns a dominant role to the banking and private sectors, and not the monetary authorities.

The chapter also covered the on-going debate over inflation and monetary policy, highlighting the two different positions adopted by the contending structuralists and neo-liberal or orthodox schools of thought, which, respectively, are primarily neo-Keynesian and neo-classical in orientation. Inflation, to structuralists, in opposition to the neo-liberals, is not primarily caused by changes in money stock, but is largely a function of socio-political factors, which makes it impossible for the monetary authorities of a small and open economy (that of South Africa), to determine current money stock,  $M3_t$ , by applying monetary instruments to the previous period money stock,  $M3_{t-1}$ . This relationship will be empirically tested exclusively in chapter nine.

Aligned with this structuralist argument is the argument that inflation is “imported”. Also covered are the neo-classical view and neo-Keynesian views, giving a touch-and-go exposition on the *endogenous* and *exogenous* money supply arguments, respectively advanced. The neo-classical view, in line with the neo-liberal theory, considers money supply *endogenous*, and thus controllable by monetary authorities, whereas it is regarded as *exogenous* by neo-Keynesians and structuralists, rendering it uncontrollable. For completion, supply-side economics, made popular by President Reagan of the United States in the 1980s, is also presented.

This chapter covered the theory of monetary policy, in preparation for subsequent discussion on monetary policy in South Africa. Emphasis is put on the money supply process, since it is the crux of this study to determine whether or not the monetary authorities can control money supply, and thereby are effective in influencing the

economic growth of a small and open economy. This chapter concludes the theoretical framework. The next chapter covers South African reality, the interplay of monetary policy and economic growth in South Africa.

## CHAPTER FOUR

### MONETARY AGGREGATES: ENDOGENOUS AND EXOGENOUS MONEY SUPPLY

#### 4.1 INTRODUCTION

The purpose of this chapter is specifically to give a brief overview of the different views on money supply advanced by structuralists and neo-liberal economists, in addition to describing the overall differences around monetary policy. Also specifically covered will be inflation targeting, which relates to the inflation arguments stated above and depict the similarity to *money supply targeting* by monetary authorities in South Africa. Money supply targeting is empirically tested in chapter nine. According to structuralists, money supply is *exogenous*, thus uncontrollable by monetary authorities of a small and open economy, like South Africa. This will be tested as one of the hypotheses in chapter eight. Because of this, it is further argued that any serious and thorough economic analysis cannot be conducted merely by considering economic factors, to the exclusion of the socio-political ones. On the contrary, neo-liberal or orthodox economists consider money supply to be *endogenous*, and controllable by such monetary authorities. The next section deals with the difference between endogenous and exogenous money supply.

#### 4.2 ENDOGENOUS AND EXOGENOUS MONEY SUPPLY

As stated above, the controversy between structuralists and neo-liberals or orthodox economists, particularly monetarists, pivots around the different views on money supply held by these two contending schools of thought. The structuralist view is that money supply is *exogenous*, whereas monetarists view it as *endogenous*. A variable is designated endogenous if it is determined within or by the model, and when it is changed it, in turn, causes changes in output and employment. In contrast, an exogenous variable is determined outside the model by external forces beyond the control of the monetary authorities. In the terminology frequently used, output, employment and the real wage are designated as endogenous variables in the neo-

classical sense (Froyen 1996:408-415). *Endogenous* variables are those values we wish to determine, like output; and *exogenous* variables are those variables whose values are determined outside the model by external forces, beyond the control of the monetary authorities. The exogenous variables are used to explain the endogenous variables, but are not themselves explained in the model (Dornbusch, Fischer, Mohr & Rogers, 1996:93).

Bayes and Jansen (1995:476) define money supply ( $M^s$ ) as follows:

$$M^s = \left[ \frac{1 + c^d}{r + e^d + c^d} \right] \times MB,$$

Where:

- $c^d$  = desired currency to deposit ratio
- $r$  = required reserve to deposit ratio
- $e^d$  = desired excess ratio
- MB = monetary base, and

$$\left[ \frac{1 + c^d}{r + e^d + c^d} \right] = \text{money-multiplier}$$

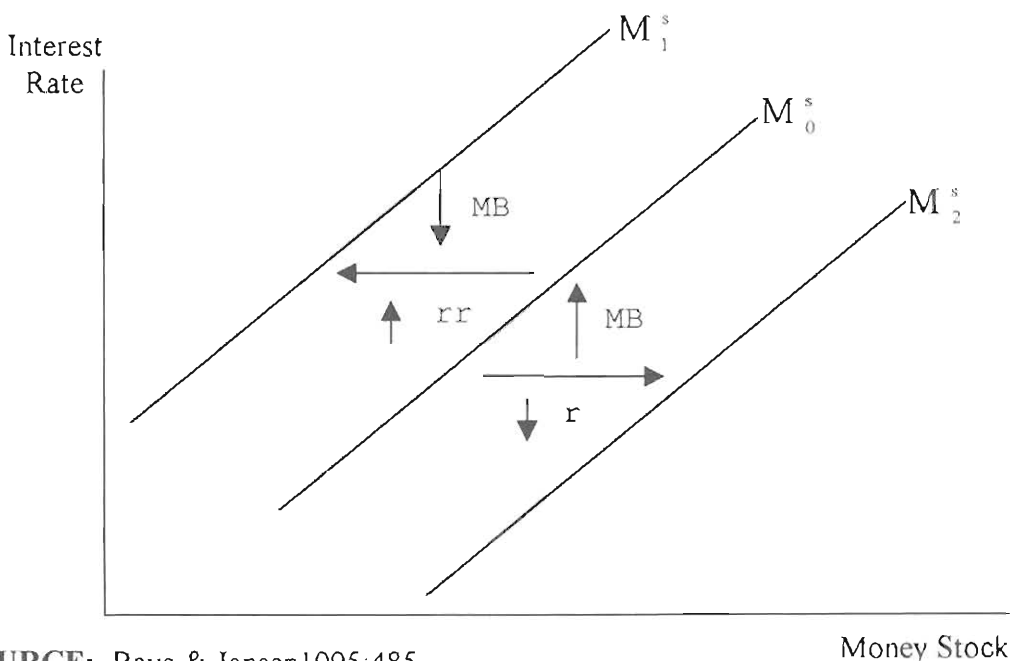
It is said that there is disagreement between economists, in our case, structuralists and monetarists (neo-liberals or the orthodox school), on the impact of interest rate on the determinants of the money supply, represented by equation C above. Structuralists argue that these determinants are exogenous, determined by outside forces and not by the interest rate. In line with this structuralist view, the currency to deposit ratio,  $c^d$ ,

or the desired excess reserve ratio,  $e^d$ , do not change as the interest rate is altered. Monetarists' view is that these determinants are endogenous, dependent on economic variables like interest rates.

#### 4.2.1 Endogenous money supply curve

For structuralists money supply is endogenous, so that  $c^d$  and  $e^d$  do not remain constant, but vary with economic conditions. For example, there is said to be an inverse relationship between interest rates, and on the one hand, and  $e^d$  and  $c^d$ , on the other. Banks are said to decrease their excess reserves with increases in the interest rates, and to be able to lend out additional funds at the higher rates. Similarly, many depositors are said to hold less currency and more interest-bearing instruments to earn greater interest income. Thus, the money multiplier is said to be an increasing function of interest rates and not a constant. This gives rise to a money supply curve ( $M^s$ ), which is endogenous and *upward sloping* (Bayes & Jansen, 1995:485), depicted by Figure 3:

**FIGURE 4. 3: ENDOGENOUS MONEY SUPPLY**



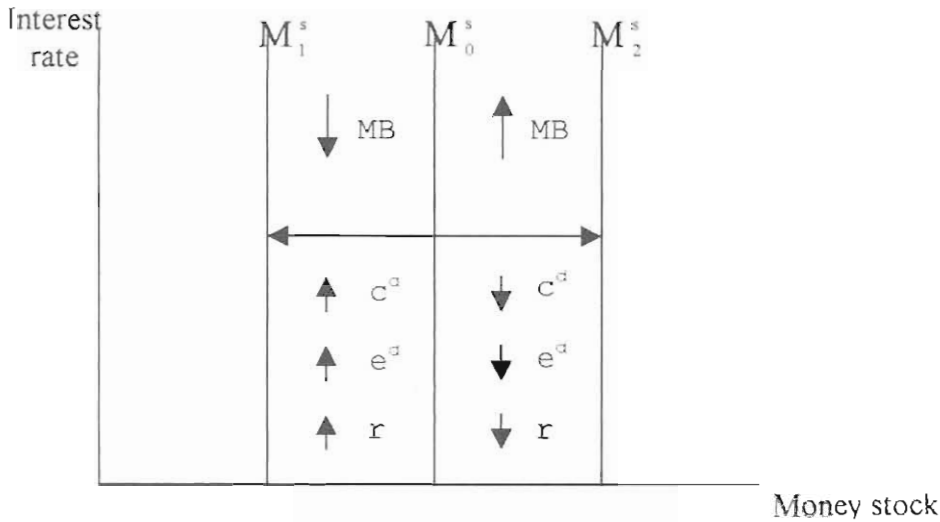
SOURCE: Baye & Jansen 1995:485.

The money supply curve slopes upwards because as interest rates rise, excess reserves fall and the amount of money in the economy increases – the money multiplier effect. This effect also takes place via the currency to deposit ratio,  $c^d$ , which drops as interest rates rise. Thus, higher interest rates lead to higher money supply, when money supply is endogenous. This is the basis of the structuralist argument against neo-liberal economists, that it is inappropriate to consider the effect of exogenous changes in  $c^d$  or  $e^d$  on the money supply, since they are functions of the interest rate graphed on the vertical axis of figure 4.4. Whereas the functional relationship between interest rates, on the one hand, and  $c^d$  and  $e^d$ , on the other, gives an upward money supply curve, changes in required reserves,  $rr$ , or the monetary base,  $MB$ , shift the money supply curve, just as in the case of an exogenous money supply curve and in the same direction. An increase in  $rr$  shifts the money supply curve to the left, while decreases in  $rr$ , lead to rightward shifts, as reflected by figure 4.3. Also changes in  $MB$  lead to an opposite effect compared to those in  $rr$ . Increases in  $MB$  shift the money supply curve to the right, resulting in a higher stock of money at each interest rate; while decreases in  $MB$  shift the money curve to the left, thereby reducing the money stock at each interest rate (Bayes & Jansen, 1995:484-485). More detailed coverage of this topic will be given in chapter seven on money supply and monetary policy in South Africa, the empirical testing of the determinants of the money supply and the impact of changes in the repo rate will be discussed in chapters eight and nine.

#### **4.2.2 Exogenous money supply curve**

When the money supply in the economy is exogenous, it is said to be determined by the banks' preferences for excess reserves,  $e^d$ , and the depositors' preferences for holding cash, and these preferences are not affected by economic variables like interest rates. Consequently, the money multiplier is constant and the amount of money supplied,  $M^s$ , does not vary with changes in interest rates (Baye & Jansen, 1995:483). This gives rise to the vertical exogenous money supply curve reflected in Figure 4.4:

**FIGURE 4.4: EXOGENOUS MONEY SUPPLY CURVE**



**SOURCE:** Baye & Jansen 1995:483

Increases in  $c^d$ ,  $d^c$  and  $r$  shift the money supply curve to the left, from  $M^s$  to  $M_1^s$ , since such increases reduce the money multiplier and thus the money supply. Decreases in any of these variables have the opposite effect, shifting  $M_0^s$  to  $M_2^s$ . The effect of  $MB$  is a direct one, shifting the money supply curve to the right or left with increases or decreases, respectively, in  $MB$ . This aspect of the South African money supply will be discussed in more detail in chapter six. The next sections briefly outlines the debate on inflation by structuralists and orthodox economists.

### 4.3 INFLATION

One of the core structuralist arguments is that inflation is imported from countries with which a small and open economy is engaged in trade, it is maintained that there is no relationship between the domestic rate of inflation and economic growth. This structuralist contention has been empirically tested by this study. Because monetary authorities in South Africa replaced the use of money supply targeting by inflation targeting in 2000, before conducting this empirical testing, it not only necessary, but crucial, to give a brief overview of inflation targeting, because the “main objective of a system of inflation targeting is to provide a stable ‘anchor’ for price and wage

adjustments in the economy, thereby stabilising and containing the inflation rate” (Fourie 2001: 246).

### 4.3.1 Introduction

This section gives a brief overview of inflation as a prelude to the discussion of the structuralist argument over the relationship between economic growth and inflation, with application to the South Africa economy. Inflation is a continuous increase in the price of good and services and is a major macroeconomic problem, adversely impacting upon economic growth. Usually, the growth rate of the economy is taken to be the rate at which the real Gross Domestic Product, GDP, the total value of final goods and services produced in the economy during a given time period (usually a year), is increasing. There are two measures of GDP, namely nominal GDP or current rand GDP, and real or constant rand GDP. The output tends to fluctuate around a trend in a cyclical fashion. The pattern of economic activity around a growth trend is called the *business cycle*. It reflects a more or less regular pattern of expansion (recovery) and contraction (recession) in economic activity around a growth trend. At a cyclical peak, economic activity is high relative to the trend, while in a cyclical trough economic activity is low relative to the trend. During an expansion (or recovery), the employment of factors of production increases, which is a source of increased production. Conversely, during a recession or contraction, unemployment develops or increases and less output is produced with existing resources and technology. The unemployment rate is that fraction of the labour force that cannot find jobs. The relationship between unemployment and inflation is reflected in what economists call the Phillips curve, suggesting a trade-off between the two. This curve showed that high rates of unemployment were accompanied by low rates of inflation and vice versa (Dornbush, Fisher, Mohr & Rogers 1996:328-340), although the stability of this relationship is strongly disputed nowadays. The Phillips curve is further discussed in chapter seven.

This trade-off between inflation and unemployment creates a dilemma for economic policy makers, in that they should decide to choose between sustained high-growth strategy, which would increase the inflation rate, and slow-growth recovery that reduces inflation, but at the cost of a high unemployment rate. As indicated above



structuralists argue that inflation is explained by structural factors, alleged to be ignored by orthodox economists. This structuralist view finds currency and support in South Africa, as reflected by, the increasing challenge of the official macroeconomic policy of South Africa, GEAR, by the labour movement and the blame directed to the SARB by the proponents of GEAR. There are two views on how policy makers handle the dilemma. One is to assume that they act in the interests of society, pursuing the policy that minimizes the total cost of economic stabilisation. The other view is that in a democracy, policy makers respond to the electorate, choosing policies that will maximise their chances of being kept in office. It is implied by this view that this sensitivity to the views of the electorate may or may not result in choosing the optimal policy. This has given rise to what is called the *political business cycle* hypothesis.

According to this hypothesis, politicians will use restraint immediately after an election, raising unemployment but reducing inflation. When the next election approaches, expansion takes over to reduce unemployment to gain votes at the expense of inflation. Consequently, a systematic cycle is created, with fiscal policy tightened to create stock and disinflation and then relaxed to reduce unemployment through expansionary policies (Dornbusch, Fisher, Mohr & Rogers 1996:293-296). However, the central bank, in championing monetary policy, is supposed to be independent and a-political. This then creates a tension between fiscal authorities, the ministry of finance, and the monetary authorities, the central bank. In South Africa, the official GEAR strategy is under attack, even if fiscal deficit targets have been accomplished and inflation has fallen to lower levels than predicted by the GEAR document of 1996. The basis of this sharp criticism of and attack on GEAR is that reducing the deficit too quickly was not accompanied by lower interest rates, instead the real bank rate rose sharply, and private investment policies of GEAR are said to have harmed rather than stimulated growth. This COSATU argument is in line with an evaluative International Labour Office (ILO) report on the labour market in South Africa (Standing, Sender & Weeks 1999:33).

The reaction of GEAR proponents is that poor performance should not be blamed on fiscal policy, but rather on unnecessarily tight monetary policy. This reflected the

tension between the ministry of finance, which objected to the growing interest burden that high interest rates placed on the budget and the central bank (SARB), which was more concerned about the exchange rate and inflation than about short-term growth concerns, especially job creation. Although GEAR did not meet its projected target, it is possible that the reason is that the vision of a more flexible labour-market outlined in GEAR was not consistently implemented. Furthermore, enacted legislation increased the employment costs of labour, thus discouraging investment. For instance, the Basic Conditions of Employment Act increases vacation or leave and reduces working hours, thereby increasing hourly fixed costs. This has reduced the potential of investors to set up businesses in South Africa and create jobs. However, while the labour movement criticises GEAR for not creating jobs, it is against the creation of economic opportunities at the expense of lower wages. The notion that wage restraint or wage flexibility is necessary for job creation is rejected. It is said, therefore, that GEAR, instead of generating jobs, has presided over significant job losses. To address these problems, the South African authorities opted for *inflation targeting*, which is discussed next (Natrass 2000:125-127).

#### 4.3.2 Inflation targeting

Superficially, inflation targeting is similar to money supply targeting, except that the target variable is the inflation rate itself rather than money supply growth. The main objective of inflation targeting is to reduce inflationary expectations by providing a credible anchor for price adjustment throughout the economy. Inflation targeting has both advantages and disadvantages. The first potential advantage of inflation targeting is that it makes intuitive sense to use inflation targets rather than some intermediary target, and that inflation targeting is more easily understood and more transparent. Also, it provides a yardstick for assessing the SARB's performance and its accountability in conducting monetary policy. This in turn could boost or build up the credibility of monetary authorities and thereby help the public to form more accurate expectations about inflation. Furthermore, the tight framework may help the SARB to maintain its independence and encourage restraint in government spending, thereby improving the co-ordination between fiscal and monetary policies (Natrass 2000:233-236).

The implementation of inflation targeting may present a number of problems. In the first place, it is not easy to control inflation precisely. Secondly, there is a time lag between the emergence of inflationary pressures and the implementation of corrective the measure, namely interest rate hikes. Thus for this corrective measure to be effective in curbing inflation, requires a reliable model for forecasting inflation, which is notoriously difficult. Furthermore, concentrating on inflation may cause economists to overlook other economic factors such as output stability and exchange rate stability. The first step in inflation targeting is to choose a target rate or range for inflation, together with a time horizon within which the target is to be achieved. Then, sufficient flexibility must be built in to absorb unforeseen exogenous shocks. Otherwise, *ad hoc* accommodation of shocks can undermine the credibility of the target. Because the Consumer Price Index (CPI) is sensitive to shocks that are not directly related to the inflationary process, the SARB adopted a new index in February 2000, known as CPIX. This is the CPI excluding the effect of interest payments on home loans. In South Africa, the target is set by the Minister of Finance, in consultation with the Governor of the SARB (Nattrass 2000:235).

Based on theory and international experience, the success of inflation targeting is predicated upon a number of prerequisites. The Reserve Bank should have a clear mandate and be assured of its independence. There should also be mutual commitment on the part of both monetary and fiscal authorities, as well as cooperation between them. Also required is a high degree of nominal exchange rate flexibility, to avoid conflict with inflation targeting. Another requirement for successful implementation of inflation targeting is a well-developed financial market and the existence of a low existing inflation rate. While these prerequisites are fairly met in South Africa, fierce opposition to inflation targeting remains. The Labour movement, rightly or wrongly, perceives a trade-off between inflation and unemployment, hence the negative attitude towards strict attention to inflation through explicit targeting. The SARB argues that it impacts on the demand side of the economy and is thus unable to address structural problems on the supply side such as unemployment (Nattrass 2000:236).

#### 4.4 CONCLUSION

This chapter briefly dealt with the theoretical aspects of the latest view on monetary policy, namely, exogenous and endogenous money supply, the axis on which the debate between structuralists and neo-liberal or orthodox economists is turns, and inflation targeting. For the monetary policy of an open and small economy to be successful in stimulating growth, structuralists argue that money supply must be endogenous. Their view is that money supply is endogenous, in that monetary authorities cannot control it and, in turn, monetary policy cannot stimulate economic growth. Instead, structural social economic factors are said to play an important role, a fact which orthodox economists overlook. Orthodox economists, on the other hand, consider money supply to be exogenous and therefore controllable by monetary authorities. Inflation, according to structuralist, as opposed to orthodox economists, is not caused by an expansion of money supply. Instead, it is said to be imported from the large developed countries with which a small and open economy trades. Thus, this chapter sets the stage for the empirical analysis of money supply and monetary policy application in South Africa, a topic covered in chapter six.

## CHAPTER FIVE

### THE SOUTH AFRICAN ECONOMY 1960 – 1997: AN OVERVIEW

#### 5.1 INTRODUCTION

The purpose of this chapter is to create a framework for the next chapter's discussion of money supply and monetary policy application in South Africa, by indicating some basic features and problems of the South African economy, which relate period of economic growth that preceded the 1994 elections. It should be mentioned that while South Africa had low inflation rates during the 1960s and was one of the best economic performers, its economy sharply deteriorated in the 1980s and early 1990s (Dornbusch, Fischer, Mohr & Rogers 1996:44).

*Stagflationary* pressures caused a new monetary approach to be considered. Years of double-digit inflation had to be managed by monetary authorities. The debate on the role of monetary policy clearly developed around the role of the Reserve Bank in controlling the money supply, thereby affecting *price stability* in the process. After the 1994 elections, the voices of certain politicians became louder and louder in their advocacy of the possible role of monetary policy in directly influencing economic growth and development. Empirical testing is therefore necessary to determine how monetary policy in South Africa developed, whether in a structuralist or an orthodox (neo-liberal) direction. This research study tests the hypotheses surrounding this issue, as stated in the previous part of the study, especially in chapter two, to establish if in fact the SARB can directly influence economic growth and development by the right monetary policy mix. Therefore, it is necessary to describe the economic growth-path of South Africa and outline its main features.

#### 5.2 SOUTH AFRICA'S POSITION IN THE WORLD ECONOMY

While the association of gold, diamonds and other minerals with wealth often gives the impression that South Africa enjoys high standards of living, South African is by no means

a rich country by international standards, even though there are very rich people in it. Economic growth is vulnerable; unemployment is high and increasing, with relatively high inflation and recurring balance of payments problems (Dornbusch, Mohr & Rogers 1995:44). Tables 1 and 2, on the following pages, give a picture on how South Africa's economic growth and inflation rates, respectively, compare with those of fifteen selected countries - not all small and open, but selected to give a complete and historic picture, namely, three being Western industrial countries (France, the United Kingdom and the United States), three being former British dominions like South Africa (Argentina, Brazil and Chile) and three sub-Saharan African countries (Kenya, Zambia and Zimbabwe), for the period between 1960 and 1997.

In terms of population and gross national product (GNP), and in comparison with moderately sized economies, South Africa ranks between 20th and 30th among 127 countries. However, when compared with the high-income industrialised countries of the West, the picture becomes bleaker, and South Africa is ranked at 85, on a scale of 1 (the poorest country) to 127 (the richest country) according to GNP per capita expressed in US dollars (World Bank, *International Financial Statistics International Financial Statistics Yearbook*, Various Issues). A comparative ranking is given in table 3.

In terms of social indicators, South Africa stands between Latin American and African countries. The parameters used for such ranking are average population growth percentage, birth rate per 1 000 people, fertility rate and life expectancy at birth (World Bank, *World Development Report 1993*). These demographic factors are reflected by the Table 4.

Gross domestic product (GDP) measures are fraught with distortions, generating perceptions of national welfare or well-being, such as overlooking the externalities of the production process and quality of goods produced. In calculating GDP, pollution costs, for example, are not factored in when sales revenue from goods produced are calculated. Also, if the quality of goods and services were to decline while the prices remained the same, the country would be worse off, yet the GDP does not reflect such changes. To counter this problem, the United Nations Development Programme (UNDP) developed other measures of economic well-being such as the Measurement of Economic Welfare

(MEW) and the Human Development Index (HDI). The MEW focuses on the level of national welfare, rather than on the level of economic activity. However, difficulties in determining national welfare have restricted the use of MEW. On the other hand, HDI not only considers GDP per capita, but also measures of purchasing power, life expectancy and education levels (Biggs 1997:13-14).

**TABLE 1: ECONOMIC GROWTH IN  
SELECTED COUNTRIES 1960 – 1997**

Country	Average annual increase in real GDP (%)				
	1960-1969	1970-1979	1980-1989	1990-1993	1994-1997
France	5,6	3,7	2,3	1,5	1,0
United Kingdom	2,9	2,4	2,3	-0,8	1,4
United States	4,3	2,8	2,6	0,6	2,6
Australia	5,3	3,8	3,3	0,8	3,5
Canada	5,4	4,7	3,1	-0,4	1,8
New Zealand	4,1	2,3	2,0	-0,1	3,6
Japan	10,9	5,2	4,2	3,4	1,0
South Korea	7,6	9,5	8,1	7,5	7,2
Malaysia	4,2	8,0	5,7	8,9	8,7
Argentina	4,2	2,6	-0,8	5,8	5,7
Brazil	7,7 <sup>4</sup>	7,8	2,9	-1,3	2,7
Chile	4,7	1,9	3,4	6,1	7,3
<b>South Africa</b>	<b>5,6</b>	<b>3,3</b>	<b>2,2</b>	<b>-1,0</b>	<b>0,6</b>
Kenya	3,4 <sup>4</sup>	6,4	4,2	2,0	1,4
Zambia	5,5	1,2	1,4	-1,1 <sup>2</sup>	-0,2
Zimbabwe	na	2,4	4,9	2,1 <sup>3</sup>	1,0

NOTES:

1. Figures for Japan are GNP figures
2. Data available only up to 1991
3. Data available only up to 1990
4. Data for full period not available

na Not available

SOURCE: International Monetary Fund, *International Financial Statistics Yearbook* (Various Issues)

**TABLE 2: INFLATION IN SELECTED COUNTRIES**

Country	Average annual increase in consumer prices (%)				
	1960-1969	1970-1979	1980-1989	1990-1993	1994-1997
France	3,8	8,9	7,3	3,0	2,1
United Kingdom	3,5	12,5	7,4	6,3	3,3
United States	2,3	7,1	5,5	4,2	3,1
Australia	2,5	9,8	8,4	3,8	2,6
Canada	2,5	7,4	6,5	4,0	1,6
New Zealand	3,2	11,4	11,8	3,2	2,4
Japan	5,3	9,0	2,5	2,7	1,0
South Korea	15,7	15,1	8,1	8,2	6,7
Malaysia	0,7	5,4	3,6	3,9	3,7
Argentina	22,7	19,6	31,9	33,4	18,0
Brazil	44,3	30,0	23,0	11,2	19,2
Chile	25,1	12,9	21,2	21,1	14,7
<b>South Africa</b>	<b>2,4</b>	<b>9,5</b>	<b>14,6</b>	<b>14,5</b>	<b>13,7</b>
Kenya	1,8	10,8	11,6	21,5	21,1
Zambia	4,5	10,1	36,5	31,8	41,4
Zimbabwe	1,9 <sup>1</sup>	7,2	12,7	28,7	67,2

NOTES: 1. Figures pertain to 1965 - 1969. No earlier data available.

