

INFLATION IN SOUTH AFRICA: 1921 TO 2006.
HISTORY, MEASUREMENT AND CREDIBILITY

Johannes Jacobus (Jannie) Rossouw
MCom Econ (UP), MBA (UP)

Submitted in fulfillment of the requirements for a PhD in the School of Development Studies,
University of KwaZulu-Natal, 2007

Date: 1 August 2007

Supervisor: Prof M (Vishnu) Padayachee

DECLARATION

This doctoral thesis represents original work by the author and has not been submitted in any other form to another university.

Where use has been made of the work of others, it has been duly acknowledged and referenced in the text.

The findings presented and conclusions arrived at in this doctoral thesis are entirely those of the author.

The research for this doctoral thesis was performed under the auspices of the School of Development Studies at the University of KwaZulu-Natal. Research was undertaken under the supervision of Professor Vishnu Padayachee during the period January 2006 to August 2007.

ABSTRACT

This study reports the development and use of an original methodology to measure inflation credibility, as well as the first results of such measurement in terms of an inflation credibility barometer. The barometer is an instrument measuring the degree of acceptance of the accuracy of historic inflation figures. Despite the lack of knowledge about inflation and the low inflation credibility recorded by this first calculation of an inflation credibility barometer for South Africa, valuable information about inflation is unveiled to the authorities. The research results serve as a benchmark, but cannot be compared to earlier research, as this study represents the first systematic measurement of inflation credibility in South Africa.

The barometer yields better results than the limited current international measurement of perceptions of the accuracy of historic inflation figures. The barometer (i) reports the credibility of inflation figures as a figure between zero and 100; (ii) will highlight changes in credibility over time with repeated use; (iii) can be explained easily to the general public; (iv) provides for international comparison between countries; and (v) can be used by all countries. The use of inflation credibility barometers and changes in barometer readings over time can also serve as an early warning system for changes in inflation perceptions that might feed through to inflation expectations.

Sampling results used to calculate a South African inflation credibility barometer show little public understanding of the rate of inflation. Owing to an increased focus on inflation figures in countries using an inflation-targeting monetary policy, central banks entrusted with such a policy should adopt a communication strategy highlighting the calculation and measurement of the rate of inflation. This study shows that no generally accepted international benchmarks for successful central-bank communication strategies have been developed, but the use of the methodology developed in this study will assist in the assessment of the effectiveness of communication strategies.

This study makes three further contributions of significance to available literature on inflation in South Africa. The first is an analysis of price increases and inflation over a period of 85 years

(1921 to 2006) and a selected comparison of salaries and remuneration over a period of 78 years (1929 to 2006). To this end data sets were developed for comparative purposes, thereby distinguishing between perception and reality about the accuracy of inflation figures over time. As this comparison has not been done before, a methodology was developed that can be used in future research. Based on these comparisons an inflation accuracy indicator (IAI) is developed for the first time. The research showed no systematic over or under-reporting of price increases, therefore confirming the general accuracy of the consumer price index (CPI) over time. As with the inflation credibility barometer, this methodology can be used internationally to confirm the accuracy of countries' inflation figures over time. This methodology can also be used by developing countries with capacity constraints in economic modelling and forecasting.

The second contribution to available literature is the first analysis of South Africa's experience with inflation over a period of 85 years from the perspective of the central bank. This analysis highlights not only the difficulties encountered by a central bank to contain inflation, but also focuses the attention on the policy errors of the authorities in their quest to contain rising prices.

The third contribution is an analysis of international and domestic initiatives aimed at improving the accuracy and measurement of inflation. The implications of these initiatives for developing countries are considered in the interest of a level international playing field between developed and developing countries.

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LIST OF ABBREVIATIONS**B**

Board of Governors of the Federal Reserve System	Fed
Bureau for Economic Research	BER
Bureau of Market Research	BMR
Bureau of Labor Statistics	BLS

C

Central Statistical Service	CSS
Committee of Central Bank Governors	CCBG
Common Monetary Area	CMA
Consumer price index	CPI
CPI excluding changes in interest costs	CPIXX
CPI for metropolitan and other urban areas excluding changes in the interest costs of mortgage bonds	CPIX

D

Demand for money/nominal demand for money balances	Md
Democratic Republic of the Congo	DRC

E

European Central Bank	ECB
European Commission	EC
European Monetary System	EMS
Exchange rate mechanism	ERM

F

Federal Economic Statistics Advisory Committee	FESAC
Federal Open Market Committee	FOMC
First Order Conditions	FOC

G

Gross domestic product	GDP
------------------------	-----

H

Harmonised index of consumer prices	HICP
Household	HH

I

Income	Y
<i>Indice Nacional de Precios al Consumidor</i>	INPC
Inflation accuracy indicator	IAI
International Bank for Reconstruction and Development	World Bank
Institute for Security Studies	ISS
International Monetary Fund	IMF

L

Less developed countries	LDCs
--------------------------	------

M

Marginal benefit	MB
Marginal cost	MC
Monetary Policy Committee	MPC
Money supply	M
Master of Business Administration	MBA

N

National Finance Corporation	NFC
New neoclassical synthesis	NNS
Non-accelerating inflation rate of unemployment	NAIRU

O

Organisation for Economic Co-operation and Development	OECD
Organisation for European Economic Co-operation	OEEC
Output	y
Owner-occupied housing	OOH

P

Penny	d
Policy Target Agreement	PTA
Prices	P
Production price index	PPI

Q

Quantity	Q
----------	---

S

Southern African Development Community	SADC
Standard error	SE
Statistical Office of the European Communities	Eurostat

T

The Commission of inquiry into the monetary system and monetary policy in South Africa	De Kock Commission
---	--------------------

U

University of Stellenbosch

US

United Kingdom

UK

United States of America

United States

Unidad de Fomento

UF

V

Velocity of circulation of money

V

ACKNOWLEDGEMENTS

I wish to use this opportunity to thank many people and institutions for supporting this study. Although too many to mention all by name, I wish to highlight in particular the following:

- Prof M (Vishnu) Padayachee for the confidence he has put in me, and for his supervision of this study;
- Prof J A Lombard, retired Head of the Economics Department at the University of Pretoria and retired Senior Deputy Governor of the SA Reserve Bank, who introduced me to the study of economics;
- the invaluable assistance of Proff J H Martins and A A Ligthelm, and of Ms M E Maritz of the Bureau of Market Research of the University of South Africa, which is gratefully acknowledged;
- the Chairperson of the Ethics Committee of the Faculty of Economic and Management Sciences at the University of Pretoria, Prof R van Eyden, for permission to do research among students at that university;
- the Dean of Student Affairs at the University of Pretoria, Prof M T Speckman, for permission to do research among students at that university;
- the management and staff of Markinor;
- the Cillie family for the expenditure records of Dr G G Cillie;
- Proff P Engelbrecht and T de Coning and Ms G Arangies, all of the University of Stellenbosch, for information about the remuneration of professors at the University;
- Dr W Botha of the Stella Street Dutch Reformed Church in Pretoria for information about the remuneration of reverends;
- Mr H Pringle of the National Treasury for information about remuneration structures in the civil service;
- Mr G van de Wall, a retired Director-General, for valuable discussions on the remuneration structure of the civil service;
- Prof J F Potgieter, retired Director of the Institute for Planning Research at the University of Port Elizabeth (as it was known at the time);
- Ms I Gaspar of the SA Reserve Bank for translation assistance;

- Mr H H van Gass of the SA Reserve Bank for translation and other assistance;
- Library staff of the SA Reserve Bank;
- Dr E J van der Merwe, a retired Chief Economist of the SA Reserve Bank, for commenting on various aspects of this study;
- Ms A Mostert of the SA Reserve Bank for linguistic services;
- the SA Reserve Bank for financial and other assistance with this study; and
- my long-suffering family: Sunélle, my wife, and my son Malherbe and my daughter Carina, who have both grown considerably in the months that I have spent completing this study.

Soli Deo Gloria.

Jannie Rossouw

Pretoria

CHAPTER 1

INTRODUCTION

1.1 Background and context

Inflation as a topic of study has received broad attention in academic and policy literature over many years. This is also the case with the monitoring and measurement of inflation expectations as a component of an inflation-targeting monetary policy (see for instance Bryan and Ventaku, 2001a; De Wet, 2003; Kershoff and Smit, 2002; Mishkin, 2004; Saunders, 2003; or Sveriges Riksbank, [S.a.]). However, the measurement of the public's perceptions about inflation figures as an anchor for expectations has received little attention.

Central banks in inflation-targeting countries use inflation forecasting, explanation or escape clauses in the event of non-achievement of the target and the measurement of inflationary expectations as three support measures of monetary policy implementation. These support measures are called for because current policy changes will only fully influence the future rate of inflation after a time lag. The length of time for policy changes to affect inflation is determined by the speed at which changes in monetary policy is transmitted through the economy. The last one of these three measures (inflation expectations) is not within the direct sphere of control of the authorities. This is understandable, as inflation expectations are formed by and large through the historic policy decisions of central banks and their success in containing inflation, rather than through public announcements of the future intentions of the central bank. According to Mishkin “... an essential ingredient to a successful anti-inflation policy is the credibility of the policy in the eyes of the public ...” (2004: 658).

Inconsistent policy decisions increase the expectations of future inflation, resulting in dynamic time inconsistency (also referred to as time consistency) problems (see for instance Kydland and

Prescott, 1977). The time inconsistency problem¹ in the conduct of monetary policy provides an explanation of the ensuing conduct in terms of game theory between a central bank and private economic agents in their efforts to outmanoeuvre one another in predicting actual, rather than promised, economic outcomes. The central bank will choose to announce in period t an optimal low inflation rate for $t+1$ and, since that affects the expectations and the behaviour function of private economic agents in $t+1$, could find that a higher inflation rate is optimal, thereby resulting in the implementation of a more expansionary policy than previously announced. Central banks attempt to prevent any time inconsistency problems by favouring an explicit monetary policy anchor, rather than the use of policy discretion. This reduces uncertainty about the policy direction of authorities.

In literature “autonomy” and “independence” of central banks are often used as if the words have the same meaning (see for instance Arnone et al., 2007: 5). De Kock states that “[w]hile the central bank obviously has no right to claim independence of the Government ... it should be enabled to maintain a position of independence within government” (1956: 318). As the authority of central banks to conduct suitable policy is commensurate with “autonomy” rather than “independence”, the first description is preferred, but because the literature uses these two words as if they have the same meaning, both are used in this study.

Whereas many central banks have lost autonomy in operations during economic hardship, a renewed focus on such autonomy emerged in the 1980s and 1990s, when it was realised that monetary policy *cannot be all things for all people*. Maxwell’s explanation of this loss of independence is that “[o]ne of the common criticisms of central bank independence is that it may lead to economic policy that is less employment-promoting than the ideal policy of the median voter and/or that is not social-welfare optimising. This critique is related to the fact that central bankers are likely to be more conservative than the average voter and are not directly accountable to the electorate” (1997: 146). The autonomy of the central bank to take the necessary decisions about monetary policy and interest rates without government interference accordingly remains an important issue for debate. Padayachee observes that “[o]ne noticeable trend in developing

¹ The time inconsistency problem is explained in more detail in section 4.2.

countries has been the rather dramatic increase in the statutory independence of their central banks in the 1990s” (2000: 496). This is confirmed by Maxwell, who states that “[b]etween 1990 and 1995 at least thirty countries ... legislated increases in the statutory independence of their central banks” (1997: 3).

Sustained economic growth and development require a number of preconditions, one of which is sufficient savings to support future investment. Sustained (and increasing) inflation, however, encourages current expenditure at the expense of future expenditure (i.e. savings), as consumers attempt to avoid paying higher prices in future. Perceptions that actual inflation exceeds the officially measured inflation rate will result in consumers acting in accordance with such perceptions by consuming now, rather than saving for future consumption if the perceived inflation is high.

This study is of value from a development perspective in as much as governments of developing economies can employ the methodology developed for the comparison of actual prices with “projected” price levels to confirm the accuracy of their measurement of average price increases. This can be a useful tool for developing countries to enhance inflation credibility.

In a developing country the use of an inflation credibility barometer and changes in the barometer will serve the dual purpose of an early warning system for changes in inflation perceptions². Readings of the inflation credibility barometer over time will warn governments of developing countries to adjust policies timely in the event of deteriorating inflation perceptions that might feed through into inflation expectations, thereby supporting the accurate pricing through interest rates of the opportunity cost of postponing current consumption in favour of future consumption (i.e. savings).

² Inflation perceptions imply *perceptions about the accuracy of the measurement of price changes*.

1.2 Scope and hypotheses of this study

This study focuses chronologically on four issues. First, South Africa's experience with inflation and price increases from a central bank perspective is examined. Secondly, methodological issues in the measurement of inflation, with specific reference to South Africa, are considered. Thirdly, price changes of various goods and services in South Africa since 1921 are analysed and compared to the rate of inflation over the relevant periods. Fourthly, the credibility of the rate of inflation as an accurate indication of the general rate of price increases in the South African economy is measured by means of an inflation credibility barometer.

Although the main focus of the study is *South Africa's experience* with inflation, regional and international comparisons are highlighted where applicable. This study highlights the relevance of the research for developing countries, particularly for countries in the Southern African Development Community (SADC) in the period running up to monetary unification and the introduction of a single currency, envisaged for 2016.

This study covers information and data available from 1921 to the end of 2006, except in instances where it is specifically stated that earlier or later data or developments have been taken into consideration. A sub-hypothesis and a main hypothesis are tested.

Sub-hypothesis (Hypothesis 1):

The prices of various identifiable consumer goods and services, as well as salaries, increased on average in accordance with the official overall rate of inflation over time.

This hypothesis is tested by comparing the actual price increases of various identifiable consumer goods and services, as well as increases in salaries, with the South African consumer price index (CPI) over the period since identification. The purpose of the comparison is to distinguish between perception and reality by ascertaining whether the prices of goods and services and salaries generally increased at a slower or faster pace than the CPI.

Main hypothesis (Hypothesis 2):

The degree of acceptance of the published official inflation figures as an accurate indication of general price increases in the South African economy by the general public, can be measured by means of an inflation credibility barometer.

This hypothesis is tested by an analysis of questionnaires developed to measure the credibility of published inflation figures in terms of an inflation credibility barometer³ by various groups of respondents. Based on the results obtained from the respondents, inflation credibility barometers are constructed, measuring the degree of acceptance of inflation credibility⁴ out of 100. Related to this hypothesis are issues such as:

- the suitability of questionnaires used in various pilot studies for general use;
- differences in the inflation perceptions of various constituent groups; and
- the level of understanding of the meaning and measurement of inflation of different groups of respondents.

1.3 Brief comments on the methodology used in this study

It was necessary to develop the methodology used for testing the two hypotheses in this study, as research of this nature has not been undertaken before. The development of the methodology and difficulties that had to be overcome are explained in detail in the relevant chapters reporting the research on the two hypotheses.

By means of summary, however, a particular challenge for testing the sub-hypothesis was the identification of homogeneous goods and services for purposes of comparing their current and adjusted historic prices to validate the accuracy of changes in the CPI. The guiding principle was

³ The use of the terminology *inflation credibility barometer* in this study differs considerably from the reference to a *barometer of inflation credibility* by Scholtes (2002: 67), who uses it to describe the calculation of longer-term breakeven inflation based on bond values (Scholtes, 2002: 70).

⁴ Inflation credibility implies the *credibility of current inflation statistics*.

availability of information, which could be obtained from a number of sources containing detailed, unprocessed price data. It was also necessary to consider quality improvements and the introduction of decimalisation and metrification in South Africa during the period under review. The methodology developed to validate the accuracy of inflation data is explained in Chapter 6 and is readily applicable to other (and particularly developing) countries.

The historic comparison of salaries or cost-to-company remuneration levels in real and nominal terms also posed certain challenges, but a methodology could be developed to ensure a basis for comparison over time. During the period of comparison “*job-title*” inflation has occurred in many positions in the private sector: the managing director has, for instance, become the chief executive. As a result of such “*job-title*” inflation, suitable private-sector positions could not be identified for purposes of comparison in this study. To the contrary, job titles in the South African civil service have remained broadly the same over the past 20 years. The previous redesignation of civil service positions in South Africa was in 1981, when the titles of (permanent) secretaries were, for instance, changed to directors-general. Two positions in the civil service were identified for comparative purposes.

It was necessary to develop a methodology to ensure that the research results reflect the influence of factors other than inflation on remuneration. Such factors include changes in direct taxes and the affordability of “big-ticket” spending items such as housing and transport. This methodology can be used by other countries that suffered from sustained inflation over a prolonged period of time to compare real remuneration of comparable positions. It is also a useful tool to ascertain whether low credibility of inflation figures is based on perception or reality.

As is the case for the sub-hypothesis, no local or international methodology or benchmarks exist for testing the main hypothesis, i.e. measuring the public’s degree of acceptance of the inflation figures as an accurate indication of general price increases. A methodology and benchmarks for this study were developed by compiling questionnaires of varying length that were tested in five initial pilot studies and one extensive pilot study, as explained in detail in Chapter 7. These pilot

studies confirmed the suitability of the methodology to measure the credibility of inflation figures for the calculation of inflation credibility barometers.

As the research results obtained from the methodology developed and tested in five pilot studies and one broader study supported the main hypothesis, the same methodology was used for sampling inflation credibility for the first time among a representative sample of the South African population. To contain the cost of sampling, this research was undertaken by means of participation in a national omnibus research questionnaire. Omnibus sampling is an accepted research practice used by many different disciplines (see for instance Camponovo, 2006; or Lindenmann, 2001) as is explained in Chapter 7. The sampling results of the representative study confirmed the main hypothesis. The methodology can be used for the international measurement (and comparison between countries) of the credibility of inflation figures.

1.4 Outline of the study

Chapter 1 demarcates the scope of the study and sets out the two hypotheses to be tested. South Africa is the main focus of the study, but international comparisons are used when appropriate. Ways in which the methodology and research can be applied by developing countries (and SADC⁵ countries in particular) are examined in relevant chapters whenever appropriate, because South Africa shows elements of both developed and developing countries in its economic structure.

Chapter 2 contains a selected review of literature on macroeconomic theory with a focus on monetary issues and highlights the measurement of inflation perceptions internationally. The implications of developments in macroeconomic theory for developing countries are also reviewed in this chapter.

Chapter 3 considers the measurement of inflation. Initiatives aimed at improving the accuracy and measurement of inflation in the United States of America (United States), a number of

⁵ SADC is the Southern African Development Community region.

member countries of the Organisation for Economic Co-operation and Development (OECD) and in South Africa are also considered. The implications for developing countries of initiatives to improve the measurement of inflation are explained briefly in this chapter.

The theory of using explicit anchors for a monetary policy framework, with specific reference to inflation targeting as one such anchor owing to its current use in South Africa, is reviewed in Chapter 4.

The fifth chapter reviews monetary policy and South Africa's experience with inflation since 1921 from a central bank perspective. Reliable inflation data are published as far back as 1921, which co-incides with the establishment of the South African Reserve Bank (SA Reserve Bank)⁶, although the SA Reserve Bank has never had any responsibility for measuring inflation. The review from the perspective of the SA Reserve Bank shows variable degrees of success in containing inflation, implying that containing inflation might not always have been its primary objective⁷. The chapter also highlights initiatives of the SA Reserve Bank to improve communication with all stakeholders about monetary policy, inflation in general and the inflation target since its adoption in South Africa in 2000.

Chapter 6 examines whether changes in the CPI can be regarded as an accurate indication of general price increases for an average South African household, therefore testing the sub-hypothesis. This chapter compares the price increases of selected identifiable consumer goods and services, as well as increases in salaries, with the South African CPI over different periods

⁶ The SA Reserve Bank opened its doors for business for the first time on 30 June 1921.

⁷ In the promulgation of the Currency and Banking Act, No 31 of 1920, in terms of which the SA Reserve Bank was established, it was already envisaged that a central bank will contribute positively to the prevention of inflation (SA Reserve Bank, 1971: 11), although price stability was not specifically highlighted as a policy objective. The Canadian central bank, established in 1935, was the first to be entrusted with such explicit responsibility, *inter alia*, for mitigating fluctuations in the general level of prices (De Kock, 1956: 23). Although legislation entrusted the SA Reserve Bank with a similar explicit responsibility only in 1989 with the promulgation of the SA Reserve Bank Act, No 90 of 1989, De Kock (1954: 273) mentions that the SA Reserve Bank focused already during World War II (albeit in conjunction with the South African and British treasuries) on policies to diminish internal inflationary pressure. Before its abolition "... the gold standard had automatically imposed a large measure of discipline" (De Kock, 1974: 56), and after its abolition "... greater prominence was given, in both academic and banking circles, to the question of controlling bank credit and the money supply with the object of stabilising the general price level" (De Kock, 1974: 130).

since 1921. This comparison aims at distinguishing between perception and reality by ascertaining whether the prices of goods and services and salaries increased at a rate slower or faster than the CPI. An inflation accuracy indicator (IAI) is developed for the measurement of the accuracy of the rate of inflation, and the chapter also shows the usefulness of this instrument for developing countries.

When this study was initially planned, the goal was to identify and compare the price increases of a selection of consumer goods since 1921, the year corresponding with the oldest data for a comprehensive South African CPI, and goods and services since 1974, the first year that inflation in South Africa moved into double digits for a prolonged period of time, ending only in 1993. However, as insufficient information on comparable prices of goods and services for those exact years was available, identifiable historic prices and salaries available at various dates since 1921 are used for comparative purposes in Chapter 6. This approach allowed for (i) the inclusion of a broader variety of goods and services than would have been possible if data available for 1921 and 1974 only were used, and (ii) the monitoring of price movements over different time periods.

Chapter 7 highlights the findings of pilot studies and the findings of a representative sample undertaken for this study, aimed at measuring inflation credibility in South Africa, and particularly the acceptance of changes in the CPI as an accurate indication of the general level of price increases in the economy. These studies are used to construct inflation credibility barometers. These barometers are compared with the approaches used in a number of other countries and regions aimed at the measurement of the public's perceptions of the current rate of inflation, discussed in Chapter 2. The possible application of a barometer by developing countries or regions, with specific reference to SADC, is also discussed in this chapter.

The conclusions from the study are summarised in Chapter 8, and areas for further research are also highlighted. The study also comprises a list of references and a number of appendices.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

The *Encyclopaedia Britannica* states that “[i]nflation is generally thought of as an inordinate rise in the general level of prices” (1988: 310). The *New Palgrave: A dictionary of Economics* (1987) quotes Laidler and Parkin (1975: 741) to define inflation as “a process of continuously rising prices, or equivalently, of a continuously falling value of money” (1987: 832). Moreover, “[s]ince there are many different ways of measuring prices, there are also many different measures of inflation. The most commonly used measures in the modern world are the percentage rate of change in a country’s Consumer Price Index or in its Gross National Product deflator” (*New Palgrave: A dictionary of Economics*, 1987: 832).

Murali (2004) states that the word inflation owes its origin to the Latin word *inflare*, which literally means "to blow into", from *flare*, "to blow". This is an accurate description of the current understanding of inflation: an unsubstantiated increase in prices, i.e. not reflecting changes in relative scarcity. Over many centuries unsubstantiated increases in prices occurred, with the related problems of containing such increases. In this sense “[i]nflation is both a very old problem and a very new one. If we look back in history, we discover many inflationary periods. Diocletian tried (in vain) to curb a Roman inflation in the fourth century A.D.; between 1150 and 1325, the cost of living in medieval Europe rose fourfold; between 1520 and 1650, prices again rose between 200 and 400 per cent, largely as a result of gold pouring into Europe from the newly opened mines of the New World. In the years following the Civil War ... [in the United States] ... the South experienced a ferocious inflation, while prices in the North doubled; during World War I, prices in the United States doubled again” (Heilbronner, 1975: 170 and 171). In many instances inflation was, however, followed by subsequent periods of deflation. In the United States, for instance, the “ ... producer price index in 1943 was slightly below its 1810 value” (Haslag, 1997: 19).

Diocletian was not content with half measures in containing inflation. He fixed the maximum prices at which beef, grain, eggs, clothing and other articles could be sold, and prescribed the death penalty for anyone charging higher prices (Rupert, 1974b: 115). This is a very early example of direct price controls aimed at containing price increases, but failed so miserably that it had to be abandoned after much blood was shed.

The current understanding of the word inflation is contrasted with its earlier meanings by Bryan, who states that “[f]or many years, the word inflation was not a statement about prices but a condition of paper money – a specific description of a monetary policy. Today, inflation is synonymous with a rise in prices, and its connection to money is often overlooked” (Bryan, 1997: 1). Bryan also states that “[w]hat was once a word that described a monetary cause now describes a price outcome. This shift in meaning has complicated the position of anti-inflation advocates. As a condition of the money stock, an inflating currency has but one origin – the central bank – and one solution – a less expansive money growth rate. But as a condition of the price level, which may have originated from a variety of things ... the solution to – and the prudence of – eliminating inflation is much less clear” (Bryan, 1997: 1).

Bryan shows that the use of the word inflation originates from the period between the mid-1830s and the Civil War in the United States, when banks issued “ ... bank notes, a private paper currency redeemable for a specific amount of metal. That is, if the issuing bank had it. At times, banks did not have enough gold or silver to satisfy all of their claims. Bank notes ... tended to depreciate. It is during this period that the word inflation begins to emerge in literature, not in reference to something that happens to prices, but as something that happens to a paper currency” (Bryan, 1997: 2). Bryan states that the earliest reference to inflation to be found in the library of the Federal Reserve Bank of Cleveland comes from a publication of 1855, although “[t]he Oxford English Dictionary shows the earliest reference to be from Barnard: The property pledge can have no tendency whatever to prevent an inflation of the currency” (1997: 2 and 6). Whereas “[t]he term inflation was initially used to describe a change in the proportion of currency in circulation relative to the amount of precious metal that constituted a nation’s money ... by the

late nineteenth century, however, the distinction between currency and money was becoming blurred” (Bryan, 1997: 2).

Bryan concludes that “[w]ithout being tied to the money supply, any price increase seems to have an equal claim to the word inflation. Indeed, today we regularly read reports of a seemingly endless variety of inflations. When the word is used as a description of the price level, an anti-inflationary policy can easily be characterised as being against any price increase, including higher wages. This is simply not the case. An anti-inflation strategy is concerned with a particular type of price increase – a rise in the general price level stemming from excessive money creation. When viewed in this light – the light provided by the word’s original meaning – a zero-inflation objective for the central bank becomes a much more sensible goal” (Bryan, 1997: 4). Bernanke et al. state that “... in the long run, the inflation rate is the only macroeconomic variable that monetary policy can affect” (1999: 10).

Friedman states that inflation originates in modern times from “... the actions of legislators and central banks, rather than from such acts of God as specie discoveries, ... [implying that] ... inflation is not likely to proceed very long without being anticipated, and perhaps, over-anticipated” (1972). The implication is therefore that inflation experienced by modern economies is inevitably linked to bad policies in one way or another.

Section 2 of this chapter provides a selected review of literature on the development of macroeconomic theory, focusing on monetary issues, since 1921. This section provides the theoretical and macroeconomic backdrop of the study and contextualises inflation and its measurement within a macroeconomic framework and development perspective. Section 3 highlights the available literature on the international measurement of inflation perceptions. Section 4 assesses macroeconomic theory and policy reform in developing countries. The conclusions follow in Section 5.

2.2 A selected review of literature on macroeconomic theory with a focus on monetary issues

Although the word *inflation* was used as long ago as the 1830s, “[p]ersistent inflation is a post–World War II phenomenon. Before then, the history of price indexes shows bouts of inflation followed by periods of deflation. In other words, the price level cycles showed no discernible upward or downward trend” (Haslag, 1997: 12). As the period before World War II was characterised by price swings rather than persistent price increases in the way inflation is understood today, the early literature on inflation focuses attention on this cyclical trend in price changes. In this regard Haslag states that “[e]conomic expansions generally coincided with inflation, and contractions typically coincided with deflation” (1997: 19).

Hansen states that “[o]n considering the history of the theories of inflation, it is possible to distinguish two main treatments, of which the one seems to have had its origin far back in the past, while the other is only half a century old⁸” (1951: 1). The first and older of these two theories is based on the quantity of money theory. The second theory, integrating micro and macroeconomics, has been developed by Wicksell and is based on the principle that the general price level is determined by the aggregate demand and aggregate supply of goods and services in the economy (see for instance Hansen, 1951: 1 and 2; or Keynes, 1942⁹). In considering the development of new theories over time, the remark of Gordon that “... the outcome of historical events often challenges theorists and overturns theories, leading to the evolution of new theories” (2000: 58) comes to mind. In the review of inflation over time, events such as the Great Depression of 1929 to 1933; the surfacing of persistent inflation after World War II; historically high rates of inflation in developed countries in the 1970s; and the subsequent demise of inflation in developed countries since the 1980s, have triggered the development of new theories.

Before the Great Depression the prevailing view was that an economic system could deviate from an equilibrium position of full employment and output for short periods only. Such disturbances would only be of a temporary nature (Snowdon and Vane, 2005: 37) and flexible price and wage

⁸ It should be borne in mind that this book was published in 1951, implying that the later theory might now be more than a century old.

⁹ A 1942 reprint of *The General Theory* of Keynes was used for this review.

adjustments would restore equilibrium. At the same time, inflation could only be caused by increases in money supply, and would therefore also be a temporary disturbance only, as the value of the currency was fixed in terms of the price of gold. Not only would full employment and output follow the disturbance, but price level stability would also follow within a reasonably short period of time. A case in point is the United States, where consumer price inflation averaged only 0,1 per cent per year between 1880 and 1914 (Bordo, [S.a.]). In the United States this period of price stability was preceded by a period of price increases, following the discovery of gold in California in 1848. The production of gold increased the money supply in the United States, which raised domestic expenditures and nominal income, and ultimately the price level (Bordo, [S.a.]). Such increases were, however, the exception rather than the rule.

The remark of Laidler and Parkin that “... the quantity theory of money has, in one form or another, dominated the literature on inflation for the greater part of the past three hundred years” (1975: 744) is therefore used as point of departure in this review. The quantity theory of money retained its analytical usefulness owing to its application of the tools of supply and demand to the determination of the price of money (see for instance Levi, 1994: 424).

In terms of the quantity theory of money, the identity $MV = PQ$ (with M = money supply, V = velocity, P = prices and Q = quantity) implies that prices can increase only if M or V show a concomitant increase, with Q remaining stable. Harberler states that “... except in periods of hyperinflation ... a rise in velocity by itself has never caused, or substantially intensified, serious inflationary trouble ... ” (1966: 62), on condition that inflation is defined as an increase in prices and not as an increase in MV . In its most basic form the quantity theory of money became established after “... the publication of David Hume’s essay, *Of Money*, in 1752” (Snowdon and Vane, 2005: 50). Two versions of the quantity theory developed: the approach followed by Fisher; and the Cambridge cash-balance approach associated with Marshall and Pigou (Snowdon and Vane, 2005: 50; see also Sloman, 1994).

In Fisher’s approach, money is desired by agents in some fixed amount solely because it happens to be the medium of exchange. In this analysis money yields no gains to the holder. In terms of

the quantity theory of money an increase in the supply of money will lead to an exactly proportionate increase in the price level based on the assumptions that (i) V and Q are fixed with respect to the money supply; (ii) Q is determined by the full employment output level of the economy, achieved within reasonable periods after shocks pushing the economy off full employment; (iii) the supply of money is exogenous; and (iv) the direction of causation runs from MV (left) to PQ (right) (see for instance Mishkin, 2004: 219 and 220; Sloman, 1994: 606; or Wykoff, 1976: 60). The implication is that money supply increases cause price inflation. The main criticism of this interpretation of the quantity theory of money is linked to the assumptions, particularly in as much as it is based on an assumption that the velocity of money is constant. Keynes stated as far back as 1936 that there is “... no reason for supposing that V is constant” (1942: 201).

The Cambridge cash-balance approach differs from the analysis of Fisher in its consideration of money as a desired store of value, rather than only as a medium of exchange. A clear distinction is also drawn between the demand for money (M_d) and the supply of money (M) (Sloman, 1994: 606; Snowden and Vane, 2005: 51). Money therefore increases utility “... by enabling the divorce of sale and purchase as well as ... [serving as] ... a hedge against uncertainty” (The history of economic thought website, [S.a.]). As money has the ability to yield utility to its holder because it serves a precautionary function and provides a store of value, the demand for money is not only driven by a transactions motive, but also by income, wealth and interest rates. The money demand function in this analysis can be stated as $M_d = kPY$. In this equation M_d represents the demand for nominal money balances, PY is the money value of national income (with P representing prices and Y representing income) and k is the fraction of PY that private economic agents wish to hold. In this analysis k is assumed to have a constant value¹⁰, although it was recognised that the coefficient could vary in the short run (Snowden and Vane, 2005: 51).

The Cambridge analysis focuses on M_d , which is equal to the supply of money (M) determined by the central bank, and as a result $M = kPY$. As is the case with the approach followed by

¹⁰ Also known as the *Cambridge Constant* (The history of economic thought website, [S.a.]).

Fisher, Y represents the full employment value of output and is therefore constant. As k is also constant, M (money supply) determines P (prices), and changes in M will result in changes in the price level (see for instance Sloman, 1994: 606; or Wykoff, 1976: 61). However, as is the case with the earlier analysis of the quantity theory of money, this analysis did not withstand the test of time owing to the need to relax assumptions about constant values.

The first to question the classical quantity theory of money (even before Keynes) was Hawtrey (Haberler, [S.a.]). Haberler states that “... according to Mr Hawtrey, there is a tendency in our banking system to keep the interest rate too low during the upward swing of the cycle; then prices rise, we get a credit inflation, and sooner or later the banks are forced to take steps to protect their reserves – they increase the rate and bring about the crisis and the depression ... [t]he reason which Mr Hawtrey gives for this is different from the one which Professor Irving Fisher and other writers of this group have to offer” (Haberler, [S.a.]).

As far back as 1932 Hawtrey stated in his book *The Art of Central Banking* that “... the power of a central bank ought to be used to prevent undue fluctuations in the price level ... ” (1932: viii). Hawtrey stated in respect of inflation that “... the essence of the evil is an undue enlargement of the consumers’ income and outlay, and a consequent rise of prices or depreciation of the currency unit” (1932: 265), and uses for inflation the definition of “... an expansion of the consumers’ income and outlay ... ” (1932: 331). Hawtrey offers, *inter alia*, increases in interest rates as a solution to the prevention of inflationary problems (1932: 129 – 131; 272 and 273; see also Haberler, [S.a.]).

The Great Depression provided the backdrop for the work of Keynes. After the crash in share prices on securities exchanges in the United States in October 1929, the world entered what is known today as the Great Depression. The Great Depression was characterised by stagnant production and high unemployment (Parkin, 2003: 474). The prevailing view of classical economists was that an economy cannot stagnate in a position of sustained unemployment associated with production at a lower level than full employment output. The classical view was that prices and wages will adjust downward in a flexible fashion and within a reasonable period

of time to a point where the economy will again achieve full employment output¹¹. During the Great Depression this did not happen, and the economy remained stuck in a less than full employment position for an extended period of time. In the United Kingdom (UK), for instance, unemployment fluctuated with the trade cycle before World War I, averaging around 4½ per cent of the workforce, but reached more than 22 per cent of the workforce in 1932 and 1933 (Sloman, 1994: 605). Keynes already stated in 1930 that *The Slump of 1930* (as he called the Great Depression at the time) in the UK and in the United States was caused by interest rates at too high a level (1930: 377 to 387). He suggested as the remedy for the slump sharply lower interest rates induced by the Bank of England and the Board of Governors of the Federal Reserve System (Fed) (Keynes, 1930: 385 and 386).

Reasons for the prolonged period of unemployment differed between countries. The Great Depression in the United States was prolonged, *inter alia*, because “ ... the economy was further bombarded with huge negative demand shocks ... ” (Parkin, 2003: 782) and failures of commercial banks (Parkin, 2003: 724). In the case of South Africa the Great Depression was prolonged because the country stayed on the gold standard after it was abandoned by the UK (discussed in Chapter 5), and a drought causing severe hardship in farming communities.

The Great Depression was also prolonged internationally as a result of monetary policy mistakes. At the time of the Great Depression, economists under the influence of the quantity theory of money, “ ... did not recognise that velocity ... [of money] ... declines sharply during severe economic contractions” (Mishkin, 2004: 521). As the prevailing view was that velocity remains constant, a contractionary monetary policy was inadvertently followed by many countries during the Great Depression. In his liquidity preference theory, Keynes abandoned the view that velocity was constant (1942: 201; see also Mishkin, 2004: 521). Keynes used the assumption that individuals have transactions, precautionary and speculative motives to exercise a demand for money (1942: 170). Keynes held the view that a severe contraction such as the Depression resulted in a situation where “ ... personal saving increases and investment stagnation combined

¹¹ Ricardo, for instance, held the view that “[i]f wages were too high to clear the labour market, they would simply fall until the disequilibrium was eliminated” (Sloman, 1994: 602).

to reduce demand severely” (Wykoff, 1976: 216), thereby giving rise to the view that the central bank cannot introduce effective monetary policies to counter prolonged recessions.

Whereas the classical economists preceding Keynes supported Say’s Law, Keynes challenged this assumption of a stable consumption-income relationship (1942: 26; see also Wykoff, 1976: 244 and 245). The French economist Jean-Baptiste Say stated that overproduction is not possible, as supply creates its own demand (see for instance Parkin, 2003: 556; Samuelson and Nordhaus, 2001: 710; or Sloman, 1994: 603). Keynes held the view that production does not depend on supply, but on demand, in as much as it is determined by what people are willing to buy (Parkin, 2003: 556; see also Wykoff, 1976: 245), thereby challenging the assumption of clearing markets (Sloman, 1994: 612). This brings to mind the earlier view of Malthus, who stated that a recession was the result of a lack of effectual demand (Sloman, 1994: 602). If the general public increases savings rather than to spend, but business enterprises do not invest the amount saved, resources will remain unemployed indefinitely. This is contrary to the classical view that the downward adjustment of wages and prices is flexible enough to ensure a new full employment equilibrium within a reasonable period of time.

Keynes introduced the liquidity preference theory in his explanation of the behaviour of money market equilibrium and the suitable use of monetary policy (Moggridge, 1980: 103). In his analysis, “... Keynes rejected the notion that the relation between money and income was stable” (Wykoff, 1976: 245). Keynes made a distinction between the transactional, the precautionary and the speculative demand for money (Keynes, 1942: 170; see also Mishkin, 2004, 521 to 524; or *New Palgrave: A dictionary of Economics*, 1987: 22 and 23). In the distinction between these different forms of demand for money, Keynes states that “... we can usefully employ the ancient distinction between the use of money for the transaction of current business and its use as a store of wealth” (1942: 168, see also Hansen, 1953: 126).

Keynes viewed the transaction motive as a combination of an income motive, dependent on the amount of income and the time period between receipt and disbursement, and a business motive, determined by the interval between the time of business expenditure and the receipt of the

proceeds of sales (1942: 195 and 196). The precautionary demand for money is defined by Keynes as “ ... the desire for security as to the future cash equivalent of a certain proportion of total resources ... ” (Keynes, 1942: 170). In respect of the transactions demand and the precautionary demand, Keynes states that “ ... there is no necessity to hold idle cash to bridge over intervals if it can be obtained without difficulty at the moment when it is actually required” (Keynes, 1942: 171). Such demand is therefore influenced only to a limited degree by interest rates (Hansen, 1953: 128), and will “ ... be highly inelastic with respect to the rate of interest i unless this is very high” (Hansen, 1953: 129).

The speculative demand of money is defined as “ ... the object of securing profit from knowing better than the market what the future will bring forth” (Keynes, 1942: 170). Keynes divided the assets that can be used to store wealth into cash and bonds (Mishkin, 2004: 522). Keynes assumed that money (cash) held for speculative purposes does not provide any return for the speculator. The return on bonds is determined by interest payments and any possible capital gain or loss, which is dependent on the expectations of future interest rate movements (see for instance Wykoff, 1976: 246 and 247). An expectation that interest rates will increase by a substantial margin would lead to an expected capital loss that might outweigh the interest earned from continued investment (Keynes, 1942: 198 and 199; see also Mishkin, 2004: 522), thereby stimulating the demand for cash at the expense of bonds. Consequently, the demand for money (cash) is negatively related to interest rates.

A special case develops in the Keynesian analysis of the liquidity preference theory when interest rates are on a sustained sharp decline and all bond holders anticipate capital losses. The supply of bonds would increase without a concomitant demand, resulting in an infinitely elastic demand for money (Wykoff, 1976: 248), known as the liquidity trap. Keynes states that “[t]here is the possibility ... that, after the rate of interest has fallen to a certain level, liquidity-preference may become virtually absolute in the sense that almost everyone prefers cash to holding a debt which yields so low a rate of interest. In this event the monetary authority would have lost effective control over the rate of interest. But whilst this limiting case might become practically important in future, I know of no example of it hitherto” (1942: 207). In this regard Wykoff states that

“[b]oth Keynesian and non-Keynesian economists have reservations about the liquidity trap and about the speculative demand for money motive” (1976: 248).

In an analysis of the presentation of the liquidity preference theory by Keynes (1942), Hansen states that “[t]he *General Theory* ... [Keynes, 1942] ... has the effect of relegating money to a place of less prominence than that assigned to it in the *Treatise* ... [Keynes, 1930]” (1953: 216). The main contribution of Keynes was not so much the liquidity preference theory, however, but his attempt to find solutions to the Great Depression, a problem addressed already in his earlier book (Keynes, 1930: 377 to 387). Keynes states that “[t]he outstanding faults of the economic society in which we live are its failure to provide for full employment and its arbitrary and inequitable distribution of wealth and income” (1942: 372)¹². In proposing his solution for the underemployment and unemployment problem experienced during the Great Depression, Keynes held the view that an economy will return only to full employment when there is no obstacle to full employment (e.g. sticky wages or demand deficiencies), thereby challenging Say’s Law.

Keynes (1942) offered a combination of solutions to the problems posed by the Great Depression, based on what Moggridge calls “ ... breaks from the past” (1980: 96). In essence the aim was to ensure a return to full employment within a reasonably short period of time, which did not happen because prices and wages did not adjust smoothly to reflect depressed economic conditions as was predicted by the classical economists. In no particular order, the first proposal of Keynes was that the government should increase its role in the economy by exercising “ ... a guiding influence on the propensity to consume ... ” (Keynes, 1942: 378), hence advocating an increased role for government intervention in the economy. The aim is to increase demand in the economy, which subsequently became known as demand management.

The proposed second solution is linked to the first: an increase in the equality of income distribution (Keynes, 1942: 373 and 374). Keynes held the view that “[g]reater equality will raise the consumption function; and an increase in the propensity to consume will serve to increase the

¹² These matters still occupy the minds of economists and developmental specialists at the time of completion of this study. The inequitable distribution of wealth and income is particularly relevant in South Africa, where the Gini coefficient rose from 0,69 in 1996 to 0,77 in 2001 (Human Sciences Research Council, 2004).

inducement to invest” (Hansen, 1953: 219). Redistribution by means of taxation to fund increased spending by the government can support the aim of greater income equality in societies. Even under conditions of economic depression some justification for higher taxes on the incomes of those employees fortunate enough to retain their jobs can be found. Parkin states that “... those who kept their jobs barely noticed the Great Depression. It is true that wages fell from 57c an hour in 1929 to 44c an hour in 1933. But at the same time, the price level fell by a larger percentage, so that real wages actually increased. Thus people who had jobs became better off during the Great Depression” (2003: 722). A tax increase even during the Great Depression would therefore have kept employed people at the same real after-tax position.

Thirdly, Keynes questioned the prevailing level of interest rates and stated that “... the scale of investment is promoted by a low rate of interest, provided that we do not attempt to stimulate it beyond the point which corresponds to full employment” (1942: 375). This point of view corresponds with the viewpoint put forward already in 1930 (Keynes, 1930: 377 to 387).

The fourth proposal considered enhanced international trade in as much as Keynes held the view that it could become an instrument to be used to the advantage of all participants (1942: 383). At the core of these proposals was the need to restore full employment in economies through an increased role of government, although Keynes “... was opposed to a system of state socialism” (Hansen, 1953: 221). Keynes states that “... a somewhat comprehensive socialising of investment will prove the only means of securing an approximation to full employment ... but beyond this no obvious case is made out for a system of State Socialism which would embrace most of the economic life of the community” (1942: 378).

Hansen points out that “Keynes did not come to grips with the possible inflationary implications of a deliberate programme of sustained full employment ... Keynes ... was thinking ... about normal peacetime conditions and not about the overfull employment of war and post-war booms” (1953: 214). Sustained peacetime inflation emerged after the Second World War under conditions completely divorced from the employment problems of the early 1930s (see for instance De Wet, 1987: 3) that had given rise to Keynes’s views on the role of government.

Already in 1953 Hansen raised the question whether Keynes ceased to be a Keynesian (1953: 222) in the period after 1936. Hansen concludes that “[t]here is no evidence ... of any change in his ... [Keynes’s] ... fundamental economic thinking: what had changed was his view of the role of the United States in international economic affairs” (1953: 227).

Snowdon and Vane (2005) adopted the terminology of Coddington (1983) to divide the interpretations of Keynes’s theories into three clusters (or schools): the *hydraulic* (or orthodox) interpretation, the modified general equilibrium approach and the *fundamentalist* (or Post-Keynesian) interpretation.

First, the orthodox interpretation stresses the inherent instability of economic systems and the long period that it takes for a return to full employment after a shock in the absence of demand management. This interpretation has as a major weakness a “ ... lack of convincing reason for wage and price rigidities based on rational behaviour” (Snowdon and Vane, 2005: 71). The Pigou wealth effect has shown that falling prices increase real wealth during an economic downturn, which eventually leads to an increase in consumption expenditure. Davidson states that “ ... the failure of orthodox Keynesian analysis and policy prescriptions fuelled the monetarist and new classical counter-revolutions” (2005: 451).

Secondly, the modified general equilibrium approach focuses attention on sustained declining output owing to a lack of co-ordination between the decisions of economic agents because they respond to wrong price signals and question assumptions about rational behaviour in decision-making (Snowdon and Vane, 2005: 72; see also Akerlof, 2002; or Leijonhufvud, 1992). Keynes himself questioned the rationality of behaviour of speculators (1930: 359), and states that “[t]he value of a company’s shares, and even of its bonds will be found to be sensitive to a degree, which a rational observer from outside might consider quite absurd, to short-period fluctuations in its known or anticipated profits” (1930: 360). In challenging the assumption that private economic agents act in a rational way at all times, economists could reconsider the contribution of Keynes to economic behaviour. Rational behaviour in investment decisions is questioned when it is said that investment decisions are driven by a combination of fear and greed, rather

than by rational decision-making (see for instance Authers, 2006: 12). This has given rise to neurofinance, the study of the way in which fear dominates reason and greed distorts reason (Authers, 2006: 12) and is related to research in the field of neuroscience, by studying the way in which consumers make purchasing decisions (Mitchell, 2007: 5).

In its measurement of perceptions of the credibility of inflation figures, this study is linked to questions raised about the assumption of rational behaviour and rational perceptions in economic decision-making, particularly under conditions of increased affluence (Galbraith, 1975). Marber states that “... in the United States and other advanced industrialised countries, there has been a trend towards individualised high-end speciality goods ...” (2003: 160 and 161), e.g. oversized sport utility vehicles. The question whether this behaviour is rational in the true sense of the word should be raised, particularly as this behaviour contributes to societies that are “... gobbling up the earth’s resources at a dizzying pace” (Marber, 2003: 164). Likewise, “[i]n at least some Keynesian models, workers are less than rational. For example, they may harbour money illusions” (Blinder, 1988: 284).

Thirdly, the Post-Keynesian interpretation regards “... the influence of unstable expectations due to uncertainty as a key feature of Keynes’s work” (Snowdon and Vane, 2005: 71). In this analysis “... the complete unpredictability of the future may have important economic consequences” (2005: 472). Snowdon and Vane state that “[t]he more radical Post-Keynesian interpretation ... continues to offer an alternative vision of how the macroeconomic system operates” (2005: 699). Post-Keynesianism has been described as “... an extremely broad church” (Harcourt, 2006: 2; see also Davidson, 2005: 452). The use of *Post Keynesian* as an accepted name for this *broad church* “... became widely accepted after the *Journal of Post Keynesian Economics* appeared in 1978” (Niggle, 2004: 50). Davidson raises the opinion that “Post Keynesian theory evolves from Keynes’s revolutionary approach to analysing a money-using, entrepreneur economy” (2005: 453).