SOURCE: International Monetary Fund, *International Financial Statistics Yearbook* (Various Issues)



**TABLE 3: A COMPARISON OF PER CAPITA INCOME BETWEEN SOUTH AFRICA AND OTHER COUNTRIES, 1995**

Country	Population (millions)	Population Average Annual Growth Rate (%) 1990-1995	GNP per Capita (US dollars)	GNP per Capita Annual Growth (%)	GNP per Capita Ranking from 1 (lowest) to 133
France	58	0,5	24 990	6,2	125
U.K.	59	0,3	18 700	1,4	116
United States	263	1,0	26 980	1,3	128
Australia	18	1,1	18 720	1,4	127
Canada	30	1,3	19 380	0,4	119
New Zealand	4	1,4	14 340	0,8	111
Japan	125	0,3	39 640	2,9	132
South Korea	45	0,9	9 700	7,7	108
Malaysia	20	2,4	3 890	5,7	99
Argentina	35	1,3	8 030	1,8	105
Brazil	159	1,5	3 640	-0,8	98
Chile	14	1,5	4 160	6,1	101
<b>South Africa</b>	<b>41</b>	<b>2,2</b>	<b>3 160</b>	<b>-1,1</b>	<b>91</b>
Kenya	27	2,7	280	0,1	22
Zambia	9	2,9	400	-0,8	32
Zimbabwe	11	2,4	540	-16,3	38

NOTES: Data not available for 1996 and 1997.

SOURCE: World Bank, *International Financial Statistics Yearbook*, (Various Issues)

**TABLE 4: SOME DEMOGRAPHIC INDICATORS  
FOR SELECTED COUNTRIES**

Country	Average Annual Growth rate (%) 1990-1995	Average Annual Population Growth (%) 1990-1995	Crude Birth Rate Per 1 000 Population	Total Fertility Rate 1995	Life Expectancy at birth (years) 1995
France	1,0	0,5	6	1,7	78
United Kingdom	1,4	0,3	6	1,7	77
United States	2,6	1,0	8	2,1	77
Australia	3,5	1,1	6	1,9	77
Canada	1,8	1,3	6	1,7	78
New Zealand	3,6	1,4	7	2,1	76
Japan	1,0	0,3	5	1,5	80
South Korea	7,2	0,9	10	1,8	72
Malaysia	8,7	2,4	12	3,4	71
Argentina	5,7	1,3	22	2,7	73
Brazil	2,7	1,5	44	2,4	67
Chile	7,3	1,5	12	2,3	72
<b>South Africa</b>	<b>0,6</b>	<b>2,2</b>	<b>50</b>	<b>3,9</b>	<b>64</b>
Kenya	1,4	2,7	58	4,7	58
Zambia	-0,2	2,9	73	5,7	46
Zimbabwe	1,0	2,4	55	3,8	57

- NOTE:
1. The total fertility rate represents the number of children born to a woman living to the end of her childbearing years.
  2. Data not available for 1996 and 1997.

SOURCE: World Bank, *International Financial Statistics Yearbook*, (Various Issues).

When 173 countries are ranked from the lowest (173) to highest (1) in 1993, South Africa is placed at position 85, about the middle, using UNDP's HDI approach. As shown in following table, table 5, South Africa's overall low ranking is a result of a low life expectancy at birth, a low adult literacy rate and a low schooling index:

**TABLE 5: THE UNITED NATIONS HUMAN DEVELOPMENT INDEX, SELECTED COUNTRIES**

Country	Life expectancy at birth (years) 1995	Adult Literacy rate (%) 1995	Adjusted GDP per capita (US dollars) 1995	Ranking from 1 to 173
France	78	98	17 405	8
U.K.	77	98	15 304	10
United States	77	98	21 449	6
Australia	77	98	16 051	7
Canada	78	98	19 323	2
New Zealand	76	98	13 481	17
Japan	80	98	17 616	1
South Korea	72	96	6 733	33
Malaysia	71	83	6 140	57
Argentina	73	96	4 295	46
Brazil	67	83	4 718	70
Chile	72	95	5 099	36
<b>South Africa</b>	<b>64</b>	<b>82</b>	<b>4 865</b>	<b>85</b>
Kenya	58	78	1 058	127
Zambia	46	78	744	130
Zimbabwe	57	85	1 484	121

SOURCE: United Nations Development Programme, *Human Development Report*, 1993.

While above comparisons are subject to significant margins of error, it can be safely inferred that by the middle 1990s South Africa's economic performance was fairly modest by international standards.

### 5.3 SOUTH AFRICA'S POSITION IN SOUTHERN AFRICA

In spite of the South African economy's relatively low ranking by international standards, in terms of Africa, South Africa is highly ranked. On the basis of GNP per capita, South Africa was ranked second in 1995. The number one position was taken by Gabon, which has a low population and rich oil deposits. However, although it is impressive in terms of Africa, the region in which South Africa is situated happens to be the worst performing

economic region in the world (International Financial Statistics Yearbook, World Bank, Various Issues). South Africa is by far the largest and most developed economy in Southern Africa, as indicated in table 6:

**TABLE 6: THE ECONOMIES OF SOUTHERN AFRICA**

Country	GDP in millions (US dollars) 1995	GNP per capita (US dollars) 1995	World Bank ranking <sup>1</sup>	Average Annual Growth (%) 1985-1995 <sup>2</sup>
Botswana	2020	3020	84	6,1
Lesotho	2770	770	35	1,2
Malawi	170	170	14	0,7
Mozambique	80	80	1	3,6
<b>South Africa</b>	<b>3160</b>	<b>3160</b>	<b>85</b>	<b>1,3</b>
Tanzania	120	120	2	1,0
Zimbabwe	540	540	3	-
			8	-0,6

- NOTES: 1. 133 countries are ranked according to GNP per capita expressed in U.S. dollars from 1 (the lowest) to 133 (the highest)
2. Average annual growth in real GNP.

SOURCE: World Bank, *International Financial Statistics Yearbook*, (Various Issues).

An important point indicated in table 6 is that while South Africa has the largest and most developed economy in Southern Africa, other countries, especially Botswana, have experienced much higher economic growth than South Africa since 1980. The economic and political instability in the region had the drawback of discouraging potential investors. As an African country, South Africa is affected by the perception of what is happening in Africa, which causes international investors serious concern. However, as a gateway into Southern Africa in particular, and Africa in general, South Africa is well positioned in terms of international investment. The downside is that if South Africa stands out as an

economic success for the region, significant migration to South Africa might increase. Such an occurrence would have serious implications for South Africa's growth. Thus, it is crucial that South Africa's economic growth efforts are also extended towards growth in other countries in the region, since attractiveness to potential foreign investors will continue to be linked to development in the region (Dornbusch, Fischer, Mohr & Rogers 1996: 52).

#### **5.4 OPENNESS OF THE SOUTH AFRICAN ECONOMY**

South Africa is linked not only to countries in sub-Saharan Africa, but also to other countries, notably the major industrialised countries, like the United States and the United Kingdom. As a result, South Africa is vulnerable to changes in international economic conditions, being an important trading nation, ranking among the top 30 in the world. Measured in terms of the share of exports in GDP or the share of imports in gross domestic expenditure (GDE), South Africa has an open economy. However, by international standards, the South African economy is not particularly open, although it is much more open than the economies of the United States, Japan, Argentina and Brazil (Dornbusch, Mohr & Rogers 1996: 52).

Furthermore, the structure of the economic growth and development in South Africa can be inferred from the tables used below. This structure can be better reflected by breaking down imports into capital goods, intermediate goods, consumer goods and unclassified goods, as contained in table 7, on the next page.

As can be seen from table 7, South Africa's imports consist mainly of capital and intermediate goods. In the light of this, and considering that South Africa's exports, which are an important source of income and employment, are largely of mining products, mainly gold, changes in demand and prices in the international markets render South Africa vulnerable. The situation is worsened by the fact that structurally the world economy is moving away from mineral-intensive production methods to technology-intensive production methods based on know-how rather than on natural resources. Without enough skills as compared to newly industrialised countries (NIC) like South Korea, South Africa is facing new challenges as a commodity-exporting country

(Dornbusch, Mohr & Rogers, 1996: 54).

**TABLE 7: COMPOSITION OF SOUTH AFRICA'S  
IMPORTS, IN SELECTED YEARS**

<b>Country</b>	<b>Capital goods (%)</b>	<b>Intermediate goods (%)</b>	<b>Consumer goods (%)</b>	<b>Unclassified (%)</b>
1960	30,0	48,4	20,4	1,2
1965	39,6	38,2	19,7	2,5
1970	44,3	33,0	19,8	2,9
1975	42,5	40,6	13,9	3,0
1980	38,5	48,2	13,2	0,1
1985	39,4	45,0	14,5	1,1
1990	41,6	38,1	17,9	2,4
1995	41,9	39,0	17,9	1,2

NOTES: Data for 1996 and 1997 not available.

SOURCE: South African Reserve Bank, unpublished figures.

## **5.5 SOUTH AFRICA'S BALANCE OF PAYMENTS AND EXCHANGE RATE**

Between 1976 and 1997, South Africa faced frequent balance of payments problems, with persistent net outflows of foreign capital along with changes in the composition of capital inflows from long-term direct investment in the private sector to short-term borrowing

and portfolio investment by the public and banking sectors. This meant that unlike in the past, South Africa could no longer finance current account deficits by net inflows of foreign capital, that is capital account surpluses. From 1946 to 1976, South Africa was able to afford domestic expenditure in excess of domestic production. Net exports, that is exports (X) minus imports (Z), represent the difference between gross domestic product (GDP) and gross domestic expenditure (GDE), with  $GDP = GDE + (X - Z)$ . If GDE is greater than GDP, the net exports (X - Z) are negative. This deficit on the current account will have to be financed. For South Africa, up to 1976, this financing came from net inflows of foreign capital, i.e. capital account surpluses (Mohr & Fourie 1998:658).

In the 1980s, because of international economic and political factors, South Africa faced a foreign debt crisis. Following the 1976 political uprisings in Soweto and other black townships, as well as the 1984 - 1985 labour unrest, strenuous deflationary policies were pursued. As a result, real domestic fixed investment declined by over 10 percent between 1976 and 1977, while real consumption expenditure was fairly constant, falling by less than 1 percent in 1977. That culminated in a cumulative current account surplus of about R5 billion from 1977 to 1979 (SARB Quarterly Bulletin, various issues), which financed the capital account deficit of R3,1 million. In 1985 local investor confidence collapsed, and the precipitous drop in the exchange rate was insufficient to protect the levels of foreign reserves. Consequently, a moratorium was declared on all debt repayment, as an attempt to stem the outflow of capital. However, this adjustment led to declining investment, with implications for growth and employment. This indicates a strong correlation between imports and private domestic fixed investment. Given that approximately 85 percent of imports into South Africa are imports of capital and intermediate goods (South African Quarterly Bulletin, various issues), policies aimed at restricting imports of consumer goods, particularly luxury goods, are unlikely to be successful on their own. Thus, satisfactory adjustment involves restructuring the economy to eliminate imbalances at desirable levels of output, investment and social needs. Deflation on its own acts very quickly, but it is costly and the improvement it brings about is temporary. Satisfactory adjustment or restructuring can take place in the medium term, being growth-oriented, rather than merely depressing investment consumption (Kahn 1992:80-82).

On the other hand exchange rate changes are adjusted relative to the prices of imports and exports. Depreciation has an expenditure-switching effect, since local goods become cheaper than imported goods, leading to domestic goods being consumed more. At the same time, exports become more competitive, because they are now cheaper in foreign currency price terms. This then shifts resources to export-oriented sectors. There is also an expenditure-reducing effect, because depreciation raises the domestic prices of imports, in turn raising the cost of living and reducing real income. The extent to which expenditure on imports is reduced depends on the elasticity of demand for imports. In South Africa import price elasticity of demand for capital goods is very low, but expenditure elasticity is high. This means that a reduction in expenditure (consumption and investment) is more effective than depreciation for reducing imports. The less dependent South Africa becomes on capital goods imports, the higher the price elasticity will be. With regard to exports, manufacturers who can set their own prices in world markets can benefit, depending on the price elasticity of demand for these products. Those industries with excess capacity will be best able to take advantage of the depreciation. Thus, flexibility and substitutability are important. At the same time, primary exports will have their rand profit increased, without these necessarily being any impact on foreign exchange earnings (Kahn 1987:82-85).

It is argued that relative price changes alone may not be sufficient to encourage the development of export-oriented manufacturing industries, since customers may place greater emphasis on quality and reliability of delivery criteria than on prices. Furthermore, the establishment of new industries takes time and marketing resources are also needed. Thus, doubt is often expressed over the ability of exchange rate depreciation alone to bring about required allocation of resources. Where nominal depreciation is accompanied by an offsetting acceleration in the domestic rate of inflation, the real exchange rate will remain unchanged. Thus nominal depreciation is unlikely to strengthen the current account. There is no doubt that depreciation boosts inflation. What is uncertain is the extent to which prices and costs rise relative to depreciation, as well as how long it takes prices to catch up. It is argued by structuralists, that exchange depreciation, via its effects on prices, is a propagating factor of inflation (Dornbusch, Fischer, Mohr & Rogers 1996:346-350).



Accordingly, depreciation can result in real output reduction, especially when the export response is low. The contractionary effect of devaluation is short-term. The greater the export response, the more positive the effect on growth. More measures are therefore required to stimulate export expansion, since the growth effects of exchange rate changes depend crucially on the extent and duration of the real exchange rate change, flexibility and structure of production and the response of trade flows to relative price changes. Another important effect of depreciation is the effect on debt repayment and debt servicing. Since most debt is terms of foreign currency, depreciation increases the domestic value of debt. This was the case in South Africa between 1983 and 1984, when foreign debt rose by 6,6 percent in United States dollar terms, but because of depreciation of the rand value, this debt rose by 65,5 percent in rand terms, with the proportion of total debt to GDP rising from 32,6 percent to 45,7 percent. Even if exchange rates are not useful in helping to bring about structural change, the experience of African and Latin American countries in recent years has demonstrated that maintaining a grossly overvalued exchange rate will be economically disastrous in the long run (Kahn 1992:84).

It is essential to consider the impact of exchange rate changes on economic growth. When the economic growth path is export-oriented, a stable predictable real exchange rate is preferred. The reason is that manufacturers are reluctant to embark on an export expansion process when there is a possibility that the real exchange rate might change to their disadvantage. This is confirmed by the success of the export-oriented growth strategies used by Taiwan and South Korea, where stable, and predictable real exchange rates have been maintained. In contrast, when an internally oriented growth path is pursued, the exchange rate is allowed to fluctuate, moving in line with world prices of primary commodities, since countries pursuing this growth path earn foreign exchange through primary goods, in South Africa through the mining sector. Thus, the emphasis is placed on protecting the profitability of this sector. As the prices of mineral goods rise, the domestic currency, the rand, appreciates, and vice versa. This has been the type of exchange rate policy followed in South Africa up to 1988. The floating rand has been helping to insulate these (gold and platinum) exporters against fluctuations in dollar prices of these commodities. The caution provided to such industries by the floating rand could therefore assume even greater importance (Kahn 1991:85-87).

With an increase in demand it is held that the production of these goods will increase

income, employment and physical well-being. However, this policy has constraints. First, it drives deregulation and encourages small business. However, there is no guarantee that an entrepreneurial spiral will seek to establish and expand small firms. Second, large firms are usually more efficient than small ones. Third, in South Africa the existence of highly concentrated industries reduced the prospects of the emergence of small firm across a broad spectrum of industry. And finally, and most importantly, since inward-industrialisation relies on low-cost production and low-cost goods, substantial funding from outside is needed to "kick-start" the process. Thus the exchange rate policy required would be one that results in an injection of foreign funds (McCarthy 1988:vol.56). Having considered South Africa's balance of payments and exchange rate features, we now turn to South Africa's factor endowment, which determines or constrains a country's long-term economic growth potential.

## **5.6 SOUTH AFRICA'S FACTOR ENDOWMENT**

The economic growth rate of a country is influenced by the quantity and quality of its factors of production, i.e. natural resources, labour, capital and entrepreneurial talent (Dornbusch, Fischer, Mohr & Rogers, 1996:55). Each of these is now briefly discussed.

### **5.6.1 Natural Resources**

Natural resources are all inputs into the production process obtained directly from nature, including land, water, fish resources, metals and minerals. South Africa is fairly well endowed with these resources, especially minerals. However, the country lacks enough water resources. There are no navigable rivers. In terms of minerals, the only one missing is crude oil. Agriculturally, South Africa is capable of producing a food surplus, except for a few products like coffee, tea, rice and cocoa, despite the fact that only 12 percent of the total land area is arable. There is also considerable fishing potential, given the long seaboard (Dornbusch, Fischer, Mohr & Rogers 1996:55-57).

### 5.6.2 Labour

Labour, as a factor of production, includes the total number of people employed or available for employment, as well as their physical and intellectual skills and effort. It depends on the size and age distribution of the population. Labour also hinges on participation rate, that is the proportion of the population of working age employed or seeking work. The level of skills and endeavour depends on factors like prevailing social structure, values, attitudes, education and training (Sadie 1980:ch.13). Accordingly, there are two distinct labour markets in South Africa, one for skilled and one for unskilled workers. There is a chronic shortage of skilled workers, resulting in high remuneration. In contrast, the supply of unskilled workers is abundant, commanding lower wages, which are, however, often increased through trade union intervention (Sadie 1987:290).

This is a legacy of the past apartheid government, which interfered in the labour market through racist policies of job reservation for whites, influx control restricting blacks to certain areas, and inferior Bantu education for blacks. According to the then policy, white immigration was used to supplement the shortage of skilled workers. Between 1963 and 1976, 30 000 net immigrants per year entered South Africa. As political and economic uncertainty loomed in South Africa, the figure dropped to 340 per year between 1985 and 1988. The number increased again between 1989 and 1992, when prospects for democracy became real, jumping to 4 100 per annum (Dornbusch, Fischer, Mohr & Rogers 1996:58).

Demographically, the population of South Africa, for analytical purposes, is divided into four categories, based on the occupational skills level of the male breadwinner, follows:

- (1) executive or managerial group
- (2) the professional, technical and other skilled workers
- (3) workers in jobs demanding less skill (semi-skilled workers)
- (4) the unskilled, the peasants, the unemployed and underemployed and the very poor (Sadie 1987:290)

These features are captured in the following two tables, table 8 and table 9:

**TABLE 8: STRUCTURE AND GROWTH OF SOUTH AFRICAN POPULATION**

Category		Numbers in 1990	Increments 1990-2005	Numbers in 2005
I	(Executive)	1 181 000	129 000	1 310 000
II	(Skilled)	4 226 000	680 000	4 906 000
III	(Semi-skilled)	13 903 000	4 266 000	18 169 000
IV	(Unskilled)	17 349 000	9 693 000	27 042 000

SOURCE: Sadie, J.L.: 1992. Unemployment in South Africa: its nature and origins, *Studies in Economics and Econometrics*, 16(1).

**TABLE 9: PROJECTED INCREMENTAL LABOUR AND DEMAND BY CATEGORY, 1980-2000**

Category		Supply (Increment)	Demand (Increment)	Shortage Or Surplus
I	(Executive)	94 000	197 000	-103 000
II	(Skilled)	455 000	897 000	-422 000
III	(Semi-skilled)	2 495 000	2 500 000	-
IV	(Unskilled)	3 796 000	1 028 000	+2 768 000

SOURCE: Sadie, J.L.: 1992. The human resources in South Africa. *South African Journal of Science*, 83, May.

In table 9, it is shown how population growth will be dominated by the already large semi-skilled and unskilled categories. However, it should be noted that these projections are based on the apartheid past, so that these may be improvements as the education system gets overhauled. Another factor to be considered is the rise of trade unionism in South Africa. In the past, the impact of labour on the economy was minimal, since labour laws

under apartheid suppressed possible labour strikes and disturbances. But after the Wiehahn Commission of Inquiry into Labour Legislation between 1979 and 1981, the labour laws were changed. Racial discrimination was abolished and black trade unions became recognised. This gave rise to a phenomenal increase in membership of registered trade unions, resulting in a significant increase in the incidence of industrial disputes, according to the National Manpower Commission Report of 1992. This is reflected in table 10:

**TABLE 10: STRIKES IN SOUTH AFRICA (1992 – 1997)**

<b>Year</b>	<b>Man day Lost in Millions</b>
1992	4,2
1993	3,6
1994	3,9
1995	1,6
1996	a
1997	1,7

NOTES: a - In 1996 no strikes were reported, because what took place was merely a high level of unruly behaviour.

SOURCE: South African Survey 1996/97, South African Institute of Race Relations.

### 5.6.3 Capital

It is important to make explicit the difference between capital and its corresponding flow variable, investment. Investment refers to additions to the physical stock of capital, whereas capital means the physical objects, i.e. all manufactured assets used in the production of goods and services. Thus capital is a stock concept, whereas investment is a flow concept, which relates to changes in capital stock during a particular period. Capital stock is at a particular level at any particular point in time. South Africa is capital-poor. Many capital goods, such as heavy or specialised machinery and equipment, cannot be manufactured locally. Thus the large capital component of imports, as shown in table 9. Financing of these capital goods often require net inflows of funds from

abroad. This dependence on imported capital goods and foreign financing has significant implications for a country's economic growth. For instance, higher savings in domestic economic activity leads to increases in import demand, which puts pressure on the balance of payments. The only way out to stem such import demand without the application of import control, is by applying restrictive or contractionary policies (Dornbusch, Fischer, Mohr & Rogers 1996:60-61).

The situation described above put South Africa in a desperate position during the 1980s, when access to foreign funds was denied. South Africa could not repay its foreign debt, becoming a "capital-exporting" country, despite scarcity of capital in the country. Thus, for South Africa to improve its economic growth performance, dependence on imported capital goods and services had to be reduced.

## 5.7 ENTREPRENEURSHIP

The entrepreneur is one who perceives opportunities and marshals the other factors of production in the production process. It is the enterprising spirit of entrepreneurs, which stimulates economic growth. These economic agents are said to come from a proportion of executives relative to other categories. The South African situation is not an encouraging one, considering the picture painted by tables 9 and 10. The inference that can be drawn is that entrepreneurial activity is modified by the economic, political and social environment within which potential entrepreneurs operate (Dornbusch, Mohr & Rogers 1996:61-62). While it is obvious that the political, social and economic structures of the apartheid past have hindered entrepreneurship, the problem cannot be simply remedied by a change in the ruling political party.

The ruling party faces very complex and daunting challenges. To deliver on the campaign trail promises will take a long time, but the electorate that voted the party into office does not seem to exercise any patience. The unemployed are expecting jobs now, while those who are in employment are being retrenched at an increasing rate. Those who are homeless are expecting the promised houses now, while there is no capacity to keep up with demand and informal settlements are being pitched next to upmarket houses, thereby reducing their value. There is student unrest because students are not allowed to

return to school because they are in arrears with school fees, all the while are accepting education subsidies and accommodation from the new democratic government. The list of expectations that cannot be met now can go on and on. Having discussed the factors of production in South Africa, the aggregate demands that these factors have to address is the next topic.

## **5.8 AGGREGATE DEMAND IN SOUTH AFRICA**

### **5.8.1 Consumption**

During the period 1955 to 1979, 89 percent of disposable income was spent on consumer goods and services. This increased to more than 97 percent during the period 1986 to 1993. As a result, the personal saving ratio, that is the ratio between personal savings to personal disposable income fell from approximately 11 percent to less than 3 percent between these periods (Dornbusch, Fischer, Mohr & Rogers 1996: 63; Fourie 2000:159).

South Africa's consumption spending exceeds the level of investment, a trend inimical to economic growth. This spending is on four major categories, namely durable goods (e.g. private motor vehicles and household appliances), semi-durable goods (e.g. motorcar accessories and clothing), non-durable goods (e.g. food) and services (e.g. medical and transport services). Whereas, on the one hand, spending on durable goods is the most volatile, spending on non-durable goods, is the most stable component of private consumption. It should be noted that the decision to consume is a decision not to save, and vice versa. The personal saving ratio, i.e. the ratio between personal savings and personal disposable income in South Africa continues to fall, which is a major concern in recent years. The composition of four major categories of consumption, namely durable goods, semi-durable goods, non-durable goods and services, is affected by cyclical factors and structural changes (Dornbusch, Fischer, Mohr & Rogers 1996:63; Fourie 2000: 247).

Consumption expenditure by government in general is estimated as the current expenditure on salaries and wages; goods and other services of a non-capital nature by the general departments of public authorities. Government in South Africa includes national

or central, provincial and local government, which is further divided into unicity metropolitan council; district councils and local councils. Government spending does not include transfer payments, such as pensions and disability grants. Thus, there is a difference between government spending on goods and services and the size of government budget, which includes a significant amount of transfers (Nattrass 2000:7-8). This relatively high consumption component of Gross Domestic Expenditure (GDE) in South Africa is reflected in table 11 on the following page:

### 5.8.2 Investment, saving and consumption

Table 11 on the next page shows investment as the smallest component of GDE. Although inventory investment is also important, it is fixed investment, which plays a more significant role in the generation or stimulation of economic growth. Changes in inventories serve as indicators to signal to firms whether to expand or contract the production of services and goods. In South Africa, the growth rate in real gross fixed investment was moderate, with an average annual growth rate of 4,6 percent between 1947 and 1962. Rapid growth occurred between 1963 and 1975 at 9,5 percent, followed by a period of decline from 1976 to 1992 at 1,5 percent per annum, despite the spurt in investment during the 1979-1981 boom. Capital is a scarce factor of production in South Africa. With structural decline in the growth of real fixed investment spending in South Africa, more investment was required, with the result that production became increasingly capital intensive, despite South Africa labour abundance of labour (Dornburch, Fischer, Mohr & Rogers 1996: 64). Table 12, below shows evidence of increased capital intensity of production, by presenting real capital stock per worker in mining and manufacturing for selected years, although it is not suggested that this is the only measure of capital intensity. Other measures are capital-output ratio and the incremental capital-output ratio (ICOR). The capital-output ratio gives the relationship between capital and output, that is the additions to capital stock, in form of investment which brings about corresponding increases in the flow of national output (GNP) as a direct relationship (Todaro 1982:88).

The incremental capital output ratio (ICOR) is the ratio of the rate of investment to the rate of growth. A higher ICOR implies a lower return on investment. If capital is the only scarce factor of production in a country and the rate of investment is the sole determinant



of growth; a high ICOR would imply a relatively low efficiency of investment. In contrast, capital is not the only scarce factor of production, and thus, a relatively high and rising ICOR would not necessarily imply inefficient investment. A rising ICOR could indicate increasing scarcity of factors of production other than capital. As countries approach full employment, their ICOR's are expected to rise, as labour is replaced by capital, with diminishing returns to investment setting in (Riedel 1987:53-55).

**TABLE 11: GDE, GDP AND COMPONENTS OF AGGREGATE DEMAND, 1993 – 1997: AT 1990 CONSTANT PRICES**

	<b>1993 Pre-election (R millions)</b>	<b>1997 Post-election (R millions)</b>
Private consumption expenditure	231 756	366 688
Consumption expenditure by government	79 786	126 962
Gross domestic fixed investment	59 304	103 343
Change in inventories	550	(4 390)
Residual item	(4 275)	(4 577)
<b>Gross domestic expenditure (GDE)</b>	<b>367 121</b>	<b>588 026</b>
Net exports of goods and services (i.e. exports – imports)	15 078	6 832
<b>Gross domestic product (GDP)</b>	<b>382 199</b>	<b>594 858</b>

SOURCE: South Africa Reserve Bank, *Quarterly Bulletin*, March 1996 & March 1998

Associated with capital-output ratio is the conflict between employment and output. Given that the total funds available for new investment are limited, using the funds to employ people means inability to purchase equipment, which may mean less employment. However, that might mean increased production. Thus, maximisation of output requires optimal and efficient usage of scarce resources, which means that where capital is scarce, the capital-output ratio is minimised and employment is maximised. The conflict between employment and output maximisation arises because of the increased capital intensity of production on the one hand, the demand for high wages not congruent

with productivity on the other.

It should be remembered, however, that the capital-intensive methods of production are said to always involve lower capital costs per unit of output and higher costs per work place than the labour-intensive methods. Also, where output responds positively to additional workers, the level of employment associated with a given machine will depend on the level of wages. This is illustrated in table 12, on the next page, which shows fixed capital per worker for the South African economy in the mining and manufacturing industries for selected years, 1960 to 1997, at constant 1985 prices.

**TABLE 12: FIXED CAPITAL STOCK PER WORKER AT CONSTANT 1985 PRICES IN MINING AND MANUFACTURING, SELECTED YEARS (1960 – 1997)**

<b>Year</b>	<i>Mining</i> <b>(R)</b>	<b>Manufacturing</b> <b>(R)</b>
1960	15 243	11 972
1965	16 414	13 377
1970	16 552	15 820
1975	22 014	20 450
1980	26 854	27 057
1985	36 187	33 886
1990	46 367	31 497
1992	53 682	35 208
1993	69 686	105 414
1995	68 668	113 884
1997	68 458	124 071

SOURCE: South African Reserve Bank, *Quarterly Bulletins*, Various Issues

It is obvious, from the table above, that South Africa faced capital deepening, that is an increase in capital per worker. With declining investment spending, this is a serious problem for economic growth in South Africa.

The ratio of gross domestic savings to GDP in South Africa reflects a continuous decline from 1987, as table 13 shows:

**TABLE 13: GROSS DOMESTIC SAVING TO GDP IN SOUTH AFRICA  
(1981 – 1997)**

<b>Year</b>	<b>Ratio (%)</b>
1981	27,2
1982	20,8
1983	25,3
1984	22,5
1985	24,5
1986	23,5
1987	22,5
1988	22,7
1989	22,6
1990	19,5
1991	18,9
1992	17,1
1993	17,2
1994	17,1
1995	16,8
1996	16,5
1997	14,5

SOURCE: South African Institute of Race Relations, *South Africa Survey, 1996/1997*.

On the other hand, private consumption expenditure grew by 4 percent in real terms in 1996, as compared to 4,5 percent in 1995, while real government consumption expenditure grew by 0,5 percent in 1995 and by 5,0 percent in 1996. In 1996, private consumption as a proportion of GDP rose from 62,3 percent in 1995 to 66,8 percent, while central government expenditure as a proportion of GDP rose from 16,8 percent of

GDP in 1946 to 23,5 percent in 1996 (South African Reserve Bank 1997:4-8).

### 5.8.3 Government spending

Central government spending is detested by those who advocate a free-market system, without government intervention, favouring instead privatisation of state-owned enterprises. On the contrary, interventionists see nothing wrong with government interference with the market mechanism. They even call for nationalisation of what is considered crucial enterprises. The South African experience is that government expenditure exceeded government investment as a percentage of GDE, with a resultant increase in the share of transfer payments, that is interest on public debt, subsidies and transfers to households and the rest of the world, as reflected in table 14:

**TABLE 14: GOVERNMENT SPENDING IN SOUTH AFRICA,  
SELECTED YEARS**

Year	Consumption spending by government as % of GDE	Gross investment by public sector as % of GDE	Transfer payments as % of GDP
1946	9,8	5,5	6,3
1950	9,4	7,8	4,4
1960	9,8	8,8	4,0
1970	11,7	10,2	4,9
1980	14,7	14,2	6,1
1990	20,8	7,1	9,8
1993	22,0	4,3	10,8
1994	21,0	16,3	15,4
1995	20,0	16,9	15,3
1996	20,6	17,5	14,9
1997	21,6	17,6	15,0

SOURCE: South African Reserve Bank, *Quarterly Bulletin*, Various Issues.

#### 5.8.4 Net Exports

South African's position regarding exports and imports, on the openness of South Africa's economy, is covered in the previous sections. Exports and imports grew from 1994 as the economy became reintegrated internationally after the normalisation of diplomatic and trade ties. Between 1985 and 1996 real exports increased by 42 percent while real imports grew by 95 percent. The following table, table 15, shows the real value of total exports and imports and the annual change:

**TABLE 15: SOUTH AFRICA'S EXPORT AND IMPORT PERFORMANCE**

Year	Real Exports R million	% Increase (Decrease)	Real Imports R million	% Increase (Decrease)
1985	63 608	-	46 487	-
1986	61 197	3,8	45 347	(2,5)
1987	60 075	(1,8)	46 932	3,5
1988	65 969	9,8	57 214	21,9
1989	69 517	5,4	57 396	0,3
1990	70 714	1,7	54 046	(5,8)
1991	70 674	(0,1)	55 204	2,1
1992	72 464	2,5	58 156	5,3
1993	75 955	4,8	62 237	7,0
1994	76 731	1,0	72 257	16,1
1995	83 854	9,3	84 217	16,6
1996	90 414	7,8	90 563	7,5
1997	95 387	5,5	95 453	5,4
		Total 49,7%		Total 77,4%

SOURCE: Department of Finance, *Budget Review*, (Various Issues).

South Africa's major trading partners are shown in table 16:

**TABLE 16: SOUTH AFRICA'S MAJOR TRADING  
PARTNERS SELECTED YEARS**

1981-1985	1988	1992	1994	1997
United States	Germany	Germany	United States	Germany
Japan	Japan	United States	Germany	United Kingdom
Germany	United Kingdom	Japan	United Kingdom	United States
United Kingdom	United States	United Kingdom	Japan	Hong Kong
Switzerland	Italy	Italy	Switzerland	Italy
France	Taiwan	France	Hong Kong	Switzerland
Italy	France	Hong Kong	Italy	Taiwan
	Belgium	Belgium	Taiwan	Zimbabwe
NOTES:	Ranking is in order of importance according to value of non-gold South African exports to them plus imports from them. Data for Taiwan for 1992 not available.			
SOURCE:	1981-1985: Commissioner for Customs and Excise, <i>Foreign Trade Statistics</i> , Various Issues. 1982-1992: International Monetary Fund, <i>Direction of Trade Statistics</i> , Various Issues. 1996/1997: South African Institute of Race Relations, <i>South Africa Survey</i> .			

## 5.9 UNEQUAL DISTRIBUTION OF INCOME AND WEALTH

South Africa suffers widespread absolute poverty, with very high unequal distribution of income and wealth. This feature underscores the root of many social, political and economic problems in the country. The poor, with the fragile and new democracy now reigning in South Africa, are cherishing very high expectations for improvement. Aggregate inequality is measured by Gini coefficients. The Gini co-efficient for countries with highly unequal income distributions lies between 0,5 and 0,7 and for countries with relatively equitable distributions the figure lies between 0,2 and 0,35 (Todaro 1982: 142). The following table, table 17, on the next two page shows South Africa's income levels by

race and the income disparity before the 1994 elections, which put the current government in office, that is the levels for 1993 and for 1995. after the elections:

**TABLE 17: AVERAGE INCOME BY RACE IN SOUTH AFRICA  
SELECTED YEARS**

Year	Race	% Income Share	Per Capita Income (R) <sup>a</sup>	Disparity Ratio
1993	African	29,3	2 717	11,8
	Asian	4,8	12 963	2,5
	Coloured	7,4	6 278	5,1
	White	58,5	32 076	1
1995	African	38,5	3 379	8,0
	Asian	4,0	11 471	2,4
	Coloured	8,9	7 072	1
	White	48,6	27 040	1

- NOTES:
1. a = Average annual per capita income per population in Rands
  2. Disparity ratio is the per capita income of whites to that of Africans.
  3. Data for race groups not available for 1996 and 1997.

SOURCE: 1996 – 1997: *South African Survey*, South African Institute of Race Relations, Johannesburg.

Although racial inequality has been narrowing steadily, class inequality is widening. Between 1975 and 1991 the poorest 40 percent of Africans became 40 percent poorer, while the top 20 percent became 40 percent richer. On average, in 1996, African households were earning R1 252 a month, an increase of 10 percent, compared with the R7 108 earned by white households, an increase of 9 percent (South African Institute of Race Relations 1997:377-383). A further racial income distribution, showing the Gini coefficients, is given in the following table, table 18:

**TABLE 18: GINI COEFFICIENTS FOR DIFFERENT POPULATION GROUPS, 1975, 1991 AND 1995**

Group	1975	1991	1995
African	0,47	0,62	0,52
Coloured	0,51	0,52	0,50
Asian	0,45	0,49	0,44
White	0,36	0,46	0,49

NOTES: Data for 1997 and 1998 not available.

- SOURCES:
1. Whiteford, A & McGrath, R (1994): *Distribution of Income in South Africa*, Human Sciences Research Council, Pretoria.
  2. Hirschowitz, R. (1997): *Earning and Spending in South Africa*, Central Statistics, Pretoria

The Gini coefficient for South Africa as a whole was 0,59 in 1995. This is a high value, indicating highly unequal distribution of income in South Africa. This is comparable to high inequality of income distribution in countries like Brazil and Ecuador (Todoro, 1989:200). As reflected by Table 18 above, income distribution by 1995 is less unequal among Asians (Gini-coefficient = 0,44) than whites (Gini-coefficient = 0,49), Coloureds (Gini-coefficient = 0,50) or Africans (Gini-coefficient = 0,52).

## 5.10 SOUTH AFRICA'S ECONOMIC GROWTH RATE

In 1996, South Africans were 23 percent richer per head than they were in 1960, but 16 percent poorer than in 1981. Four consecutive years, 1990 to 1993, South Africa experienced negative growth in GDP per head. Thereafter, in 1994 it rose by 0,6 percent in 1995 by 1,2 percent and 1 percent in 1996 (South African Institute of Race Relations, 1997:654-658). In line with the structuralist argument, for complete presentation of these contrasting views, a brief account of the socio-political factors of the South African economic environment is first given, followed by a detailed discussion.



## 5.11 THE SOCIO-POLITICAL FACTORS OF THE SOUTH AFRICAN ECONOMY

This section provides a very brief account of the socio political factors of the South African economy, in view of the structuralist argument that socio political factors should be considered if any economic analysis is to be serious and thorough. This is perhaps more pertinent for the South African economy, given the prevalent claims that the current economic performance has largely been conditioned by the economic policies of the *apartheid* era. This is even more applicable given the economic expectations created by the ‘political miracle’ that gave birth to the new, fledging and tenuous democracy in South Africa. It is in the light of these “unrealised” expectations that the GEAR policy is criticised by COSATU. At the heart of the of the COSATU argument is that the black majority rule that came with the new democracy and ‘filtering-down’ effects of GEAR policy are not yet being felt by this majority. Put differently, the “Black majority rule does not abolish the economic implications of apartheid in real terms (Cohen 1986: 95).

The previous exclusion of South Africa from the global scene and the governmental protection of industry during the apartheid era had far-reaching inhibiting consequences on economic growth. The conventional economic wisdom was that socio political factors should not be factored into the way business was conducted. The political reality of South Africa has challenged this perception, dictating increased participation of business in developing socio political and economic unfolding process. “The conventional business wisdom of the 1980s held that the business of business is business. However, this view is increasingly challenged by the unconventional macro-environment and, in 1991, Barlow Rand Chairman publicly proclaimed that the business of business is to stay in business. This subtle change of words implied a dramatic departure in thought, strategy and action regarding the mission and vision of business in South Africa” (Consultative Business Movement 1993: 1).

As South Africa positions itself for the future, the ugly past of apartheid cannot be

ignored. Current aspirations, expectations and temperament are fed off the past. During the new democracy campaign-trail, politicians, jockeying for votes, made at times what was obviously unrealistic promises. Victims of apartheid are now expecting tangible and substantial economic changes, which cannot be delivered overnight. To contain patience, business is compelled to assist these politicians. Otherwise, the fragile democracy will snap back into the violent past. The recurrence destabilising of strikes and boycotts, especially by the labour movement should be avoided at all costs. However, there is a looming potential for such eruption, given the sharp differences between the government, on the one hand, and its allies, COSATU and the South African Communist Party, on the other, over the official economic policy, GEAR, and the process of the privatisation of state assets process by the labour movement (Nattrass 2000:285)

It is crucial for South Africa to maintain a serene and peaceful political atmosphere, in order to attract the investors, both domestic and foreign, especially given the crime wave plaguing the country. Although it seems inconceivable that violent uprising against the new democratic government is likely in the near future, this does not rule out eventual outbursts. If, for instance the state of education remains unaltered in the eyes of the dissatisfied students, and labour demand are ignored, uprisings cannot be ruled out. There is no question that the economic rigidities and racist tenets of apartheid are responsible for the high unemployment rate, especially among blacks (South Africa, RDP Programme 1994:14).

The twin aspects of unemployment and poverty are also alarming: “The consequences of this discriminatory pattern of development for black South Africans are reflected in the statistics. The inequality in income distribution in South Africa is amongst the highest in the world. One-fifth to one-quarter of children under the age of six are mal-nourished; only about one-fifth of black families have incomes above the minimum effective level. The whites, although they only constitute 15% of the population of South Africa, lay claim to well more than half of the national income, and more than 90% of the wealth of the country is in their hands. More than one-fifth of all black South Africans between the ages of 15 to 60 are unemployed, and in some areas unemployment is already as high as 50%. Every year the number of

unemployed grows by nearly a quarter million”(Howe & Roux 1992: 16).

Failure of the manufacturing sector is another socio - political factor to note. Historically, South Africa’s means towards industrialisation was via the mining sector. While mining is the major earner of foreign exchange, it lacked major features that stimulate overall economic growth. Natural resources, like gold and diamonds, are wasting or diminishing resources, which deplete with time. Furthermore, mining does not allow for the backward and forward linkage crucial for stimulating growth. To sustain apartheid, the protection of infant industries led to an *inward-looking* industrial approach. Competition was thus not forced, as it would otherwise have been and the domestic market was too small to energize these infant-industries into becoming world competitors: “For more than sixty years South Africa attempted to develop a dynamic industrial sector through a policy of *import-substitution*. In fact industries were protected in the hope that they would grow up and become major foreign-exchange earners. Our infant-industries grew old, but most of them never became strong enough to compete in the international markets. As a consequence, our dependence on foreign imports remained high. In spite of all the attempt at import replacement, imports remained very high, 25 – 30 % of national income” (Howe & Le Roux 1992: 17).

Other contributing factors were the exclusion of blacks from the manufacturing process. Bantu education and job reservation imposed constraints on the availability skilled labour. Correlated to the problem of an adequate skills base is the inability to develop capital goods in South Africa. Not only did the government exclude black participation, it also failed to develop a local capital-goods industry (Mirth 1990:302-505). Thus the challenge for South Africa is to speed up its personnel skills development, if she is to catch up with the fast moving world. This will require a new attitude towards investment in education, for if the educational backlog is not addressed, the future is likely to be bleak. Thus, given the socio-political factors at play, after the long waves of violence and political turmoil experienced in South Africa, *stability* stands out as the chief ingredient for economic recovery. “Violence feeds not only on poverty and crime, but also on lack of trust and deteriorating relationships between political actors which could plague South Africa well beyond a political settlement. These conflicting relationships are not only the result of poor relationships between individuals,

but involve deep and conflicting interests” (Consultative Business Movement 1992:15). The next section covers the related problems of poverty, unemployment and crime in South Africa.

## **5.12 SOUTH AFRICA’S PROBLEMS REGARDING POVERTY, UNEMPLOYMENT AND CRIME**

Poverty eradication is the primary concern of every country. “One of the greatest threats to the well being of a country is the widespread impoverishment of its people. It is particularly alarming when poverty is not only widespread but continues to grow. These developments are well known for leading to vicious cycles of poverty.”(Abedian & Standish 1992: 1). In 1993 the poverty line for an urban household with adults and three children in South Africa was estimated to be about R840 per month. The estimate for a rural household with two adults and three children was given as R740. In terms of these estimates, 63,9 percent were living below the poverty line in the rural areas and 50,8 percent in the urban areas. The figures for coloureds were 25,1 percent in the rural areas and 32,9 percent in the urban areas; for Asians the figures were 0,0 percent in the rural areas and 9,7 percent in the urban areas, and for whites 1,8 percent in rural areas and 3,1 percent in urban areas. Fifty three percent of the population of South Africa made up the poorest 40 percent of households and spent less than R385 per adult per month. The poorest 20 percent of households spent less than R225 per adult per month (South Africa Institute of Race Relations 1997:664).

While there has been a definite tendency for real wages to rise for all racial groups, largely due to upward shift of occupational structure which marginalized unskilled labourers, Africans and Coloured have been the most adversely affected, thereby causing impoverishment (Abedian & Standish 1992:10-16). In turn this gave rise to associated socio-economic problems, including poor standards of housing, health, education and productivity. Accompanying these problems and discouraging foreign investment are the soaring levels of crime in South Africa, as indicated in table 19, on the next page.

The framework within which to understand the above crime figures is the higher level

unemployment in South Africa. In 1994, the official unemployment rate among Africans was 41,1 percent, 23,3 percent among coloureds, 17,1 percent among Asians and 6,4 percent among whites. By 1995 the unemployment rate among Africans was 37 percent, 22 percent for coloureds, 13 percent for Asians and 6 percent for Whites (South Africa Institute of Race Relations 1997:359).

**TABLE 19: SELECTION OF CRIMES REPORTED IN SOUTH AFRICA  
SELECTED YEARS**

<b>Crime</b>	<b>1984</b>	<b>1988</b>	<b>1990</b>	<b>1993</b>	<b>1994</b>	<b>1995</b>
Arson	4 714	4 882	7 171	6 854	7 056	6 562
Assault	125 002	125 571	124 030	144 504	157 315	171 656
Theft of motor vehicles	44 372	57 851	68 649	77 906	94 710	97 947
House- breaking	153 440	182 754	225 158	259 646	276 056	294 204
Murder	9 462	10 631	15 109	19 583	18 312	18 983
Rape	37 755	45 847	61 132	87 102	95 763	102 809
Shop- lifting	27 245	40 833	48 935	62 166	63 274	59 109

NOTES: 1. According to the Survey, not all crimes are reported.  
2. Data for 1996 and 1997 not available.

SOURCE: South African Institute of Race Relations, *South Africa Survey* 1996/1997.

### **5.13 GROWTH, EMPLOYMENT AND REDISTRIBUTION (GEAR) – THE NEW MACRO-ECONOMIC POLICY AFTER 1994**

Prior to the democratic election of 1994, monetary authorities in South Africa pursued an interest-rate stabilisation policy as reflected in table 1. The gross domestic product (GDP), declined from 5,6 percent, during the period 1960 – 1969, to negative 1 percent for the period 1990 – 1993 (see table 2). During this bank-rate era, the inflation rate rose from 2,4 percent during the period 1960 – 1969 to 14,5 percent during 1990 – 1993, as shown

in table 3. Also, the increase in real exports declined from 4,8 percent in 1993 to 1 percent in 1994. As shown by table 18, relative racial income disparity was also high during this bank-rate era. The Gini co-efficient which measured unequal distribution of income within 4 groups in 1991 was 0,62 for Africans, 0,52 for coloureds, 0,49 for Asians and 0,46 for whites. The respective disparity ratios for these race groups were 11,8; 2,5; 5,1; and 1 in 1993, as reflected in table 17.

The Stals era, 1994 to 1997, moved away from “monetary targets” to “monetary guidelines”, using changes in money supply as the most important monitor for monetary authorities. This policy shift ushered in improvements on economic growth (GDP) for the period between 1994 and 1997 as shown in table 2. The inflation rate also dropped from 14,5 percent in the period from 1990 to 1993, to 13,7 percent for the period 1994 to 1997 as shown in table 3. Another improvement of this policy shift is the closing of the gap in the distribution of income between the various race groups in South Africa. According to table 18, the Gini coefficient for Africans dropped from 0,62 in 1991 to 0,52 in 1995, from 0,52 to 5,0 for coloured, 0,49 to 0,44 for Asians; while increasing from 0,46 to 0,49 for whites. The income disparity ratios also started closing up, dropping from 11,8 in 1993 to 8,0 in 1995 for Africans, from 2,5 to 2,4 for Asians, and from 5,1 to 3,8 for coloured, as compared to the income of whites.

After the new democratic government took office in 1994, the Department of Finance published GEAR in 1996, as a strategy for rebuilding and restructuring the South African economy. This strategy which is in keeping with goals set in the reconstruction and development program (RDP), acknowledges job creation as the primary source of income redistribution. The RDP document, published in 1994, is the new government’s socio-economic framework, which “seeks to mobilise all our people and our country’s resources towards the final eradication of apartheid and the building of a democratic, non-racial and non-sexist future” (RDP 1994: 1). There are six linked basic principles, which make up the political and economic philosophy that underlies the whole RDP (South Africa 1994:4–7).

These are:

- (1) An integrated and sustainable program – to harness all resources in a coherent and purposeful effort that can be sustained.
- (2) A people driven process – rendering development which treats its citizenry as passive recipients of goods and services, but actively involving and empowering all the citizenry.
- (3). Peace and security for all – through the creation of a judicial system that assures fairness and equality for all and stems the tide of violence and crime.
- (4) Nation-building – to heal massive racial divisions and inequalities left behind by apartheid, and became a united country is able to become globally competitive.
- (5) Link reconstruction with development – as an integrated process, in contrast to a commonly held view that growth and development, or growth and redistribution are processes that contradict each other. Growth, increase in GDP, is seen as a priority that precedes development and development as marginal effort of redistribution to areas of urban and rural poverty.
- (6). Democratisation of South Africa – eradication of minority control and privilege, which impedes growth and development, by transforming both the state and civil society.

Thus, the RDP seeks to address questions around the creation of jobs, to combat poverty and raise the living standards of all South African citizenry, by providing adequate housing, education, health-care and peaceful co-existence for all races. “The RDP attempts to provide achievable, realistic and clear program to answer these questions. But it goes further than this and encourages people and their organisations to participate in the process” (South Africa 1994: 13).

The goal of the strategy was to an realise annual economic growth of 6 percent and job-creation of 400 000 per year by 2000 (South African Survey 1996/97:653). In the light of this goal, the purpose of this study is to determine whether or not monetary policy is

effective in stimulating economic growth in South Africa, thereby affirming either the structuralist theory or neo-liberal theory.

#### 5.14 CONCLUSION

This chapter covered the characteristic features and problems of the South African economy, as well as describing how South Africa compares with other countries. Also covered is the openness and smallness of the South African economy, since the openness of a small country's economy is the key to assessing the dispute between the structuralist theory and neo-classical/orthodox theory regarding the ability or inability of such country's monetary policy to stimulate economic growth. Numerous tables give South Africa's resources, trade performance, growth rate, demographic structure and other key characteristics that reflect South Africa's position.

Further, problems experienced by South Africa, which impact on economic performance are briefly covered. These include poverty, unemployment and the tide of violence and crime. Then, an overview of monetary policy application in South Africa is briefly outlined, since it is the role of monetary policy, in stimulating economic growth, that this study seeks to examine. To complete the portrayal of South Africa's economic picture, the new economic policy of GEAR, formulated within the RDP framework, is given. This chapter sets the stage for the empirical evaluation covered in the following chapters, on whether or not monetary policy stimulates economic growth in South Africa, as a small and open country, as postulated by structuralist theory or neo-liberal/orthodox theory.



## CHAPTER SIX

### MONETARY POLICY APPLICATION IN SOUTH AFRICA PRIOR TO 1994: AN OVERVIEW

#### 6.1 INTRODUCTION

The purpose of this chapter is to examine the historical application of monetary policy in South Africa, over different time periods marking policy shifts, and to determine its effectiveness or lack thereof in stimulating growth. This background will serve as an input for formulating an ideal model for monetary policy in South Africa, which is the topic of the next chapter. This chapter will therefore cover a historical account of application of monetary policy in South Africa prior to the first democratic elections in 1994. The objectives of monetary policy in South Africa; the techniques and mechanics of monetary policy; the instruments of monetary policy, as well as, the controversy over the use of the monetary base ("high powered money") or the interest rate in controlling money supply in South Africa; and the South African financial structure within which monetary policy is implemented will be discussed. This chapter will also deal with the definition of economic growth, which will serve as a framework within which the formulated monetary policy model for South Africa is empirically tested in Part 3.