Although this group of economists can therefore hardly be pinned down to narrow, single or specific views, they generally hold the view that a market economy lacks any natural tendency to

return to equilibrium and the restoration of full employment after exogenous shocks. Equilibrium and full employment can only be restored within a reasonable time frame through activist government policies, and in particular fiscal policies owing to weaknesses in monetary policy. In a Post-Keynesian analysis of economics, full employment is regarded as a higher priority than stable prices¹³ as it is argued “... that the level of unemployment necessary to keep effective downward pressure on wages and prices entails unacceptable social costs” (Niggle, 2006: 379).

Post-Keynesians stress that no economy is ever in a true state of equilibrium at any particular or given point in time, but rather in constant transformation owing to one or more positive or negative exogenous shocks. Such transformation is *path-dependent* and not *destination-dependent*, thereby allowing governments leeway to determine and improve the outcome of economic activity. In this regard Robinson states that “[t]o me, the expression *post-Keynesian* has a definite meaning; it applies to an economic theory or method of analysis which takes account of the differences between the future and the past” (1978: 210).

In its approach to monetary theory, the Post-Keynesians view money as endogenous to the real sector, while it is viewed as exogenous in terms of traditional monetary theory. The implication of this Post-Keynesian endogenous view is that the money supply is determined in the market for money, and not under control of the central bank. Bain and Howells (2003: 87) explain this view of endogenous money supply in terms of a modern monetary system, where a central bank stands ready to grant accommodation (i.e. increase the money supply) to commercial banks in the event of liquidity shortages, rather than to control the money supply. In this regard Moore states that “if bank loans are largely demand determined ... this then implies that the money supply is credit driven” (Moore, 1988: 373).

Money supply that is determined endogenously has serious implications for monetary policy, as it leaves only short-term interest rates within the control of the central bank. This conclusion of the Post-Keynesians might provide an explanation for their support of financial market regulation

¹³ This assessment leaves some impression of reasoning in terms of a short-run Phillips curve, i.e. some trade-off for lower unemployment at the expense of less price stability.

(see for instance Niggle, 2004: 35). If the central bank can control only short-term interest rates, other forms of control (i.e. through a regulatory framework) are certainly required. In a similar fashion many Post-Keynesian economists “ ... advocate fixed exchange rate systems constructed around an international financial institution which could issue liquid financial assets as needed by deficit countries” (Niggle, 2004: 35) as a measure to increase financial control.

A narrow Post-Keynesian view of the banking system regards its functions as the setting of deposit rates and acceptance of deposits on the one hand; and, on the other, the provision of loans at a rate exceeding the rate paid on deposits (Godley and Lavoie, 2004: 3) to all creditworthy customers, but particularly to producers to fund work-in-progress and stock (as completion of production and sales cannot be matched perfectly). However, in practice banks perform much broader functions beyond this narrow description, e.g. the issuing of capital, the accumulation of institutional net worth, the issuing of commercial paper and the holding of financial assets (Godley and Lavoie, 2004: 8). These expanded functions of banks, over and above the narrow description, can contribute to continued instabilities and shocks to an economy (Godley and Lavoie, 2004: 8).

This analysis of the banking system supports the Post-Keynesian view “ ... of a very unstable economy, whose growth rate is the result of an open-ended transformational process taking place through economic fluctuations, characterised by excessive unemployment and inequality, and which is often threatened by incoherence and the possibility of breakdown” (Niggle, 2004: 1). In the Post-Keynesian analysis, spending and real output are insensitive to interest rate reductions in recessions (see for instance Niggle, 2004: 30). The consequence of this ineffectiveness of a monetary policy relaxation under recessionary conditions is the need to employ other demand stimulating policies (see for instance Arestis and Sawyer, 2002; see also Niggle, 2006: 378). In this environment of endogenous money and relatively ineffective monetary policy, together with macroeconomic equilibrium below full employment after negative economic shocks combined with very weak adjustment to such shocks (see for instance Snowden and Vane, 2005: 702), it follows that Post-Keynesians prescribe economic adjustment focusing on demand management policies under control of the government.

In 1958 Phillips published a study linking unemployment and the rate of change in money wage rates in the UK for the period 1861 to 1957 (Dornbusch and Fischer, 1988: 466). Based on the research, Phillips developed a curve showing that a higher rate of unemployment is associated with a lower rate of increase in money wages, thereby showing a trade-off between unemployment and wage inflation (Dornbusch and Fischer, 1988: 467; Wykoff, 1976: 384)¹⁴. This subsequently became known as the Phillips curve, although the work of Phillips was not the first on the topic. As far back as 1926 Fisher studied and published a paper on the co-movement of inflation (or the purchasing power of the dollar as he also calls it) and the unemployment rate (Fisher, 1926). Fisher's analysis confirms the stimulation of employment during a period of inflation, but he states that although an inflationary period helps to provide jobs, it also raises the cost of living to the detriment of employees (Fisher, 1926).

Based on interpretations of the analysis of Phillips, a view of a stable trade-off between higher inflation (rather than an increase in money wages as assessed by Phillips) and increased economic growth (rather than increased employment) developed over time (see for instance Wykoff, 1976: 385). This gave rise to a view that inflation should be "allowed" for the benefit of improved economic growth. However, by the second half of the 1960s, this approach started losing its appeal (De Wet, 1987: 24), with Friedman stating in 1968 that "... Phillips wrote his article for a world in which everyone anticipated that nominal prices would be stable and in which that anticipation remained unshaken and immutable whatever happened to actual prices and wages" (1968: 8). Subsequently, two views on the Phillips curve developed: The short-run Phillips curve and the long-run Phillips curve (see for instance Parkin, 1999: 746; or Samuelson and Nordhaus, 2001: 695 and 696).

The short-run Phillips curve is viewed as a trade-off between some form of inflation and some form of lower unemployment or economic growth, but holds true only under conditions of an unanticipated increase in aggregate demand (Parkin, 1999: 746). An unanticipated increase in

¹⁴ Some literature mistakenly states that the research of Phillips shows an inverse relationship between inflation and unemployment (see for instance Parkin, 1999: 746; or Mohr and Fourie, 2004: 568). Michie states that "[t]here is no clear consensus within economic theory about the inflation-unemployment relationship" (2006: 87).

aggregate demand increases inflation and lowers unemployment, which results in a trade-off between the two. The outcome is employment below its natural rate and an increase in prices (Parkin, 1999: 747). This result is supported by conditions of unanticipated inflation, as unanticipated inflation results in aggregate demand temporarily exceeding potential output (Parkin, 1999: 744).

The long-run Phillips curve is a vertical line at the natural rate of unemployment, showing no trade-off between rising inflation and unemployment. The natural rate of unemployment¹⁵ is the rate of unemployment associated with full employment (Parkin, 1999: 575, see also Stiglitz, 1997: 799). This is related to “... the NAIRU, the non-accelerating inflation rate of unemployment” (Mishkin, 2004: 429). The NAIRU can be defined as the “... unemployment rate consistent with a constant inflation rate. At the NAIRU, upward and downward forces on price and wage inflation are in balance so there is no tendency for inflation to change” (Samuelson and Nordhaus, 2001: 771). Changes in inflation will therefore not result in any changes in the NAIRU in the long run, thereby implying that the economy will remain at potential output irrespective of movements in inflation in the long run (Stiglitz, 1997: 800).

Michie states that the NAIRU is not necessarily static at one rate (or level) of unemployment, because “... if aggregate investment could be increased, raising productivity and competitiveness, then the feasible wage that firms would be able to pay would rise. This again would allow the economy to operate at lower rates of unemployment, without inflationary pressures developing. Enhancing productive capabilities shifts the NAIRU curve to the left” (2006: 91). The implication is not only that there “... may be no unique equilibrium point (NAIRU) with only that one level of unemployment associated with non-accelerating inflation” (Michie, 2006: 91), but also that “... the reduction in unemployment would result in inflation falling rather than rising” (Michie, 2006: 91).

¹⁵ Samuelson and Nordhaus (2001: 696) state that the terminology *natural rate of unemployment* is unsatisfactory because there is nothing natural about it.

The differentiation between the short-run and long-run Phillips curves has changed the understanding of the links between inflation, unemployment and output since its first publication by Phillips in 1958. Clearly the short-run curve does not hold true under all circumstances for prolonged periods of time – if it was indeed the case, no country in the world would have suffered unemployment, as unemployment would have been limited by means of increased inflation. Mishkin states that the “Phillips curve theory is now highly controversial, and many economists believe that it should not be used as a guide for the conduct of monetary policy” (2004: 429).

As inflation became a chronic and persistent problem towards the end of the 1960s, the stage was set for a reaction to prevailing (Keynesian) views of the time (Moggridge, 1980: 166), particularly as stagflation¹⁶ developed (Sloman, 1994: 621). According to Moggridge, “[t]he earliest exercises surrounding the monetarist revival largely centred on the statistical testing of a money-income relationship ... to suggest that changes in the nominal supply of money, defined in various ways, were the most important determinants of the level of income” (1980: 166). This reaction became associated in the minds of many people with the work of Friedman¹⁷ (Moggridge, 1980: 166).

Friedman is of the view that “ ... substantial inflation is always and everywhere a monetary phenomenon ... ” (Friedman and Friedman, 1980: 299; see also Sloman, 1994: 621). This view serves as one of the cornerstones for his revival of the quantity theory of money. Wykoff describes this approach as a “ ... groundswell of a counterrevolution in economic theory ... [led] ... by Milton Friedman and the Chicago School. The approach was not the income-expenditure approach of Keynesians but the quantity theory of money – the modern offspring of the pre-Keynesian classical quantity theory” (1976: 25). The main differences are a focus on flows by

¹⁶ Stagflation can be defined as the combination of low growth and high unemployment with high inflation (Sloman, 1994: 621).

¹⁷ Friedman states that the University of Chicago was “ ... one of the few academic centres at which the quantity theory of money continued to be a central and vigorous part of the oral tradition throughout the 1930s and 1940s ... ” (Friedman, 1956: 3; see also Wykoff, 1976: 55), but Patinkin and Johnson have provided evidence that there was no perceptible oral tradition at the University in the inter-war period which can be related to the theoretical structure of Friedman's Monetarism (The history of economic thought website, [S.a.]).

the Keynesians and a focus on stocks, and particularly the stock of money, by the Chicago (monetarist) School (Wykoff, 1976: 25), and the view of the monetarists that the velocity of money is relatively stable (Friedman, 1956: 21; Levi, 1994: 425; Samuelson and Nordhaus, 2001: 716 and 724; Sloman, 1994: 788), hence resuscitating the quantity theory of money.

In his analysis of inflation, Friedman states that “... the government alone is responsible for any rapid increase in the quantity of money. That very fact has been the major source of confusion about the cause and the cure of inflation” (Friedman and Friedman, 1980: 297). This view implies a “broad definition” of *government* which implicitly includes the central bank. This view is also related to the statement that “... substantial inflation is always and everywhere a monetary phenomenon ...” (Friedman and Friedman, 1980: 299). These two elements form the cornerstone of Friedman’s approach to monetary policy and the cure of inflation, which is a slower rate of increase in the quantity of money (Friedman and Friedman, 1980: 329). To this end the monetary authority (the central bank and the treasury) should set a target growth rate for the quantity of money (Friedman, 1968: 16).

Sloman divides the followers of Friedman into extreme monetarists and moderate monetarists. The first group believes that markets clear very quickly owing to virtually instantaneous adjustments in expectations to new situations, while the second group believes that markets adjust within a year or two to new circumstances (1994: 626).

The work of Friedman has set the scene for the development of different schools of thought in economics (see for instance Dornbusch and Fischer, 1988; Snowdon and Vane, 2005; or Wykoff, 1976). Although these different schools are known by a variety of names, they can broadly be defined as two groups: followers of the approach set by Keynes in 1936, or followers of the revival of the classic theory by Friedman. The followers of Keynes support government intervention to solve economic problems, while the followers of Friedman propagate the ability of the market mechanism to solve economic problems (Dornbusch and Fischer, 1988: 4 and 5). The debate centres around the benefits of the visible hand of the government *versus* the invisible hand of the market (see for instance Snowdon and Vane, 2005: 219; or Nordhaus, 1975: 169).

In this debate emphasis is placed on the credibility of policies and their execution, the limitations of discretionary stabilisation policies and on expectations (Dornbush and Fischer, 1988: 674). Samuelson and Nordhaus state that “[e]xpectations are said to be rational if they are not systematically wrong (or biased) and use all available information” (2001: 763), with any errors in forecasts or predictions being of a random nature (Sloman, 1994: 858). Parkin defines a rational expectation as “[a] forecast based on all relevant information” (1999: G-9). Over time “... rational expectationists ... became known collectively as the new classical school” (Snowdon and Vane, 2005: 219), or as extreme monetarism (Sloman, 1994: 626).

The new classical school holds the views that people use all information available in making decisions and that prices and wages are flexible in their ability to adjust to changed circumstances (Samuelson and Nordhaus, 2001: 720). In their view, long-term wage contracts are renegotiated when conditions change, and wage flexibility is accordingly achieved within a reasonable period of time (Parkin, 1999: 5). The implication is that “... markets clear very quickly and expectations adjust virtually instantaneously to new situations” (Sloman, 1994: 626). Mishkin states that “... all wages and prices are completely flexible with respect to changes in the price level; that is, a rise in the expected price level results in an immediate and equal rise in wages and prices because workers try to keep their real wages from falling when they expect the price level to rise” (2004: 660). Snowdon and Vane regard this assumption of “... markets clearing ... [as] ... the most controversial aspect of classical theorising” (2005: 220).

Regarding the use of all available information, rational expectations are linked to unbiased forecasting. This does not imply that forecasts are always correct or that expectations can only be formed on the basis of accurate forecasting, but merely implies that the information is unbiased and not systematically incorrect (Dornbusch and Fischer, 1988: 675; Samuelson and Nordhaus, 2001: 720). This approach to rational expectations is related to the efficient-market hypothesis for the valuation of securities, which can be defined as “... all new information is quickly understood by market participants and becomes immediately incorporated into market prices” (Samuelson and Nordhaus, 2001: 763). The expected result is that “... if forecast errors are

expensive to the forecaster, any systematic errors will eventually be corrected by the people making them” (Dornbusch and Fischer, 1988: 675).

The implication of the new classical approach anchored in rational expectations is that anticipated policy actions and amendments do not influence aggregate demand and employment (Mishkin, 2001: 661). The only way in which economic policy can influence output and employment is through unanticipated policy actions, but private economic agents will adjust quickly to such action, thereby limiting their effectiveness. Policy makers cannot, therefore, rely on any systematic misunderstanding of their policies for effective implementation. As people adapt their expectations, they will again have rational expectations about the implications of policies (Dornbusch and Fischer, 1988: 675 and 676). Under these circumstances policies based on fixed rules, which enhance anticipation of policy actions, will deliver the best economic results in the long run (see also Section 4.2 in Chapter 4).

While rational expectations support the rules-based policies advocated by the monetarists, this approach does not support the assumption of the monetarists that the velocity of money is relatively stable. This assumption was challenged in the *Lucas critique*, with Lucas pointing out that private economic agents change behaviour when faced by different policies (see for instance Mishkin, 2004: 716). Velocity is indeed not constant, but can change if a fixed money growth rule is adopted by the central bank, implying that it is not possible to base monetary policy on a fixed money rule (Samuelson and Nordhaus, 2001: 725).

Criticism and shortcomings of the new classical school’s approach gave rise to the development of the real business cycle theory (Mishkin, 2004: 597). This theory accepts that economic output is influenced by aggregate supply shocks caused by changes in technology (Samuelson and Nordhaus, 2001: 722; see also Mishkin, 2004: 597) that influences the growth rate of productivity (Parkin, 1999: 773). Supporters of this school believe that the business cycle drives money (Mishkin, 2004: 616), rather than money driving the business cycle – the view supported by the monetarists. Consequently, this analysis does not leave room for discretion in policy application.

Discretionary policies will not influence factors causing the shocks as real developments, rather than nominal or monetary developments, cause the business cycle.

The main criticism of the real business cycle theory is that “... [m]any economists doubt whether the technology shocks required in order to generate business cycle phenomena are either large enough or frequent enough” (Snowdon and Vane, 2005: 333) to create the swings in output. Related to this is the criticism that recessions are not characterised by technological regress (Snowdon and Vane, 2005: 334), implying that productivity changes do not cause the business cycle, but the cycle causes fluctuations in productivity (Parkin, 1999: 776). Mishkin states that “[r]eal business cycle theory is highly controversial and is the subject of intensive research” (Mishkin, 2004: 597; see also Chatterjee, 1999).

The second half of the 1980s saw a debate on the continued relevance of Keynesian economic theory. According to Snowdon and Vane, the main shortcomings of the Keynesian models were viewed as “... inadequate microfoundations which assume non-market clearing; and the incorporation in both Keynesian and monetarist models of a hypothesis concerning the formation of expectations which was inconsistent with maximising behaviour ...” (2005: 358). According to Blinder, “[b]y about 1980, it was hard to find an American academic macroeconomist under the age of 40 who professed to be a Keynesian” (1988: 278). This happened only some nine years after Nixon, at the time President of the United States, declared in 1971 that “[w]e are all Keynesians now¹⁸” (see for instance Brannon, 2006; Moggridge, 1980: 11; Smart, 2006; or Snowdon and Vane, 2005: 23). This difference in sentiment shows that economic thinking can change rapidly, and with it the schools of economic thought.

A new Keynesian school of thought subsequently emerged and its focus is described by Dornbusch and Fischer as an explanation of the reasons why “... the economy does not work well” (1988: 688). To this end a distinction can be drawn between moderate Keynesians and extreme Keynesians (Mayer, 1997: 13; Sloman, 1994: 627). Moderate Keynesians “... argue

¹⁸ A slightly different interpretation is that Nixon pronounced himself a Keynesian in 1969, which was newsworthy because a Republican president was adhering to the liberal economic policies of Keynes. As a result Friedman remarked that “[w]e are all Keynesians now” (Newman, 2003).

that economies will probably eventually pull out of recession even if governments do not boost demand” (Sloman, 1994: 627). Samuelson and Nordhaus state that “[e]ventually the inflexible or sticky elements of cost ... become unstuck and negotiable” (2001: 666). This adjustment will be added by a decline in the real wage level and the accumulation of surplus savings will encourage banks to find borrowers (Sloman, 1994: 621). After a period of recessionary conditions, investment will also recover as redundant equipment is replaced and as banks attempt to find borrowers for surplus funds. However, as this can be a slow process, it requires active government investment to boost demand. Even once an economy is near full employment, “ ... the government must continue to control aggregate demand to prevent fluctuations in output and employment” (Sloman, 1994: 627). To achieve this goal, government intervention is required “ ... to smooth the peaks and troughs as far as possible. When the economy is in a cyclical downswing, expansionary monetary and fiscal policies are recommended. When the economy is booming, restrictive measures are proposed” (Mohr and Fourie, 2004: 579).

Extreme Keynesians “ ... argue that there is no automatic mechanism to eliminate demand-deficient unemployment even in the long run. Not only are wages sticky downwards, but any reductions in wages that do take place will further reduce consumer demand. Money circulating will automatically fall as banks lend out less and less in response to falling demand” (Sloman, 1994: 627). They base this view on their assumption that “ ... when aggregate demand decreases and unemployment rises, the money wage rate does not change. It is completely rigid in the downward direction ... [and] ... the economy gets stuck in a below full-employment equilibrium” (Parkin, 2003: 709). Extreme Keynesians¹⁹ are of the view that the only way out of this situation is for governments to increase aggregate demand by raising government expenditure and cutting taxes, because there are no natural forces operating to restore full employment (Parkin, 2003: 709). Samuelson and Nordhaus state that an economy can fall into a depression of such magnitude that “[a] nation could remain in its low-output, high-misery condition for a long time because there is no self-correcting mechanism or invisible hand to guide

¹⁹ The extreme Keynesians still favour a market economy, albeit with a large degree of government intervention to achieve the goal of full employment. Sloman (1994: 628) identifies as a further group of economists the radical left. This group sees the market economy as flawed and favours its replacement by an alternative system, e.g. state planning or worker control (Sloman, 1994: 628).

the economy back to full employment” (2001: 712). The implication is that “... the nation must spend its way out of recession. Extensive import controls must be used if necessary²⁰” (Sloman, 1994: 627).

Modern-day monetarists favour policies based on rules, while Keynesians favour policies based on discretion (see for instance Meltzer, [S.a.]; Mishkin, 2004: 654; or Sloman, 1994: 826 and 827). Friedman states that “[b]y setting itself a steady course and keeping to it, the monetary authority could make a major contribution to promoting economic stability” (1968: 17). The monetarists’ view of discretion in policy implementation is that it “... can involve long and variable time lags, which can make the policy at best ineffective or at worse destabilising” (Sloman, 1994: 826). The only way in which these lags can be eliminated, is by adopting a rules-based policy. This approach is related to the adaptive expectations hypothesis, which states “... that people base their expectations of inflation on past inflation rates” (Sloman, 1994: 845). The implication is that people learn from experience. If governments apply their rules consistently, people will adapt to such application of policy rules and adjust their behaviour accordingly.

The Keynesian preference for discretion is based on the viewpoint that demand is subject to numerous exogenous shocks, e.g. flowing from changes in consumption, expectations, exports, imports, industrial action, investment, political events, savings or world economic factors (see for instance Blinder et al., [S.a.]; Meltzer, [S.a.]; or Sloman, 1994: 827). Owing to these shocks economies are inherently unstable, requiring random intervention by government that cannot be based on rules, also because market-based economies have no natural or automatic tendency to achieve full employment. Davidson states that “[a] heterogeneous group of economists, united solely by their rejection of the neoclassical synthesis, often claim the same name to their approach to macroeconomic modelling, namely Post-Keynesian economics” (2005: 451).

In a response to the inability of the initial Keynesian approach to provide an explanation for the problem of stagflation (see for instance Snowdon and Vane, 2005: 699), Keynesians have

²⁰ To the contrary, Keynes (1942: 383) favoured free international trade. It seems fair to conclude that the Keynesians are somewhat eclectic in their support of some of the doctrines prescribed by Keynes.

adopted as modifications in recent years an increased focus on cost-push factors, equilibrium employment and adaptive expectations (Sloman, 1994: 864). In their explanation of cost-push factors, Keynesians put forward the explanation that the Phillips curve has moved to the right over time, resulting in a higher level of wage inflation at every level of employment. The resultant stagflation should be treated by policies aimed at shifting the Phillips curve to the left and back to its original position (Sloman, 1994: 865). To this end some Keynesians argue for the introduction of price and wage controls. Related to this view on the Phillips curve is the theory of the target real wage, i.e. a “... theory that unions bargain for target real wage increases each year irrespective of the level of real growth in the economy” (Sloman, 1994: 866). If economic growth is sufficiently large to pay for the increase in real wages, the economy will be free of cost inflation (see also Michie, 2006).

Problems with the stimulation of employment in order to eradicate unemployment continue to puzzle economists. One recent explanation is the efficiency wage theory (Levi, 1994: 470). Based on this theory, an employer can pay its workers a wage rate above the market wage rate (rather than the market-clearing rate), provided that workers’ productivity improves accordingly and worker turnover is reduced (which reduces training costs) and shrinkage is reduced as the cost of being detected is increased. As a result, for the economy as a whole “[w]ages remain higher than necessary, and the result is persistent unemployment. The traditional free-market story breaks down” (Levi, 1994: 470).

In the consideration of expectations, some Keynesians incorporate adaptive expectations into their models, while others incorporate rational expectations (Sloman, 1994: 867). However, in their incorporation of expectations, modern Keynesians differ from monetarists as they treat prices and wages as not perfectly flexible, and expectations influence output and employment decisions, rather than only pricing decisions (Sloman, 1994: 867). Moreover, prices and wages are more likely to be rigid when required to move downward than upward. If expectations are rational, the response of the economy to output shocks might be very slow owing to trade unions refusing to accept wage increases below the current rate of inflation, particularly if the public rationally predicts this resistance and acts accordingly. Under conditions of adaptive

expectations, any reduction in inflation will be even slower than with rational expectations (Sloman, 1994: 868).