#### 6.2 THE HISTORY OF MONETARY POLICY IN SOUTH AFRICA

Over the years, monetary policy application in South Africa has shifted its focus between interest rate stabilisation and control of money supply. In the 1960s, the Keynesian approach, which focuses attention on fiscal policy for the achievement of macro-economic policy objectives, that is economic growth, was pursued in South Africa. Monetary policy played a more passive role, in that interest rates were stabilised at relatively low levels, with extensive use of credit ceilings, changes in liquid asset requirements and direct or indirect interest rate subsidies to selected sectors like agriculture, home owners and exporters (Franzsen, 1970: 113-114). A distinctive shift in focus by monetary authorities took place in the 1970s, tending towards a monetarist approach, as inflation rates soared.

However, the Keynesian inclination lingered, and in the 1980s, monetarist enthusiasm subsided somewhat, with the monetary authorities tempering the Keynesian approach with some features of monetarism. Demand management was applied, that is the control of spending in order to control inflation and maintain a sound balance of payments, together with a monetarist element of money supply control. Thus the blend of monetary policy followed in South Africa is described as a "conservative Keynesian demand management and pragmatic monetarism" (De Kock Commission 1985:13). In the 1990s, protection of the value of Rand both at home and abroad took place via control of the money supply as well as through the bank rate. In the 1990s, attention shifted to the independence of the SARB, notwithstanding its accountability to the government (Stals 1993a:25-27; Mollentze 2000: S 18 -20).

According to the Bank Act of 1942, cash reserve requirements were used as instruments for safeguarding the interests of depositors, requiring 10 percent and 3 percent to be held by commercial banks against demand and time deposits respectively. These cash reserves were to be held with the SARB. This was the policy up to 1965. Furthermore, in 1965, as an additional credit policy instrument, the Bank Act was amended to give the SARB the power to impose supplementary reserve requirements for purposes of monetary stability (Lombard, 1993:41-55).

In terms of this amendment, commercial banks could deduct from any supplementary reserve balance they were required to hold with the SARB any net increase after a specified date in the aggregate amount of their holdings of treasury bills, government stock with a maturity not exceeding 3 years, bills or advances to the Land Bank and other approved assets. This instrument was a variable liquid asset requirement rather than a variable cash reserve requirement. In 1961, the Bank Act was further amended to empower the SARB to reduce commercial banks' minimum cash reserve balance against demand liabilities to not less than 6 percent, to stimulate the economy. The use of required minimum liquid assets was predicated upon the supposition that the limited supply and/or low yield of these assets would serve to curtail bank lending, money growth and inflation (Whittaker 1992:68-72).

The consequence of the recommendations of the Technical Committee was the Reserve Bank Act of 1965, which now included all banking institutions, and not only

the commercial banks. One uniform set of legal requirements was set, the only distinctions being with respect to "short", "medium" and "long" term liabilities, and thereby bringing "near-banks" under the control of SARB. Previously, these "near-banks", financial institutions, which competed with commercial banks for deposits, were not subject to minimum reserve requirements, which tended to render the SARB's efforts to control the money supply ineffective, so that stabilisation in South Africa proved ineffective. The period was marked by inflationary financing of Government expenditure, which could not be curbed by restrictive policies based on liquidity or cash requirements. Credit ceilings and other credit controls were then chosen (Franzsen Commission, 1970: 592). During this period of increasing inflation, the use of interest rates as the target of monetary policy fell into disrepute, since they could no longer give an indication of the real cost of borrowing. Emphasis came to be placed on fixing a target for the money supply and allowing interest rates to find their own market-determined levels. The proclaimed policy reflected the belief in the quantity theory of money, which views monetary growth as the sole cause of inflation, together with the associated belief that the economy is self-adjusting, tending towards the natural rate of unemployment in the long run. However, in practice, instead of fixing the monetary base as the quantity theory of money purports, monetary authorities in South Africa set target ranges for the growth of one or other of the monetary aggregates, like M1, which they sought to achieve by a suitable adjustment of the interest rate (Dornbusch, Fischer, Mohr & Rogers, 1996:417-420).

In 1972, existing ceilings on bank credit were abolished and liquid asset requirements were revised in South Africa, in an attempt to stimulate the economy. While banks were given more freedom to extend credit, they were urged by the SARB to give preference to the extension of credit for production and export purposes. However, there was rapid growth in monetary aggregates, especially M2, and a deficit on the balance of payments during 1975. Again monetary policy was to keep interest rates relatively stable, with the prime overdraft rate fluctuating between 8 and 12,5 percent over the period 1970-1979. After 1979, the prime overdraft rate fluctuated between 9,5 and 24 percent, with monetary aggregates achieving record growth rates, especially the growth rate of M1 in 1981, 1984 and 1988 (SARB Quarterly Bulletin, several issues). This reflected the change in policy to allow interest rates to adjust to market forces, in an attempt to control the growth rate of

monetary aggregates without using direct controls. But foreign interest rates and the balance of payments problems put pressure on South African monetary authorities, forcing them to revert to the previous policy of fixing the interest rate as in 1986. During the 1990s the SARB has once again reverted to a market-oriented approach, controlling money supply relative to prevailing economic conditions. As an indication of the flexibility that the monetary authorities have, a change in terminology is used, moving away from "monetary targets" to "monetary guidelines" (Nattrass 2000:231-233) This is to reflect the current policy, which is captured by the use of "monetary guidelines", suggesting no commitment or fixation of attaining a certain rate of expansion or contraction of the money supply. With "monetary guidelines", monetary authorities are said to be able to deviate from forecast of the rate of monetary expansion: "The Reserve Bank will therefore at this juncture continue with the existing policy of using changes in the money supply as the most important monitor for its decisions regarding the implementation of monetary policy" (Stals, 1994: 25).

The experience of money supply and interest rates in South Africa, up to 1993, prior to the democratic elections discussed above is reflected in table 23.

### **6.3 MONETARY POLICY APPLICATION IN SOUTH AFRICA PRIOR TO 1994**

#### **6.3.1 Objectives of monetary policy in South Africa**

"For the last twenty years the South African economy has suffered from a rate of price inflation which has been higher than that of its trading partners. Amongst other ills, it has also experienced wide fluctuations in nominal and real interest rates, and a weakening foreign exchange value for its Rand currency. These conditions have not being conducive to durable growth of the economy" (Whittaker 1992:55). In South Africa, the South African Reserve Bank and the Treasury are the monetary authorities charged with the responsibility for implementing monetary policy. The Treasury's main responsibility is to take charge of the annual budget, which is the main vehicle for the government's fiscal policy, ensuring that the necessary controls are in place to spend the

budgeted money prudently and for the approved purposes (Fourie 2001:25). While the Treasury is also part of monetary authorities, and a central bank cannot be completely independent, the South African Reserve Bank should be free from political interference in exercising its monetary policy responsibility. This calls for the Governor of the South African Reserve Bank to be independent, in the narrow sense, accountable to the government, which restricts absolute independence (Stals 1993:25-27).

Accordingly, the broad objectives of monetary policy, as part of total public economic policy, include promotion of economic growth, raising levels of employment and achieving domestic and external monetary stability. Monetary policy may become expansionary in times of underemployment of available resources. At full employment, while certain expansion of the monetary base is still required, the degree is lesser, for otherwise inflation and balance of payments problems set in, as demand for goods and services exceeds supply. This situation would arise as a result of high liquidity, the easy availability of credit, low interest, etcetera. Increases in cost and prices as well as imports are bound to occur as a result of such expansionary policies, are bound to occur (De Jongh 1970:11). Presently the overall objective or mission of the South African Reserve Bank, is "the protection of the domestic and external value of the Rand" (Stals 1993:28-30).

While previous monetary policies differed from the current one, all policies have included attempts to curb inflation. According to De Kock (1985:13), inflation causes reduced investment inefficient allocation of source labour and other resources. And if it is not curbed, inflation is also said to lead to the imposition of price and other direct controls, which in turn worsen such inefficient allocation of resources. Inflation is also said to reduce the propensity to save, having a tendency to escalate if not countered. Furthermore, De Kock (1985:13), also points out the detrimental impact of inflation on economic growth by stating that if the country's inflation rate is higher than that of trading partners, the result leads to balance of payments problems. Such problems are said to have a tendency to result in the imposition of import control, exchange controls, etcetera, which under full employment conditions put pressure on resources, escalating the inflation rate. The effects of balances of payments problems, it is further asserted, may lead to devaluation or a series of devaluations.

**TABLE 20: MONEY SUPPLY AND INTEREST RATES  
 IN SOUTH AFRICA: 1970-1993 (PRE-1994 ELECTION)**

Year	Annual percentage increase in money supply (%)		Interest Rate at end of year(%)	
	M1	M2	Prime Overdraft Rate	BA rate
1970	3,2	9,4	8,5	7,30
1971	5,1	5,9	9,0	8,50
1972	12,8	9,1	8,5	5,40
1973	15,1	22,3	8,0	7,20
1974	22,6	19,9	12,0	11,00
1975	13,4	20,7	12,0	8,50
1976	6,1	14,9	12,5	9,65
1977	3,1	-2,0	12,5	8,80
1978	6,1	19,0	11,5	7,60
1979	19,1	12,6	9,5	4,60
1980	29,7	21,8	17,0	7,00
1981	34,2	28,5	18,0	15,25
1982	21,3	15,7	20,0	14,25
1983	29,0	22,5	24,0	18,10
1984	39,9	23,5	16,5	21,75
1985	13,7	18,8	12,0	13,60
1986	-3,5	7,9	12,5	8,90
1987	23,2	10,0	18,0	9,50
1988	30,5	32,4	21,0	15,65
1989	15,3	30,6	21,0	18,00
1990	12,7	17,7	20,25	17,70
1991	17,7	19,1	20,25	16,40
1992	14,2	12,5	17,25	12,40
1993	8,0	3,2	15,25	10,15

NOTES: Changes in money supply calculated as a percentage increase in annual averages of month-end balances.

Prime overdraft rate is that charged by major commercial banks. BA rate is the rate on three-month bankers' acceptances.

SOURCES: Franzsen (1983); South African Reserve Bank Quarterly Bulletins.

From the above, it can be stated that prior to the Stals focus on the preservation of the value of the Rand, both at home and abroad, as the primary objective of monetary policy in South Africa, the broad-based or traditional objectives can be seen as: "relative stability of general price level; a high and stable level of employment of labour; a satisfactory high rate of expansion of total output, i.e. satisfactory rate of economic growth; and satisfactory balance-of-payments, foreign reserves and exchange position" (De Kock 1985: par 13.15).

Given that protection of the value of the Rand is the primary or "ultimate" monetary policy objective for monetary policy authorities, this does not mean that monetary authorities are most reluctant to attain such a goal by mandatory price controls. Instead, the authorities may adopt an "intermediate" objective like a certain target rate of growth of the money supply. Also, the authorities cannot simply fix the size or the rate of growth of money supply. This, does not imply, however, that monetary authorities never interfere in the activities of banking institutions. Instead authorities are bound to create conditions in which the money supply will "spontaneously" be neither too large nor too small and will be growing neither too rapidly nor too slowly, relative to the "ultimate" goal of protecting the value of the Rand. Governing the rate of growth of money supply is the banks' ability and desire to create and accept monetary liabilities, that is the supply side of the money-creation process, on the one hand, and on the other hand, the non-bank public's willingness to hold such liabilities, that is the demand side of money-creation process. As such, monetary authorities can hope to control the money-creation process from the supply side by reducing or expanding the amount of reserves of the private banking institutions, for example. Another assumption is that such an amount can be closely managed by the monetary authorities. For the demand side, authorities can achieve their money supply target by bringing about a particular level of interest rates at which the domestic non-bank public will wish to hold money in line with the set target size (Fourie, Falkena & Kok 1996:291). To operationalise both the amount of reserve assets available to the banking sector and the level of market interest rates, the monetary authorities have a number of instruments at their disposal, which they have been applying since the inception of the South African Reserve Bank (SARB). These instruments are discussed in the next section.

### 6.3.2 Monetary policy instruments

In its role as facilitator or promoter of economic growth, monetary policy seeks to influence variables such as the money supply, the level and structure of interest rates and the general availability of credit in the economy, by exercising control over the financial system. The South African Reserve Bank (SARB), which was established in 1921, uses policy instruments in performing five main functions, that is controlling the issue of notes, being a banker to other banks, serving as custodian of the country's gold and other foreign exchange reserves; and formulating and implementing monetary policy (Fourie & Van den Bogaerde 1997:232-233).

The SARB has the sole right to issue bank notes and coins. This cash is circulated through purchases of assets from the government and the commercial banks, thereby creating credit availability by SARB to these sellers of financial assets. In performing this function, the SARB is constrained by the public's cash requirements, that is "till money requirements". As a banker of bankers, the SARB is the custodian of minimum banks. This is a process through which the banking sector can create money, since they do not have to keep all deposits in reserve. The control of money supply by the monetary authorities is at the heart of this study. By controlling the composition and levels of their required reserves, the SARB can control the supply of money. Banks also use these reserves to clear mutual claims and obligations, thus rendering the SARB a clearing bank as well. The SARB clears one bank's debit balance against other banks credit balances. The SARB also acts as lender of last resort, in that the cash balance shortage experienced on the money market by the Corporation for Public Deposits (formerly the National Finance Corporation), the discount houses and commercial banks, can be obtained from the SARB. Usually, the discount houses obtain the required cash balances for shortfalls from the SARB, on behalf of commercial banks, by rediscounting land bank bills, treasury bills, bankers' acceptances, etcetera. The determination of rates, terms and conditions under which the SARB executes its rediscounting is called its discount policy.

As the custodian of the country's gold and other foreign exchange reserves, the SARB is also the government's banker, handling all financial receipts and payments of the state. The SARB also deals with the weekly issue of treasury bills on behalf of the treasury,



advising the government with regard to monetary and financial matters, including the administration of exchange controls. And with regard to formulation and implementation of monetary policy, as stated above, the SARB co-operates with the Department of Finance, while maintaining its independence (Fourie 1991:232-233).

To perform its main functions, the policy instruments used by the SARB can be divided into four broad categories, namely "market-oriented" policy instruments, "semi-direct" policy instruments, "direct" policy instruments, and instruments with "external" dimension (Fourie, Falkena & Kok 1996:216-220). "Market-oriented" policy instruments are of two types, the discount policy or refinancing policy and instruments that support the SARB's refinancing policy, namely public-debt management, open-market operations, the operation of Tax and Loan accounts, variations in reserve-asset requirements, and other measures for influencing the money-market shortage. "Semi-direct" policy instruments take the form of variations in reserve-asset requirements, while credit ceilings, selective credit controls; reserve-asset requirements, capital requirements, deposit and/or lending interest rate controls, "moral suasion", hire-purchase credit controls, and import deposit schemes constitute "direct" policy instruments. Under policy instruments with "external" dimension fall official foreign borrowing; changes in exchange control regulations; and central-bank intervention in the spot and forward foreign-exchange markets (Fourie, Falkena & Kok 1996: 251).

These policy instruments are used in accordance with the classical principle of economic management, which seeks never to control the endogenous variables of the market mechanism directly, but to influence them indirectly through those elements of the market which are naturally subject to outside influence. As stated above, these policy instruments are related to the main functions of the SARB in its formulation and implementation of monetary policy; this relationship is discussed in the next section as techniques of monetary control.

#### **6.4 THE TECHNIQUES OF MONETARY CONTROL**

On the basis of the main functions of the SARB discussed above, the control of the cash reserve requirements of private banks, rediscounting operations, intervention in spot and

forward foreign exchange markets and open market operations, that is the selling and buying of securities, are instruments used to sharply focus the Rand value protection binoculars of SARB. Open market operations consists of decisions regarding the timing, volume and nature of the SARB's sales or purchases of financial assets, to supply or absorb cash reserves. The financial assets involved are commonly and traditionally government securities. Like public-debt management, open-market operations are "supporting" instruments of the present South African monetary control system, used to increase or reduce the money-market shortage which serves to make the refinancing or discount policy effective. Public-debt management and open-market operations are used in a more direct manner, by setting limits to the banks' powers to extend credit and to create money. For the SARB to operate effectively from the supply side precludes automatic and unconditional refinancing at the "discount window" is precluded. Variations in reserve requirements are not effective for the day-to-day management of money-market conditions, because of the "lag-effect" from the time these requirements are announced in the Government Gazette to the time they are implement by the banks. Besides this "announcement effect", opponents of their use consider them an unfair "tax", since no interest is earned on them. But those in favour find them useful in reinforcing the role of the SARB, because of the tendency that expansion of the banking system cannot normally take place without a rise in the need for high-powered money, that is all domestic bank notes and coins plus all balances of the private banks with the SARB. Also, proponents maintain that variable cash requirements can be useful in controlling sudden, large and substantial increases or decreases in banks' actual cash reserve holdings, which cannot be corrected via open-market operations. With regard to intervention in the spot and forward foreign-exchange markets, the SARB may enter the foreign-exchange market as a seller or buyer of foreign exchange to influence maintenance of the exchange value of the Rand (Fourie, Falkena & Kok 1996:303-308).

Interaction in the spot and forward foreign exchange markets is conducted in the light of official foreign borrowing, and exchange controls, which are used to maintain sufficient foreign reserves to manage the floating exchange rate. Quotes of foreign exchange rate are employed to attract or repel inflows of foreign capital and to discourage or encourage capital outflows. Foreign investors in considering the desirability of investing in a claim, denominated in Rands, on a South African resident, will consider the interest rate per

annum to be earned, plus the expected percentage per annum of the Rand. These will be compared with rate of interest earned by the foreign investor at home, allowing for transaction costs.

If the investment would earn more in South Africa, this will result in capital inflows to South Africa. Without forward cover, the percentage rate of appreciation or depreciation of the Rand would necessarily be uncertain, and the average expected rate of the Rand appreciation or depreciation would then be used to factor in the risk element. This risk is removed when the foreign investor sells the amount of Rands to be accrued at the end of the claim in the forward exchange marked at the exchange rate quoted "today". The same is the case with a South Africa importer considering financing imports. When foreign interest rates are lower relative to South African rates, overseas financing will be attractive as long as the future rate of depreciation of the Rand vis-à-vis the spot rate does not offset the interest differential.

The SARB's offering of its forward-cover facilities is aimed at approximate interest-rate parity, whereby the total cost of foreign financing of imports is approximately equal to the interest cost of financing these imports in South Africa (Barr and Kantor 1983:19-20). Due to the fact that it is almost impossible for the SARB to determine the movement in the effective exchange rate, and given the limited level of foreign exchange reserves of the Bank, the approach of gradually dismantling exchange control measures was implemented during the Stals era (Mollentze 2000: S 40 –41).

## 6.5 CONCLUSION

This chapter covered monetary policy application in South Africa, up to 1993, before the new democratic government, as a prelude to this study's empirical analysis. The objectives of monetary policy in South Africa and monetary policy instruments were discussed. The chapter also dealt with techniques of monetary control and policy instrument used in South Africa over time, as well the tendency to stabilise interest rates via direct or indirect measures by South African monetary authorities

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1972	12,8	9,1	8,5	5,40
1973	15,1	22,3	8,0	7,20
1974	22,6	19,9	12,0	11,00
1975	13,4	20,7	12,0	8,50
1976	6,1	14,9	12,5	9,65
1977	3,1	-2,0	12,5	8,80
1978	6,1	19,0	11,5	7,60
1979	19,1	12,6	9,5	4,60
1980	29,7	21,8	17,0	7,00
1981	34,2	28,5	18,0	15,25
1982	21,3	15,7	20,0	14,25
1983	29,0	22,5	24,0	18,10
1984	39,9	23,5	16,5	21,75
1985	13,7	18,8	12,0	13,60
1986	-3,5	7,9	12,5	8,90
1987	23,2	10,0	18,0	9,50
1988	30,5	32,4	21,0	15,65
1989	15,3	30,6	21,0	18,00
1990	12,7	17,7	20,25	17,70
1991	17,7	19,1	20,25	16,40
1992	14,2	12,5	17,25	12,40
1993	8,0	3,2	15,25	10,15

NOTES: Changes in Money Supply calculated as percentage increase in annual averages of month-end balances.  
 Prime Overdraft Rate is that charged by major commercial banks. BA rate is the rate on three-month banker's acceptances.

SOURCES: Franzsen (1983); South African Reserve Bank Quarterly Bulletins.

The historical account given in this chapter covers the application of monetary policy in South Africa for the period up to 1993. Also covered is the new macroeconomic policy called GEAR (Growth, Employment and Redistribution), and the unique South African economic features that constitute the environment within which monetary policy is applied. The next chapter covers monetary policy and money supply in South Africa.

## CHAPTER SEVEN

### MONETARY POLICY AND MONEY SUPPLY IN SOUTH AFRICA

#### 7.1 INTRODUCTION

The overall features of the South African economy and the broad application of monetary policy in South Africa prior to 1994, having been discussed in previous chapters, this chapter analyses the relationship between monetary policy and money supply. To recapitulate, structuralists argue that monetary authorities in an open and small economy cannot control money supply, since it is considered to be *exogenous*, and they are incapable of stimulating economic growth or curbing inflation. Inflation, to structuralists, is imported and to say it is a monetary phenomenon caused by money supply expansion is tautological. They argue that for there to be inflation there must be a money supply, but this does not imply that excessive monetary expansion is the sole or primary cause, and this tautology, they say, cannot be seen as the cause of inflation. Furthermore, structuralists argue that non-economic factors, the socio-political influences, should be taken into account in a monetary analysis of the economy. On the other side of the debate, orthodox or neo-liberal economists, especially monetarists, consider money supply *endogenous* and thus controllable by monetary authorities. They further consider inflation to be positively affected by changes in money supply. It is against this backdrop that this chapter sets out to discuss the money supply process and the application of monetary policy in South Africa. The discussion is opened by tracing the money supply process as the monetary authorities in South Africa, the South African Reserve Bank (SARB), tried to manage the nation's money supply, especially during the 1990s.

#### 7.2 GOAL OF MONEY SUPPLY IN SOUTH AFRICA

The main concern of the SARB, ideally in conjunction with the Department of Finance (Treasury), is with adjustments to interest rates and the growth of the money supply. This concern flows from the ultimate goal of monetary policy, namely promoting strong long-term economic performance. In the short to the medium term, monetary policy objectives seek to stabilise the macro-economy, by, for means such as making adjustments to

external or exogenous shocks and smoothing out business cycle fluctuations, controlling inflation, stabilising the balance of payments, and maintaining a stable and appropriately valued real exchange rate. In terms of the Constitution and the Reserve Bank Act, the mandate of the SARB is to “protect the value of the Rand” (Nattrass 2000:213). On the domestic scene, this mandate prescribes the requirement that the SARB control inflation, while in the international context, it means the maintenance of a stable and appropriately valued exchange rate. These two main functions, the control of inflation and the exchange rate policy, are discussed later in this chapter.

### 7.3 THREE MAIN MONETARY POLICY INSTRUMENTS IN SOUTH AFRICA

In general, there are three main tools or instruments of monetary policy and a few minor ones. The three major tools are open market operations, discount window policy and reserve requirements. Minor policy instruments include the ability to enact selective credit controls and the ability to use persuasion, sometimes called *moral suasion*, to guide the banking and financial institutions to act in a particular and desired manner. Open market operations entail purchases or sales of government securities by the SARB in a secondary market for securities. These are not new issues by the Treasury, but are bonds previously bought by someone other than the SARB. These open market operations affect the reserves which banks are required to hold, thus their ability to make loans. Essentially, the SARB use open market operations to influence the liquidity of the money market. With reserves above those banks are required to hold, *excess reserves*, banks can make loans and thereby “create money”. Reserve requirements set by the SARB are an extremely powerful and seldom used tool of monetary policy. When banks fall short of the required reserves, they can “go to the window” and borrow from the SARB. The interest rate charged, *discount rate* (or the *repo rate* since 1999), for these loans is increased or lowered to discourage or encourage borrowing, thereby causing the money supply to move in the direction desired by the SARB (Baye & Jansen 1995:427-436).

## 7.4 OTHER MONETARY POLICY TOOLS IN SOUTH AFRICA FOR AFFECTING THE MONEY SUPPLY

Other minor monetary policy tools like selective credit control are at the SARB's disposal. The *margin requirement* on stock purchases is also varied in response to the influence of discretionary actions of the SARB. Stock is purchased *on margin* when the buyer borrows a fraction of the funds needed to purchase the stock. A margin requirement of 40 percent would require that a buyer provide funds equal to 40 percent of the price of the stock. The margin requirement is used to avoid widespread margin purchases, since a large drop in the stock price can cause problems in the repayment of loans and thereby cause problems for the entire financial industry. With *moral suasion*, as monetary policymaker and regulator of the banking and financial industry, the SARB has considerable persuasive clout to influence behaviour in what it considers the public's best interests. Theoretically, money supply ( $M^s$ ) is a tool which the Reserve Bank can utilise at its discretion, to the extent that it can manipulate components of the *monetary base* (MB). The monetary base is also called *high-powered money* which is currency in the hands of the public, C, plus commercial bank reserves, R, and the size of the money multiplier, M, (Baye & Jansen 1995:436-437)

Accordingly, before analysing the impact of monetary policy when money supply is exogenous and endogenous, this chapter briefly examines the money supply process; the two main functions of the Reserve Bank, control of inflation, and the exchange rate policy. After this prelude and the subsequent analysis, the South African experience is presented.

### 7.4.1 The Money supply process

The analysis of the money supply process in this section, and sections 7.4.2 to 7.6.2 is based on the approach of Baye and Jansen (1995:446-473). Generally, the public holds currency and deposits, so that the total money stock,  $M^s$ , is the sum of currency, C, and deposits, D :

$$M^s = C + D \quad (44)$$



This narrow definition of money,  $M1$ , is used to simplify the discussion and will later be expanded to reflect the broader definition,  $M3$ . It is assumed that the public wishes to hold currency in proportion to deposits. The *desired currency to deposit ratio*,  $c^d$ , is given as follows :

$$c^d = C / D, \quad (45)$$

such that :

$$C = c^d \times D \quad (46)$$

Given that the banking sector holds excess reserves,  $ER$ , in addition to required reserves,  $RR$ , then total reserves,  $R$ , become:

$$R = RR + ER \quad (47)$$

The *required reserve to deposit ratio*,  $rr$ , that is :

$$rr = RR / D \quad (48)$$

gives total reserves as equal to the required reserve ratio,  $rr$ , times deposits :

$$RR = rr \times D \quad (49)$$

Assuming excess reserves,  $ER$  to be proportioned to deposits,  $D$ , the desired excess ratio,  $e^d$ , becomes :

$$e^d = ER / D \quad (50)$$

which can be rewritten as :

$$j \quad ER = e^d \times D \quad (51)$$

Substituting equations (49) and (51) into equation (47), total bank reserves, we get :

$$R = RR + ER \quad (52)$$

$$= (\pi r \times D) + (e^d \times D)$$

$$= (RR + e^d) \times D,$$

which indicates that when the total banking systems holds a constant function of banking system deposits as required and excess reserves, total banking system reserves are proportional to deposits. Thus equation (4) can be rewritten as:

$$R = (\pi r + e^d) \times D \quad (53)$$

## 7.5 THE MONETARY BASE

As stated above, the *monetary base* is at times called *high-powered money*. It is currency in the hands of the public, C, plus commercial bank reserves, R :

$$MB = C + R \quad (54)$$

The monetary base is convenient for analysing open market operations and the way currency holdings and excess reserves affect money creation. For instance, if an open market purchase of R1 million is made and the securities dealer deposits it all, that increases the bank's reserves by R1 million. Assume that the reserve requirement ratio is 20 percent, then R800,000 can be loaned out, where excess reserves are not held.

Supposing the securities dealer decides to keep a currency holding of 25 percent, required

currency to deposit,  $c^d$ , equal to .25. With the required reserve ratio at 20 percent, the securities dealer withdraws R200, 000 ( $.25 \times R800, 000$ ). After the withdrawal of the R200,000, the new reserves are R800,000. It should be noted that the 25 percent currency holding of free or loanable reserves, after retaining required reserves of the R800, 000 is not of initial deposit (R1 million). Against the R800, 000, the bank's required reserve ratio of 20 percent means it must hold R640, 000. Thus, it can loan out R640, 000. If a decision to hold excess reserves of 5 percent is made, a further R40, 000 will be held and only R600, 000 loaned out. This illustrates the fact that the initial R1 million open market purchase will increase bank loans (and hence deposits at other banks) by a lesser amount than when there is no currency holding and excess reserves. This is how the Reserve Bank increases currency in the hands of the public. An open market sales has the opposite contractionary effect on currency in the hands of the public. After this is brief exposition and simple illustration on the monetary base, MB, we now turn to how it impacts on banking system deposits, D, and the currency holdings by the public, C.

## 7.6 THE COMPLETE DEPOSIT MULTIPLIER

This section covers the relationship between the monetary base and total banking system deposits. The focus is on how currency holding and excess reserves drain the banking system of reserve, in turn affecting the capacity to make loans out or “create money”. We first substitute equations (46) and (52) into equation (53) to express the monetary base, MB, as :

$$\begin{aligned} MB &= C + R, & (55) \\ &= c^d D + (\pi + e^d D), \end{aligned}$$

which can be rewritten as :

$$MB = (\pi + e^d + c^d) \times D. \quad (56)$$

Now the monetary base is the total banking system deposits, D, multiplied by the sum of

currency to deposit ratio,  $c^d$ , the required reserve ratio,  $rr$ , and the desired excess reserve ratio,  $e^d$ . Solving equation (56) for  $D$ , we obtain the total amount of deposits that are generated with a given monetary base:

$$D = \frac{MB}{rr + e^d + c^d}, \quad (57)$$

which can be rewritten as :

$$D = \left[ \frac{1}{rr + e^d + c^d} \right] \times MB \quad (58)$$

Equation (58) determines total banking system deposits given the parameters of the banking system. It also indicates that the total amount of banking system deposits is actually a multiple of the monetary base. The term in the square brackets is called the *complete deposit multiplier*. It indicates the multiple by which a given change in the monetary base will increase the total banking system deposits. This multiplier decreases (increases) with increases (decreases) in either the currency to deposit ratio,  $c^d$ ; the required reserve ratio,  $rr$ ; or the desired excess reserves,  $e^d$ . A change in monetary base,  $\Delta B$ , causes a change in deposits,  $\Delta D$ , which is equal to the fraction in the square brackets :

$$\Delta D = \left[ \frac{1}{rr + e^d + c^d} \right] \times \Delta MB \quad (59)$$

We next discuss the complete currency or cash multiplier.

### 7.6.1 THE COMPLETE CURRENCY MULTIPLIER

As shown above, an open market purchase leads not only to an increase in the banking system deposits, but also to more currency in circulation. The reverse is true for an open market sale. If we substitute equation (58) for  $D$  in equation (46), we obtain the following relationship between the monetary base and currency :

$$C = c^d \times D, \quad (60)$$

and solving for D, we get:

$$\frac{C}{C^d} = D. \quad (61)$$

Substituting equation (58) for (61), we get:

$$\frac{C}{C^d} = \left[ \frac{1}{r + e^d + c^d} \right] \times MB \quad (62)$$

which can be rewritten as :

$$C = \left[ \frac{c^d}{r + e^d + c^d} \right] \times MB \quad (63)$$

Here, the term within the square brackets is called the *complete currency multiplier*, which determines by how much currency holdings increase due to changes in the monetary base. A change in the monetary base,  $\Delta MB$ , will lead to a change in currency holdings,  $\Delta C$ , that is a fraction of the initial  $[c^d / r + e^d + c^d]$  of the initial increase in the monetary base :

$$\Delta C = \left[ \frac{c^d}{r + e^d + c^d} \right] \times \Delta MB \quad (64)$$

Thus, the additional increase in the money stock, as the monetary base changes, in the money stock is the same as equations (55) and (57), which is the *complete money multiplier* effect next discussed.

## 7.6.2 THE COMPLETE MONEY MULTIPLIER

The relationship between the money stock and the monetary base can be deduced from equation (44), and is as follows:

$$M^s = C + D.$$

Substituting equations (63) and (58) for C in (45) and D in (46), respectively, we get the following:

$$C = \left[ \frac{c^d}{\pi\pi + e^d + c^d} \right] \times MB$$

and

$$D = \left[ \frac{1}{\pi\pi + e^d + c^d} \right] \times MB,$$

gives:

$$M^s = \left[ \frac{1 + c^d}{\pi\pi + e^d + c^d} \right] \times MB. \quad (65)$$

The term in the square brackets in equation (65) is called the *complete money multiplier*, the sum of the complete currency and complete deposit multipliers. It depends on the desired currency to deposit ratio,  $c^d$ , the required reserve ratio,  $\pi\pi$ , and the desired excess reserve ratio,  $e^d$ . It determines the multiple by which the change in the money stock,  $\Delta M^s$ , will be occasioned by a change in the monetary base,  $\Delta MB$ .

$$\Delta M^s = \left[ \frac{1 + c^d}{r + e^d + c^d} \right] \times \Delta MB. \quad (66)$$

Thus, since the change in the monetary base is multiplied by the complete money multiplier, the money stock changes by a multiple of the change in the monetary base. For the narrow definition of money, M1, was used here. To broaden it to M3, deposits are divided into demand deposits, D, and time deposits, T, adding to them to C, cash and the near-money components, MM, as follows:

$$M3 = C + D + T + MM. \quad (67)$$

If we then let the *time deposits to demand deposits ratio*,  $T / D$ , be  $c^t$ , and the other components to deposit,  $MM / D$ , be  $c^m$ , then the complete M3 money multiplier becomes :

$$M3 = \left[ \frac{1 + e^d + c^t + c^m}{r + e^d + c^d} \right] \times MB. \quad (68)$$

## 7.7 MONETARY POLICY APPLICATION

This section is largely based on the work by Natrass (2000); Fourie (2000); and Mollentze (2000).

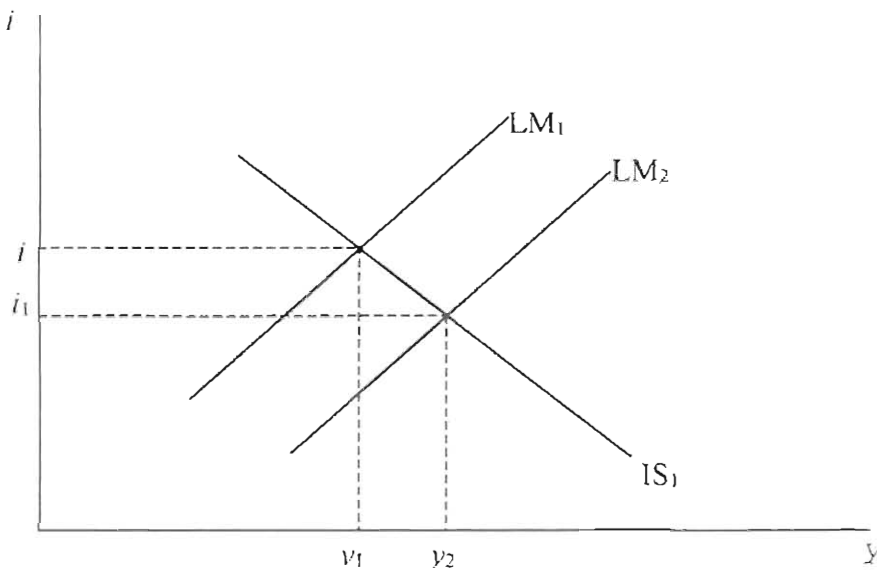
### 7.7.1 Structuralist(Keynesian) and neo-liberal (neo-classical) approaches

Orthodox or neo-liberal economists, who follow a neo-classical approach, regard money supply as *exogenous* and *controllable* by monetary authorities. This view is not shared by structuralists, with their Keynesian slant, who regard money supply as *endogenous* and *not controllable* by monetary authorities. The traditional orthodox monetary policy approach in the IS-LM model refers to the modification of nominal money supply by the Reserve Bank, through monetary policy instruments, especially open market operations – the sale

and purchase of bonds to and from the public. The sale of bonds decreases money supply, while purchases increase money supply. The impact of such open market operations of money supply is differently explained by two schools of orthodox economists, namely Keynesian and neo-classical schools (Mohr & Fourie 1998:443-444).

To Keynesians, an increase in money supply shifts the LM curve out to the right, increasing the demand for bonds. This increased demand raises the prices of bonds and consequently, there is a drop in their yield.

**FIGURE 5: EXPANSIONARY MONETARY POLICY: KEYNESIAN MODEL  
(i.e. STRUCTURALIST)**



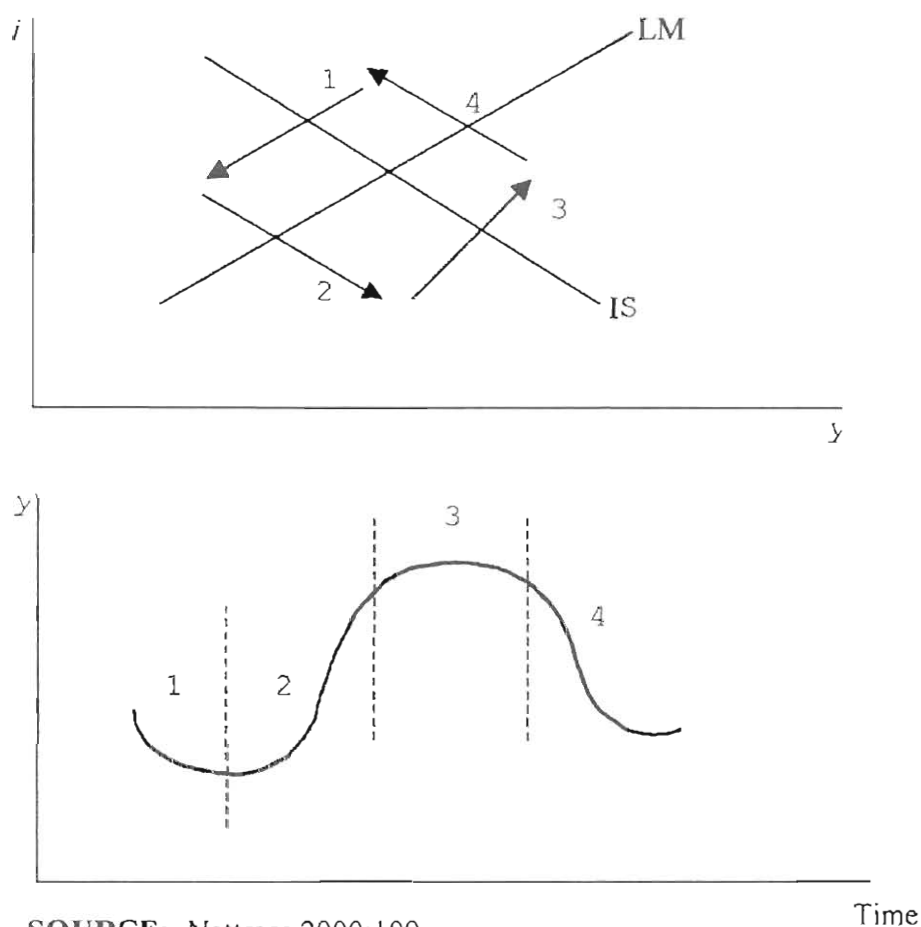
**SOURCE:** Natrass 2000:107.

This inverse relationship, namely that when interest rates fall bond prices increase, has an impact on the real sector, the goods market. When the interest rate falls, investment demand increases, and consequently output increases. Thus, output increases in line with increased demand. This is the so-called Keynesian transmission mechanism, which reflects the way the money supply ultimately affect the output, via the interest rate. However, Keynesians (structuralists) qualify this by stating that if investment is relatively insensitive to change in interest rates and if the demand for idle balances is highly elastic, monetary



policy through changing money supply becomes less effective in affecting output (Nattrass 2000:106-107). However, this static comparative model does not reflect reality. In the real world, the economy is rarely if ever “in equilibrium”. Then the question becomes whether the authorities should ever try to intervene or whether they should wait for the economy to adjust towards equilibrium.

**FIGURE 6: POSSIBLE MOVEMENT AROUND IS-LM EQUILIBRIUM AND IMPLICATIONS FOR THE BUSINESS CYCLE**



**SOURCE:** Nattrass 2000:109

On the contrary, neo-classical economists (the orthodox economists or neo-liberals) argue that money supply does not have a lasting impact on output, propagating the dichotomy between the monetary sector and the real sector. Thus, it is argued that attempts by monetary authorities to increase the level of output through expansionary monetary policy are said to be ultimately self-defeating. Such attempts are considered inflationary, because the economy is assumed to be at the full-employment level of output, and trying to boost

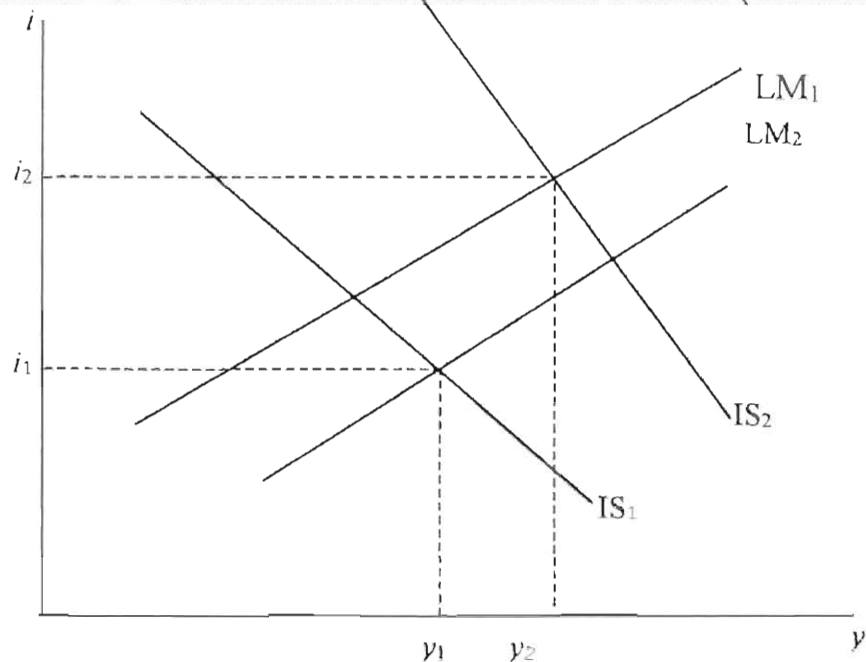
demand above this level simply results in a rise in the price levels. It is further argued that when an expansionary monetary policy is pursued, the real money supply initially increases as a result of the increase in the nominal money supply. This shifts the LM curve to the right. To satisfy the new demand, output has to rise, but because factors of production are fully employed, that becomes impossible. All that can happen is a rise in prices, thereby contracting the real money supply. This shifts the LM curve back towards the left until the full employment level output is again restored. Thus monetary policy is said to have no impact on the real level of output ( Natrass, 2000:114-115).

### 7.7.2 The Keynesian-neoclassical hybrid

This approach to the LM-IS framework uses the neo-classical model when the economy is at full employment and then uses the Keynesian model in a depression. For South Africa, given the per capita GDD drop in 1998 and 1999, the rising unemployment, and the drop in capacity utilisation, this would suggest a policy response leaning to the Keynesian side. This is supported by arguments that the South African economy is “demand constrained” although the neoclassical thinkers such as those who designed GEAR believe that the economy to be “supply-constrained” and inflation to be the primary danger to be fought at all costs (Adelzedah 2000.) Given these different views on whether the South African economy is “demand-constrained” versus “supply-constrained”, advocating a Keynesian (structuralist) or neo-classical orthodox) approach, respectively, a *hybrid* or *mix* of the two approaches is proposed as a practical solution. The hybrid model is said to have built-in flexibility, following the Keynesian approach when the economy is ‘demand-constrained’ and following the neoclassical when the economy is “supply-constrained” (Snowdon, Vane & Wynarczyk, 1994:ch 6 & 8).

In such a model, the expansionary impact of an increase in demand would be dampened by an increase in prices, although not eliminated. This is shown by an increase in output from  $y_1$  to  $y_2$ , as the demand pushes the IS curve to  $IS_1$  to  $IS_2$  and the rise in prices pulls the LM curve back from  $LM_1$  to  $LM_2$  (Natrass 2000:205-206).

**FIGURE 7: EXPANSIONARY MONETARY POLICY (HYBRID MODEL)**



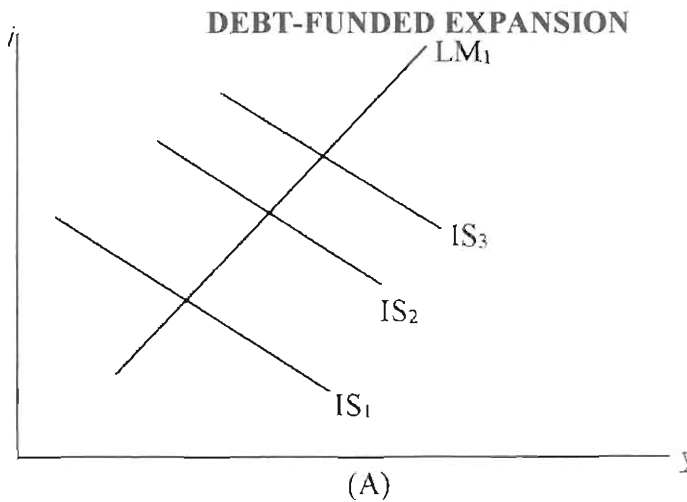
**SOURCE:** Nattrass 2000:117.

## 7.8 INVESTMENT ENVIRONMENT AND INTEREST RATES

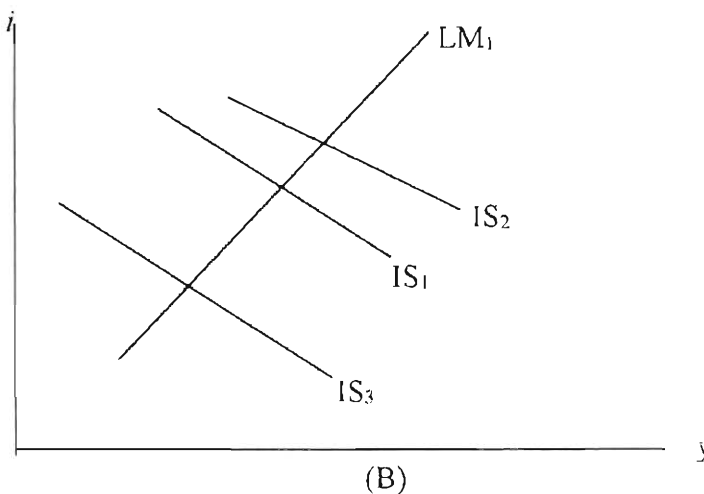
The IS-LM framework has a problem regarding the modelling of investment, since it largely depends on “expectations”, “fears,” “flights of fancy” or the “animal spirits” of investors. To investors, government budget deficit is widely regarded as a determinant of investment, although investor reaction cannot be predicted, as is illustrated by figure 8 on the following page. If investors respond positively to demand, the demand and output rises, and the IS curve shifts out from  $IS_1$  to  $IS_2$ . As investment rises, demand increases and further pushes the IS curve from  $IS_2$  to  $IS_3$ , as is illustrated by panel A. Thus, demand becomes the driver of investment and in turn, of growth. The implication of this analysis is that restrictive fiscal policy will result in a dual contraction in demand, which reduces investment. The labour movement in South Africa, especially COSATU, is critical of the government’s orthodox restrictive policies, because reducing the deficit quickly is seen to cause deflationary pressure on the economy, causing job losses. Accordingly, the government is urged to pursue expansionary policies to induce exogenous increases in investment and income. However, if the government is suspected of spending the borrowed money to finance debt unwisely, fears this that monetisation of debt may spark off inflation could reduce demand and contract investment, as reflected in B of figure 8.

The initial increased demand resulting from the expansionary policy, before fears set in, shifts the IS curve from  $IS_1$  to  $IS_2$ . As fears grow stronger, demand drops and this, in turn, contracts investment, shifting the IS curve from  $IS_2$  to  $IS_3$ . The dilemma becomes how to stimulate economic growth when the estimation of the investment function is difficult to determine and we really do not know what determines investment, since restrictive fiscal policy propagated by the GEAR strategy of low interest rates to stimulate investment assumes it will rise and COSATU assumes it will fall. This controversy over GEAR aroused by COSATU, and the associated criticism of the SARB strategy, are covered below.

**FIGURE 8: DIFFERENT PRIVATE INVESTOR REACTIONS TO**



An increase in debt-financed Government spending boosts private investment (as investment reports positively to demand)



An Increase In Debt-financed Government Spending Reduces Investment (As Investment Reacts Negatively To The Rise In Government Debt)

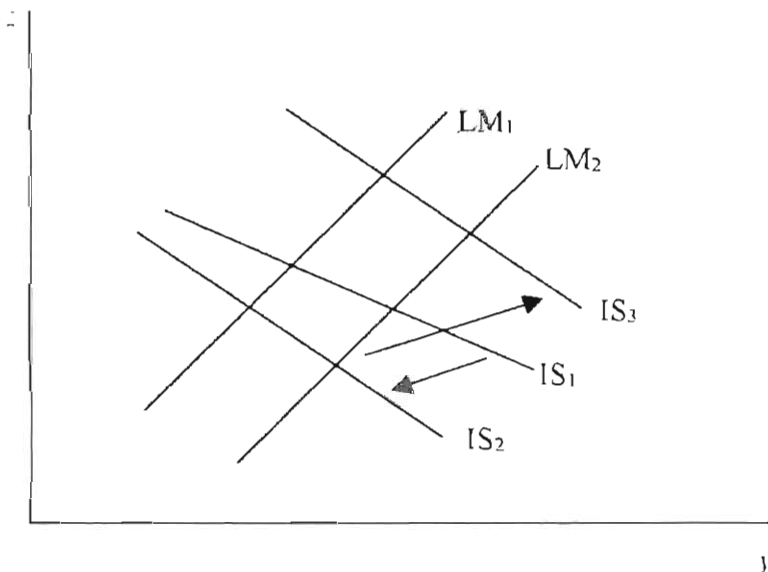
**SOURCE:** Natrass 2000: 121.

The GEAR strategy calls for low interest rate consistent with higher economic growth and SARB favours a higher rate consistent with lower inflation. To gain a better understanding of this on-going and fervent debate over the efficacy of the South African official macroeconomic policy, a brief outline of the GEAR investment strategy, which is attacked by COSATU for its alleged failure to stimulate economic growth and generate meaningful employment opportunities, an attack shifted by GEAR proponents to the monetary authorities, SARB, is the next topic.

### 7.8.1 GEAR investment strategy

From the previous sections, it is apparent that there are no *a priori* grounds for anticipating how investors will react. GEAR is the macroeconomic strategy of South Africa, introduced in 1996 by the Ministry of Finance. The basic idea is that by running a primary surplus, investor confidence will be boosted to the extent that its net impact on demand is positive. Initially when the authorities reduce the deficit, by taking more in taxation than they inject in the form of spending, the IS curve shifts inwards to the left, from  $IS_1$  to  $IS_2$ . The results of such a restrictive fiscal policy are shown in figure 10:

**FIGURE 9: THE GEAR VISION**



**SOURCE:** Natrass 2000:124.

Then, as private investment picks up, owing to lower levels of interest rates, the IS curve shifts outwards to the right, from  $IS_2$  to  $IS_3$ . Thus, what starts out as ‘contractionary’ fiscal

policy ends up being in fact expansionary. This is becoming conventional wisdom, even if it is not backed by substantial evidence and thorough theoretical underpinnings. The excess of tax income over expenditure used to reduce debt results in a drop in the supply of bonds, a fall in interest rates and the outward shift of the LM curve to the right, from  $LM_1$  to  $LM_2$ . This is the core belief that underpins South Africa's GEAR strategy (Nattrass 2000:123-125). The assumption of the formulators of GEAR was that the SARB, the monetary authorities, would not restrict growth of the money supply, thereby shifting the LM curve back to the left, possibly even move past  $LM_1$ . Reality proved this assumption to be false for the South African economy (see chapters 8 and 9).