Economists in the Austrian School are staunch supporters of the free-market economy. The Austrian School of economic thought has its roots as far back as 1871 with the work of Carl Menger (Garrison, 2005: 474; Walker, [S.a.]). The focus of the Austrian School is the individual (or entrepreneurship) and markets (see for instance Boettke and Leeson, 2003; or Garrison, 2005: 476). The Austrian School studies individual economic activity and the challenge of individuals to co-ordinate their actions with that of other individuals, e.g. linking the forces of supply and demand (Walker, [S.a.]). Individual actions and entrepreneurship accordingly serve as the underpinnings of economic theory. Individuals (also in their capacity as entrepreneurs) attach value to their own and the economic actions of other people through the market mechanism based on own individual perceptions of the measurement of value (Walker, [S.a.]). This brings to mind Galbraith's rhetorical question: "[w]ho can say for sure that the deprivation which afflicts him with hunger is more painful than the deprivation which afflicts him with envy of his neighbour's new car?" (Galbraith, 1975: 3 and 4).

The focus on the individual and on entrepreneurs implies that the Austrian School believes in free exchange between market participants, as they would not have carried it out if transacting parties would not have been in a better position after such exchange. Institutions (including governments and central banks) serve a useful purpose only in helping individuals to cope with uncertainty and a lack of perfect knowledge (Walker, [S.a.]).

In a free market for capital, the interest rate serves as the price of investment capital and reflects the actual time preference of lenders and borrowers. The Austrian School's preference is that the interest rate should not be subject to regulation, and calls such a rate the "natural interest rate". The control of money supply by the government through central banks disturbs the natural interest rate, implying that the actual market rate will no longer reflect the real supply and demand for investment capital. Periods of economic downturn are the mechanism used by the market to correct the misallocation of resources during periods when the actual interest rate was

held below the natural interest rate through intervention by the government or the central bank. Inflation is caused by an increase in the supply of money by the authorities, typically the central bank in modern economies. Inflation will be “cured” by a free market in money and banking (see for instance Foldvary, 2006; Garrison, 2005: 516; or Saville et al., 2005: 675), as it reflects the natural rate of interest as the price of capital.

The Austrian School has been in “... opposition with a post-WWII economics dominated by Keynesianism and its emphasis on the relationship between aggregate variables” (Boettke and Leeson, 2003: 451). The Austrian School has engaged in numerous arguments with other schools of thought, but has been sidelined to some extent in the mainstream economic debates in English-speaking countries (The history of economic thought website, [S.a.]). Boettke and Leeson are of the opinion that the Austrian School finds itself in a strange position with regard to their fellow economists, as “[t]hey believe others have stumbled upon the right answers to many practical policy questions, but for the wrong reasons” (2003: 453).

During the past decade the economic school of critical realism²¹ developed, but the literature seems to be divided about its possible contribution to the development of macroeconomic economic theory in the long run. Economic analysis using the tools of critical realism moves beyond the microfoundations of macroeconomics to the macrofoundations of microeconomics. This analysis questions the nature of the social structure and the way in which it has evolved. Bache states that “[a]n important characteristic of critical realism is a strong emphasis on ontology, that is, the study of the nature of reality, the study of what really exists” (2003: 3).

Bache states that an important criticism of critical realism “... against econometrics is that it turns upon the identification of strict regularities between observable events. According to critical realism such regularities are the exception rather than the rule in the social world” (Bache, 2003: 2). Hodgson, however, states that “[t]here is little consensus among critical realism on key questions of concern for economists. For instance, critical realists are themselves divided on the

²¹ This school of thought is linked to critical naturalism, a methodology seeking to identify the mechanisms producing social events while at the same time recognising that these mechanisms change more easily than objects in the physical world.

question of the value of econometrics” (2004: 53). Hodgson reaches the conclusion that critical realism seems “ ... to be a predominantly leftist political movement, of distinctly – but not entirely – Marxist hue” (2004: 70). However, it seems to be too early in its development to label this school of thought, as Hodgson attempts.

An overview of the current main schools of thought in macroeconomics is attached as Appendix E. This shows that the thinking of these schools overlaps in certain areas, but considerable differences are also evident. Snowden and Vane state that “ ... in practice the dividing line between schools is becoming increasingly blurred on many issues. With the benefit of hindsight, differences between schools have often been exaggerated” (2003: 701). Given the degree of overlap between the different schools, it comes as no surprise that Goodfriend and King (1997: 2, 4 and 26) stated during the last decade of the previous century that macroeconomics is moving toward a new neoclassical synthesis which inherits the neoclassical synthesis of the 1950s and 1960s and combines Keynesian and classical elements. This synthesis originally involved “ ... a desire to provide practical macroeconomic policy advice, a belief that short-run price stickiness was the root of economic fluctuations, and a commitment to modelling macroeconomic behaviour using the same optimisation approach commonly employed by microeconomists” (Goodfriend and King, 1997: 2), thereby providing “ ... new dynamic microeconomic foundations for macroeconomics” (Goodfriend and King, 1997: 2). The synthesis applies intertemporal optimisation and rational expectations to the analysis of pricing and output decisions in a Keynesian context as well as to the consumption, investment and labour-supply decisions of real business cycle models (Linnemann and Schabert, 2003). Jett, however, refers to the synthesis as a consensus model of monetary theory, stating that “[d]epending on who is using it, the model is sometimes called the New Neoclassical Synthesis Model and other times the New Keynesian Model” (2006).

Snowdon and Vane describe the central elements of this synthesis as “(i) the need for macroeconomic models to take into account intertemporal optimisation; (ii) the widespread use of the rational expectations hypothesis; (iii) recognition of the importance of imperfect competition in goods, labour and credit markets; and (iv) incorporating costly price adjustments

into macroeconomic models” (2003: 29). However, they state that “[c]learly this new consensus has a distinctly new Keynesian flavour” (Snowdon and Vane, 2003: 411). In this regard Goodfriend and King state that new neoclassical synthesis models “... offer policy advice based on the idea that price stickiness implies that aggregate demand is a key determinant of real economic activity in the short run” (1997: 26). In terms of their description of the new neoclassical synthesis, Goodfriend and King (2001: 1 and 2) state, *inter alia*, that:

- monetary policy must respect the real business cycle analysis determinants of real economic activity over time;
- the transmission of monetary policy to real economic activity is located in its influence on the ratio of the price charged by an average firm in monopolistic competition to its marginal cost of production, called the average markup;
- monetary policy action that raises aggregate demand raises marginal cost and lowers the average markup, which reduces the tax rate on work effort in a real business cycle model to sustain an increase in output and employment;
- price stability should be the objective of monetary policy achieved by means of a neutral policy that keeps output at its potential, defined as the outcome of an imperfectly competitive real business cycle model; and
- output must be supply-determined on average, although it may periodically be demand-determined owing to monopolistic competition and sticky prices.

The new neoclassical synthesis incorporates intertemporal optimisation and rational expectations into dynamic macroeconomic models, draws on New Keynesian economics in its incorporation of imperfect competition and costly price adjustments, and aims to develop quantitative models of economic fluctuations (Goodfriend and King, 1997: 25; see also Linnemann and Schabert, 2003). Its development is associated closely with Samuelson (Isa, 2003: 28). Samuelson held the view that “... the neoclassical synthesis should remove the contradiction between aggregate macroeconomics and traditional microeconomics and bring them together in a complementing complex theoretical system, which should serve as the starting point of an effective combination of monetary and fiscal policy” (Isa, 2003: 28).

Significantly for this study, it should be noted that the new neoclassical synthesis differs completely from the earlier new classical synthesis in respect of monetary policy. In terms of the earlier synthesis, inflation was viewed “... as having a momentum of its own and fluctuating with unmanageable shifts in the psychology of price setters. The new synthesis also views expectations as critical to the inflation process, but sees expectations as amenable to management by a monetary policy rule” (Goodfriend and King, 1997: 50). The new neoclassical synthesis shows that monetary policy has a direct influence on real economic activity, implying that it is not possible to interpret economic fluctuations independently of monetary policy (Goodfriend and King, 1997: 26). The synthesis also indicates that aggregate demand has to be managed by monetary policy (Goodfriend and King, 1997: 26). However, monetary policy can only exert its influence on economic activity within limits (Goodfriend and King, 1997: 31). This synthesis leads to four conclusions about monetary policy and its role in the economy, which can be summarised by stating that (Goodfriend and King, 1997: 2 and 3):

- monetary policy can have an important and persistent effect on real economic activity owing to gradual adjustments of both individual prices on the one hand and the price level on the other;
- even under conditions of costly price adjustments, there is little evidence of a long-run trade-off between real activity and inflation;
- inflation has significant welfare costs owing to its distortions of economic performance, implying that significant gains can be achieved in terms of increased transactions efficiency and reduced relative price distortions by eliminating inflation; and
- policy credibility plays a central part in understanding the effects of monetary policy.

This last conclusion is of particular importance for central bankers: monetary policy can be implemented optimally in a rules-based environment, rather than in a discretionary fashion, but should be credible in the eyes of the public. It is therefore necessary not only to consider the policy rule most suitable for this purpose (Goodfriend and King, 1997: 3), but also to consider enhancing policy credibility. The focus of this study is on inflation credibility underpinning policy credibility and inflation expectations.

As inflation, and particularly unanticipated inflation, has real costs for an economy (Snowdon and Vane, 2005: 411), it naturally follows that the policy rule adopted by the central bank should aim at bringing inflation to the lowest possible level and keeping it at that level. Goodfriend and King use the new neoclassical synthesis “... to develop a set of principles and practical guidelines for neutral monetary policy, defined as that which supports output at its potential level in an environment of stable prices” (1997: 3). After considering problems such as lags between monetary policy action and their influence on the price level, responses to commodity price shocks, any potential policy trade-off between price and output variability and the use of a short-term interest rates as policy instrument, the conclusion is not only that a monetary policy regime of inflation targets²² is preferred (Goodfriend and King, 1997: 3; see also Snowdon and Vane, 2005: 703), but also that “... a central bank should target near-zero inflation” (Goodfriend and King, 1997: 33).

The conduct of macroeconomic policies, including monetary policy, can naturally not be divorced completely from the prevailing political process in any country. Attempts are made in many countries to shield monetary policy somewhat from direct political influences, and recently the adoption of explicit anchors for monetary policy has led to considerable success in this regard. A case in point is the adoption of inflation targets as an anchor for monetary policy, a policy model also adopted by South Africa in February 2000 (South Africa, 2000).

Shielding monetary policy from the political process is particularly important under conditions where politicians are tempted “... to manipulate policy instruments so that policy outcomes are most favourable around the election period” (Snowdon and Vane, 2005: 526). One possible result is that policies could be implemented “... which are biased against future generations” (Snowdon and Vane, 2005: 526). This is particularly true for monetary policy that is not conducted independently from the government: inappropriate expansionary monetary policy in a period running up to an election will cause higher inflation after the election.

²² An inflation target as an anchor for monetary policy is discussed in Chapter 4.

During the 1970s a number of economists made reference to the *political business cycle*, the best-known of which is Nordhaus (1975). Nordhaus states that “... it is clear that a political business cycle is a significant factor in the operation of some capitalistic democratic economies” (1975: 187). Of particular importance is the finding that “... within an incumbent’s term in office there is a predictable pattern of policy, starting with relative austerity in early years and ending with the potlatch right before elections” (Nordhaus, 1975: 187). Snowdon and Vane state that “... politicians, faced with a regular election cycle, will tend to develop short time horizons” (2005: 566). Heckelman refers to this tendency as one where “... incumbent politicians have an incentive to manipulate the economy as elections draw near” (2001), although there have been limited attempts to test historically for political business cycles. This flows from the view that “... such manipulations were not possible before the advent of activist policy ushered in during the Keynesian revolution ... ” (Henckelman, 2001). Agénor and Montiel state that policymakers can introduce macroeconomic policy “... which is difficult to justify on the basis of purely economic arguments ... [but is] ... responsive to policymakers’ desire to secure their positions in office or improve the likelihood that they will be reelected” (1996: 572).

Nordhaus (1975: 188 and 189) highlights some remedies for the political business cycle and the related unemployment/inflation bias, applicable to socialist and capitalist democracies²³, that can be summarised as:

- improvement of the information available to voters, thereby enabling them to judge actions by government aimed at stimulating the political business cycle in a run-up to elections;
- non-synchronisation of electoral periods such as in the United States could reduce the amplitude of the political business cycle;
- the acceptance of price and wage controls, which will contain inflation;
- broadening the base of participation in policy-making, which will make it difficult for the government to implement a plan aimed at fostering the political business cycle; and
- entrusting economic policy to persons not directly subject to re-election results, in the same way as monetary policy is entrusted to central banks. Fiscal policy can similarly be turned

²³ According to Nordhaus, “[t]he only difference ... is that planned economies may show less fluctuations within electoral periods than unplanned economies” (1975: 188).

over to treasury officials. However, the costs and benefits of independent policy determination are difficult to consider, while it is alleged from time to time that the central bank pays more attention to the latest monetarist idea than to fundamental policy problems.

It is noteworthy that Nordhaus identifies the benefits associated with a central bank conducting monetary policy independently from the political business cycle, albeit not to the full degree of autonomy or independence associated with successful monetary policy implementation today. This approach only became generally accepted some time after the publication of the paper by Nordhaus (1975).

This review of the development of theories on monetary policy and inflation covers periods when governments elected to use direct measures (price and wage controls, also known as incomes policies) for purposes of controlling inflation even though countries were not at war²⁴. Michie states that “... if inflation began rising, the policy reaction would be to attempt to restrain inflation directly, through prices and incomes policy, rather than to allow unemployment to rise” (2006: 88) as a result for instance of stricter monetary policy associated with higher interest rates.

One example is the United States, where the government introduced an incomes policy on 15 August 1971 and maintained these controls until 30 April 1974 (Kosters, 1977: 121). Consumer price inflation in the United States initially declined by about one percentage point to a level of 3 per cent during the first 12 months after the introduction of the incomes policy (Kosters, 1977: 122). The success of the policy was, however, short-lived: the rate of inflation subsequently accelerated to a level of 11,5 per cent per annum in the eight months before price and wage controls were lifted, and to 12,2 per cent in the eight months after 30 April 1974 (Kosters, 1977: 122)²⁵.

²⁴ Galbraith advocated the use of permanent widespread price controls to contain inflation after serving as deputy head of the US Office of Price Administration during part of the World War II (Sloman, 1994: 292).

²⁵ Experience with price controls brings to mind Goodhart’s law, which states that “[c]ontrolling a symptom of a problem or only one part of the problem will not cure the problem: it will simply mean that the part that is being controlled now becomes a poor indicator of the problem” (Sloman, 1994: 753).

As often happens during a period of direct controls interfering with the functioning of the market mechanism of supply and demand, shortages were reported in the United States. The media started reporting shortages from late 1973 (e.g. some two years after the introduction of the policy) and this problem persisted in 1974 (Kosters, 1977: 188). The implication is obvious: as is the case with sound monetary policy following a period of persistent high inflation, an incomes policy is also not a painless solution to an inflation problem. In this case the cost is reflected in shortages, rather than in increases in interest rates.

The second example is the UK (see for instance Michie, 2006: 88). The UK introduced an incomes policy early in 1948 (Merrett and Monk, 1967: 65). This policy was maintained until September 1950, when it failed because the trade unions “... refused to suspend agreements which tied wage increases to the cost of living index” (Merrett and Monk, 1967: 67). Similar policies were again introduced in the UK in the 1950s, 1960s and 1970s. In their assessment of the success or otherwise of the use of these policies, Merrett and Monk state that an incomes policy “... has proved successful in modifying the rate of inflation during the short period of its operation ...” (1967: 67).

The more interesting conclusion, however, is that “[t]here is no evidence from the experience of major industrialised countries of Europe that the rate of inflation can be reduced significantly below 3 per cent per annum without a relatively large pool of unemployment ...” (Merrett and Monk, 1967: 71). This reminds of the statement by Nordhaus that “[m]any economists doubt whether the inflation/employment trade-off can be significantly improved within the traditions of a liberal mixed capitalist system” (1975: 189). Subsequent successes of industrialised countries to contain inflation by means of sound monetary policy, rather than by means of incomes policies, have shown that inflation is not inevitable. Snowdon and Vane state that “... significant costs arise when governments choose to suppress inflation, leading to distortions to the price mechanism and further significant efficiency losses” (2005: 412). Friedman and Friedman are of the view that the private economic agents regard “... the imposition of price and wage controls as a signal that inflation is heading up, not down. It has therefore led them to raise their inflation expectations rather than to lower them” (1980: 326). The implication is therefore

that sound monetary policy, rather than control measures, is advisable for the control of inflation, and particularly for containing inflation expectations. Moreover, current low inflation in developed countries is not associated with undue high unemployment levels.

The debate whether governments should adopt policy rules or should allow discretion in the application of economic policy, is an ongoing one. Monetarists prefer rules and Keynesians favour discretion (see for instance Parkin, 2003: 610, 739 to 744). Monetarists argue that the formulation and application of rules will ensure that the government provides a sound policy framework that remains free of temptation, e.g. the temptation to stimulate total output and reduce unemployment in a period running up to an election²⁶ (Sloman, 1994: 826). The application of rules also ensures that domestic private economic agents are not cushioned from market forces, which enhances efficiency in adjustments to changed circumstances (Sloman, 1994: 826 and 827). The announcement of rules by the government and their strict application also reduce inflation expectations, thereby providing an environment for high and stable economic growth.

Keynesians reject the application of rules and favour discretion because demand is subject to random exogenous shocks. As no set of rules can successfully deal with all such shocks, they argue that the adoption of a discretionary policy will deliver better results, particularly as different shocks require differences in treatment, rather than the application of a standard set of rules dealing in similar fashion with all shocks (see for instance Parkin, 2003: 740; or Sloman, 1994: 827). In addition, owing to uncertainties about “ ... the kinds of problems an economy may confront in future, new Keynesians do not support the fixed rules approach ... ” (Snowdon and Vane, 2005: 410). Keynesians favour active and discretionary government involvement in the economy to counter demand deficiencies as a result of exogenous shocks.

Literature on inflation suggests that a distinction has to be made between anticipated and unanticipated inflation, as their effects on the economy are different (see for instance Levi, 1994:

²⁶ This reminds of the Primrose prime interest rate incident in South Africa in November 1984 (described in Chapter 5), when the country used policy discretion rather than rules.

440; or *New Palgrave: A dictionary of Economics*, 1987: 833 to 835). Parkin states that “... the failure to correctly anticipate it ... [inflation] ... results in unintended consequences” (1999: 742). In considering unanticipated inflation, it might be more appropriate to refer to incorrectly anticipated inflation (or an unexpected level of inflation), as unanticipated inflation refers to a situation where the actual rate is either higher or lower than the expected rate (Levi, 1994: 440). However, as literature utilises unanticipated inflation for describing any one of these two outcomes, the same terminology is used in this study.

The main consequences of unanticipated inflation are a redistribution of income and wealth; distortions in the relative prices of goods and of services; distortions in output and employment; and unforeseen adjustments in relative wages and salaries (see for instance Parkin, 1999: 742; Samuelson and Nordhaus, 2001: 688; or Snowdon and Vane, 2005: 411). The impact is clear: unanticipated inflation imposes costs on an economy “... regardless of whether the inflation turns out to be higher or lower than anticipated” (Parkin, 1999: 743). The costs associated with unanticipated inflation reminds of the cost when governments suppress inflation by means of an incomes policy (Mishkin, 2004: 412). Samuelson and Nordhaus state that “... the reality is that inflation is usually unanticipated” (2001: 688).

Anticipated inflation occurs when actual price increases correspond with anticipated (or expected) price increases. In this regard Samuelson and Nordhaus state that “... anticipated inflation at low rates has little effect on economic efficiency or on the distribution of income or wealth. People would simply be adapting their behaviour to a changing monetary yardstick” (2001: 688). The actual cost of anticipated inflation depends on the rate of inflation (Parkin, 1999: 744). Parkin (1999: 744) is of the view that the costs are probably small at a low rate of 2 or 3 per cent per annum, a view supported by Samuelson and Nordhaus (2001: 688). Parkin (1999: 744 and 745) describes the costs of anticipated inflation as increased transactions costs because people try to avoid the consequences of inflation; increased taxation on interest earned to off-set the effects of inflation; and planning difficulties owing to uncertainties in an environment characterised by inflation.

The problems resulting from both anticipated and unanticipated inflation indicate that inflation is a serious economic problem requiring proper policy attention. The conclusion is therefore that relative price stability²⁷ is important for any economy. Whereas the definition of inflation is widely accepted, the definition of relative price stability vis-à-vis inflation seems to be somewhat problematic, as is the case with finding a modern definition for price stability. If price stability were to imply stable or constant prices in the true sense of the word, such prices are associated with price level stability today (see for instance Joint Economic Committee, 2004: 2; or Gwartney et al., 2000: 12).

Greenspan states that “... the primary role of monetary policy in the pursuit of the goal of maximum sustainable growth is to foster price stability. By this we mean establishing an environment where expected changes in the average price level are small enough and gradual enough that they do not materially enter business and household financial decisions” (1989: 5). Hansen states that “[p]rice stability is a condition that some economists describe as inflation so low that it no longer affects people's economic decisions” (2007: 1), while relative price stability is “... generally defined²⁸ as an inflation rate of between 1 per cent and 2 per cent” (2007: 1). Gwartney et al. state that “[a] working definition of price stability has emerged in the form of a consensus²⁹ that monetary policy makers should keep the inflation rate within a band of zero to 3 per cent” (2000: 12 and 13), which is probably the definition that Hansen has in mind for relative price stability. Mohr and Fourie state that “[w]hen economists talk of price stability as an objective, they refer to the objective of keeping inflation as low as possible” (2004: 62), thereby equating price stability to relative price stability. Samuelson and Nordhaus state that “... most nations seek the golden mean of stable or slowly rising prices as the best way of encouraging the price system to function efficiently” (2001: 419), and refer to this as price stability.

²⁷ Relative price stability as used in this study has the meaning of prices increasing at a low average rate, e.g. average annual price increases of between zero and two per cent or in accordance with an inflation target. It is not used to imply that the relative prices of goods and services in relation to one another should not change. Even in an environment of price stability, changes of the latter nature are still necessary to ensure the reflection of changes in relative scarcity. This matter is also discussed in section 4.1.

²⁸ Although making this statement, Hansen (2007: 1) does not provide any source to support the assertion.

²⁹ Like Hansen (2007: 1), Gwartney et al. (2000: 12 and 13) provide no source for the assertion.

Yet another approach has been adopted by the central bank of Israel. That bank mentioned in 2003 that “[t]he Consumer Price Index was down 1,5 per cent in the first nine months of the year ... [and over] ... the past twelve months (September 2002 to September 2003) the CPI posted a sharp downturn of 1,9 per cent” (Bank Leumi Le-Israel B. M. and subsidiaries, 2003: 2). This declining trend in prices was referred to as “relative price stability” (Bank Leumi Le-Israel B. M. and subsidiaries, 2003: 2).

This brief analysis leaves as possible descriptions for relative price stability an inflation rate of between 1 and 2 per cent (Hansen, 2007: 1); a less-than-specific view on a particular rate or range of inflation to be regarded as relative price stability (Greenspan, 1989: 5); or even a moderate decline in prices (Bank Leumi Le-Israel B. M. and subsidiaries, 2003: 2). In the interest of clear and easy communication with the general public on the objectives of monetary policy and the achievement of such objectives highlighted by this study, it seems imperative that central bankers should agree on:

- the standardised use of *relative price stability* rather than *price stability* in describing the objectives and achievements of monetary policy, as price stability has different meanings for different people; and
- a standardised definition or description for *relative price stability*.

Following Greenspan, a suitable definition for relative price stability in this context seems to be *price changes and expected future price movements (either up or down) at a level where they do not influence current decision-making in any way*, which is somewhat aligned to the view of Gwartney et al. when they state that monetary policy achieves price stability when “low and easily predictable rates of inflation” (2000: 11) prevail in an economy. An alternative could be to describe price increases in accordance with an inflation target as relative price stability in countries using such a monetary policy approach.