Proponents of GEAR strategy, in defending the GEAR policy, blame monetary authorities for pursuing an "unnecessarily" tight monetary policy. This has created tension between the Ministry of Finance, which objects to the growing interest burden that high interest rates placed on the budget, and the SARB, which is more worried about the value of the Rand, thus the exchange rate and inflation rather than the short-term growth concern. The agreement is for the SARB to target a specific inflation band, which can be adjusted to accommodate unexpected external shocks. Another defence by the proponents of GEAR is that of labour-market inflexibility. To examine these justifications of the poor performance of GEAR policy, it is necessary to examine the alleged preoccupation of monetary policy with the protection of the value of the Rand. Since money supply, as already shown, is not affected by changes in the interest rate, the equilibrium quantity of money balances is determined solely by the position of the money supply curve. The equilibrium interest rate is determined by the intersection of the real money demand and the real money supply.

## 7.9 MONETARY POLICY IN SOUTH AFRICA

Before concentrating on the role of monetary policy, namely control of the exchange rate and inflation in preserving the value of the Rand by monetary authorities in South Africa, to detriment of growth and job-creation, as alleged by the proponents of the GEAR policy in defence of its failure to deliver on its promises, it is important to first understand how the instruments of monetary policy are used to influence money supply and money market shortfalls. As previously discussed, the SARB can manipulate the components of the base;

namely notes and coins, and gold and foreign exchange reserves, and the size of the money multiplier, by changing *liquid asset requirements*, although this is seldom done. These instruments, notwithstanding the SARB, since the mid-1980s having adopted a system of monetary control in which the money supply (M3) was regarded as effectively *endogenous* and the *interest rate* was seen as the operational monetary policy tool. Ultimately, the interest rate, and recently the *repo rate*, is considered to influence growth, employment, inflation and the exchange rate (Nattrass 2000:254-256). In a comprehensive study on monetary policy in the “new” South Africa, after 1994, Mollentze (2000: S 41) claims that: “little research has been done on the various transmission channels of monetary policy in South Africa. Because of the complexity and interaction of a large number of variables, such research may in fact not prove to be practicable. Various relationships would have to be disaggregated microeconomically, which would be a major study in its own right. Moreover, the necessary data are not available. In the few cases where such data exist, this is so for only the last few years... Although econometric testing of the various channels of monetary transmission in South Africa has been limited, central bankers agree that results from other financially developed countries are relevant for South Africa. This therefore confirms the ultimate validity of an expansionary monetary policy which is designed to stimulate the economy – and *vice versa*”. This study is an attempt to provide a solution to some of the empirical gaps in chapters eight and nine. Thus, we next take a brief look at how the SARB use the interest rate to control liquidity, the provision of accommodation by commercial banks

### 7.9.1 Accommodation and interest rate control

As previously stated, the SARB used direct control, such as liquid asset requirements and credit ceilings to manage liquidity in the economy during the 1970s. This approach was gradually abandoned in the 1980s, following the report of the De Kock Commission (1985.) The SARB controlled interest rates in the economy via its bank rate. Implicit in this cash reserve system is the SARB’s view that the money supply is *endogenous*. Commercial banks were legally obliged to hold an amount of cash reserves equal to certain percentage of their total liabilities (that is deposits,) and should these reserves fall below this legal requirement, they had to borrow from the SARB, the “discount window”. The commercial bank would approach the SARB to discount financial assets for cash, less

than what it would have received on the open market. Thus, the SARB would provide “accommodation” to the commercial bank by crediting its current account at the SARB.

This accommodation usually took the form of overnight loans against suitable collateral security. The amount owed collectively by the commercial banks to the SARB is known as *money market shortage*. When a money market shortage existed, the SARB could influence the structure of interest rates by altering the bank rate. When the bank rate rose, that triggered the wholesale market interest rate for short-term funds, which in turn sparked an increase in the rate which banks charged their customers and that paid on deposits. Thus, the entire structure of interest rates in the economy rose, with the SARB acting as a wholesaler of money, at the bank rate, to commercial banks, which retailed money to consumers at market rates, spread in a relatively fixed structure around the bank rate (Nattrass 2000:215-220)

Accordingly, the SARB could ensure that the banking system remained indebted to it under accommodation, that there was a positive money market shortage, so that it effectively controlled interest rates in the economy. The bank rate was also used to influence the money supply. For instance, if the growth in money supply was considered too high, the bank rate has increased, which in turn induced commercial banks to raise their interest rate to their customers. This discouraged borrowings and encouraged savings on the part of consumers, thereby dampening the money supply. Thus, by changing the bank rate or the discount rate charged commercial banks for approaching the accommodation window, a shift was induced in the whole structure of market interest rates. Through the transmission mechanism, market interest rates could affect key macroeconomic variables such as the money supply, bank credit extension and inflation (Mollentze 2000: S 41 – 42).

However, this interest rate control system had a number of problems. The major problem was that the money market interest rates were relatively insensitive to fluctuation in liquidity in the economy. This was because since banks could easily meet their liquidity requirements automatically from the SARB at the bank rate, the short-term interest rates were often not affected by liquidity shortages, thereby rendering the impact of changes in the size of money market shortage on short-term interest rates ineffective (Nattrass



2000:215-220)

Furthermore, because the bank rate had an “announcement effect”, it had a high degree of political significance. Expectations regarding changes in the bank rate became more important than the explanation of available liquidity in the market on changes in interest rates. This meant that the expectation that the SARB was about to change the bank rate would cause money market rates to change without any necessary change in the underlying liquidity conditions. Thus, the SARB was unable to send clear signals to the market about its monetary policy stance. Also, the SARB was unable to receive clear signals about the market liquidity position, which hampered the regulation of the domestic money supply. To remedy this problem, the “*repurchase system*” was introduced in 1998 to replace the bank rate, this was designed to allow underlying liquidity conditions in the market to be reflected by short-term market interest rates (Fourie 2000:240 - 243).

Under this repurchase system, a repurchase agreement is where one party sells an asset to another party with the understanding that the seller will buy it back in the future. This is like a loan with collateral. The difference with this system is that the SARB is able to decide now on a daily basis how much it wants to lend out or how much liquidity it wants to supply to the market. Such amount is put up for tender and each commercial bank submits a bid for the amount it desires. This tender bid involves a repurchase agreement, with the bank offering to sell financial assets to the SARB for cash, which it will repurchase in the future, usually one week hence. However, the SARB has the discretionary power to shorten or lengthen the one-week maturity period. The discount rate the bank is willing to pay on the repurchase assets is called the “*repo rate*”. Thus, the bank offering the rate obtains all the liquidity it requests, while the lowest bidder may well receive less money than it bid for.

Accordingly, different banks could pay different rates if their tender rates differed, and for this reason the system is known as “*multiple-rate scale auction*” and the “*repo rate*” published in the media is the average of all the individual bidding rates. The repo rate, on a day-to-day basis, tends to fluctuate within a narrow margin. Because the amount offered is now fixed by the SARB and the repo rate is determined by the tender process, the policy intentions of the SARB are reflected in a more transparent way (Nattrass 2000:221-226).

In periods of uncertainty or financial volatility, the SARB is able to hold *fixed rate auctions*, designed to send a clear signal to the market and to stabilise the short-term interest rates. When that is the case, the total liquidity provided is divided among the banks on a *pro rata* basis, depending on the amount of money for which each bank originally bid. Furthermore, to allow for unforeseen liquidity shortages on the part of the banks, the SARB augmented the repurchase system with the *marginal / lending facility*, allowing banks to borrow overnight funds or loans for few days, at a rate higher than the *repo* rate. This rate was set at 1 percentage point higher than the repo rate of 15%, when the system was introduced, but this has substantially changed as circumstances changed. Towards the end of 1999 the SARB fixed the repo rate at 12%, gravitating the system to a fixed rate auction system. At each meeting the SARB's Monetary Policy Committee makes a pronouncement on the repo rate. The change is not clearly spelled out, but speculation is that the multiple-bid repo system has not been functioning as it was intended. This move has, however, blurred the difference between this system and the previous system of bank rate control. It is suggested that the repo system was a public relations exercise to depoliticise the old bank rate (Nattrass 2000:225-227). A fixed rate has formally been used again since September 2001.

We now turn to the monetary approach of controlling inflation and the exchange rate, which has been criticised by GEAR proponents.

### 7.9.2 Controlling Inflation

Between 1974 and 1993 South Africa's rate of inflation fluctuated between 10% and 20%, but since 1993 the rate has been consistently less than 10%, which may be attributed both to its stringent monetary policy of high interest rates and to the sluggishness of economic activity during the most of the latter period (SARB Quarterly Bulletin, several issues). Two primary causes of inflation are essentially "cost-push factors", acting on the supply side of the economy and "demand-pull factors", such as increased money supply and excessive credit extension fuelling consumer spending on the demand side. "Cost-push factors" include rapid wage and salary increases, higher international oil prices, higher interest rates raising the cost of capital, food price inflation caused by adverse

climatic conditions, and exchange rate depreciation triggering higher import prices. Inflation is at times also caused by entrenched expectations of future price increases. For example, firms that accept a certain rate of inflation will build this expectation into their sales prices and salary structures for the next year, thus creating a self-fulfilling prophecy (Nattrass 2000:227-228)

However, monetarists argue that inflation, CPI, rises continuously only if money supply is allowed to keep growing, with “too much money chasing too few goods”. Thus, according to this basically Quantity Theory of Money view, the only effective means for controlling inflation in the long term is by pursuing a contractionary money supply policy. In fighting inflation in South Africa, the main instrument at the disposal of the SARB is the repo rate. By increasing the repo rate, market interest rates are shifted upwards, in turn, suppressing the demand for credit and monetary expansion. High interest rates discourage borrowing and consumption spending, which reduces demand-pull inflation. On the supply side, higher interest rates may encourage firms to scale down wages and salaries. With import demand also discouraged by high interest rates, ‘imported’ inflation will also decline.

For the period between 1960 and 1972, South Africa experienced positive real interest rates and low inflation. During the 1980s, the SARB put more emphasis on stabilising the business cycle fluctuations rather than on controlling inflation. This briefly reversed the positive real interest rate to stimulate the economy in 1986 and 1987. In 1989, when Chris Stals took over as Governor of the SARB, the focus was back on controlling inflation. Since then, the trend in South Africa has been characterised by greater stability in the bank rate/repo rate, high real interest rates and falling inflation (Nattrass 2000:230-231.)

However, while Chris Stals was successful in fighting inflation he was accused of lack of transparency. This was because inflation-targeting did not make the goal or target rate clear. The time frame he used to target reducing inflation was “in line” with that of major trading partners, namely bringing inflation within the 1 to 5 percent band, but was never given. The criticism was fuelled by the fact that the CPI is sensitive to transitory shocks, which are not directly related to the inflationary process, as argued by structuralists. A suggested way out is to build flexibility into the framework to allow for unforeseen

exogenous inflationary shock through the balance of payments or exchange rate, international oil price hikes, etcetera. As a result, in February 2000, the SARB adopted a new price index known as CPIX, which is the CPI excluding the effect of interest payments on the loans (Natrass 2000:233-236)

### 7.9.3 Balance of payments and exchange rate policy

With globalisation, international flows of goods and financial assets are crucial for monetary policy consideration. Thus the balance of payments becomes a constraint, will capital account shocks posing problems. This has an impact on the real exchange rate, which might possibly cause currency crises. We now briefly discuss the issues.

#### 7.9.3.1 Exchange rate policy in South Africa

To comply with the Constitutional imperative to “protect the value of the Rand”, the SARB’s focus is not only domestic through controlling inflation, but also *external*, through stabilisation of the real effective exchange rate at the appropriate value. This objective of the exchange rate policy is crucial for becoming internationally competitive. South Africa, like most countries these days, has opted for a managed floating exchange rate under this regime. The SARB intervenes in the market to smooth out short-term fluctuations, even if the value of the Rand has fluctuated under market forces. This is a comprehensive solution as the country retains some autonomy in monetary policy but reduces the impact of unexpected shocks is reduced. If, for instance, there is a sudden spate of selling of Rands on the foreign exchange market, the SARB steps in to buy these Rands and thereby reduce the supply, which in turn protects the value of the Rand. However, because reserves are limited, this policy cannot be pursued for a long period of time. As an alternative, the SARB influences the exchange rate by altering the incentives for both local and foreign agents to hold or trade in Rands, such as discouraging locals from demanding foreign exchange with which to purchase imports. Aligned with this are policies which influence the components of the balance of payments. For a brief period after the end of the Bretton Woods fixed exchange rate system in 1972, South Africa first pegged the Rand to British sterling and to the US dollar, before opting

for a managed float. In the 1980s and 1990s, South Africa's policies arguably led to an overvalued nominal and real exchange rate. While this addressed the SARB's major concern of not "importing" inflation, it reduced South Africa's global competitiveness. In 1996 and in 1998, the Rand depreciated significantly, when the SARB could not sustain its interventions to fight crises by selling its foreign reserves (Nattrass 2000:196-202). As a repository of gold and foreign exchange reserves, the SARB is responsible for maintaining equilibrium in the balance of payments, that is compatibility between the current and financial accounts (capital account).

## 7.10 CONCLUSION

This chapter covers the different views held on money supply by structuralists and neo-liberal economists, which in turn form the basis of their opposing arguments. To structuralists money supply is *exogenous*, thus beyond the control of the monetary authorities of a small and open economy like that of South Africa. On the other hand, 'neo-liberal' or orthodox economists, especially the neoclassical economists and monetarists, consider money supply endogenous and under the control of such monetary authorities. Implicit in the structuralist argument is the notion of "importation" of inflation, rejecting the view that increases in the money supply are the primary or only cause of inflation. Instead, socio political influences are said to be factored in when analysing the causes of inflation. Again, this is opposed by orthodox economists who regard increases in the money supply as the main cause of inflation, rejecting the contention that it is 'imported'. Accordingly, since this debate is studied, using South Africa as a frame of reference, the money supply process and its application are discussed, as a framework within which the opposed arguments are formulated.

The goal of monetary policy in South Africa up to 1997 was to protect the value of the Rand and maintain an appropriately valued exchange rate; the three main monetary policy instruments used: open market operations, discount-window policy and reserve requirements; and other selective instruments, like moral suasion, are presented. This set the stage for the subsequent discussion on controlling inflation for preservation of the value of the Rand and balance of payments and exchange rate policy. Given that the official macroeconomic policy of GEAR is challenged by COSATU, a very powerful

labour union, as a failure in stimulating growth and creating jobs, its proponents instead shift the blame to the monetary authorities, the SARB, for pursuing ‘inflation targeting’, which presupposes high interest rates. High interest rates are said to discourage investment, thereby stifling economic growth. For this reason, GEAR’s poor growth performance, it is argued, should be blamed on monetary policy and not on the GEAR strategy. Accordingly, this chapter briefly touched on the money supply process and monetary policy in South Africa, investment and the GEAR strategy, and the controversy between COSATU and the proponents of GEAR over the effectiveness of GEAR as the official macroeconomic policy of South Africa.

## CHAPTER EIGHT

### EMPIRICAL EVALUATION TECHNIQUES

#### 8.1 INTRODUCTION

The purpose of this chapter is to use normal estimation techniques to empirically evaluate the challenge of orthodox or neo-liberal theory by structuralists, regarding the efficacy of monetary policy in stimulating economic growth of a small and open economy, using South Africa as a case study, that is to test the argument presented in the previous chapters. Also presented will be the specification of the single-equation models used to test the structuralist view, that monetary policy in a small and open economy is not effective in promoting economic growth. According to structuralist theory, monetary transmission is inoperative in such economies, since changes in money supply, pursuant to either contractionary or expansionary policies are ineffective. For instance, it has already been stated that if monetary authorities opt for an expansionary policy, by increasing money supply, to lower interest rates, as the interest rates drop so does net foreign assets (NFA). Consequently, the drop in NFA reduces the money supply, which is the opposite of the intended monetary objective. In contrast, if the objective is to raise interest rates by following a contractionary monetary policy, the resultant increase in interest rates attracts NFA, in turn increasing money supply. Thus, again the opposite effect to that intended is said to be the result. At the heart of the structuralist argument is thus the uncontrollability of money supply. This argument is refuted by neo-liberal theory, which considers the interest-rate elasticity of NFA movements to be too low, for it to dampen and reverse monetary policy objectives, consequently rendering monetary policy effective in controlling money stock.

Cognate to the above argument, structuralists reject both postulates of neo-liberal theory, that is the ability of the monetary authorities of a small and open economy to control the money stock and the ability of money supply changes to influence economic growth (GDP) via the interest rates ( $r$ ), since the opposite of the expected

results of the pursued monetary policy objectives occur. Accordingly, changes by increasing or decreasing the money stock to reduce or increase interest rates respectively are said to achieve, ultimately, the opposite effects on interest rates. Furthermore, structuralists by arguing that money stock changes do not influence interest rates, also imply in-operability of the monetary transmission mechanism, since it is via interest rates that investment is changed, which in turn has an impact on economic growth.

Structuralists further challenge the impact of inflation on economic growth. They reject the orthodox view that inflation is primarily a monetary phenomenon. Instead, inflation is said to be structural and imported from big developed countries with which the small and open countries trade. Export-oriented economic policies to stimulate growth are also rejected; import-substitution policies are promoted instead, since exports are said to have nothing to do with money supply changes via inflation and foreign exchange. Rather, structuralists would argue that exports depend on the level of economic growth (GDP) of the big and developed countries with which small and open countries trade.

Consequently, the techniques discussed in this chapter are those that were be used to empirically evaluate the structuralist argument that monetary policy cannot stimulate economic growth in a small and open country, in this case South Africa. The techniques that were be used are: the ordinary least squares (OLS) regression analysis technique, which is conventionally used, and cointegration, to determine the long-run equilibrium positions, after testing the time series used for stationarity. Error correction model (ECM) is only described and not used, because it is not essential for this study. “ECM is a popular macroeconomic specification which integrates the long-run equilibrium analysis and short-run dynamic adjustment by including in the short-term dynamic model a measure of how much out of equilibrium or target the variables are in the last period, as in Pagan and Wickens (1989). It relates changes in  $y_t$ , to last period’s error,  $y^*_{t-1} - y_{t-1}$ , where  $y^*_t$  denotes the target or equilibrium value” (Intriligator, Bodkin, & Hsigo 1996:414). In fact, “many economic time-series tend to behave as random walks. This has led to the development of cointegration analysis which seeks to investigate long-run relations between economic variables without falling prey to spurious correlations. Furthermore,



error-correction models (for a recent and comprehensive reference, see, for example, Banerjee et al 1993) seek to incorporate short-run disequilibrium behaviour along with long-run tendencies in econometric modelling.” (Mukherjee, White & Wuyts 1998:41).

## 8.2 OVERVIEW OF EMPIRICAL EVALUATION

Conventionally, an empirical study, to test economic theory, follows the following five consecutive basic steps:

- (1) Formulating a model;
- (2) Gathering the data;
- (3) Estimating the model;
- (4) Subjecting the model to hypothesis testing; and
- (5) Interpreting the results.

In economics, as in physical science, the model formulated is set up in the form of equations, which describe the behaviour of economic and related variables. The model formulated might consist of a single equation, or a system involving a set of several simultaneous equations. The single equation model was used in this study. In single equation specification, the variable explained is referred to as the dependent variable or regress and those variables that influence it are called independent variables or exogenous variables or explanatory variables or regressors. After formulating the model, the next step is to gather reliable data that are suited to the economic theory being tested. Time series data that give measurements at different points in time are used in this study. The third step is the estimation of the model, that is obtaining estimates of the unknown parameters of the model. The postulated hypotheses are then tested by subjecting the model to diagnostic tests to make sure that the underlying assumptions and estimation methods are appropriate. Finally, the results are interpreted, to draw conclusions that might support or contradict the postulated economic theory (Ramanathan 1995). If the time series are non-stationary, they are transformed by differencing to determine whether or not they are co-integrated, concurrently establishing the long-run equilibrium. With the time series rendered stationary, spurious and non-sensical results are avoided.

Schematically the flowchart of steps taken to conduct this study's empirical evaluation of the hypotheses underlying the economic debate between structuralists and neo-liberalists on whether or not monetary policy, via controlled or deliberate changes in the money supply, can stimulate the economic growth of a small and open country, in this case the Republic of South Africa, is presented by figure 10 on the following page.

In line with the cointegration approach, collected data used were be tested for stationarity and the determination of the level of integration. If the time series are stationary, then the classical assumptions of OLS regression analysis technique are satisfied. However, if the time series are found to be non-stationary, they are transformed. Cointegration is used to establish long-term relationships between the variables. Then after the long-run equilibrium has been determined, to establish its dynamic nature or the short-run relationship, the cointegration regression results that have been obtained are used to estimate the ECM. This gives the dynamic relationship between the variables in the model, important from a forecasting perspective (Engle & Granger 1987:251-76). As stated above, the ECM is not used in this study. Since OLS regression analysis technique is well known, only cointegration and ECM will be briefly discussed in turn.

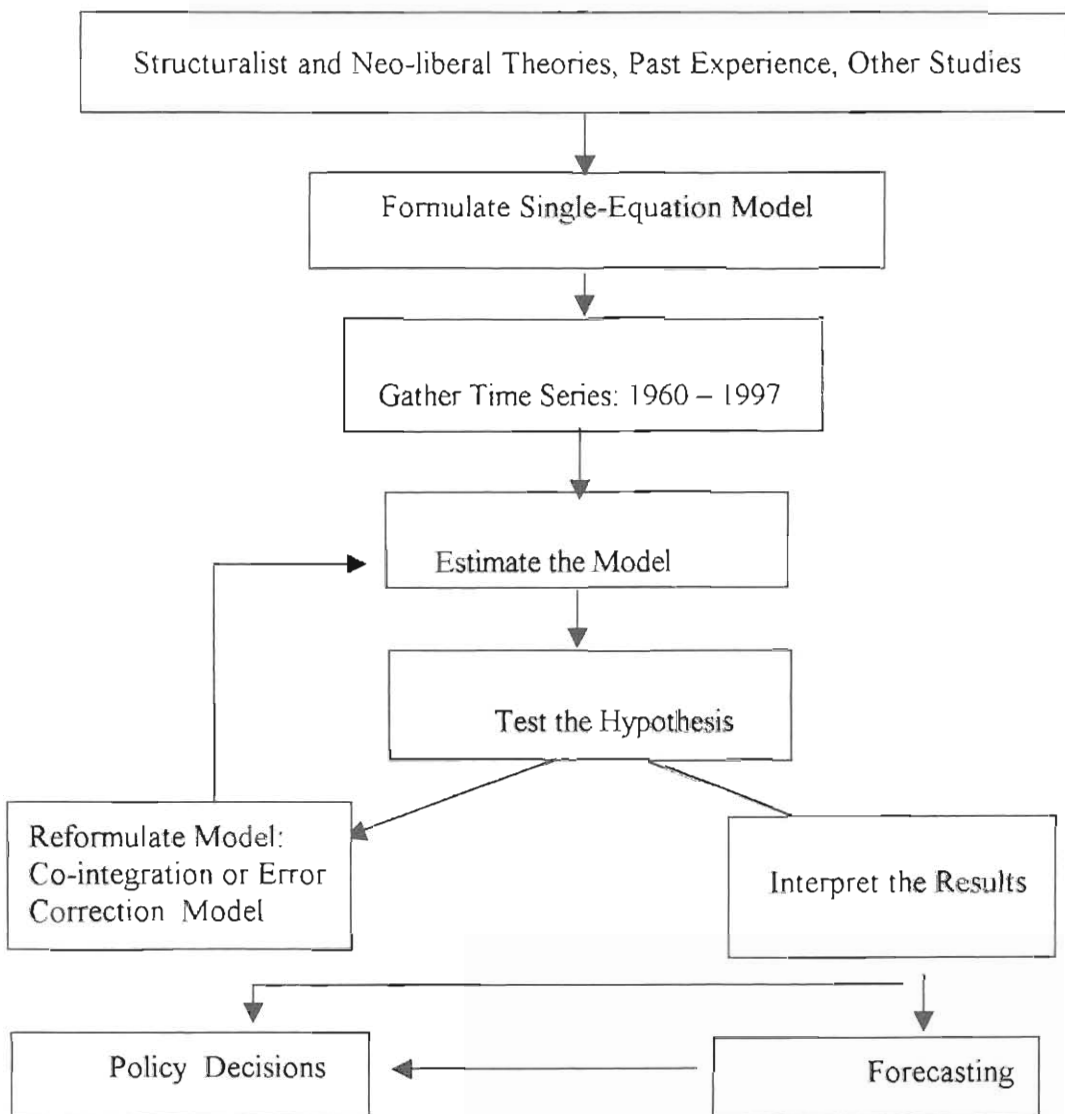
### 8.3 COINTEGRATION AND ERROR CORRECTION APPROACH

#### 8.3.1 Overview

This section briefly covers co-integrated series and the augmented Dickey-Fuller (ADF) test used to test time series for co-integration, to avoid spurious correlations that persist even when the sample gets larger. Thus, co-integration distinguishes between stationary and non-stationary variables, the source of spurious regression, to obtain meaningful causal relationships rather than contemporaneous ones. The economic interpretation of cointegration is "that if two (or more) series are linked to form an equilibrium relationship spanning the long-run, then even though the series themselves may contain stochastic trends (i.e. be non-stationary) they will nevertheless move closely together over time and the difference between them will be stable (i.e. stationary)" (Harris 1995: 6).

When the variables are co-integrated, moving closely together over time and with the difference between them stable, the long-run relationships between economic variables are separated from their short-run responses by estimating an error correction model (ECM), which is of importance from a *forecasting perspective* (Harris, 1995:23). Although ECM

**FIGURE 10: ADAPTED FLOWCHART OF STEPS IN EMPIRICAL STUDY: MONETARY POLICY AND ECONOMIC GROWTH IN SOUTH AFRICA**



SOURCE: Ramanathan, 1995:6.

is not used for the reasons stated above, it will be briefly described for the sake of completeness. For the existence of long-run equilibrium, the variables that enter the relationship must be cointegrated, that is all variables of the same order are integrated and there is a linear combination of these variables, with a lower order of integration (Engle & Granger 1987:251-276). For instance, if two variables are both integrated of order 1, that is  $I(1)$ , that means there is a linear combination of these variables which are integrated of order one, that is  $I(Z)$  implying stationarity. Thus, an  $I(Z)$  error implies that the disequilibrium error will seldom move too far from zero and will often cross the zero line, meaning the occasional occurrence of equilibrium (Engle and Granger 1987:253).

### 8.3.2 Testing for cointegration

Tests for co-integration start with visual inspection of the first-order and second-order moments that can be employed. Even if more formal tests such as the Dickey-Fuller (DF) and augmented Dickey Fuller (ADF) tests are more objective, visual inspection of the first-order and second-order moments remains valuable. Tests of co-integration rely on *weak stationarity* or *second-order stationarity* or *covariance stationarity*, when the mean, variance or covariance are independent of time. Non-stationarity of a variable is determined by existence of a *unit root*. Unit root tests are firstly used to determine the order of integration of the variables in the co-integrating equation. Then a test for co-integration, to determine whether the residual of this cointegrating equation is integrated of a lower order than that of the variables of the cointegration equation is made. Beyond the visual or informal inspection of the *plot of the error term* and *correlogram of the error term*, formal tests such as DF, ADF and Phillips-Perron (PP), with the cointegrating regression Durbin-Watson (CRDW) are used. (Harris 1995:34-57).

The difference between the DF and ADF tests, is that DF assumes that the variable considered follows a first-order auto-regression and that the residual of the DF-regression is independently and identically distributed, while ADF drops this assumption. Further, the ADF-test extends the DF-test by allowing for inclusion of lagged values of the dependent variable, the intercept and a deterministic trend. Lagging the dependent variable ensures that the process of the ADF model is white noise. The number of lags to be included to produce white noise is determined by performing tests for serial correlations,

heteroskedasticity and the normality on the residuals of the ADF model and selection of the number of lags that minuses the Aike's Information Criterion (AIC) (Engle & Yoo 1987). Consideration is also given to the reduction of lags until the last lag is significant or until the model does not contain any lags. The testing for co-integration between variables also imply testing for the presence or absence of a long-term equilibrium relationship between these variables. If variables are found to be co-integrated, the Error Correction Model (ECM), which is discussed in the following section, is estimated (Engle & Yoo 1987:143-159).

### 8.3.3 Error correction models (ECMs)

A valid error correction model of data exists when a set of variables are integrated of the same order (Cuthbertson, Hall & Taylor, 1992:140-141). ECM gives the dynamic relationship between variables, that is dependent variable fluctuations around its long-term trend are explained by fluctuations in the explanatory variables around their long-term trend. This means, disequilibrium in one period is corrected in the next period (Engle & Granger 1987:253). The long-term effects are also included, through the error term of the long-term co-integrating relationship in the ECM (Harris 1995).

The specification of the ECM is as follows:

- (1) All variables are transformed to stationary variables by differencing; for example, an  $I(2)$  variable will be differenced twice to generate an  $I(Z)$ .
- (2) The stationary form of the dependent variable is regressed on the other stationary variables.
- (3) Lagged dependent and independent variables are included in the ECM.
- (4) The error term of co-integrating regression (lagged one period) is included in the ECM.

- (5). With all variables in ECM being stationary, the classical regression assumption is are fulfilled and the conventional diagnostic tests can be applied, to determine which variables should be included in the final specification of the ECM.

While the strength of cointegration and the ECM approach is to help avoid spurious economic causal relationships, by giving long-term and dynamic economic relationships, there are a few weaknesses. Under certain circumstances ADF is not powerful, giving consistent estimated coefficients which are not fully efficient. Also, the coefficients cannot be used for hypothesis testing since they are generally non-normal. These weaknesses are overcome by a third step proposed by Engle and Yoo (1987:143-159).

The analytical tools that were be used in conducting this study's empirical analysis on the whether or not monetary policy via controlling the money supply can stimulate the economic growth (GDP) of a small and open country, having been described, the next section specifies the model that was be used.

#### 8.4 SPECIFICATION OF THE MODEL

Since this is not an econometric study, the purpose is not to formulate a rigorous econometric macro-economic growth model. The main aim is to empirically test the tenability of structuralist theory, or lack thereof, on whether monetary policy is effective in stimulating the economic growth of a small and open economy, namely, whether or not GDP is significantly impacted by changes in M3 and CPI. Accordingly, a single-equation model was be used. As stated in the previous chapters, structuralists in opposing orthodox or neo-liberal theory, mainly argue that GDP is not significantly changed by M3 and CPI because monetary authorities in pursuing either an expansionary or a contractionary policy of increasing or reducing money stock (M3) of a small and open economy cannot be successful, since they achieve the opposite of their desired aim. Intended increases of M3 to reduce interest rates, are said to cause outflows of net foreign assets, NFA, which as a component of M3, ends up reducing M3, while intended decreases in M3 to increase interest rates also achieve the opposite of the desired effect, that is increased interest rate attracts inflows of NFA, which instead increases M3. Instead, domestic economic growth,

GDP, is said to be determined by the levels of GDP of big trading partners, namely the GDP of South Africa is determined by those of the United States, the United Kingdom, France, Germany and Japan.

However, according to orthodox theory, changes in NFA as a result of the impact of changes in M3 on the interest rate ( $r$ ) are smaller than the changes in M3, that is the interest-elasticity of NFA is small. Thus, monetary authorities can control changes in the money stock, thereby influencing interest-rates, which in turn impacts on domestic investment, which ultimately brings about changes in economic growth, GDP, via this *monetary transmission mechanism*. Accordingly, controllability of the money supply by monetary authorities, namely, keeping it within set targets, becomes a minor premise of the major argument on whether or not GDP is affected by M3 and CPI. Controllability also implies absence of external influence. Thus, M3 will also be considered in terms of foreign influences, using the United States dollar exchange rate, FOREX, as a proxy, and the REPO as the domestic monetary policy tool.

Structuralists further argue, as opposed to orthodox or neo-liberal theory, that the economic growth of open and small countries is not affected by inflation, which is considered a non-monetary phenomenon, but imported. Thus, structuralists, as opposed to neo-liberalists do not regard inflation as primarily a monetary phenomenon, influenced mainly by changes in money supply, as argued by Friedman (1970) for instance. For simplicity of exposition, the single-equation model was used, to test the opposed arguments advanced by structuralists and orthodox or neo-liberal economists. These, for *controllability of money supply*, will be formulated as the null and alternative hypotheses, as follows:

- 1.) Null hypothesis (structuralist) :  $M3_t \neq f(M3_{t-1})$ .  
 Alternative hypothesis (orthodox):  $M3_t = f(M3_{t-1})$ ;
  
- 2.) Null hypothesis (structuralist) :  $GDP \neq f(M3, CPI)$   
 Alternative hypothesis (orthodox):  $GDP = f(M3, CPI)$ ;
  
- 3.) Null hypothesis (structuralist) : Incontrollability of money supply

Alternative hypothesis (orthodox): Money supply is controllable.

Thus, to reject the null hypothesis, formulated to represent the a particular argument, means we must “accept” the alternative hypothesis, formulated to represent the opposite argument, and *vice versa*, namely, if we fail to reject the null hypothesis, then we must “accept” it and reject the alternative orthodox hypothesis.

Put differently, if we reject the orthodox null hypothesis (1) above, namely, that there is a relationship between the current level of money supply, M3, in current period, t, and the level in the previous period, t – 1, the alternative hypothesis that such relationship exists must be “accepted”, and *vice versa*: also, to reject orthodox null hypothesis (2) above, that changes in money supply, M3, and inflation, CPI, do affect economic growth, GDP, is to “accept” the alternative hypothesis that M3 and CPI do not affect GDP, and *vice versa*; and to reject the structuralist null hypothesis (3) above, that money supply cannot be controlled by monetary policy, is to “accept” the alternate hypothesis that such controllability exist.

The structuralist argument is that monetary policy cannot stimulate economic growth by changing the money supply, based on the argument that monetary authorities cannot influence the current period money stock by manipulating that of the previous period:

$$M3 = f(M3_{t-1}) \quad (69)$$

If it is not possible to reject the structuralist null hypothesis that there is no correlation between M3 and  $M3_{t-1}$ , that is the correlation coefficient between them is zero, applying the classical regression analysis assumptions stated above, then the structuralist argument would be affirmed, and the alternative hypothesis, that is the correlation co-efficient between M3 and  $M3_{t-1}$  is non-zero, which represents the orthodox theory, would be rejected. Consequently, there would be no need for further testing of whether monetary policy, in changing money supply levels, can stimulate the economic growth of a small and open economy, as well as whether inflation has any impact on it. However, if the null hypothesis, representing the structuralist theory, is rejected, the next step is to test the impact of changes in money supply, (M3), and inflation, consumer price index (CPI), on



real economic growth, (GDP). This will be estimated by the following equation:

$$\text{GDP} = f(\text{M3}, \text{CPI}) \quad (70)$$

Again, the argument of no relationship will be represented by the null hypothesis, that is zero correlation coefficients between GDP and M3, and GDP and CPI. If be are unable to reject the null hypothesis, then the alternative hypothesis, of non-zero correlation coefficients, representing the orthodox or neo-liberal theory, must be accepted, and *vice-versa*.

To avoid a spurious conclusion on the causal relationships represented by the tested hypothesis, further testing for cointegration was be conducted. However, even if this is not an econometric study, but an economic one, even if a single-equation model was used, care was be taken to observe the principles of model specification and selection. Also, in testing for stationarity of time series to avoid non-sensical or spurious conclusions the more popular and objective augmented Dickey Fuller (ADF) test were be used to test for the presence of unit roots.

## 8.5 CONCLUSION

In this chapter the steps, techniques and the tools that were used to empirically test the hypotheses postulated by both structuralists and neo-liberals on the role of monetary policy on economic growth of a small and open economy, South Africa in this case, are briefly discussed. These steps outline the research methodology used, from literature survey; formulation of the type of model used; the scope of the study; the estimation of the model and testing of the hypothesis; and how to ensure that the results obtained are not spurious for policy decisions. The techniques and tools used are OLS regression analysis and co-integration, to test for stationarity of the time-series. For this study, only co-integration is essential, to avoid spurious conclusions. The next chapter describes the empirical evaluation.

## CHAPTER NINE

### EMPIRICAL ANALYSIS AND EVALUATION

#### 9.0 EVALUATION PROCEDURE, SAMPLE PERIOD AND DATA SOURCES

Traditional classical regression analysis was used to evaluate the equations representing the structuralist and orthodox or neo-liberal arguments.. If the structuralist arguments are formulated as the null-hypotheses, then those of the orthodox or neo-liberal economists are the alternate hypotheses. If, for example, the orthodox arguments are rejected as null-hypotheses, then the orthodox or neo-liberal arguments are rejected. On the other hand, if the null hypotheses cannot be rejected, then the orthodox or neo-liberal arguments are confirmed. The regression analysis results are next tested for stationarity of the time-series, to avoid spurious conclusions about the established relationships. The augmented Dickey-Fuller (ADF) test is used to test the results obtained using OLS, which are presented next.

#### 9.1 THE ESTIMATED EQUATIONS AND SAMPLE PERIOD

The two estimated and tested equations are the following:

$$M3_t = f(M3_{t-1}), \quad (69)$$

and

$$GDP = f(M3, CPI). \quad (70)$$

This study covers the period 1960 to 1997. Yearly data on the small and open economy of the Republic of South Africa are used, obtained mainly from the Quarterly Bulletin of the Reserve Bank of South Africa, and other economics

## 9.2 HYPOTHESES TESTING

The tested hypotheses are the following:

- 1.) Null hypothesis (structuralist) :  $M3_t \neq f(M3_{t-1})$ ;  
Alternative hypothesis (orthodox):  $M3_t = f(M3_{t-1})$ ;
- 2.) Null hypothesis (structuralist) :  $GDP \neq f(M3, CPI)$ ;  
Alternative hypothesis (orthodox):  $GDP = f(M3, CPI)$ ;
- 3.) Null hypothesis (structuralists) : Incontrollability of money supply;  
Alternate hypothesis (orthodox): Money supply is controllable.

The results obtained are presented in the next section.

## 9.3 RESULTS OF THE TEST EQUATIONS

The following tables present the regression results after applying collected data on equation (23), to test the null hypothesis that  $\beta=0$ , that is the t-statistic for  $M3_{t-1}$  is 0 or that  $M3_{t-1}$  is not related to  $M3_t$ , which is informally conducted to shed some more on the controllability of monetary supply in terms of keeping it within set monetary targets. The results are obtained using the computer econometric package EViews. Here only the t-statistic is used, and not the augmented Dickey Fuller (ADF) test, since we are not measuring a long-term relationship. The results are of particular importance for this study, in explaining whether or not monetary policy can have any impact or influence on economic growth of a small and open economy, by changing money supply levels even if it cannot influence such levels.

From table 21, with 37 observations, n, and one explanatory variable, k, our degrees

of freedom,  $n - k - 1$ , become  $37 - 1 - 1$ , becoming 35. This being over 25 degrees of freedom, and the t-statistic for  $M3(-1)$  being 139.034, which is far more than 2, the figure used for applying the rule of thumb to determine the significance of the t-statistic, we reject the null hypothesis that  $\beta$  is not significantly different from zero. Thus, the structuralist argument that there is no significant relationship between the level of money supply in the current period,  $t$ , and the money supply level in the previous period,  $t-1$ , must be rejected and the alternate orthodox hypothesis that the monetary authorities can influence the current level of money supply,  $M3_t$ , by applying monetary policy on that of the previous period,  $M3_{t-1}$ , must be accepted.

**TABLE 21:**  $M3 = \alpha + \beta M3_{t-1} + \mu_t$

Variable	Co-efficient	Std. Error	t-Statistic	Prob.
$\alpha$	980.6329	883.1809	1.110	0.27
M3(-1)	1.1474	0.000853	139.034	0.00
$R^2$	: 0.99			
Adjusted $R^2$	: 0.99			
Durbin Watson	: 1.77			
Akaike's Information Criterion (AIC)	: 16.82			
Schwarz Criterion	: 16.91			
F-statistic	: 19330.51			

#### 9.4 HYPOTHESIS TESTING: IMPACT OF M3 AND CPI ON GDP

Having found that there is a relationship between  $M3_{t-1}$  and  $M3_t$ , money supply of a small and open economy like that of the Republic of South Africa, informally

confirming the orthodox or neo-liberal argument, we still have arguments on whether or not monetary authorities can control money supply, namely, whether they have the ability to keep it within set monetary targets, as well as test whether or not there exist a significant relationship between this country's economic growth, GDP, on the one hand, and money supply, M3, and inflation, CPI on the other, as advocated. According to the structuralists, in opposition to the neo-liberal view, there is no relationship between GDP and M3, since the economic growth of a small and open economy is said to be insulated from monetary phenomena, that is changes in M3, as well as inflation, CPI, but to depend on the economic growth of the big developed western countries with which it trades. Thus, the argument can be formulated using the null hypothesis,  $H_o$ , stating no relationship between these variables, and the opposite as the alternative hypothesis,  $H_a$ , and then collected data can be applied to these hypotheses based on the test equation (70):

$$GDP = \alpha + \beta_1 M3 + \beta_2 CPI + \mu$$

as follows:

$$H_o: \beta_1 + \beta_2 = 0$$

$$H_a: H_o \text{ is not true.}$$

Applying the same analytical methods used to test the controllability of money supply by the monetary authorities of a small and open economy, that of the Republic of South Africa in this case, we arrive at the results contained in the table 22 on the next page. These results are found by applying empirical data in testing the above equation.

Again, we start with the initial visual inspection, for stationarity, after using the rule of thumb method of establishing the significance of M3 and CPI in explaining real GDP. The t-statistic values of M3 and CPI from table 22 are 12.19 and 14.78, respectively, both more than 2, thus implying significance. While M3 and CPI are individually significantly related to GDP, we must also test whether both are similarly significant or not.

To do this, we use the F-test. Here we have  $k$ , the explanatory variables, being 2, that is the numerator for the F-table, and  $n - k - 1$  being  $38 - 2 - 1 = 35$ . From the F-table, we get the value 5.39% at 1% significance level for the sample of 30 observations and

**TABLE 22: TEST EQUATION:  $GDP = \alpha + \beta_1 M3 + \beta_2 CPI + \mu$**

Dependent Variable	: GDP			
Sample (adjusted)	: 1960 1997			
Included observations	: 38			
Variable	Co-efficient	Std. Error	t-Statistic	Prob.
$\alpha$	101157.1	5072.935	19.94	0.0000
<b>M3</b>	0.303833	0.024920	12.19	0.0000
<b>CPI</b>	7237.524	489.4733	14.78	0.0000
R-squared	: 0.93			
Adjusted R-squared	: 0.93			
Durbin Watson	: 0.89			
Log likelihood	: -417.32			
Akaike's Information Criterion (AIC)	: 22.12			
Schwarz Criterion	: 22.25			
F-statistic	: 243.84			

5.18% for the sample of 40 observations. Given that the calculated F-value (F) given by table 22 is 243.84, very much greater than both the critical value ( $F_c$ ) for the sample of 30 and 40, we do not need to extrapolate.

Applying the test criterion:

$$\text{Reject } H_0 : \text{if } F > F_c$$

Don't reject  $H_0$ : if  $F < F_c$

We reject the null hypothesis, representing no relationship between both M3 and CPI, and GDP, that is their correlation co-efficients,  $\beta_1 \cdot \beta_2 = 0$ , and “accept” the argument that changes in the money supply, M3, and inflation, CPI, both affect economic growth, GDP, of a small and open economy. Subsequent to this informal testing a more formal ADF-test for stationarity was conducted to test for stationarity. The results are captured in the table 23, on the following page:

According to table 23, the ADF test statistics is  $-4.39328$ . We compare this to the calculation of the MacKinnon critical value, for  $C(\rho)$ . At 1% significance level, now with  $n = 2$  and  $T = 36$ , we get:

$$C(\rho) = (-3.9001 - 10.534/36 - 30.03/36^2) \approx -4.22 \quad (74)$$

We apply the criteria test that we reject the null hypothesis that there is no co-integration, when the ADF test statistic is less negative than  $-4.22$ . Since  $-4.39$  is more negative than  $-4.22$ , we reject the null hypothesis that there is no stationarity.

Accordingly, we can draw the meaningful conclusion that economic growth (GDP) of a small and open country, the Republic of South Africa in this case, is significantly affected by changes in money supply (M3) and inflation (CPI). Thus, the neo-liberal or orthodox argument that economic growth in an open and small economy is related to changes in money supply and inflation is confirmed.

The complement of the above empirically rejected structuralist argument is that the economic growth of a small and open economy depends on the economic growth of its big trading partners. For the sake of interest, and in the light of the fact that the crux of the structuralist argument concerning the relationship between economic growth of South Africa and money supply and inflation has already been rejected, an

*informal test* of the impact of the levels of economic growth of selected big trading partners on that of South Africa was empirically conducted. Of all the selected trading partners of South Africa, namely, the United States (USGDP), the United Kingdom (UKGDP), France (FGDP), Japan (JGDP), and Germany (GGDP), *none is significantly related* to the economic growth of South Africa (RSAGDP) and they collectively explain only 33 per cent of it, as shown in table 24.

**TABLE 23: AUGMENTED DICKEY-FULLER UNIT ROOT TEST**

<b>ADF Test Statistic</b>	-4.349328			
Augmented Dickey-Fuller Test Equation:				
Dependent Variable	: dGDP			
Method	: Least Squares			
Sample (adjusted)	: 1962 - 1997			
Included observations	: 36 after adjusting end points.			
<b>Variable</b>	<b>Co-efficient</b>	<b>Std. Error</b>	<b>t-Statistic</b>	<b>Prob.</b>
<b>dGDP(-1)</b>	-0.662753	0.152381	-4.349328	0.0001
R-squared	: 0.356991			
Adjusted R-squared	: 0.338079			
SE of regressions	: 11399.89			
SSR	: 4.42E+09			
Log likelihood	: -386.3419			
Durbin Watson Statistics	: 1.964264			
Akaike's Information Criterion (AIC)	: 21.66252			
Schwarz Criterion	: 21.66252			
F-Statistic	: 18.87638			





## SUPPLY CHANGES: 1986 – 1997

*Monetary targets* were introduced in 1986 in South Africa. According to the SARB, these targets were never regarded as rigid rules to be religiously adhered to. The Reserve Bank is said to have used its discretion and often allowed the growth of the money supply to move outside the set target ranges. To reflect of this position, the SARB change of the terminology to *monetary guidelines* in 1991, "...to convey the authorities' views as to what should happen to money growth rate in the prevailing economic conditions, rather than as a firm *forecast* of the rate of monetary expansion

TABLE 24: TEST EQUATION

$$RSAGDP = f(USGDP, UKGDP, FGDP, JGDP, GGDP)$$

Dependent Variable	: RSAGDP			
Sample (adjusted)	: 1960 1997			
Included observations	: 37			
Variable	Co-efficient	Std. Error	t-Statistic	Prob.
$\alpha$	-2444.289	1476.588	-1.65	0.1079
<b>USGDP</b>	77.17824	184.6901	0.41	0.6789
<b>UKGDP</b>	345.8979	234.0246	1.47	0.1495
<b>FGDP</b>	64.97752	230.2551	0.28	0.7797
<b>JGDP</b>	352.0478	255.3303	1.37	0.1778
<b>GGDP</b>	16.18513	85.04126	0.19	0.8503
R-squared	: 0.42			
Adjusted R-squared	: 0.33			
Durbin Watson	: 0.09			
Log likelihood	: -331.27			
Akaike's Information Criterion (AIC)	: 15.39			
Schwarz Criterion	: 15.65			
F-statistic	: 4.57			

in the guideline year or as a binding *commitment* to the rate of monetary expansion

that was to be achieved at all costs.” (SARB1991:25).

Given that South Africa is a small and open economy, even if the SARB sets the repo or market rate, monetary policy is always subject to the balance of payments constraint. This was clearly stated by the Governor of the SARB, when South Africa’s gold and foreign reserves declined by over R3 billion in four months. The Governor went on to state that should the restrictive impact of such a decline on domestic liquidity continue, interest rates would not be reduced, irrespective of what is happening to the inflation rate. A warning was also given, that should the overall deficit on the balance of payments continue, that would lead to higher interest rates, which the SARB would not try to neutralise by the creation of money (Stals 1993: 30).

However, it is not the market that sets the interest rates, but the central bank, even if it frequently seems to be passively following market trends. In reality, it decides the monetary *targets* or *guidelines*, based on its estimate of the strength and direction of other market forces. Table 25, on the next page, reflects *monetary targeting* experience in South Africa between 1986 and 1997. This period covers 52 quarters, of which in 31 quarters the *actual* money supply percentage changes were *overshooting* the set target or guideline ranges. These were 10 consecutive quarters, from the first quarter of 1988 to the second quarter of 1990; 5 consecutive quarters, from the first quarter of 1991 to that of 1992; and 16 consecutive quarters, from the first quarter of 1994 to 1997.

On the other hand, in 11 quarters, the actual money supply percentage changes were *undershooting* the set target or guideline ranges. These were 7 consecutive quarters, from the first quarter in 1986 to the third in 1987; and 4 consecutive quarters of 1993. Of the 48 quarters, only 6 were *within* the set target or guideline range. These were the fourth quarter in 1987; the last 2 quarters of 1990 and the last 3 quarters of 1993.

Thus, between 1986 and 1997, for 46 out of 52 quarters, that is for 88 percent of the time, monetary policy in South Africa was *ineffective* in controlling the money supply

within the set *money supply guidelines*, as postulated by structuralists. As shown by table 26, of the 12 percent of the time when money supply changes fell within the set target or guideline ranges, it was for only 1 quarter in 1987, namely the last; for only two quarters 1990, namely the third and fourth; and for last three quarters in 1992. It should be noted that this one quarter within the target range in 1987 followed 7 consecutive quarters of undershooting the set money supply targets or guidelines in 1986 and 1987; the 2 quarters within the target range in 1990 occurred after 10 consecutive quarters of undershooting the set money supply targets in 1988, 1989 and the first two quarters in 1992; the last 3 quarters within the target range in 1992 follows 5 consecutive quarters of overshooting the set target range in 1991 and the first quarter in 1992. Accordingly, the structuralist argument that because of external foreign factors, monetary policy is ineffective in controlling money supply changes in a small and open economy, South Africa in this case, must be “accepted”.

**TABLE 25: SET VERSUS ACTUAL MONEY SUPPLY TARGETS**

YEAR	Actual Percentage Change in M3 (Annual rate):				Set Target Range %
	1 <sup>st</sup> Quarter	2 <sup>nd</sup> Quarter	3 <sup>rd</sup> Quarter	4 <sup>th</sup> Quarter	
1986	11.59	10.77	9.93	9.93	16 - 20
1987	8.46	9.87	11.68	15.67	14 - 18
1988	20.63	22.20	26.17	26.40	12 - 16
1989	26.99	25.81	24.88	23.54	11 - 15
1990	21.73	19.43	14.26	12.00	11 - 15
1991	13.55	15.30	14.80	14.15	8 - 12
1992	11.26	8.37	8.95	8.37	7 - 10
1993	5.90	3.50	3.78	5.39	6 - 9
1994	10.58	14.33	15.41	15.05	6 - 9
1995	12.35	15.86	15.66	14.36	6 - 10
1996	15.29	14.55	14.87	14.94	6 - 10
1997	16.38	14.63	14.52	17.28	6 - 10

Note: Percentages are calculated by comparing quarterly averages with the corresponding figure of the previous year.

Source: SARB, *Quarterly Bulletin* (Various Issues)

Given that the results obtained are not conclusive in confirming or rejecting all the arguments of either of the contending economics schools of thought, that is the orthodox or neo-liberal and structuralist, it was decided that further, though non-rigorous, empirical evaluation should be conducted. Also given that there is a significant relationship between  $M3_{t-1}$  and  $M3_t$ , suggesting that the monetary authorities can *influence* the *levels* of the money supply, although they are *unable to control* them *within the set guidelines*, it became obvious that monetary policy application was constrained. This necessitated further examination, namely, of the impact of external factors on the potency of domestic monetary policy. The United States \$/South African Rand foreign exchange, FOREX, was used as a proxy for external factors. The other domestic explanatory variables of M3 are the repo rate, REPO, BA, R150 and GDE. However, only two of the five explanatory variables, namely, the REPO and FOREX, were found to be significant, giving the following equation:

$$M3 = f(\text{REPO}, \text{FOREX}), \quad (75)$$

After testing down from the following *general* equation:

$$M3 = f(\text{REPO}, \text{FOREX}, \text{GDE}, \text{BA}, \text{R150}), \quad (76)$$

where GDE is the real Gross Domestic Expenditure (GDE); BA is the 3 months bankers' acceptance rate (BA); and (R150) is the market rate on long-term government bonds.