This study is aligned with the use of rules, rather than discretion, in the application of macroeconomic and monetary policies. The analytical tools developed in this study support the use of policy rules in general, and monetary policy rules in particular. The development of these

tools also shows that the application of monetary policy models based on rules should be supported by communication strategies aimed at enhancing policy credibility. Without such credibility, perceptions of inflation might differ to such a degree from actual inflation that the general public concludes that sound monetary policy brings no tangible benefits. It is therefore necessary to ascertain whether perceptions of inflation and inflation expectations remain anchored in the current official rate of inflation.

2.3 Macroeconomic theory and policy reform in developing countries

Different views of development (or schools of thought) have emerged over time, in the same way as models of macroeconomic theory evolved over time (see for instance McAleese, 2004: 5). It is therefore necessary to consider whether the application of macroeconomic policy will deliver the same social and economic results for developing and developed countries (Economist.com, [S.a.]). Justification for a different approach for developing countries will be faster eradication of poverty and accelerated improvements in *per capita* income, levels of employment, health care, life expectancy, etc.

In literature no single definition is used for developing countries (see for instance Bale et al., 2003: 305; Biology-online, [S.a.]; Samuelson and Nordhaus, 2001: 591; Soanes and Stevenson, 2004: 392; United Nations Development Programme, 2005: 214; World Trade Organization, [S.a.]; or World Wide Web Online, [S.a.]). Use of the term *developing country* is even viewed as “... both pejorative and ambiguous” (Aycan, 2002) in certain literature, as no country is not developing (Aycan, 2002). These countries show large diversity (see for instance Bale et al., 2003: 305; Borat et al., 2006: 509; or Corden, 1987: 171) and are characterised by different forms of government (see for instance Brunell, 2006; Elahi and Danopolous, 2004: 9; Harford, 2006: 200; Hogendorn, 1987: 486 to 487; Sen, 1999: 13; or Tanaiste and Harney, 2004). Bedford-Strohm uses different but very catching terminology when stating with regard to the divide between developed and developing countries that “[a]fter the lifting of the *Iron curtain* between East and West, it is the great challenge of our time, now, to lift the *Golden curtain* which separates us in the North from the people in the South” (2006: 14).

Literature mainly identifies the orthodox view of economic development on the one hand and the structuralist view of economic development³⁰ (see for instance Contreras, 1999; Agénor and Montiel, 1996: 13; or Shahzad, [S.a.]) on the other.

The orthodox view (which is sometimes called the liberalist, traditional or monetarist school) places emphasis on similarities between the requirements of developed and developing countries. According to this mindset high inflation in developing countries is caused by excessive growth in the money supply owing to large fiscal deficits. The solutions are therefore the introduction of free domestic markets; free international trade; tight monetary and fiscal policy; and limited government intervention in the economy (Agénor and Montiel, 1996: 13; Shahzad, [S.a.]). This view is closely associated with “[c]lassical or neo-classical economics ... concerned primarily with the efficient and cost effective allocation of scarce resources and with the optimal growth of those resources over time. They ... [the orthodox school] ... hold that countries develop economically via the market” (Contreras, 1999).

By contrast, the structuralist view places emphasis on “ ... the mechanism by which underdeveloped economies transform their domestic economies from a traditional subsistence agricultural base into a modern economy” (Contreras, 1999), as developing countries might be facing deficient structures that hamper severely the effectiveness of the policy prescriptions of the orthodox school. The structure and causes of poverty are therefore important when policies are considered, as “[c]onventional fiscal, monetary and industrial policies, especially in developing countries, have either completely failed or have been of limited success in combating poverty.

³⁰ In addition, Contreras (1999) identifies the linear-stages-growth model and the neo-Marxist or dependency theory as models for overcoming poverty in developing countries. Originating from the 1950s and 1960s, the linear-stages-growth model views the process of economic development “ ... as a simple way of succession of a number of stages based on the path that the now developed nations had adopted in transforming from poor agricultural to modern industrial countries” (Moloto, 2005: 34). The shortcomings of this model, e.g. the constraint of low capital formation hampering investment, are acknowledged today (Moloto, 2005: 35). The neo-Marxist theory of the 1960s and 1970s concluded that industrialised countries exploit developing countries, and particularly workers in such countries, by paying very low prices for primary exports that are re-imported by developing countries at high prices after transformation. Industrialisation could therefore hardly be a goal of developing countries, as developed countries invested only in primary production (Contreras, 1999). The main criticism of the neo-Marxist theory is the notion that developing countries are dependent on developed countries for development (Contreras, 1999).

Structural rigidities in the economy, political factors, and the inadequacy of the policies themselves have contributed to their failure to meet their objectives” (Odekon, 2006: x). The structuralist view accordingly advocates that the market mechanism cannot overcome the problems facing developing countries. Structural rigidities and problems should be addressed by means of direct intervention.

Early structuralist prescriptions for overcoming poverty advocated direct government intervention in the promotion of industrialisation; trade barriers discouraging imports and protecting domestic industry; extensive use of exchange control in an effort to boost domestic investment; and use of special dispensations (interest rate subsidies, tax rebates and direct subsidies) to stimulate domestic industry (Agénor and Montiel, 1996: 14). Modern structuralists question the short-run policy prescriptions of the orthodox approach to solve development problems. In their view the cause of inflation in developing countries is currency devaluation combined with relatively slow productivity growth in agriculture, rigidities in administered prices, and wage indexation, which can lead to stagflation (see for instance Khan, 2005: 4; or Agénor and Montiel, 1996: 15). As an alternative to orthodox prescriptions, structuralists prescribe gradualism, rather than a quick restructuring of the economy (Agénor and Montiel, 1996: 14), and support direct government intervention in economic processes and markets. A sobering concluding remark on the two approaches is that “[m]ost likely the different conditions in each country call for different anti-poverty policy approaches” (Odekon, 2006: x; see also Agénor and Montiel, 1996). This view is supported by the statement of Kose et al. that “... developing countries perhaps would need to implement sound macroeconomic and structural frameworks” (2003: 138) to minimise the risks associated with financial integration.

Current debate should focus attention not only on the golden curtain (Bedford-Strohm, 2006: 14), but also on the quickest way to ensure that it melts away (Rossouw, 2007b: 270), thereby improving the income levels of the poor. Page states that “[s]imple theory and empirical evidence indicate that poverty reduction can be achieved by accelerating economic growth and/or by changing distribution of income in favour of the poor” (2006: 512). In the reduction of poverty, a policy of redistribution naturally has an important role to play (Odekon, 2006: x).

Redistribution is the cornerstone of a policy of progressive income tax. While economic growth contributes to the eradication of poverty, it is regarded as pro-poor if the poor benefits disproportionately from it (Page, 2006: 512), essentially serving the same purpose as a progressive income tax.

Aryeetey states that “... the available evidence is noted to be fairly strong that well-functioning financial markets promote long-run economic growth” (2003: ii116), implying that a lack of well-functioning financial markets can hamper developing countries and contribute to structural problems. A central problem of the financial systems of many developing countries is imperfect information and a lack of institutional structure for risk coverage (Aryeetey and Nissanke, 2003; Dercon, 2005; Mlambo and Oshikoya, 2001), implying that risks that are insured in developed countries can often not be insured in developing countries. Financial development in developing countries is stymied by information asymmetry, costly information and high transaction costs, and can result in some forms of credit rationing (Aryeetey, 2003: ii116). Under conditions of financial market imperfections, government intervention naturally improves the allocation and spread of loanable assets and risk, as “... the assumptions underlying the optimality of the free market system in allocating resources do not exist in developing countries” (Aryeetey, 2003: ii118). The consequence is “... the need to direct attention to building macroeconomic models that account for the interconnections between macroeconomic variables such as interest rates and exchange rates and informal finance” (Aryeetey, 2003: ii145), which is hampered by accurate data about informal finance in developing countries.

Deficiencies in the financial markets of developing countries often lead to fragmented and parallel financial markets (Agénor and Montiel, 1996: 64) in foreign exchange, savings and lending (Aryeetey and Nissanke, 2003: 313). These markets “... often constitute a significant component of economic activity” (Agénor and Montiel, 1996: 64), but “... they are difficult to monitor or quantify in any meaningful manner ... [although] ... existing evidence suggests ... that in some countries the informal sector is at least as large as the official sector and may even be larger. Fragmented markets are the result of imperfect information or other inherent operational characteristics” (Aryeetey, 2003: ii116), while parallel markets are “... often illegal

but are tolerated in many countries” (Agénor and Montiel, 1996: 65). This is not only relevant for developing countries. Developed countries are also characterised by informal financial activities, often associated with illegal activities such as drug dealing, money laundering, loan sharking or the contravention of exchange control regulations³¹. Relative to the formal financial system, these activities are merely smaller in developed countries.

The orthodox school regards fragmented and parallel markets as a consequence of government interference, particularly as a result of interest rate ceilings at too low levels, rather than a structural problem that can be alleviated by the government (Aryeetey, 2003: ii115). Prasad et al. state that “[t]he empirical evidence has not established a definitive proof that financial integration has enhanced growth for developing countries” (2003: 58), although “... there may be value for developing countries to experiment with different paces and strategies in pursuing financial integration” (Prasad et al., 2003: 58). Corden (1987: 185) suggests the use of game theory for some developing countries to assess the effects of policy decisions such as devaluations. The structural school views increases in interest rate levels in developing countries as a source of cost-push inflation in the short run that lowers economic growth, and reduces the supply of credit to finance investment (Aryeetey, 2003: ii116). A related impediment identified by the structuralist view is “... the importance of non-institutional finance in the form of money lenders and indigenous bankers” (Aryeetey, 2003: ii115), whose operations will probably not be influenced in the short-run by reforms of the financial markets. Khan states that “... some have questioned the wisdom and efficiency of orthodox short-run macroeconomic policy prescriptions ... [for developing economies], ... particularly shock treatment in the form of fiscal austerity coupled with devaluation and tight monetary policy” (2005: 4). In developing countries “[a]ccording to the nonmonetarist view frequently the source of inflation is slow relative productivity growth in agriculture ... combined with ... [rigid] ... administered prices ... together

³¹ In this regard South Africa serves as a case in point. The Minister of Finance announced an exchange control and related tax amnesty on 26 February 2003 (Manuel, 2003a). In response to the amnesty, nearly 43 000 South African residents submitted amnesty applications, disclosing illegal foreign assets amounting to R45,0 billion. South Africa’s mid-year population estimate in 2004 was 46,6 million people, implying that nearly 1 out of every 1 000 South Africans had illegal assets abroad, despite the application of strict exchange control restrictions over residents since 1961. South Africa’s legal foreign assets as at 31 December 2002 were under-reported by some 7 per cent if these illegal assets are taken into consideration (Rossouw, 2006c: 14).

with wage indexation” (Khan, 2005: 4). Structural reform should therefore precede any market-oriented monetary reform to prevent accelerating inflation. For purposes of monetary policy implementation, a particular challenge facing authorities in developing countries is the development of an understanding of the degree of difference between the functioning of the transmission mechanism of monetary policy in the formal and informal markets. Although an analysis of these differences is outside the scope of this study, it suffices to say that even developed countries sometimes lack insight into the functioning of the transmission mechanism in their economies.

Literature provides numerous reasons for less-than-satisfactory results with policies aimed at the reduction of poverty. Sahn and Younger (2004: i87) mention half-hearted reforms by governments, exogenous shocks such as droughts and changes in terms of trade, institutional constraints, and deficiencies in improvements in health and education services. Mlambo and Oshikoya state that “[l]arge and external shocks also explain Africa’s high degree of macroeconomic variability, especially the volatility of the terms of trade that is reflected in the volatility of real GDP growth and the real exchange rate” (2001: 43). The literature also stresses the importance of increased investment, a transfer of resources from savers to investors, political stability, rising household incomes reducing poverty, improved governance, and rising fiscal revenues permitting improved public investments that bring the poor into the economic mainstream (see for instance Mlambo and Oshikoya, 2001: 40 to 42; Page, 2006: 538; Prasad et al., 2003: 58; or Servén, 1998: 24) as conditions favouring sustained development. As is the case with the debate between monetarists and Keynesians (in the wider meaning of these words), Agénor and Montiel state in respect of the orthodox and structuralist debate that “ ... macroeconomic reality in the developing world indeed combines features of both” (1996: 15).

In terms of similarities and differences between developing and developed countries, South Africa finds itself in a unique dichotomy as the country has strong elements of both types of countries. Since democratic elections in 1994, South Africa has applied a mix of policies that places it squarely in the realm of the orthodox school of development. An analysis of some of the results of this policy is shown in Table 2.1.

The analysis in Table 2.1 shows that South Africa has achieved considerable success in improving stability and output with the application of orthodox policies. The one lagging area is clearly employment creation. As orthodox policies did not make inroads into the country's employment problem, it comes as no surprise that literature offers alternatives, based on the principles of the structural school, to alleviate this problem. Michie (2006) and Epstein (2002) offer structural solutions based on the alternative use of monetary policy to overcome this failure of orthodox policy measures. Michie (2006: 96) favours lower interest rates to foster productivity-enhancing investment that will increase supply (thereby limiting any possible inflationary effects of such lower rates) and encourage employment. If inflationary pressures develop in the period before the economy starts reaping the benefits of improved productivity, the government can enhance competition; revert to direct controls such as an incomes policy; reduce administered prices; or introduce tax cuts on products subject to price increases to keep nominal prices stable (Michie, 2006: 97).

Table 2.1 South African economic indicators for selected years

	1994	1998	2002	2005
Budget deficit/GDP	- 4,8	- 3,3	- 0,7	- 0,5
GDP growth	3,2	0,5	3,7	5,1
Inflation	9,0	6,9	9,2	4,7
Unemployment*	20,0	25,2	29,7	26,5
Unemployment**	31,5	37,5	40,9	40,5

* Narrow definition

** Expanded definition

Sources: SA Reserve Bank *Website*; SA Institute of Race Relations, 2006

Epstein (2002) suggests that the central bank should replace the inflation-targeting monetary policy framework with the targeting of employment growth³², subject to an inflation constraint. The employment target should be supported by stricter exchange control to insulate domestic macroeconomic policy from global pressures and to ensure the channelling of credit to employment generation and socially productive activities (Epstein, 2002: 1 and 2), but should be subject to an overriding inflation constraint. The concern about an inflation constraint of 6 per cent, as seems to be suggested (Epstein, 2002), is that no permanent reduction in unemployment might be achieved before the constraint is reached, given the difference between the short-run and the long-run Phillips curves and South Africa's problem of structural unemployment.

It can logically be argued that Michie (2006) favours a marginal increase in the role of the government in the economy, while Epstein (2002) favours a larger degree of intervention, extending to the goals and functioning of the central bank. This is not surprising, seeing that "... the evidence suggests that ... [macroeconomic] ... reforms have yielded some benefits for Africa's poor ... [but] ... the achievements on growth and poverty reduction have been disappointing" (Sahn and Younger, 2004: i87). While it is necessary to keep in mind that "... macroeconomic adjustment programmes have not been directly deleterious to the poor; in fact, they have often helped somewhat" (Sahn and Younger, 2004: i67), the question remains whether structural alternatives could not have achieved better results in South Africa, particularly in respect of a reduction in unemployment, therefore contributing to the goal of a quicker melting of the golden curtain between North and South.

Smithin (2002: 22 and 23) makes an interesting case for lower real interest rates to reduce inflation in closed economies, that can also be applied by developing countries. Smithin states that if "... there is a productivity improvement as a result of the increased growth, which in turn is greater than that of any increase in real wages, then the lower real interest rates will not be inflationary. This is perhaps a surprising result when looked at from a traditional point of view.

³² Epstein (2002) gives no indication of the tools that a central bank targeting employment growth should employ to overcome a problem of structural unemployment, i.e. "... significant mismatches between applicants and openings, such as to require costly retraining and/or relocation" (Snowdon and Vane, 2005: 493). Michie touches on this impediment, stating that "... a better-trained workforce is a classic public good" (2006: 103).

In this case, a cheap money policy leads to higher growth with lower inflation” (2002: 23). Although Smithin’s proposals share some elements with Epstein (2002) and Michie (2006), central banks “... should follow a real interest rate rule, rather than a monetary growth rule or an inflation rate rule” (Smithin, 2002: 27). Smithin’s proposal of a real interest rate rule seems to have merit in avoiding excessive swings in nominal interest rates (except when driven by similar swings in inflation) which in themselves introduce instability in the economy, as has happened in South Africa in the 1980s. The further attraction of Smithin’s proposal is the relative ease with which a real interest rate target as an anchor for monetary policy can be communicated. As is shown by this study, central banks face important challenges in enhancing policy credibility by means of improved communication, and Smithin’s proposal has considerable advantages from a communication perspective.

From this section, the aim for developing countries is clear – the golden curtain should melt away through the eradication of poverty in developing countries. Literature, however, suggests different remedies for the achievement of this goal. Epstein (2002) favours increased direct government intervention in the economy and increased control of economic processes, and probably represents the extreme structural view. The Austrian School of economic thought which advocates minimal government interference in any economy, discussed earlier in this chapter, can probably be regarded as the extreme orthodox view. A moderate view is put forward by Mlambo and Oshikoya (2001), who state that investors in developing countries lose faith in the macroeconomic reform process owing to time lags between policy implementation and policy outcomes. This lag “... is rooted in the government’s discretionary decision-making authority, and can be narrowed where the government is bound by fixed rules announced in advance” (Mlambo and Oshikoya, 2001: 43). The latter approach is supported in this study, i.e. the point of departure is that rules give better policy results than discretion, but rules are not the only answer to eliminating unemployment, as is evident from the South African experience. This study also focuses on the fact that imperfect information (i.e. about the credibility of inflation figures) can result in sub-optimal decision-making and allocation of resources by governments, central banks and private economic agents.

The next section summarises the literature on the international experience with the measurement of inflation perceptions, i.e. views of historic price movements and the methodology used to sample such perceptions in each country.

2.4 International experience with the measurement of inflation perceptions

Central banks measuring inflation perceptions discussed in this section are the Swedish Riksbank (the central bank of Sweden), the European Central Bank (ECB), the Reserve Bank of New Zealand and the Federal Reserve Bank of Cleveland, while the methodology used for ensuring credibility in the calculation of the rate of inflation in Mexico is also discussed³³.

Central banks do not have direct control over inflation expectations, but can influence it over time by means of consistent sound monetary policy. If the central bank does not succeed in containing inflation expectations and expectations are higher than the target, the implication, as is explained by the Swedish Riksbank, will be “... that the public does not believe that the Riksbank will manage to keep inflation in check. The Riksbank may then need to raise the repo rate more rapidly than is reflected in expectations of future monetary policy” (Sveriges Riksbank [S.a.]; also see Palmqvist and Stromberg, 2004).

Brachinger refers to a “... contradiction between the official line ... [of published inflation] ... and the consumer perception ... [of inflation as] ... the individual customer really wants to know ... the extent to which inflation is affecting her everyday purchases” (2005: 1). He adds that the consumer “... will perceive inflation the more powerfully the more often she buys goods which have become significantly more expensive. In contrast, she will barely notice a reduction in the price of goods she rarely buys, or of goods which she acquires without explicitly purchasing them and whose price is deducted every month from her bank account ... ” (Brachinger, 2005: 1). In view of the observations and findings about differences in inflation perceptions of different genders highlighted in this study, it is noteworthy that Brachinger refers to the consumer as

³³ Literature revealed no further countries or jurisdictions measuring inflation perceptions by 2005 (see for instance Rossouw and Joubert, 2005a).

female – females generally seem to perceive historic inflation to be at a higher level than male consumers.

The Swedish Riksbank has surveyed “ ... households’ perspectives on current and future price developments” (Palmqvist and Stromberg, 2004) since 1978. Respondents are requested to indicate whether they perceive prices to be the same, higher or lower than a year before, and to provide a numerical estimate of their perceived inflation. The sample used in Sweden for measuring inflation perceptions is stratified for different income groups, education levels and gender. In respect of responses by different gender groups, Jonung concluded that “ ... with respect to the perceived rate ... [of inflation] ... , the major difference ... [of 1,7 percentage points] ... was found between men and women ... This pattern – which holds throughout all groupings of men and women according to age, household income, number of children and place of living – is most easily explained by a larger rise in food prices than in the consumer price level ... As women are responsible for the major share of the food purchases within Swedish households, they are more exposed to movements in food prices than men. Consequently, the inflation rates perceived by women should be influenced more strongly by food prices than the rates perceived by men. The difference between men and women apparently indicates that perceived rates are influenced by individual expenditure patterns” (Jonung, 1981: 968).

The survey on perceptions about current inflation provides additional insight into inflation expectations for the Riksbank as respondents who perceive inflation to have been higher over the past 12 months than the actual figure, also report higher than average inflation expectations for the next 12 months (Palmqvist and Stromberg, 2004). The Riksbank publishes the average perception about current inflation, as well as an analysis of the survey results according to, *inter alia*, the gender, marital status, annual income, training and education, and age of respondents.

The ECB uses surveys of European consumers by the European Commission (EC) to measure and report on changes in perceptions of the accuracy of current inflation data (European Central Bank, 2005: 30). In this regard, the EC relies on surveys undertaken by national central banks comprising the European Monetary System. Bechtold and Linz (2005: 8) state that the ECB uses

monthly surveys of the EC which requests respondents to indicate, *inter alia*, their perceptions of changes in consumer prices over the preceding twelve months. In the European Union public perceptions that prices increase at a rate higher than reported by the historic inflation rate are normally a result of “ ... personal impressions that very often refer to specific products or classes of goods and services ... [purchased] ... ” (Del Giovane and Sabbatini, 2005: 4).

Issing (2006: 211) states that problems with perceived inflation in the European Union have been exacerbated since January 2002. In his view this is caused by the fact that consumers in countries of the Euro zone have the perception that prices have increased considerably from the introduction of the single currency on 1 January 2002 (Issing, 2006: 213), while the official inflation statistics show only a very limited increase in inflation owing to the introduction of the euro (Issing, 2006: 213). While the official rate of inflation in a unified Europa for 2002 was 2,1 per cent, the euro caused a rise in prices of not more than 0,3 per cent in that year (Issing, 2006: 214).

Issing (2006: 214) provides a number of reasons for this increase in perceived inflation from 1 January 2002. These reasons include relatively sharp increases in the prices of goods and services consumed by a broad spectrum of the population early in 2002 after (but unrelated to) the introduction of the single currency; certain service industries used the conversion to the single currency in January 2002 to increase their prices; some consumers still used historic prices at the time of conversion to the single currency in January 2002 as their reference for price levels, rather than to allow for moderate annual inflation since January 2002; and price increases are generally more strongly observed by consumers than price declines (Issing, 2006: 214). The observation of Issing about the effect of sharp price increases in goods and services consumed over a broad spectrum reminds of the finding of Jonung (1981: 968) highlighted earlier.

The ECB states that the survey by the EC is conducted at a national level on a monthly basis and covers approximately 26 000 participants (European Central Bank, 2002: 18), and provides “ ... qualitative information on the perceptions of the directional change in inflation over the last twelve months” (European Central Bank, 2005: 30). This description of the survey to calculate

inflation perceptions differs from the statement by Bechtold and Linz that “[t]he European Commission conducts monthly consumer surveys about the business environment in the 25 EU member states. Nearly 33 000 people are interviewed, 20 800 of these in countries of the Euro zone. Respondents are asked for their personal and general assessment of the economy” (2005: 8). This matter was accordingly raised with the EC, and confirmation was received that sample sizes depend on the country or the economic area considered. However, “[f]or the euro area there are a total of about 21 000 respondents to the surveys” (Cigan, 2006).

In their current format, the questions on inflation perceptions were “... introduced in May 2003. Before ... [i.e. going as far back as 1985] ... instead of asking about consumer prices, the EC asked about the cost of living” (European Central Bank, 2003: 23). Respondents are currently asked to indicate “[h]ow ... [they] ... think that consumer prices have developed over the last twelve months” (Bechtold and Linz, 2005: 5) and are requested to select an answer from one of six options on price changes, i.e. prices have risen a lot (PP); stayed about the same (M); risen moderately (P); fallen (MM); risen slightly (E); or don’t know (N) (Bechtold and Linz, 2005: 8).