Equation (76) was run mainly in order to start from the general and move to the specific, retaining significant variables and dropping those that are not. GDE, R150 and BA were found to be insignificant in explaining changes in M3. As a result only the REPO, as a domestic explanatory variable, and FOREX, as a proxy for external factors or influences were used to further explain M3. This is covered in the next section.



### 9.5.1 THE INFLUENCE OF EXTERNAL FACTORS C

Furthermore, the regression results of equation (75) indicate that the REPO and FOREX are significant as explanatory variables, both individually and collectively, as well as in explaining changes in M3. With the individual t-statistic below 2 and the calculated F-statistic of 167 for 37 included observations and 2 explanatory variables above, the  $F_c$  of 3.28 (5 per cent level) and 5.29 (1 per cent level) for 2 and 34 degrees of freedom for the numerator and denominator respectively, we *reject* the null hypothesis that the REPO and FOREX are *insignificant* in explaining changes in M3. The following tables present the results after applying collected data on equation (75), to test the null hypothesis that the t-statistic for REPO and FOREX are 0, or that the two variables are not related to M3. Although for this study, as stated above, only the t-statistic and the Augmented Dickey Fuller (ADF) test results are of importance for this study, in explaining why M3 is related to  $M3_{t-1}$ , while monetary authorities fail to meet *set* monetary targets, other standard regression analysis results will be given for the sake of completeness.

It is apparent from table 26, on the next page, with 37 observations ( $n$ ), and two explanatory variables ( $k$ ), that the degrees of freedom,  $n-k-1$ , becomes  $37-2-1$ , which equals 34. This being over 25 degrees of freedom, with the t-statistic for REPO and FOREX being above absolute 2, used as the rule of thumb to determine the significance of the t-statistic, we reject the hypothesis that REPO and FOREX are not significantly different from 0. Thus, we conclude that while the monetary authorities in South Africa can influence M3 by applying the REPO to  $M3_{t-1}$ , external forces represented by FOREX as a proxy, also impact on M3. Accordingly, on the issue of the *controllability of money supply*, both structuralists and neo-liberals are correct. The results obtained confirm the neo-liberal argument that money authorities of a small and open economy can control the money-supply, in this case using the REPO. Simultaneously, the structuralists argument that external forces, with FOREX as a proxy, render monetary policy impotent is confirmed.

The next step is to determine the stationarity of the time series used in arriving at the above conclusion. The stationarity test will tell whether the conclusion is meaningful

or nonsensical. To determine the stationarity of the time series, an augmented Dickey Fuller (ADF) test on the residuals.

Before the formal ADF test has used to test for the presence of unit roots, an initial and informal visual inspection of the first and second-order moments was conducted. During this initial stage, correlograms were used in addition to time plots, to determine how long it takes the auto correlations to die down. If they die down rapidly the time series are stationary, and, in the case of non-stationarity, they fade away slowly with a positive value. After establishing that the equation (76) is cointegrated by this initial visual inspection, the formal test on the results was conducted.

**TABLE 26: TEST EQUATION  $M3 = f(\text{REPO}, \text{FOREX})$**

Dependent Variable	: M3			
Sample (adjusted)	: 1960 1997			
Included observations	: 37			
Variable	Co-efficient	Std. Error	t-Statistic	Prob.
$\alpha$	293031.9	24135.42	12.14	0.0000
<b>REPO</b>	-4203.034	659.6000	-6.37	0.0000
<b>FOREX</b>	33943.76	2817.209	12.04	0.0000
R-squared	: 0.91			
Adjusted R-squared	: 0.90			
Durbin Watson	: 1.18			
Log likelihood	: -396.41			
Akaike's Information Criterion (AIC)	: 18.75			
Schwarz Criterion	: 18.88			
F-statistic	: 167.61			

The formal test for cointegration involved taking the ADF statistics, -12.46415 in table 27, and measure it against a MacKinnon (1991) set of parameters of an equation of the response surfaces. The following relation of response surfaces:

$$C(\rho) = 0\alpha + 0_1T^{-1} + 0_2T^{-2}, \quad (77)$$

where  $C(\rho)$  is  $\rho$  percent critical value and  $T$  is the number of observations making it possible to get the appropriate critical t-Test residuals from an Ordinary Least Squares (OLS) equation where the number of regressors (excluding the constant and trend) lies between:  $1 \leq n \leq 6$ . For instance, with 105 observations and  $n = 3$ , by looking at MacKinnon table for a constant,  $0\alpha$ , and no trend, at the 5% significance level we get  $0\alpha = -3.7429$ ;  $0_1 = -8.352$  and  $0_2 = -13.41$  and substituting into these figures in equation (77), we get:

$$C(\rho) = (-3.7429 - 8.352/105 - 13.41/105^2) \approx -3.82 \quad (78)$$

The test criterion for testing the null hypothesis that there is no integration, is to compare the ADF test statistic with the MacKinnon calculated value. We reject the null hypothesis of no co-integration at 5% significance level if the ADF test statistic, that is the t-value, is more negative than  $-3.82$  (Harris 1995: 54 – 550).

The calculated critical value, based on the MacKinnon table (Harris 1995:158), where constant is  $-3.4336$ ,  $0_1 = 5.999$ ,  $0_2 = 29.25$ , with  $n = 2$  and observations,  $T$  is 31, we get:

$$C(\rho) = (-3.9001 - 10.534/31 - 30.03/31^2) \approx -4.37 \quad (79)$$

Since the ADF test statistic, according to Table 27, is  $-12.46415$  and it is less negative than  $-4.37$ , we reject the null hypothesis that there is no cointegration. Therefore, we can conclude, at 99% confidence level, that money supply, M3, is significantly related to the repo rate, REPO, and the foreign exchange rate between the United States dollar and the South African Rand, FOREX, as a proxy for external influences on money supply, without fear that this conclusion might be spurious or non-sensical.

**TABLE 27: AUGMENTED DICKEY-FULLER UNIT ROOT TEST**

<b>ADF Test Statistic</b>	-12.46415			
Augmented Dickey-Fuller Test Equation:				
Dependent Variable	: dM3			
Method	: Least Squares			
Sample (adjusted)	: 1998:09 – 2001:03			
Included observations	: 31 after adjusting end points.			
<b>Variable</b>	<b>Co-efficient</b>	<b>Std. Error</b>	<b>t-Statistic</b>	<b>Prob.</b>
<b>dM3(-1)</b>	-2.721861	0.218375	-12.46415	0.0000
R-squared	: 0.90			
Adjusted R-squared	: 0.89			
SE of regressions	: 9647.389			
SSR	: 270E+09			
Log likelihood	: -327.3611			
Durbin Watson Statistics	: 2.557310			
Akaike's Information Criterion (AIC)	: 18.41123			
Schwarz Criterion	: 18.50374			
F-Statistic	: 266.3744			

## 9.6 CONCLUSION

In this chapter we presented a brief statement of the problem addressed, the opposing views of structuralist economic theory and orthodox or neo-liberal theory, on whether monetary authorities of a small and open economy, in this case the Republic of South Africa, can or cannot control money supply. Control should be understood to mean the ability of monetary policy to influence changes in money supply, in line with the *monetary targets* or *guidelines*. As shown in table 29, monetary policy failed dismally to control money supply changes. Also covered in the chapter is the result on testing the relationship between  $M3_t$  and  $M3_{t-1}$ , that is whether or not there exists significant relationship between  $M3_t$  and  $M3_{t-1}$ . A significant relationship of this kind between these two variables is found to exist, contrary to the structuralist



argument. Given the empirical results obtained that the monetary authorities do not influence the current period M3 level, by manipulating that of the previous period, despite their failure to control money supply changes within set money supply targets, it was necessary to probe these results further. The impact of external factors on the efficacy of domestic monetary policy was also probed. A single-equation model was used to determine the impact of domestic monetary policy on M3, in the light of external factors. Domestic explanatory variables that directly influence M3, namely GDE, R150, BA, and the REPO, were used. The United States dollar/South African Rand *exchange rate* (FOREX), was used as a proxy for foreign influences or external factors. The purpose was to determine whether or not the controllability of money supply has rendered ineffective by external or exogenous factors. Only the REPO and FOREX were found to be individually and collectively significant in explaining M3, thus explaining the ability of monetary authorities in South Africa, to influence the current money supply level, while being unable to keep it within the set monetary targets.

Also evaluated in this chapter was whether or not changes in GDP can be explained by changes in M3 and CPI, said not to be mainly a monetary phenomenon by structuralists. According to structuralists, the monetary authorities cannot change money supply, M3, as they desire, for each time they try, they get the opposite result, that is when they desire expansionary results, they end up with contraction of money supply and when contractionary policy is pursued they end up instead with increase in money supply, and this was empirically examined. Thus, structuralists hypothesise that there is no significant relationship between economic growth, GDP, as the dependent variable, and M3 and CPI, as explanatory variables. Instead economic growth of a small and open economy is said to be influenced by that of big trading partners. Then, the alternative hypothesis to this structuralist null hypothesis, becomes: GDP is explained by M3 and CPI. From the obtained results above, it is found that both M3 and CPI significantly determine or influence GDP. An informal and non-rigorous empirical test was also used to establish the relationship between the economic growth of South Africa and the levels of economic growth of its big trading partners. .

The approach used by the study to empirically test the hypothesis was through regression analysis. To first determine the significance of the relationships between variables, the t-test and F-test were used. Then tests for stationarity were applied, to determine whether or not the tested equations were co-integrated, to avoid drawing spurious or non-sensical conclusions. The initial step for testing was to use the less formal visual inspection approach. Then the augmented Dickey-Fuller (ADF) test was used. The time series used were found to be stationary, thus rendering the conclusions drawn meaningful and not nonsensical. Accordingly, from this empirical study, the following conclusions were drawn:

- (1) The structuralist argument that monetary authorities cannot control the money supply (M3) changes, namely, keeping them within set monetary targets, is “*accepted*”. However, this result must be read with (3).
- (2) The neo-liberal or orthodox theory argument that economic growth (GDP) of a small and open economy; South Africa in this case, is influenced or determined by M3 and CPI is “*accepted*”; and in addition, the economic growth of South Africa is not significantly related to the levels of economic growth of her big trading partners.
- (3) The neo-liberal or orthodox theory argument that money supply in the current period ( $M3_t$ ) is related to money supply in the previous period ( $M3_{t-1}$ ), in an open and small economy, that of Republic of South Africa in this case, is “*accepted*”; meaning, in the light of (1), monetary authorities can *influence* changes in money supply, but *cannot control it*, because of external influences.
- (4) While the repo rate explains *changes* in the money supply in South Africa, its impact is diluted by external forces. This explains why monetary authorities are able to influence the current period money supply but are unable to control it within set target levels.

Accordingly, the seven problem areas as well as associated questions, set out in section 1.6. are answered by the above conclusions as follows:

- Problems (1), (3), (4) and (5) are answered by conclusion (2), namely, that economic growth of South Africa, as a small and open economy, is influenced by monetary policy through both money supply changes and the levels of inflation, as postulated by orthodox or neo-liberal economists;
- Problems (2) and (5) are also answered by conclusion (2). Because monetary policy influences economic growth, and economic growth is positively correlated with the rate of employment, therefore monetary policy also stimulate employment growth;
- Problem (7) is answered by conclusion (3), namely, that monetary authorities in South Africa can influence the current period level of money supply by manipulating that of the previous period. However, conclusion (1) clearly modifies this conclusion, by showing that the monetary authorities, even though they influence the current money supply, cannot control it according to the desired set monetary targets. The explanation for this is given by conclusion (4), namely that external factors influence domestic monetary policy.

## CHAPTER TEN

### SUMMARY OF FINDINGS AND RECOMMENDATIONS

#### 10.1 INTRODUCTION

In this last chapter, we give a summary of the study, covering its purpose and the problem or theoretical contradiction addressed; the existing literature on this problem; how the problem was contextualised by approaching it in the light of a specific present empirical or concrete situation; the analytical methodology used to study the problem; the presentation of results obtained by empirically applying this analytical methodology to evaluate the various sides of the debate over the problem, and the conclusion drawn from the results obtained, which is briefly presented below.

##### 10.1.1 PURPOSE OF THE STUDY

The purpose of this study was to shed some light on the on-going debate between structuralist and orthodox or neo-liberal economists. At the heart of this debate was the question whether “money matters” or not. To structuralists, “money does not matter” in small and open economies; they argue that the monetary authorities in such economies cannot control changes in money supply. Because of this alleged uncontrollability of money supply, economic growth is said to be unrelated to money supply changes. It is further argued that inflation, is not only a monetary phenomenon, instead it is imported from large developed western countries with which the small and open economy trades. Like money supply, inflation is also said by structuralists to have no relationship with economic growth. The structuralist theory has its theoretical roots in Latin America, which grappled with poverty and under-development attributed to the alleged “unfair trade-terms” determined by big developed western countries with which trade is conducted. Because of persistent economic growth problems, especially inability to curb soaring inflation rates, weak currencies and related monetary problems, reminiscent of those seen during the Great Depression, faith in monetary theory got eroded. Economic growth was seen to be arbitrarily determined or related to the growth level of the big and

developed countries with which they conducted international trade.

On the other side of the debate, orthodox or neo-liberal theory argues that the economic growth of a small and open economy is determined or influenced by both changes in money supply and inflation, both of which fall under the control of the monetary authorities. Thus, to orthodox or neo-liberal economists, the monetary authorities of a small and open economy can control money supply by changing its size within set monetary targets or guidelines; there is a significant relationship between the level of money supply of the current period, and that of the previous period, and economic growth, is related to money supply and inflation.

It is the purpose of this study to make a contribution to resolving the controversy between structuralist and orthodox or neo-liberal economists, since it is important for an open and small economy like the Republic of South Africa to determine which theory to apply and pursue. This is particularly important for South Africa, whose official economic policy, GEAR, considered orthodox or neo-liberal, is being challenged from various sides.

### 10.1.2 PROBLEM DEFINITION

The problem studied was whether monetary policy can stimulate economic growth in a small and open economy, that of South Africa in this case. This problem is differently addressed by the structuralist theory of monetary policy on economic growth of a small and open economy, and the orthodox or traditional or neo-liberal economic theory. These two opposed theories were empirically evaluated by this study. As stated above, we can formulate the problem from the structuralist perspective as follows:

- i. Monetary authorities cannot control money supply changes, that is they either *overshoot* or *undershoot* the monetary targets or guidelines they set;
- ii. The current money supply,  $M3_t$ , is not related to its value in the previous period;  $M3_{t-1}$ , using the broad monetary aggregate M3 to empirically

represent money supply; which means that monetary authorities cannot influence money supply changes.

The structuralist rationale is that whenever the monetary authorities try to increase (decrease) money supply in the current period ( $t$ ), given the experience of the previous period ( $t - 1$ ), they end up achieving the opposite, that is decreased (increased) money supply. The expansionary policy aimed at reducing the domestic interest rate, for instance, is said to discourage the inflow of net-foreign assets (NFA) as a result of the reduced interest rate. Given that NFA is a statistical counterpart of money supply, a reduction in NFA means a reduced money supply – the opposite effect of the desired monetary objective of increasing  $M3$ . The same is said to be the case for contractionary monetary policy. The reduction of  $M3$ , by reducing domestic interest rates, is said to attract an inflow of NFA, which in turn increases  $M3$  – again the opposite effects of the desired monetary objective of decreasing  $M3$ .

- iii. Given this alleged inability of the monetary authorities to determine the current money supply of a small and open economy, it is argued that monetary policy cannot play any role in stimulating economic growth through changes in money supply. Inflation, which is structuralists do not consider to be primarily a monetary phenomenon, is also said to bear no significant relationship with economic growth. Instead economic growth is said to be determined by the economic growth, GDP, of big trading partners.

Accordingly the problem was statistically formulated by letting the null hypothesis capture the postulated argument, and the alternative hypothesis to represent the opposite. Thus, if the structuralist null hypothesis of no relationship between  $M3$  and  $M3_{t-1}$ , and that of no relationship between GDP, as the dependent variable, and  $M3$  and CPI, as explanatory variables cannot be rejected, then we must “accept” the structuralist argument. On the contrary, if the null hypotheses are rejected, then we must “accept” the alternate hypotheses, that is. the opposite argument, that monetary authorities can control money supply; that there is a relationship between  $M3$  and  $M3_{t-1}$ ; and that economic growth (GDP) of a small and open economy, that of South Africa, is explained by money supply and inflation, and not the growth rates of big

trading partners.

### 10.1.3 STUDY METHODOLOGY

The first step was to define the problem around the structuralist-orthodox economic debate. To do this, the extensive literature covering the debate was consulted to capture the meaning of the arguments presented by the opposed structuralist and orthodox or neo-liberal economic schools of thought. To give significance to the problem studied, its relevance for the present day had to be established. Since the argument concerned a small and open economy, the Republic of South Africa (RSA), was used as a case study. The South African economic reality was used as a basis for conducting a situational analysis. Having done this, the next stage became the formulation of a model to be used to empirically test the opposed arguments presented by structuralists versus orthodox economists. Because this is not an econometric study, for simplicity of exposition, a single-equation model was used. With the model in place, data was collected, to empirically test the model. Upon application of traditional ordinary least squares (OLS) regression analysis and testing of stationarity of the used time series, to avoid spurious conclusions, the results obtained are interpreted and presented.

As stated above, traditional or conventional regression analysis can lead to non-sensical or spurious conclusions, when the time-series are not stationary. To avoid such incorrect conclusions, the time series are tested for stationarity, using the popular augmented Dickey-Fuller test. The following single equation was used to test controllability of money supply by the monetary authorities of a small and open economy:

$$M3 = \alpha + \beta M3_{t-1} + \mu_t,$$

where:

- |          |  |
|----------|--|
| $\alpha$ | the constant or intercept                              |
| $\beta$  | the correlation co-efficient between M3 and $M3_{t-1}$ |
| $\mu_t$  | the disturbance or error-term, to capture other        |

determinants of M3, besides  $M3_{t-1}$

M3	money supply in current period, t.
$M3_{t-1}$	money supply in previous period, t – 1.

The sample period was 1960 to 1997, using yearly observations. Thus, 38 observations (including end points) were used. The collected data, sourced from the Quarterly Bulletin of the central bank of RSA, the South African Reserve Bank (SARB), were fitted to the above equation, using OLS regression method. The structuralist argument was formulated into the following null hypothesis:

$$H_0: \beta = 0,$$

which says there is not relationship between M3 and  $M3_{t-1}$ . The alternative hypothesis, capturing the orthodox or neo-liberal argument, which says there is controllability of money supply, represented by the relationship between M3 and  $M3_{t-1}$ , was as follows:

$$H_A: \beta \neq 0,$$

The rule of thumb method was used to establish the significance of the t-statistic, that is it should be greater than 2. On finding t-statistics to be significant, the formal augmented Dickey-Fuller (ADF) test was conducted to test for stationarity or co-integration of the equation. Then the ADF test statistic was measured against the MacKinnon critical value.

The same approach was used to test for the relationship between GDP and the explanatory variables M3 and CPI. For that, the following equation was used:

$$GDP = \alpha + \beta_1 M3 + \beta_2 CPI + \mu_t,$$

where:

<i>GDP</i>	Economic growth (Gross Domestic Product)
<i>M3</i>	Money supply
<i>CPI</i>	Inflation (consumer price index)
$\alpha$	Intercept or constant



$\beta_1$	Correlation coefficient between GDP and M3
$\beta_2$	Correlation coefficient between GDP and CPI
$\mu_i$	Disturbance or error-term

In this case the structuralist argument became the following null hypothesis:

$$H_0: \beta_1 = \beta_2 = 0,$$

meaning there is no relationship between GDP and M3 and between GDP and CPI. The alternative hypothesis, representing the orthodox argument that M3 and CPI affect GDP is the following:

$$H_A: H_0 \text{ is not true.}$$

In addition the relationship between the GDP of South Africa and that of her big trading partners, namely, the United States, the United Kingdom, France, Germany and Japan, was also empirically tested to evaluate the structuralist argument.

#### 10.1.4 RESULTS OBTAINED

In applying the t-test technique to test the structuralist argument, taken as the null hypothesis, that there is no relationship between M3 and  $M3_{t-1}$  or that  $\beta$  (the correlation co-efficient between M3 and  $M3_{t-1}$ ) is zero, is *rejected*. This means the orthodox or neo-liberal argument, the alternative hypothesis, that there is a significant relationship between the current and the previous period levels of money supply in a small and open economy, in this case the Republic of South Africa, must be "*accepted*". To avoid this being spurious or nonsensical equation was tested the equation for cointegration was tested.

However, as indicated by the empirical data presented in table 32, the structuralist argument that monetary policy in an open economy, that of South Africa in this case,

cannot control money supply changes must be “*accepted*” and that of the orthodox or neo-liberal theory of controllability of money supply changes *rejected*. These two results pose an interesting question, to be probe deeper by further study, as to which monetary policy instrument or forces are responsible for the significant relationship between the current period’s money supply level and that of the previous period, when monetary policy is incapable of controlling the money supply changes.

Furthermore, in measuring the ADF test statistic, obtained in testing for co-integration, against the MacKinnon critical value for testing the structuralist null hypothesis for co-integration, it was found that it was more negative than the MacKinnon critical value, at 1% level of significance. Therefore, the current level money supply,  $M3_t$ , as explained by the previous level,  $M3_{t-1}$ , and the equation used to test the relationship, was is co-integrated at 1% significance level. Stated differently, we can conclude that Orthodox or neo-liberal theory, that there is a significant relationship between the current and the previous period money supply levels, must be “*accepted*” with a 99% level of confidence.

Upon reaching this conclusion, the next step was to test the structuralist argument on the impact of M3 and CPI on GDP. In this testing, not only the t-test was used, but the F-test as well, because individual variables can be jointly insignificant, while individually significant. It was found that  $\beta_1$  and  $\beta_2$  were not equal to zero, that is M3 and CPI are individually significant in explaining GDP, and that they were also jointly significant using the t-test and F-test, respectively. The ADF test was again applied to test the equation for co-integration, by measuring the ADF test statistic against the MacKinnon critical value. It was found that the ADF test statistic was more negative at 1% significant level. Thus, the economic growth, GDP, of a small and open economy, in this case RSA, was explained by money supply, M3 and inflation, CPI and this relationship can be said with 99% confidence, to ensure that this conclusion was not spurious. Thus, the structuralist argument that there is no significant relationship between GDP, on the one hand, and M3 and CPI, on the other, in a small and open economy must be rejected, in favour of the orthodox theory, which affirms such a relationship. This long run relationship was also tested to establish whether it was stable in the short run. Similar results were obtained.

confirming the stability of the long-run relationship.

## 10.2 DELIMITATION AND RECOMMENDED FURTHER STUDY

### 10.2.1 DELIMITATION

The scope of this study was limited to the empirical evaluation of the impact of monetary policy in stimulating the economic growth of a small and open economy, that of South Africa in this case. Thus the primary objective was to estimate the relationship between GDP, as the dependent variable, and M3 and CPI as explanatory variables, testing for stationarity of the time series used, to avoid nonsensical conclusions that could flow from using traditional regression analysis when the time series were nonstationary. The reason why M3<sub>t</sub> and M3<sub>t-1</sub> are significantly related, while the monetary authorities cannot significantly realise the *monetary targets* they have set to control M3, warrants further study to evaluate the dynamics involved, which are outside the scope of this study.

### 10.2.2 RECOMMENDATIONS

Given that monetary policy in South Africa, as a small and open economy, cannot control money supply changes, even if M3<sub>t</sub> is significantly related to M3<sub>t-1</sub> and that economic growth, GDP, is significantly related to M3 and CPI, the policy of protecting the value of the Rand by adjusting the money supply should be re-evaluated. A question to be answered is whether or not the policy instrument, namely, the repo rate, is appropriate, given the impact of foreign and external forces on M3, and in turn on economic growth.

A further study, using more rigorous econometric prediction techniques, including short-run models or error correction models (ECMs), must be undertaken to further

explore the empirical results obtained. This is important because the recent monetary policy is based on setting *inflation targets*, and inflation is related to money supply changes, noting that *money supply targeting* was not successful. Such a study would also indicate how long it would take to correct a long-term equilibrium disturbance. Furthermore, such a study should include the determination of specific external forces which impact on the changes in the money supply, and for what reasons.

### 10.3 CONCLUSION

On the basis of the empirical results of the analysis of this study, it must be concluded that the monetary authorities of a small and open economy, South Africa in this case, cannot *control* money supply changes, postulated by structuralists, although they are able to influence such changes, as demonstrated by the significant relationship between  $M3_t$  and  $M3_{t-1}$ . It was also concluded that economic growth, GDP, was significantly influenced by money supply,  $M3$ , and the domestic level of inflation, CPI, as propagated by the orthodox or neo-liberal theory, and not by the level of economic growth of the big countries serving as trading partners.

These conclusions have serious implications for South Africa, which as a new democracy, grappling with the eradication of poverty and reduction of unemployment or job-creation, must reduce an alarming high level of crime, which can only have a negative impact on economic growth. Furthermore, the fact that monetary policy stimulates economic growth, that is the GDP is significantly determined by  $M3$  and CPI, and that the monetary authorities cannot control money supply levels by keeping them within the *set targets*, despite their ability to influence the current period money supply level by manipulating that of the previous period, require further study and a re-examination. The contribution of the results of such further empirical probe will help resolve the argument between the structuralists and orthodox economists. It will further confirm or negate the structuralist argument of COSATU in criticising GEAR, that monetary authorities are to blame. The proponents of the official economic policy of South Africa, GEAR, in their defence against COSATU's criticism that GEAR does not work, blame the monetary authorities, who are blamed for placing their focus on money supply changes, said to be responsible

for the alleged ineffectiveness of GEAR. Thus, the tenability, or lack thereof, of putting the blame on monetary authorities as being responsible for high interest rates which inhibit economic growth, based on their supply-side economics, to the neglect of the demand-side of the economy, will be established.

Thus, this crucial and vital debate merits further analytical study, to provide a fuller explanation of whether or not the GEAR policy is effective, in creating jobs or reducing unemployment through monetary policy, and through the hotly debated policy of *privatisation*, as an essential component of orthodox economics. Having currently established that “money matters”, a further study will help define the relationship between the “real” and “monetary” sectors of the economy.

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