Based on a percentage distribution of answers, a qualitative indicator is calculated which represents perceived inflation (Bechtold and Linz, 2005: 8). In the calculation of the indicator, the responses of respondents reporting perceptions of constant or falling prices are deducted from assessments of rising prices. The measured score is calculated as $(PP + 0,5 \times P) - (0,5 \times M + MM)$ according to Bechtold and Linz (2005: 8). In reading the score, “[t]he distribution of the selected options is hence expressed as an aggregated balance indicating the difference between positive assessments (prices have risen) and negative assessments (prices are the same/have fallen). The higher the computed score, the greater perceived inflation is deemed to be. The maximum balance of + 100 would be obtained if everyone interviewed chose option 1 (consumer prices have risen a lot). A value of -100 is obtained if everyone interviewed opts for answer 5 ... ” (Bechtold and Linz, 2005: 8).

The Reserve Bank of New Zealand’s quarterly questionnaire on inflation expectations included a question on perceptions about the inflation rate since December 1987, but reporting on recorded

perceptions was improved in 1995. The bank's *J5 Marketscope Survey – Expectations of inflation*, currently distributed for completion on behalf of the bank by ACNielsen market research, includes the question “Based on your own opinions and what you've seen and heard, what do you think the inflation figure is now?” (Reserve Bank of New Zealand, 2005). This question is included in an effort to measure the prevailing perceptions of the current rate of inflation in New Zealand (Howard, 2005). The Reserve Bank of New Zealand publishes the mean and median of the perceptions reported by the respondents (Reserve Bank of New Zealand, 2005). This highlights deviations between the perceptions of respondents and the current rate of inflation.

In New Zealand the central bank has also developed an inflation calculator. The inflation calculator is a resource that enables members of the public to calculate inflation-adjusted figures over any period of time from the first quarter of 1919 (Howard and Wright, 2003: 66). The calculator is a tool that can be used to compare the purchasing power of money over time, but cannot make any adjustments to reflect quality improvements (Howard and Wright, 2003: 66 and 69). The calculator can also be used to estimate changes in the general price level and in the purchasing power of a sum of money over a specific period of time. Use of the calculator highlights the inflation pressures that developed in New Zealand during the latter half of the previous century (Howard and Wright, 2003: 70). The calculator can, however, not be regarded as an instrument for measuring inflation perceptions.

The Federal Reserve Bank of Cleveland used its FRBC/OSU inflation psychology survey to measure inflation perceptions with the assistance of the Ohio State University. This survey focused on the measurement of both inflation expectations and the public's perceptions about historic inflation figures. Respondents were also asked a question about their familiarity with the CPI and changes in the CPI as a measure of inflation (Bryan and Ventaku, 2001b: 1). The bank conducted the survey monthly until April 2002. Surveys were discontinued as the bank “piggy-backed” on a poll produced by the Ohio State University on the opinions of Ohioans for the *Columbus Dispatch* newspaper. When the newspaper decided not to renew the research contract with the University, the bank was left without a survey (Bryan, 2006). For purposes of

completing the survey, more than 400 households were selected randomly as respondents. In addition to the other questions in the survey, four questions on inflation perceptions and expectations were included in the survey from August 1998, with the aim of measuring inflation perceptions. Respondents were requested to indicate (i) whether they have heard of the CPI before; (ii) whether they think prices have stayed the same or moved up or down over the past 12 months; (iii) their perception of the movement in prices over the past 12 months; and (iv) their expectations of price movements over the next 12 months (Bryan and Ventaku, 2001b: 1).

The answers to the second and third questions were used as an indication of perceptions about inflation as measured by the variation between the average perceived inflation rate and the official rate of inflation. Higher variations showed a lack of credibility in the rate, whereas smaller variations were an indication of increased credibility (Bryan and Ventaku, 2001b: 2).

The survey of the bank and the University recorded respondents' perceptions of price changes over the preceding 12 months and their inflation expectations for the following 12 months. The survey results had shown that respondents' perceptions of historic and expectations for future inflation were related to their demographic characteristics. Respondents with "... high incomes perceive and anticipate much less inflation than people with low incomes, married people less than singles, whites less than nonwhites, and middle-aged people less than young people ... [and] ... men and women hold very different views on the rate at which prices are changing" (Bryan and Ventaku, 2001b: 1). The last observation concurs with the observations by Jonung (1981: 968) and Brachinger (2005: 1) about differences in perceived inflation between genders.

Between the introduction of the survey, in August 1998, and November 2001, respondents reported on average a perception of prices rising at about 6 per cent over the previous 12 months, or more than twice the rise of 2,7 per cent recorded by the CPI over the same period. In addition, however, "... the average inflation perceived by the nearly 8 500 men who answered our survey was 4,6 percent. While this response is higher than the official CPI inflation estimate, it pales in comparison to the 6,9 percent inflation perceived by the roughly 11 500 women who took our survey" (Bryan and Ventaku, 2001b: 1). In an analysis of the reasons for such a large

discrepancy between the perceptions of the two genders, even after adjustments between the genders to account for observable differences (e.g. in terms of education levels, income and age), women still perceived historic inflation as 1,9 percentage points higher than men (Bryan and Ventaku, 2001b: 1).

In their analysis of the reasons for this divergence between male and female respondents, Bryan and Ventaku conclude that “ ... all we can say with any confidence is that it does not appear that women have a higher perception of inflation than men because of the things they buy, the frequency of their shopping, or their knowledge of officially reported statistics. None of these factors appears to be large enough to account for the differences between men and women that we observe ... [but the answer to this question might hold] ... the key to understanding how survey data can be used to measure in the public’s inflation expectations” (2001b: 4). This conclusion of Bryan and Ventaku (2001b) that the differences in inflation perceptions between genders cannot be explained, differs considerably from the conclusions of Jonung (1981: 968) and Brachinger (2005: 1) in respect of Sweden.

Whereas the above-mentioned banks and institutions measure inflation perceptions, Mexico focuses on the confirmation of the technical accuracy of the measurement of inflation figures. The calculation of Mexico’s INPC (*Indice Nacional de Precios al Consumidor*), the index used to calculate the rate of increase in consumer prices, obtained the international ISO 9002 certification in December 2000, followed in May 2001 by the ISO 9001 certification (Banco de Mexico, [S.a.]). ISO 9000 and its subsections are a series of standards used for quality control of products and services. ISO certification was therefore preceded by technical improvements to the composition of the index and the methodology followed for calculating inflation to ensure a more accurate indication of price increases. Improvements included:

- (i) the documentation of procedures and applications used to calculate the inflation rate in an effort to prevent inconsistencies and errors;
- (ii) increased efficiency in the calculation of changes in the INPC to measure inflation more accurately; and
- (iii) the establishment of criteria to detect deviations from the prescribed process.

Although ISO certification ensures the measurement of Mexico's rate of inflation according to predetermined technical procedures and measurement instruments, it cannot pronounce on the degree of accuracy with which the inflation figures reflect actual price increases in the economy. It can therefore not be regarded in any way as a reflection of inflation perceptions (see for instance Rossouw, 2003a).

A review of available literature by 2005 did not reveal any further examples of countries (other than countries comprising the EU) or jurisdictions, other than those discussed in this section, measuring the perceptions of the public about historic inflation figures. Accordingly, the salient features of measuring inflation perceptions in Sweden, New Zealand, the European Union and by the Federal Reserve Bank of Cleveland are summarised in Table 2.2, while the approach of Mexico is disregarded for this purpose.

This comparison of the salient features of the approaches used in different countries and jurisdictions to measure perceptions about historic inflation rates, shows that their approaches differ considerably. A similar conclusion is reached in Chapter 3 of this study, i.e. calculated rates of inflation should not be compared between countries without the necessary circumspect, as country-specific issues might distort such comparisons. As is the case with the measurement of the CPI, the methodology used for the ascertaining inflation perceptions differs considerably between countries and jurisdictions undertaking such measurement.

From the salient features highlighted in this comparison, it is concluded that a broad research project measuring and reporting inflation perceptions for a country or region with any degree of confidence should provide for the separate reporting of the inflation perceptions of:

- male and female respondents, also to highlight findings corresponding either with the conclusions of Bryan and Ventaku (2001b) on the one hand, or that of Brachinger (2005) and Jonung (1981) on the other; and
- different population groups in view of the remark by Bryan and Ventaku (2001b) that whites perceive and anticipate much less inflation than non-whites, although they provide no definition or description of their use of the term *non-white*.

Table 2.2 Comparison of measures to assess inflation perceptions

	Cleveland	European Union	New Zealand	Sweden
Frequency of samples	Monthly*	Monthly	Quarterly	Monthly
Sample size	421**	21 000	1 000	2 100
Anonymity in sampling	Y	Y	Y	Y
Distinction between perceptions of genders	Y	N	N*****	Y
Measure perception of historic inflation rate	Y	Y	Y	Y
Calculate and publish a confidence interval	Y***	N****	Y*****	N

* The survey was conducted monthly from August 1998 to April 2002.

** The sample size varied a little, but averaged 421 respondents per month.

*** The Federal Reserve Bank of Cleveland did not calculate or publish a confidence indicator. However, based on information obtained from the bank (Bryan, 2006), a confidence interval could be calculated. The mean of the perceptions on inflation for the full sample was 5,8 per cent, with a standard deviation of 10,2 for the average sample size of 421. Using the formula $\bar{x} - 1,645 \frac{\sigma_x}{\sqrt{n}} \leq \mu_x \leq \bar{x} + 1,645 \frac{\sigma_x}{\sqrt{n}}$, where \bar{x} = sample mean, σ = population standard deviation, n = sample size and μ = mean value, this implies a confidence level of 90 per cent for the population.

**** Confidence interval depends on individual sampling procedure, which differs across countries in the European area (Cigan, 2006).

***** No distinction is made in terms of the measurement of perceptions according to gender in the survey process, but inflation perceptions are reported for various demographic groups, including gender (Campbell, 2006).

***** Confidence interval calculated but not published (Campbell, 2006).

Sources: Brachinger, 2005; Bryan, 2006; Bryan and Ventaku, 2001b; Campbell, 2006; Cigan, 2006; Jonung, 1981; Ribe, 2006

2.5 Conclusions

A review of the literature on the development of theories on monetary policy and inflation shows that Keynes introduced an important break from earlier economic theories during the Great Depression when the economy failed to achieve full employment through flexible adjustments in prices and wages. Keynes advocated an increased role for the government in attempts to restore full employment equilibrium in the economy. To this end he would not have been against increased taxes as a means to improve income distribution in the economy. The Keynesian view remained largely unchallenged until the emergence of the monetarists, lead by Friedman.

Modifications of the Keynesian and monetarist views through successive schools of thought still dominate macroeconomic debate, with a continuing debate on the use of either rules (the monetarist view) or discretion (the Keynesian view) in achieving the same ultimate economic goal: sustained full employment output. By means of a conclusion, the statement of Samuelson and Nordhaus that “[t]he key to macroeconomic wisdom is to combine understanding of the different theories with knowledge of when and where to apply them” (2001: 481), seems appropriate.

After the development of sustained inflationary pressures in the 1960s and 1970s, containing inflation seemed to be an insurmountable problem, with countries such as the United States and the UK at times using incomes policies in their efforts to contain price increases. Inflation was only brought under control after the introduction of sustained sound monetary policy, and this remains a precondition for controlling inflation.

At this point, it is necessary to make a distinction between anticipated inflation and unanticipated inflation. While the economic costs of anticipated inflation depend on the rate of inflation, the main consequences of unanticipated inflation are a redistribution of income and wealth; distortions in the relative prices of goods and services; distortions in output and employment; and unforeseen adjustments in relative wages and salaries. As inflation is in reality often

unanticipated, thereby leading to unforeseen costs in an economy, relative price stability should be the goal for monetary policy. In the interest of easier communication with the general public on the objectives of monetary policy, it seems imperative that central bankers should agree on:

- the standardised use of *relative price stability* rather than *price stability* in describing the objectives and achievements of monetary policy, as the latter has different meanings for different people; and
- a standardised definition or description for *relative price stability*.

Taking cognisance of the political business cycle (Nordhaus, 1975), this study favours macroeconomic and monetary policy rules, rather than the use of discretionary policy. This study highlights the development of tools that can be used to enhance the credibility of monetary policy results based on rules. Without such credibility (which should be supported by efficient communication), the general public might conclude that sound monetary policy brings only pain without any tangible benefits.

In an analysis of problems facing developing countries and the challenge of enhancing the melting of the golden curtain between the North and the South, no one-size-fits-all solution emerges. Imperfect information in developing countries can exacerbate poverty owing to sub-optimal decision-making and allocation of reserves. The emphasis that this study places on the importance of communication by central banks is therefore equally applicable to developing and developed countries.

A review of the international experience with the measurement of inflation perceptions shows the use of different approaches in various countries and jurisdictions. The measurement of perceptions cannot be compared between these countries and regions as a result of these different approaches. The ECB measures inflation perceptions as a quantitative indicator, while the Swedish Riksbank, the central bank of a country that might join a unified Europe in the future, measures perceptions about changes in the current rate of inflation. The Reserve Bank of New Zealand reports the mean and median inflation perceptions of respondents. The Federal Reserve Bank of Cleveland measured and reported until 2002 the variation between the average perceived

inflation and the official rate of inflation. No single benchmark (or international best practice) for the measurement of the credibility of inflation figures is in use, despite long periods of inflationary problems in many countries. This study accordingly combines various elements of international approaches in the calculation of inflation credibility barometers, which can be used to measure and report perceptions about the credibility of inflation.

CHAPTER 3

MEASUREMENT OF INFLATION

3.1 Introduction

When considering inflation in any economy, it is important that consensus should be reached about the interpretation of price increases to be classified as such, rather than adjustments in relative prices, and the measurement of such increases in terms of a predetermined indicator, as is explained in the next section. This is placed in perspective by the statement that “[t]he issue of how best to measure inflation is very complex. Despite universal usage of the term inflation, there is no generally agreed definition that is sufficiently precise to develop an unequivocal measure” (Woolford, 2005: 2). As inflation has been associated from the earliest years with the introduction of money into an economy, it can take the form of:

- literally debasing the currency, i.e. reducing the metal content of gold or silver coins, but not reducing their face value accordingly;
- reducing the value of a currency in terms of another through an adjustment of the exchange rate; or
- increasing liquidity in the economy without a commensurate increase in the production of goods and services for consumption – the form of inflation analysed in this study.

Section 2 of this chapter considers the measurement of price changes and inflation. Sections 3 and 4 focus on international initiatives to improve the measurement of inflation, and Section 5 reviews similar initiatives in South Africa. The international and domestic experience with inflation and implications of the analysis in this chapter for developing countries, are considered in Section 6. The conclusions from this chapter follow in Section 7.

3.2 The measurement of inflation

Van der Walt states that “[i]nflation may be described as a sustained rise in the general price level. Inflation is, therefore, reflected in a general and widely diffused increase in the prices of goods and services in the economy” (1985: 23). Mishkin states that “[w]hen inflation is defined as a continuing and rapid rise in the price level, most economists ... will agree ... that money alone is to blame” (2004: 635). These definitions, as well as the viewpoint that inflation is a monetary phenomenon, apply in this study.

Authorities responsible for measuring price levels (and therefore price changes) in an economy periodically embark on initiatives to improve the accuracy of such measurement in terms of the CPI or similar indices. If the index used for measuring price levels, and therefore to derive inflation or changes in cost of living, does not measure price levels accurately over time, the result would be distortions in the measurement of inflation and real economic activity, resulting in inaccurate adjustments to compensate for cost-of-living changes.

Of the available formulae used to compute the CPI, the most commonly used are the Laspeyres index (a fixed-weighted index), and the Paasche index where base quantities are chosen from the measurement period, rather than the base period (United Nations, 2004). A review of available literature shows, however, that the Laspeyres index is used by more developed economies than the Paasche index, e.g. Australia, Germany, New Zealand, the UK and the United States (Reserve Bank of Australia, 1998: 1; Federal Statistical Office, [S.a.]; Statistics New Zealand, [S.a.]; Sharing Benefits, 2005; and ESA, [S.a.]).

Over time, additional indices have been developed to measure changes in the price level. However, despite its shortcomings the Laspeyres index still has wide application as an instrument for the measurement of inflation, as “[t]wo obvious virtues of the Laspeyres formula are its simplicity and its familiarity. It is easy to explain a measure to compare the price of a fixed market basket of goods over time, and anyone who has studied a bit of economics has learned

about a Laspeyres index, though perhaps without the title” (Wykoff, [S.a.]). Additional indices, other than the Laspeyres and Paasche indices (see for instance Silver and Heravi, 2003), include the following:

- Carli index, which is an evenly weighted average of the price ratios where the numerator price is the price of the commodity in the current month and the denominator price is the price of the same commodity in a base month (Diewert, 2003: 1 and 4);
- Dutot index, the ratio of unweighted arithmetic means of base-period price-weighted price changes (Diewert, 2003: 1);
- Edgeworth (or Marshall Edgeworth) index, “... defined as the weighted arithmetic average of the current to base period price relatives which uses the quantities of an intermediate basket as weights. The quantities of the intermediate basket are arithmetic averages of the quantities of the base and current periods” (OECD, 2003);
- Fisher index, a geometric mean of the Laspeyres and Paasche indices (Mohr et al., 1988: 48);
- Jevons index, which is calculated as the unweighted geometric mean of relative prices (Diewert, 2003: 1);
- Lowe index, which measures the proportionate change between periods 0 and t in the total value of a specific basket of goods and services, which does not have to consist of the actual quantities in any period (OECD, 2003);
- Rothwell index, a short-term price index including seasonal fluctuations in monthly price changes (Van Mulligen and Oei, 2004: 10);
- Törnqvist index (also known as the Törnqvist Theil index), a weighted geometric average of the price relatives using arithmetic averages of the value shares in the two periods as weights (OECD, 2003);
- Walsh index, “[a] price index defined as the weighted arithmetic average of the current to base period price relatives which uses the quantities of an intermediate basket as weights. The quantities of the intermediate basket are based on the geometric mean of the volumes of the base and current periods” (OECD, 2003); and

- Young index, which is calculated as “... an expenditure share weighted average of price ratios where the numerator price is the price of the commodity in the current month and the denominator price is the price of the same commodity in a base month” (Diewert, 2003: 4).

Despite its shortcomings, the majority of countries, including South Africa (Mohr et al., 1988: 114), use Laspeyres-type indices to calculate inflation. Owing to the shortcomings in the accurate measurement of price changes highlighted above, certain countries have taken steps aimed at improving the accuracy of measuring either inflation or changes in cost of living. The next section highlights the findings of the Boskin Report and its recommendations in the United States. It is the best-known international investigation into the accuracy of the measurement of cost-of-living changes.

3.3 Investigation into accurate measurement of changes in cost of living in the United States

Owing to concerns at the time about bias in the CPI used to measure increases in the average cost of living in the United States, the Senate Finance Committee in 1996 appointed the *Advisory Commission to Study The Consumer Price Index*. The Commission was also mandated to recommend amendments to ensure that changes in the CPI accurately reflect changes in cost of living. This Commission is generally known as the Boskin Commission and its report is referred to as the Boskin Report, as it was chaired by Boskin, at the time a Professor of Economics at Stanford University in California, although the Commission comprised five members in total (United States of America, 1996). The Boskin Report was released in December 1996 and recommended downward adjustments in the level of the CPI. The importance attached internationally to this report is evident from the fact that the OECD had hosted a seminar in 2005, dealing with the question *Inflation Measures: Too High - Too Low - Internationally Comparable?*, where changes in CPI measurement in certain OECD countries since the release of the Boskin Report received considerable attention. Such changes are discussed in Section 3.4 below.

As highlighted above, changes in the CPI do not perfectly measure increases in the cost of living in a particular area or country, giving rise to the question whether measured inflation overstates or understates actual price increases. The Boskin Report addressed this matter systematically in the United States. According to Parkin, “[t]he main sources of bias in the CPI ... [of the United States] ... are new goods bias, quality change bias, commodity substitution bias and outlet substitution bias ... [with the result that] ... the bias in the CPI distorts private contracts and increases government outlays” (2003: 469), as the CPI is used as price adjustment factor in many contracts, wage settlements and, in the United States, social security payouts. Adjustments have to be made to the CPI as new goods replace old products, e.g. CDs replaced LPs, or PCs replaced typewriters. Such adjustments often result in the new goods bias and the quality change (improvement) bias, as accurate adjustments are not always possible (Samuelson and Nordhaus, 2001: 451). As relative prices change, consumers substitute goods and services in their consumption patterns or change their spending habits to different outlets (see for instance Du Toit, 1988). However, the composition of the CPI cannot take account of such changes over the short run, which results in a bias in the composition of the CPI (Parkin, 2003: 469).

The Boskin Report concluded, *inter alia*, that “[t]here are several categories or types of potential bias in using changes in the CPI as a measure of the change in the cost of living. Substitution bias occurs because a fixed market basket fails to reflect the fact that consumers substitute relatively less for more expensive goods when relative prices change. Outlet substitution bias occurs when shifts to lower price outlets are not properly handled. Quality change bias occurs when improvements in the quality of products, such as greater energy efficiency or less need for repair, are measured inaccurately or not at all. New product bias occurs when new products are not introduced in the market basket, or included only with a long lag” (United States of America, 1996). A further conclusion of the Boskin Report is that the CPI is the best available measure to ascertain increases in inflation, but “ ... it is not a true cost of living index ... [as] ... has been recognised by the Bureau of Labor Statistics – the BLS – for many years. Despite many important BLS updates and improvements in the CPI, changes in the CPI will overstate changes in the true cost of living for the next few years. The Commission's best estimate of the size of the upward bias looking forward is 1,1 percentage points per year. The range of plausible values is

0,8 to 1,6 percentage points per year” (United States of America, 1996; see also Rietveld, 2006). Gwartney et al. state that “... measurements of inflation are generally thought to be upwardly biased by about 1 percent per year” (2000: 12).

Although the Boskin Report focuses attention on the CPI and sources of possible bias in the index, the BLS holds the view that improvements in the CPI as a measure of price levels are an ongoing process (Johnson et al., 2005: 12). Since the publication of the Boskin Report, changes have been made to improve the CPI (Samuelson and Nordhaus, 2001: 452), which include more frequent updates of the weights used in compiling the CPI and sample rotation between outlets. As a result “... the market basket used in calculating the CPI is more up-to-date and reflective of current consumer behavior than it ever has been. The BLS will continue to constantly evaluate and improve its methodologies to produce the most accurate index possible” (Johnson et al., 2005: 13). Since 2002 the expenditure weights used in the CPI of the United States have been updated every two years, while before then it had been done roughly every ten years. At the same time the implementation lag has been shortened. All these measures probably resulted “... in a smaller increase in the index; for 2004 the increase in the index was 0,06 per cent lower than it would have been had the old weights been in place” (Johnson et al., 2005: 12).

In addition to more regular updates of the weights and outlets used to compile the CPI, the introduction of new consumer goods introduced into the economy also receives special attention by the BLS, with the aim of introducing such goods into the CPI in a timely fashion, thereby ensuring that the CPI is a market basket accurately reflecting consumer purchases. This approach also ensures that the CPI captures “... some of the consumer surplus when new goods enter the economy and decline steadily in price, as sometimes happen with new technology goods; failure to capture this surplus has been seen as a possible source of bias” (Johnson et al., 2005: 12).

In 2000 the BLS created the Federal Economic Statistics Advisory Committee (FESAC), following a recommendation of the Boskin Report. The FESAC serves as a link between the BLS and the academic research community, allowing the exchange of ideas between the academic and research communities (Johnson et al., 2005: 13).

Two relevant conclusions can be drawn from the policy changes following the findings and recommendations of the Boskin Report. Price changes are sometimes overstated, rather than understated³⁴; and regular revisions to the index used for measuring price changes, both in terms of spending weights reflecting the purchase patterns of consumer goods and for outlets, are required to ensure that the CPI continues to reflect average spending patterns of consumers. Following the publication of the Boskin Report, a number of OECD countries have improved the measurement of price changes, as is explained in the next section.

3.4 International attempts to improve accuracy in the measurement of inflation

Following the Boskin Report, the OECD arranged a seminar on 21 and 22 June 2005 to consider the measurement of inflation. The OECD, with its secretariat in Paris, France, is a “ ... forum where the governments of 30 market democracies work together to address the economic, social and governance challenges of globalisation as well as to exploit its opportunities. The Organisation provides a setting where governments can compare policy experiences, seek answers to common problems, identify good practice and co-ordinate domestic and international policies” (OECD, [S.a.]). Membership of the OECD is limited to countries committed to a market economy and democratic principles, and its members produce 60 per cent of the world’s goods and services. South Africa is not a member country of the OECD. The Organisation was established in 1961, emanating from the Organisation for European Economic Co-operation (OEEC), founded in 1947 to co-ordinate the Marshall Plan for the reconstruction of Europe after World War II (OECD, [S.a.]).

At the seminar a number of OECD member countries reported their experiences with and efforts to improve the accuracy of measuring price increases in their respective economies. The

³⁴ A long period of deflation in Japan contributed to a low credibility of inflation figures. Prices in Japan increased during the ten-year period after 1985 by 14,4 per cent, or by about 1,4 per cent per year, whereafter the economy entered a prolonged period of deflation. The Japanese inflation figures were often criticised between 1985 and 1995, as “[s]ome economists and journalists ... believed that the CPI overstated the price increase rate ... ” (Statistics Bureau, 1996: 3) to avoid admitting publicly that the economy was then already in deflation.

accuracy of inflation figures is naturally of importance for all countries, but even more so since the emergence of inflation targeting as an anchor for monetary policy, as “[u]nder a policy framework espousing the principles of consistency, transparency and communication, getting the numbers wrong can be extremely costly” (Rietveld, 2006: 41). Papers highlighting initiatives in a number of OECD countries to improve the measurement of price levels and price changes in terms of the CPI in areas other than owner-occupied housing, were presented at the OECD seminar (see for instance Linz and Behrmann, 2005; Ribe, 2005; Shimizu, 2005; or Woolford, 2005).

Six main problem areas in the application of the methodology to measure price increases by means of changes in the CPI were highlighted at the seminar (Diewert, 2005: 2 to 6):

- First, a standard CPI index is not a true Laspeyres index, in as much as the consumer expenditure basket pertains to a base year. Expenditure weights are therefore selected on an annual basis, whereas the prices are collected in the main at a monthly or quarterly frequency. A true Laspeyres index would be one where the base period expenditures coincide with the base period for the prices;
- secondly, at the first stages of aggregation of CPI statistics, the use of unweighted indices might result in a bias problem;
- thirdly, it is difficult to work out a coherent methodological treatment of quality change and new goods in the context of a fixed-base Laspeyres index;
- fourthly, the treatment of seasonal commodities is a major problem area. The use of an annual basket reports the longer run trend of inflation, but if the focus is on month-to-month price changes as is the case with central banks (particularly in an inflation-targeting environment), the use of annual weights can result in misleading signals owing to seasonal price adjustments;
- fifthly, prices of goods often receive more attention than prices of services in the composition of the CPI, while the relative importance of services in consumer expenditure has increased over the years; and
- last, more than one CPI may be required to meet the needs of different users. Some users require information on monthly price movements in a timely fashion, whereas other users

require accurate measurements of cost-of-living increases. Similarly, multiple indices could be useful in the context of the treatment of owner-occupied housing.

The treatment of housing cost, housing expenditure and owner-occupied housing in the CPI received considerable attention at the seminar, particularly because no standardised approach is applied by OECD countries (see for instance Cournède, 2005: 1; or Diewert, 2005: 5). The literature highlights four different (but accepted) ways for the treatment of owner-occupied housing (see for instance Cournède, 2005: 2; Diewert, 2005: 5, Shimizu, 2005: 1; or Weideman, 2006: 6).

One specific aspect to consider in the decision whether housing cost should be included in a price index is that “[a] house is a place to live in and at the same time an investment. To separate the measurement of the use from that of investment is a difficult problem in CPI calculation ...” (Guðnason, 2005: 5). An additional complication is that “[t]he CPI measures price changes in household expenditures but does not take into account changes in households’ income. Two kinds of income are connected to owner-occupied housing. One is the imputed rent that is assumed that the owner pays himself for using the housing durable and the other is the capital gain/loss in income from the price increase of the durable” (Guðnason, 2005: 10). To overcome these difficulties, a number of countries and jurisdictions simply exclude the cost of owner-occupied housing from the CPI.

Christensen et al. state that “[o]ne of the central preoccupations of statistical work at the OECD is to assess and advance international comparability of statistical series” (2005: 3). To this end, differences in the treatment of home ownership “... may be an unsatisfactory solution when there are large differences in the share of the population that own their dwellings ... [as in] ... two countries that are identical except for the share of home owners, the same changes in all prices would produce different changes in CPI” (Christensen et al., 2005: 5). Christensen et al. nevertheless conclude that “... there is no single best CPI – several conceptual approaches exist and their choice depends essentially on the use to which the CPI is put ... [as] ... a CPI that excludes OOH (owner-occupied housing) entirely could be interpreted as measuring the average

change in prices of monetary transactions of consumer goods and services in the HH (household) sector” (2005: 3 and 4).

At the same seminar, Schreyer submitted a report on the findings of an OECD “... questionnaire to countries to find out about priorities for future work on the CPI at the national and at the international level” (2005: 1). The main findings reported by selected OECD member countries in their responses to the questionnaire are highlighted in Appendix F.

Inflation rates of countries cannot be compared without the necessary circumspection. Country-specific issues, e.g. decisions about the inclusion or exclusion of owner-occupied housing cost in the index used to measure changes in price levels, or methods used to adjust for quality improvements, might distort comparisons. Cournède states for instance that “... only four of the 12 euro area countries include estimates of owner-occupied housing costs in the national consumer price indices and these four countries use three different methods. It proved therefore impossible to agree on and implement a measure for owner-occupied housing when the HICP was first introduced” (2005: 1; see also Konijn et al., 2002). The methodology used for the calculation of the CPI therefore differs between countries within the same economic union, and even between countries using one currency and monetary policy.

International initiatives to enhance the standardisation of the measurement of inflation culminated in the publication of *Consumer Price Indices: An ILO Manual*³⁵ (International Labour Organization, 2004). This manual contains “... detailed comprehensive information and explanations on compiling a consumer price index” (International Labour Organization, 2004: v). However, the recommendations of this manual are not uniformly applied by all countries.

³⁵ Although published by the International Labour Organization, other contributors to the manual are Eurostat, the IMF, the OECD, the United Nations Economic Commission for Europe and the World Bank.

3.5 Measurement of inflation in South Africa

In South Africa's case the rate of inflation is defined as changes in the CPI, which is measured by Statistics SA (see for instance Van der Walt, 1985). In countries such as South Africa which have adopted an inflation-targeting monetary policy, a clear distinction of responsibilities is required between an agency entrusted with the calculation of the rate of inflation and the central bank, entrusted with the responsibility of achieving the inflation target specified in terms of the inflation rate. Entrusting these responsibilities to one agency could cast serious doubt on the credibility of the inflation figures owing to a vested interest of such an agency to publish inflation figures aligned with the inflation target.

In addition to splitting responsibilities, an index suitable to use for the measurement of price changes reflecting inflation in South Africa should be selected. To this end Van der Walt (1985: 23) highlights production (or wholesale) price indicators (PPI), CPI and implicit national accounts deflators as indicators available for measuring inflation. The first two indices measure price levels of items included in the indices on a monthly basis. The deflator is derived by calculating ratios of current to constant prices of national accounting aggregates (Van der Walt, 1985: 23). The main disadvantages of using changes in the deflator for the measurement of inflation are that changes in the prices of certain commodities included in the deflator are not determined domestically, but fixed on international markets; the deflator reflects not only price changes, but also changes in the composition of output; it is available only periodically (typically on a quarterly basis) and with a time lag; and the deflator is subject to revision whenever national accounts data is revised (Van der Walt, 1985: 23). Owing to these shortcomings, changes in this deflator cannot be used to measure inflation.

The PPI measures the price level of commodities produced and sold at non-retail level in the manufacturing sector, foreign manufactured goods imported for domestic consumption and goods produced in other sectors of the economy. This index has limited application in as much as it does not include the prices of any services (Van der Walt, 1985: 23). Owing to its shortcomings, changes in this index cannot be used as a representative indicator of domestic price changes.

Changes in the CPI are accordingly the best instrument for measuring inflation. The CPI measures the prices of selected goods and services included in a “spending basket” of an average South African household. The main disadvantages of using changes in the CPI for purposes of measuring inflation, are that the index:

- does not cover all prices in the economy, as the prices of investment goods and certain goods and services produced by the government are excluded (Van der Walt, 1985: 24);
- can only take cognisance of the substitution of products for consumption purposes at the time of periodic revisions (Van der Walt, 1985: 24);
- frequently measures quality improvements simply as price increases (Van der Walt, 1985: 24);
- does not provide for purchasing patterns of any particular household, but for an “average household” that can hardly exist in practice (Central Statistical Service, 1987: 1);
- records the retail prices of the goods and services included in the index, implying that the index reflects the market price effect of changes in indirect taxes and subsidies (Du Toit, 1988; Van der Walt, 1985: 24); and
- differs in composition between countries, particularly in respect of the treatment of owner-occupied housing (see for instance Diewert, 2005: 5; or Cournède, 2005: 4).

The main advantages of using changes in the CPI as a measure of inflation is the reflection of actual prices, rather than derived prices. Despite the disadvantages mentioned above, this advantage, compared to the disadvantages of other possible instruments of measurement, implies that changes in the CPI is regarded as the most suitable instrument for the measurement of inflation in South Africa (Van der Walt, 1985: 24). In South Africa’s case, a weighted overall CPI is calculated, and changes in this index are regarded as the overall rate of inflation. The current basket used for measuring average expenditure was reviewed in 2000 and implemented in 2001 (Statistics SA, 2001), and the main components are highlighted in Table 3.1.

Table 3.1 Composition of overall CPI in metropolitan and other urban areas: selected weights, 2000

Item	Weight
Goods:	59,42
Food (included in goods)	23,02
Housing (included in goods)	20,70
Transport (included in goods)	13,72
Services	40,58
Medical care (included in services)	6,90

Source: Statistics SA, 2003

Rates of inflation are also calculated for different socio-economic groups and different regions in the country. To the extent in which the expenditure patterns of specific consumers differ from the average expenditure pattern, their rates of inflation will also differ from the average inflation rate (Rossouw, 2005: 296). Table 3.2 highlights the most important differences in spending weights between the “average” household (or overall CPI) and that of the very low (annual gross household income below R8 070 in 2000) and very high (annual gross household income above R56 001 in 2000) income groups. Owing to these differences, the annual inflation rate for the low income group for the period June 2000 to March 2005 amounted to 6,25 per cent, while it was 4,81 per cent for the high income group (see also Bhorat and Oosthuizen, 2005: 6).

On a regional basis inflation is calculated for each of the nine provinces, and these rates of inflation can differ considerably, owing to differences in the spending patterns of consumers in the different provinces. For example, large regional differences in inflation were recorded between the Free State and the Northern Cape. The annual average rate of increase in the Free State over the period June 2000 to March 2005 was 4,53 per cent, compared to an annual average increase of 5,76 per cent in the Northern Cape and an annual rate of inflation of 5,14 per cent nationally (Rossouw, 2005: 297).

Table 3.2 Selected spending weights in metropolitan and other urban areas in South Africa, 2000

Item	Overall CPI	Very low income	Very high income
Goods	59,42	83,88	53,97
Food	23,02	51,24	16,69
Housing	20,70	10,04	23,51
Transport	13,72	4,03	16,25
Services	40,58	16,12	46,08
Medical care	6,90	0,67	8,58

Source: Statistics SA, [S.a].

As in other countries, South Africa also makes periodic adjustments to the calculation of its CPI. At the time of the completion of this study, the South African CPI was based on the spending weights (or basket) of South African consumers as measured in 2000. At the time of the announcement of these weights in 2002, Statistics SA stated that “[t]he expenditure patterns of households change with time as their needs and buying preferences change. To ensure that the CPI gives an accurate and reliable reflection of price changes of goods and services purchased by the average household, it is necessary to update the consumer basket (weighting structure) from time to time” (2002). This includes a review of the various goods and services purchased by an average household and the calculated weights (relative importance) of the various goods and services used for the calculation of the CPI (Statistics SA, 2002).

Over the past 20-odd years (i.e. since 1985) the composition of the South African CPI has been revised every five years, initially by the Central Statistical Service (CSS), which was subsequently replaced by Statistics SA. Earlier the composition was reviewed less frequently, as

the revised consumer basket for 1985, introduced with effect from November 1987, replaced a basket that was compiled for 1975 (Central Statistical Service, 1987: 5). In announcing the rebasing of the consumer basket for 1985 spending patterns, the important point was made that the “ ... basket of goods and services is, to some extent, fictitious since provision must be made for the purchasing abilities and preferences of all households – for example, in the housing component, elements appear for the rental of a flat, as well as for ownership costs such as interest and assessment rates” (Central Statistical Service, 1987: 1).

The consumer basket also reflects the prices of goods and services purchased by an average South African household, with the word *purchased* used deliberately in the definition “ ... to distinguish those transactions from certain types of expenditure which do not represent the direct purchase of goods and services. The most important of these is income tax which is excluded ... since the amount of tax paid is not related to the quantity of government services used by a given family. Similar exclusions are life insurance premiums, pension fund contributions and the capital portion of mortgage bond repayments, all of which are forms of savings and investment” (Central Statistical Service, 1987: 2). At the same time the CPI was also amended to provide for publication according to income groups. The annual income “ ... of the lower income group was less than R8 000, that of the middle income group R8 001 to R19 999 and that of the higher income group R20 000 and more³⁶” (Central Statistical Service, 1987: 6). In addition, “ ... to make provision for possible geographic differences in spending preferences ... a consumer price index is calculated for each of the twelve main urban areas in the country” (Central Statistical Service, 1987: 7).

When the rebasing was announced in November 1987, it was found that a recalculation of the CPI for October 1987 on the basis of both the 1975 and 1985 consumer baskets caused a decline of 3,83 per cent in the index (Central Statistical Service, 1987: 4), implying that price levels of goods and services purchased by an average household were marginally overstated until October 1987 owing to the use of 1975 spending weights, rather than the 1985 weights. To account for

³⁶ Adjusted with changes in the CPI, the annual income of this group would have been more than R96 154 in 2000, while the high income group in terms of the 2000 rebasing of the CPI is regarded as households with an annual income exceeding R55 160, as a different approach for dividing households into income groups was used.

this difference an adjustment factor was used for one year to ensure continuity in the index (Central Statistical Service, 1987: 4).

In accordance with the cycle of revising the spending patterns of households and rebasing the CPI every five years from 1985, the Central Statistical Service (CSS) announced in October 1991 a revised consumption basket for 1990. For purposes of compiling this basket, a survey was undertaken on behalf of the CSS “ ... by the Human Science Research Council. The survey was undertaken in ... 12 urban areas ... [where] ... a sample of households was selected, for which expenditure patterns were determined” (Central Statistical Service, 1991: 2). Included for the first time in the consumer basket for purposes of calculating the CPI were spending in respect of TV decoders, CD players and toll road fees (Central Statistical Service, 1991: 2). The inclusion of these items confirms that periodic rebasing is required to ensure that ample cognisance is taken of consumers purchasing new products and services that were not available previously.

Similarly, the CSS announced on 27 February 1997 a new consumer basket based on the spending patterns of 1995 (Central Statistical Service, 1997). This reflected the results and findings of the “ ... quinquennial survey on the *Income and Expenditure of Households*. The results of this survey are also used to determine the relative importance (weight) of each item in the basket of goods and services purchased by an average household” (Central Statistical Service, 1997: 2). In the compilation of the spending patterns, “[t]he survey on the income and expenditure of households was undertaken by the CSS in October 1995 and covered 30 000 households throughout South Africa. Unlike the 1990 (and previous) surveys on the expenditure of households, which covered the 12 main metropolitan areas only, the 1995 survey covered all urban areas as well as non-urban (rural) areas” (Central Statistical Service, 1997: 2). As was the case five years earlier, certain purchases of households were included in the composition of the CPI for the first time. These inclusions included sectional title levies, spending on traditional healers (sangomas), cell-phone expenditure, Internet subscriptions, courier services, personal computers and software, and the payment of lobola and dowry (Central Statistical Service, 1997: 2).

During October 2002 Statistics SA announced the results of the next quinquennial survey to rebase the CPI to 2000 consumer spending patterns (Statistics SA, 2002: 2). The sample covered 30 000 households throughout South Africa in urban and non-urban areas and included respondents living in houses, townhouses, flats, hostels, informal type dwellings and traditional dwellings (Statistics SA, 2002: 2). For the first time expenditure on gambling and private security was included.

In terms of income, the survey for 2000 catered for five expenditure groups, and “[t]he boundaries of the expenditure group categories were obtained by calculating the quintiles (five equal groups) of the total number of households in South Africa and placing the break-point at the total expenditure of the top household (ranked according to expenditure) in each of the quintiles” (Statistics SA, 2002: 2). In terms of this distribution, the very low expenditure group with total annual household expenditure up to R8 070 in 2000, comprised 20 per cent of the population, but comprised only 1,39 per cent of the expenditure in terms of the rebased overall CPI of metropolitan and other urban areas in 2000. Conversely, the 20 per cent of households in the very high expenditure group with annual expenditure over R55 160 in 2000, comprised 68,41 per cent of the expenditure (Statistics SA, 2002: 3 and 4).

The most significant changes recorded in the relative importance of different goods and services as a result of the rebasing on 2000 spending patterns (highlighted in Table 3.3), are spending on food that increased from 19,48 per cent in 1995 to 23,02 per cent in 2000 and housing, with a decrease from 22,45 per cent to 20,70 per cent, as well as a decline in the percentage of income spent on clothing. Moreover, by 2002 when the rebasing was announced, the comparative CPIX-figures (CPIX denotes changes in CPI in metropolitan and other urban areas excluding changes in mortgage interest costs) for 1995 and 2000 were also published. Subsequent to the announcement in 2002 of the spending weights following the rebasing in 2000, it was announced on 30 May 2003 that a systematic error was made in the revised data in respect of the residential rent component in the CPI (Statistics SA, [S.a.]). As a result of this error, the value and the rate of growth of the residential rent component in the CPI were overestimated.

Table 3.3 Main components of CPI and CPIX in metropolitan and other urban areas, 1995 and 2000

Item	CPI 1995	CPI 2000	CPIX 1995	CPIX 2000
Commodities	57,34	59,42	65,71	66,24
Services	42,66	40,58	34,29	33,76
Food	19,48	23,02	21,92	25,66
Non-alcoholic beverages	0,82	1,13	0,92	1,26
Alcoholic beverages	1,17	1,52	1,32	1,70
Cigarettes, cigars and tobacco	1,04	1,21	1,17	1,35
Clothing and footwear	5,07	3,64	5,70	4,06
Housing	22,45	20,70	12,74	11,57
Fuel and power	3,54	3,84	3,98	4,28
Furniture and equipment	1,77	2,82	4,88	3,15
Household operation	4,87	4,68	5,48	5,22
Medical care and health expenses	5,81	6,90	6,54	7,70
Transport	13,65	13,72	15,36	15,30
Communication	3,21	2,86	3,61	3,19
Recreation and entertainment	2,18	3,04	2,45	3,39
Reading matter	0,69	0,36	0,78	0,40
Education	1,82	3,38	2,05	3,77
Personal care	3,08	3,92	3,47	4,37
Other goods and services	6,78	3,26	7,63	3,63

Source: Statistics SA, 2002

The impact of these inaccurate estimates on the annual inflation rate, measured as changes in the CPI for the historical metropolitan areas, was an overmeasurement increasing gradually from 0,2 of a percentage point in February 2002 to 2,3 percentage points in March 2003. The average impact of these data errors amounted to 0,9 percentage points for the period January 2002 to December 2002. In the short run Statistics SA, the agency responsible for the compilation of the

CPI, rectified the problem by using data from external sources to update residential rental information on a quarterly basis. The permanent solution introduced by Statistics SA was the implementation of special surveys to determine the rent of houses, flats and townhouses (Statistics SA, [S.a.]).

A rather similar incident occurred in 1991, when a mistake was made in the calculation of South Africa's PPI figures (Republic of South Africa, 1991; SA Reserve Bank, 1991: 10) after the rebasing for 1990. In this instance the mistake was detected after the release on 12 August 1991 of the PPI figures for May 1991. The necessary historic adjustments were made to the PPI figures and revised data were released on 28 August 1991 (Republic of South Africa, 1991). These incidents show that inflation data should not only be readjusted to reflect revised spending patterns over time, but should also be subjected to scrutiny to reveal timely any possible data errors. It is also reassuring to note that the adjustments were publicly announced and therefore subjected to public scrutiny, rather than to try and hide it from the public eye.

This brief review of adjustments to the measurement of price levels in South Africa over the past 22 years shows that periodic rebasing is indeed necessary to adjust the CPI for changes in spending habits and patterns, and for the inclusion of new products. Moreover, it also shows that the South African CPI includes goods and services purchased by an average consumer, but is not in the true sense of the word an accurate reflection in changes in cost of living: it is rather an indication of price levels facing an average household. Changes in the CPI therefore reflects average price changes facing an average household.

The Bureau of Market Research (BMR) at the University of South Africa until 2004 assessed periodically the spending habits (in cash and in kind) of different South African population groups³⁷ (Bureau of Market Research, 2000). The BMR completed such a study in 2000 and stated that “[t]he study calculates household expenditure on roughly 500 expenditure items (goods and services) in South Africa by language group and province for 2000” (Bureau of Market Research, 2000: 1). The study identified four language groups (Afrikaans, English,

³⁷ The survey results of the BMR are discussed in Chapter 6.

Nguni and Sotho) and one of its findings is that “[c]onsiderable differences occur in the expenditure patterns of the language groups” (Bureau of Market Research, 2000: 2).

Although the BMR study is not directly comparable with the South African CPI despite the fact that the research was done in the same year as the most-recent rebasing of the CPI, it should be noted that both the study and the CPI rebasing showed considerable differences in spending patterns between groups. Whereas the BMR found this for language groups, the rebasing of the CPI has shown the same tendency for different income groups. Appendix G compares the findings of the BMR in terms of actual spending and the CPI weights calculated by Statistics SA.

The comparison of the adjusted spending pattern used by the BMR and the weights used in the CPI, shows a large degree of convergence in respect of expenditure on food, transport and communication, accounting for 39,6 per cent of the weights used in the CPI. The biggest discrepancy in terms of percentage points is in respect to spending on housing and household operations, where definition problems (e.g. classification of electricity under housing, rather than as fuel and power) and reclassifications required for comparative purposes, might be the reasons for the discrepancies. Moreover, the analysis of the BMR represents to a larger extent than the CPI a cost-of-living index, as it includes non-purchased items such as income tax, savings, spending in kind and support of family members. It would not be possible to compile a CPI which takes cognisance of these items.

The items where a divergence of larger than 20 per cent is recorded, are:

- clothing, footwear and accessories, where the adjusted BMR spending is nearly 30 per cent higher;
- medical care, where the adjusted BMR spending is nearly 22 per cent lower;
- education, where the adjusted BMR spending is more than 30 per cent lower;
- entertainment, sport and recreation, where the adjusted BMR spending is some 70 per cent lower;
- furniture and household equipment, where the adjusted BMR spending is nearly 60 per cent higher;

- alcoholic beverages, where the adjusted BMR spending is some 90 per cent higher;
- cigarettes, cigars and tobacco, where where the adjusted BMR spending is some 95 per cent higher; and
- reading matter, where the adjusted BMR spending is about 50 per cent higher.

These trends serve to confirm that the weights used in the compilation of the CPI should indeed be revised regularly to account for possible changes in spending preferences. In this example, spending patterns differed even in respect of the same year, i.e. 2000. Such an adjustment is indeed done in South Africa every five years; a practice that should be continued in the interest of reporting accurately the price level and the rate of inflation.

This analysis of the major components of the South African CPI leads to two conclusions. First, the consumption basket is fictitious in as much as it provides for purchasing preferences of an “average household”. Such a household can hardly exist, as it would, for instance, utilise at the same time both owner-occupied and rental accommodation. Secondly, regular updates of spending baskets used in the composition of the CPI are a prerequisite for accurately measuring price levels and, therefore, price changes and inflation. This ensures that cognisance is taken in a timely fashion of changes in spending preferences and patterns, and the introduction of new consumer goods and services.

3.6 International experiences with inflation and implications for developing countries

The analysis in this chapter shows that no “single-best” approach for measuring inflation exists. Countries by and large use the techniques and data at their disposal to measure price changes in their economies. Inflation has been identified as a problem many years ago and has not been confined to any country or any group of countries, e.g. developed or developing countries. Developed and developing countries experienced a surge in inflation in the 1970s, after periods of moderate inflation following World War II. In years preceding World War II, inflation was viewed as a temporary problem, with prices moving back to pre-inflation levels during periods of deflation (Haslag, 1997: 19).

Table 3.4 Average inflation rates in developed and selected emerging economies, 1949 – 1953 to 1980 – 1982

	1949 – 1953	1954 – 1959	1960 – 1965	1966 – 1969	1970 – 1973	1974 – 1979	1980 – 1982
Industrialised economies	5,3	2,3	3,4	3,9	6,3	9,2	9,8
Developing countries	6,1	4,8	3,9	5,5	8,7	19,4	24,0
Underdeveloped countries	14,1	11,8	9,3	9,6	11,6	33,4	33,2
South Africa	5,4	2,4	2,1	3,0	6,3	11,8	14,6

Sources: De Wet, 1987; author's addition of South Africa

The reasons for sustained inflation after World War II were (i) a shortage of labour resulting in wage increases, and (ii) the continued application of demand management policies advocated by Keynes to end the high level of unemployment of the Great Depression during a period of full employment (De Wet, 1987: 3). Table 3.4 highlights inflation rates in different groups of countries and in South Africa for the period 1949 – 1953 to 1980 – 1982. The country classification used by De Wet (1987) is not compatible with the classification used in Table 3.5, highlighting inflation for the period 1961 – 1970 to 1991 – 2000.

The rate of increase in inflation abated in developed economies in the 1980s, but accelerated both in South Africa and in other emerging economies, as highlighted in Table 3.5. The two tables show that inflation in South Africa followed broadly the same trend as in industrialised economies (as identified by De Wet, 1987) or developed economies (as identified by Mokoena et al., 2004) until the end of the 1970s, but did not decline to the same degree as in those countries during the 1980s.

Table 3.5 Average inflation rates in developed and selected emerging economies, 1961 – 1970 to 1991 – 2000

	1961 – 1970	1971 – 1980	1981 – 1990	1991 – 2000
Developed economies	4,0	10,8	8,1	3,0
Selected emerging economies*	18,3	29,8	139,7	58,9
South Africa	2,8	10,6	15,4	9,0

* Argentina, Brazil, Bulgaria, Chile, Colombia, Czech Republic, Egypt, Hungary, India, Indonesia, Israel, Korea, Malaysia, Mexico, Pakistan, Peru, Phillipines, Poland, Russia, South Africa, Thailand, Turkey and Venezuela

Sources: Adapted from Mokoena et al., 2004; author's addition of South Africa

The surge in international inflation in the 1970s was caused to a large extent by the first oil price shock and inappropriate policies to deal with that shock, causing widespread increases in general price levels, while the Vietnam War also caused price pressures in the United States. In addition, the Bretton Woods system of fixed but adjustable exchange rates, in existence since World War II, collapsed in 1971 (Mishkin, 2004: 473; see also McAleese, 2004: 593). The Bretton Woods system was based on the convertibility of US dollars held by foreign governments and central banks into gold at a fixed rate of US\$35/ounce, implying that the dollar became the international reserve currency. The system survived for some 25 years despite a number of shortcomings, the most important of which were that (Mishkin, 2004: 473):

- countries experiencing difficulties in maintaining the value of their currencies against the US dollar owing to continued trade deficits were permitted to devalue their currencies, but those countries running consistent trade surpluses had no obligation to revalue their currencies; and
- the United States, as reserve currency country, could not devalue the US dollar even if it had continued trade deficits with the rest of the world.

During the 1960s the United States made attempts to reduce domestic unemployment by pursuing an inflationary monetary policy, resulting in trade deficits and an overvalued US dollar. As the surplus countries refused to revalue their currencies, the Bretton Woods system collapsed in 1971 and after unsuccessful attempts to reinstitute it, floating exchange rates were introduced in 1973 (Mishkin, 2004: 473; McAleese, 2004: 593).

An expansionary monetary policy, the collapse of the Bretton Woods system and the oil price shock of 1973 all contributed to the development of world-wide inflation in the 1970s. Gwartney et al. refer to inflation as “ ... the economic plague of the 1970s” (2000: 7). However, since 1979, particularly “ ... when Paul A. Volcker took the helm at the Federal Reserve, the mission of the central bank has been clear: to beat inflation down by repeated clubbings with the monetary policy truncheon” (Popper, 2002: 67). The appointment of Volcker followed on a period that Mishkin describes as follows: “ ... from 1965 through the 1970s, policymakers had little credibility as inflation-fighters – a well deserved reputation, as they pursued an accommodating policy to achieve high employment ... To wring inflation out of the system, the Federal Reserve under Chairman Paul Volcker put the economy through two back-to-back recessions ...” (2004: 655). Only after the second recession Volcker established credibility for the anti-inflation policies of the Board of Governors of the Federal Reserve System (Fed), a condition that still prevails.

Developed economies subsequently adopted a similar monetary policy approach and contained inflation successfully in the 1980s. Developing and emerging-market economies, including South Africa, did not adopt the same policy at the time. This exacerbated South Africa’s inflation problem, as explained in Chapter 5, until containing inflation again emerged as a monetary policy objective by 1989 (Stals, 1989: 10). Certain developing countries still experience problems in containing inflation. A case in point is Zimbabwe, where annual inflation accelerated to 585 per cent in 2005 (Banco de Moçambique, 2005; see also Coorey et al., 2007).

Since 1990 South Africa has succeeded in containing inflation by using orthodox, rather than structural, economic policies. At the time of the completion of this study, South Africa has successfully kept its CPIX rate of inflation within its target range of 3 to 6 per cent for a period of 43 months since September 2003³⁸. The question in respect of this policy success is naturally whether it was achieved at the expense of other policy goals such as reduced unemployment, as highlighted in Chapter 2. Developing countries are faced by the same challenge: containing inflation without negative consequences for economic growth, reductions in unemployment or the alleviation of poverty. Finding answers to this dilemma is, however, beyond the scope of this study.

International investors and credit-risk rating agencies (see for instance Mishkin, 2004 on such agencies) take cognisance of inflation figures in assessing country credit risk. Developing economies accordingly stand to gain from initiatives to standardise the measurement and international comparison of inflation. Developing economies should make every attempt within their limited economic means and resources to ensure the periodic rebasing of their inflation data. Lack of rebasing can lead to a situation where inflation is reported inaccurately by a large margin, which may solicit inappropriate advice on the conduct and implementation of macroeconomic policies. The publication of wrong inflation data, e.g. owing to a lack of timely rebasing, could also result in the implementation of inappropriate monetary policy by developing countries. This can be detrimental to international investment.

3.8 Conclusions

This chapter highlights differences in the understanding of the true or full meaning of the word inflation and different approaches to its measurement. Inflation is associated with the introduction of money into an economy in as much as it can take the form of debasing the currency by reducing the content of precious metal coins, devaluing the exchange rate or increasing liquidity in the economy without a commensurate increase in the production of goods and services for consumption.

³⁸ CPIX was 6,3 per cent in April 2007.

Despite the possible shortcomings in measuring inflation in terms of changes in the CPI highlighted in this chapter, this study broadly follows the approach suggested by Mishkin (2004) and by Van der Walt (1985) when considering inflation and the credibility of published inflation figures in South Africa: a rise in the general price level as measured in terms of changes in the CPI, although it should be borne in mind that it is not a true cost-of-living index.

The general conclusions to be drawn from this chapter are that:

- average price changes are often overstated, rather than understated;
- the use of different price indices (e.g. Laspeyres or Paasche) will result in differences in the measurement of price changes;
- regular revisions of the composition (weights) of the index used for measuring price levels are required to ensure that it continues to reflect average spending patterns of consumers;
- calculated rates of inflation should not be compared between countries without the necessary circumspection, as country-specific issues such as the treatment of owner-occupied housing costs in the index used to measure changes in price levels might distort comparisons;
- the consumption basket is fictitious in as much as it provides for purchasing preferences of an average household, which can hardly exist; and
- any statistical errors in the calculation of inflation should be subject to public scrutiny when rectified.

The composition of the index used to measure price levels, and therefore also price changes and inflation, should be updated periodically in an attempt to ensure accurate measurement of domestic price levels. The manual published by the International Labour Organization serves as international best practice for this purpose. However, country-specific issues, particularly in respect of owner-occupied housing, lead to differences in the composition of indices used to measure price increases. Countries should consider increased harmonisation of their indices used for measuring inflation with the published international guidelines. Harmonisation will enhance comparability of inflation figures between countries, which might eventually enhance world-wide credibility of inflation figures. In addition, it will contribute to economic development in as

much as international consistency in inflation measurement will help with the leveling of the playing field between developed and developing economies in the quest of the latter for international investment.

A number of factors contributed to a moderate acceleration of inflation internationally and in South Africa since World War II, and particularly during the 1960s and 1970s. This acceleration differed from previous experiences with inflation where price stability had again been achieved within a reasonable period of time, as rising prices became a permanent feature, rather than a temporary aberration. In the 1980s developed economies achieved success in containing inflation, but South Africa and other developing countries did not achieve the same success. South Africa achieved success in containing inflation only during the 1990s, after the introduction of a renewed focus on containing inflation in 1989, while some developing countries still suffer relatively high rates of inflation (see for instance Coorey et al., 2007; or Mokoena et al., 2004).

Developing countries should use resources to ensure that their rates of inflation remain an accurate indicator of price increases. Inaccurate measurement of inflation may result in the adoption of inappropriate macroeconomic and monetary policies. Developing countries accordingly stand to gain from initiatives to standardise the measurement and international comparison of inflation.

CHAPTER 4

THEORETICAL AND CONCEPTUAL FRAMEWORK: USING ANCHORS FOR MONETARY POLICY

4.1 Introduction

Countries generally adopt a measurement methodology for inflation commensurate with their particular needs and requirements, implying that inflation rates cannot be compared internationally without the necessary circumspection. However, despite the differences in measurement methodology, published inflation figures are used to ascertain and even compare the success of monetary policy between countries.

As highlighted in Chapter 2, macroeconomic and monetary policies can either be based on rules or discretion. This chapter deals with the theoretical debate over the use of rules (or anchors) to achieve the monetary policy objective of lower inflation. One such approach could be to make the central bank "... more independent from government and to charge it with the single responsibility of achieving and maintaining the price level" (Parkin, 1999: 809; see also Mishkin, 2004: 352 to 354). Arnone et al. state that central bank autonomy "... has indeed helped to keep inflation low. On average, a move from no autonomy to full autonomy increases the likelihood of maintaining low inflation by about 50 per cent" (2007: 21). De Wet confirms this view, stating that "... the more independent the central bank is ... [from the government] ... , the lower the inflation rate will be", citing a number of studies that had all confirmed that "... independence and inflation are highly negatively correlated" (2003: 799).

The use of the term *price stability*, implying relative price stability³⁹, rather than price level

³⁹ Relative price stability as used in this study has the meaning of prices increasing at a low average rate, e.g. average annual price increases of between zero and two per cent or in accordance with an inflation target. It is not used to imply that the relative prices of goods and services in relation to one another should not change. Even in an environment of price stability, changes of the latter nature are still necessary to ensure the reflection of changes in relative scarcity. This matter is also discussed in section 2.2.

stability, is today used in stating the objectives of central banks. This approach was preceded by the use of the terminology *financial stability* as an aim for the central bank in many countries. In this regard South Africa serves as a case in point. Between 2000 and 2004, the Bank's mission statement described its primary goal in the South African economic system as *the achievement and maintenance of financial stability*. From 2005 it was changed to read *the achievement and maintenance of price stability*. One of the main problems with financial stability as a mission statement is “... the absence of an adequate operational definition of financial stability ...” (Central Banking, 2006a: 1). In this study the terminology *relative price stability* is accordingly used to encompass also *price stability*⁴⁰ as used today by central bankers.

In the debate about central bank independence, Maxwell's question is “[w]hy would government politicians give up control over the economy (in terms of central bank independence), especially when economic performance influences political popularity?” (1997: 3). The conclusion is that “... politicians use central bank independence to try to signal their nation's creditworthiness to potential investors” (Maxwell, 1997: 4). Maxwell states that “[t]he main argument for central bank independence is improved economic performance” (1997: 12), while Epstein (2002) is of the view that the South African authorities have adopted policies such as the gradual relaxation of exchange control, financial liberalisation and control over public expenditure as attempts to improve the confidence of foreign investors in the country and to attract more foreign investment. To this end, he argues, the SA Reserve Bank and the Ministry of Finance conduct policies aimed at attracting foreign investment (Epstein, 2002).

In terms of conducting monetary policy based on rules, the ultimate policy aim is the achievement of *low inflation* or *relative price stability*, although Maxwell (1997) would probably argue that politicians would support these objectives only in as much as they improve the international creditworthiness of countries. Moreover, Maxwell (1997) reaches the conclusion that these policies by and large achieve their stated objectives in developing economies, whereas

⁴⁰ *Price stability* should not be confused with the goal of price level stability, which implies no movement in the level of prices over time.

Epstein (2002) reaches the conclusion that the policies adopted by South Africa did not succeed in employment creation or enhanced investment.

For purposes of this study, *low inflation* and *relative price stability* are taken to have the same meaning, not to be confused with an aim of *price stability* as an anchor for monetary policy, explained later in this chapter. Countries with a clear commitment to low inflation or relative price stability tend to use as intermediate targets one of a number of anchors, i.e. “... a nominal variable that monetary policymakers use to tie down the price level ...” (Mishkin, 2004: 487). Mishkin (2004: 489) identifies as alternative anchors exchange rate targeting, monetary targeting and inflation targeting and targeting changes in the nominal gross domestic product (GDP). As far back as 1968, Friedman stated that “[o]f the various alternative magnitudes that it ... [i.e. the monetary authority] ... can control, the most appealing guides for policy are exchange rates, the price level as defined by some index, and the quantity of a monetary total” (1968: 15). However, as explained in this chapter, other anchors (or targets) are also available for use by central banks. These are often described in the literature as *nominal* anchors, but as shown in this chapter, a *real* variable can also serve the purpose of an anchor for monetary policy.

This chapter analyses the use of rules-based monetary policy underpinned by an anchor for monetary policy and assesses the available anchors, as well as the monetary policy approach used in the United States, which Mishkin (2004: 510) refers to as a “just-do-it” policy. The approach followed by the Fed reminds somewhat of the eclectic monetary policy followed by the SA Reserve Bank in the late 1990s, discussed in a later chapter.

Section 4.2 deals with the advantages of an anchor for monetary policy. Sections 4.3 to 4.10 highlight the advantages and disadvantages of eight different nominal and real anchors for monetary policy⁴¹. The current monetary policy approach of the United States is explained in Section 4.11, as the largest economy in the world does not use any of the monetary policy

⁴¹ As all the anchors considered in this chapter have as a central aim low inflation, the possible use of an employment growth target as a monetary policy anchor, proposed by Epstein (2002), is not considered.

anchors discussed in this chapter. The implications of monetary policy anchors for developing economies are explained in Section 4.12. The conclusions follow in Section 4.13.

4.2 Advantages of an anchor for monetary policy⁴²

The preference for an inflation objective entrusted to an independent central bank, overriding any discretion in policy decisions, is supported by an analysis of time consistency (also referred to as time inconsistency) in monetary policy decision-making, thereby enhancing the credibility of the central bank. In this regard Walsh states that “... the three most important ingredients to a successful monetary policy are credibility, credibility, and credibility” (2003: 11). He adds that “... the empirical evidence supports the proposition that there are no quick and easy ways to gain credibility. Instead, it must be earned. Announcements not supported by consistent policy actions are not credible” (Walsh, 2003: 11). In advocating the use of controlling the quantity of a monetary total as an anchor for monetary policy, Friedman stated that “... it matters less which particular total is chosen than that one be chosen” (1968: 15), therefore clearly favouring monetary policy rules over policy discretion.

For a better explanation of the trade-off between rules and discretion in containing inflation, the Lucas supply curve could be considered. It is essentially the same as the expectations-augmented Phillips curve, with core inflation replaced by expected inflation (Romer, 2001: 272). In this model, output (y) is modeled as a function of the full employment level of output together with a weighted value of the difference between actual inflation and expected inflation (inflation gap):

$$y_t = y_{ft} + a(\Pi_t - \Pi_{t-1}^*)$$

Where

y_t = output

y_{ft} = full employment output

Π_t = inflation rate

Π_{t-1}^* = expectations at t-1 of inflation rate at t.

⁴² Except where stated otherwise, this section draws on Rossouw and Joubert, 2005b.

Conversely, the central bank's preference function, with utility being a function of actual output and inflation, can be written as:

$$z_t = y_t - b\Pi_t^2$$

Where z_t = the utility of the central bank.

This implies that the central bank's utility can be increased by either increasing output (y_t), or decreasing inflation (Π_t^2). In considering the two equations, there clearly exists an inherent tension for the central bank with regard to monetary policy implementation. For example, accelerating inflation will cause actual inflation to be higher than expected inflation and therefore increase output over the short run. However, owing to the negative relationship of inflation and utility, the central bank's utility might decrease at the same time.

This leads to the rule-versus-discretion debate in the implementation of monetary policy. This debate, which remains unsettled in literature and is still the source of some controversy, stems from the claim that policy will be dynamically consistent if determined by rules. A central bank (or government) without monetary policy discretion may, under rational expectations, be expected to make short-run optimal decisions every time it can. It therefore has nothing to gain from its opportunism, thereby producing (on average) better outcomes than a central bank with monetary policy discretion or a government with the ability to abandon temporarily its inflation target, as will be the case in New Zealand if its government ever elects to abandon temporarily the Policy Target Agreement (PTA) (Fischer, 1990: 1170; Reserve Bank of New Zealand, 2004; Mishkin, 2004: 488).

If the central bank is bound by policy rules within a framework of a singular goal (e.g. an inflation target of between 3 and 6 per cent in the case of South Africa), it is assumed that the public is aware of this framework and no change in output is expected as a result of a change in inflation. From the central bank's utility function it is concluded that the inflation rate preferred by the central bank will be equal to zero (or as close to zero as possible) or within the target range in a policy framework of inflation targeting, to make sure that no utility is lost. When the central

bank is left to act on its own discretion rather than to be entrusted with a singular goal, the resultant game theory (and particularly non-zero-sum games), based on the theory developed by Nash (Motta, 2004: 543 and 544; Parkin, 1999: 296; Shubik, 1955: 310), between the central bank and private economic agents shows that the two players would permanently be trying to outsmart each other with respect to what inflation levels are expected to be in the future.

To estimate actual inflation levels under a policy of discretion, it is necessary to consider simultaneously the Lucas supply curve and the preference function of the central bank. This implies that the central bank aims at maximising its utility, $z_t = y_t - b\Pi_t^2$, subject to the Lucas supply curve $y_t = y_{ft} + a(\Pi_t - \Pi_{t-1}^*)$. Therefore by substituting y_t :

$$z_t = y_{ft} + a(\Pi_t - \Pi_{t-1}^*) - b\Pi_t^2$$

From here the first order conditions (FOC):

$$\frac{\sigma Z_t}{\sigma \Pi_t} = a - 2b\Pi_t = 0$$

therefore $\Pi_t = \frac{a}{2b}$, with

a = marginal benefit (MB)

b = marginal cost (MC).

This means that if the benefit of creating inflation is high, inflation will be high and, on the contrary, if the cost of creating inflation is high, inflation will be low. In South Africa's case, the marginal cost of inflation is higher than the marginal benefit, implying that b will be higher and the SA Reserve Bank will therefore prefer inflation to be lower.

Kydland and Prescott (1977) observe that if expected inflation is low, so that the marginal cost of additional inflation is low, policymakers will pursue expansionary policies to push output temporarily above its normal level. However, if the public has knowledge that policymakers have this incentive, low inflation will in fact not be expected (De Wet, 2003: 796). The end

result is that policymakers' ability to pursue discretionary policy results in inflation without any increase in output (Romer, 2001: 479). Depending on the actions of the central bank and the expectations of private economic agents, the possible outcomes of game theory highlighted in Table 4.1 can evolve.

Table 4.1 Possible outcomes of game theory between a central bank and private economic agents

	Private economic agents	Private economic agents
	$\Pi_{t-1}^* = 0$	$\Pi_{t-1}^* = \frac{a}{2b}$
Central bank	$\Pi_t = 0$ $y_t = y_{ft}$ (good; no Δ in y_t)	$y_t < y_{ft}$ (can lead to recession)
Central bank	$\Pi_t = \frac{a}{2b}$ $y_t > y_{ft}$ (promotes \uparrow inflation)	$y_t = y_{ft}$ (good; no Δ in y_t)

Source: Based on De Wet, 2003 and Mishkin, 2004, and used in Rossouw and Joubert, 2005b

This table highlights the actions of the central bank in the horizontal rows, and the actions of private economic agents in the columns. If the central bank has discretion to select a target and announces that targeted inflation will be zero ($\Pi_t = 0$), the level of inflation (Π_{t-1}^*) that private economic agents will expect, depends on whether the announcement is credible or not. Private economic agents will, however, probably doubt the announcement because they know that under discretion the central bank will usually set a target higher than zero. Therefore private economic agents will set their expectations higher than zero ($\Pi_{t-1}^* = \frac{a}{2b}$).

From this the following will occur:

$$y_t = y_{ft} + a(\Pi_t - \Pi_{t-1}^*)$$

$$\text{with } \Pi_t = 0 \text{ and } \Pi_{t-1}^* = \frac{a}{2b},$$

$$\therefore y_t = y_{ft} + a\left(0 - \frac{a}{2b}\right)$$

$$\therefore y_t = y_{ft} - \frac{a^2}{2b}$$

$$\therefore y_t \downarrow$$

which is likely to lead to a drop in output, growth lower than potential growth or even a recession in the economy.

The Barro-Gordon model (Barro and Gordon, 1983a; see also Barro and Gordon, 1983b) considers a similar analysis. This model considers monetary policy under conditions where private economic agents believe for a particular reason that the policy will not be implemented (Forder, 2004: 415). This model tests the credibility (in this context also referred to as reputation) of the central bank. The Barro-Gordon model focuses “... attention on what can be done outside the normal run of things in order to induce the private sector to believe that policy will be set to achieve price stability. If the private sector can be made to believe this, policy will be improved because, although unemployment will remain above its optimal level, inflation will not” (Forder, 2004: 416).

This situation can be avoided by scrapping discretionary policy and adopting an explicit target for monetary policy based on rules to be pursued by the central bank, which will ensure an optimal situation if the target is realistically achievable. This approach is preferred by Mishkin, who states that “... the Fed’s policy regime ... does not have a nominal anchor and is much less transparent ... ” (2004: 510). For this purpose any one of a number of explicit anchors for monetary policy can be targeted for policy purposes, as is explained in further sections of this chapter, although countries tend to choose a target most suited for their specific circumstances, as each target has advantages and disadvantages.

4.3 Precious metal standard

The oldest example of an anchor for monetary policy is a precious metal standard, e.g. a gold standard⁴³ as used by South Africa until 1932. Such a policy requires that the value of the currency should be fixed in terms of a precious metal, e.g. gold, and also implies that banknotes can be exchanged for gold at the fixed price. The price of the precious metal should of course be fixed for this method of targeting to be successful. South Africa's experience with a gold standard, and particularly problems encountered in the period running up to its final abolition in 1932, is described in Chapter 5.

Advantages of a precious metal standard

The first advantage is a clear commitment to the maintenance of a constant price ratio between the currency of a country following this policy and the price of the selected precious metal. This approach leaves no room for any monetary policy discretion.

As the relevant government, rather than the central bank, normally sets the price ratio between the currency and the selected precious metal used as anchor for the system, it shares responsibility for its achievement. As the government is sharing the responsibility for its achievement, it should therefore adjust its own policies to conform to the achievement of the target.

⁴³ McAleese states that the UK was the first country to introduce a gold standard in 1819 (2004: 590). To the contrary, Flandreau (2006: 9) states that the convertibility of banknotes for gold in Britain (the UK was formally established only by means of legislation in 1800) was merely suspended between 1797 and 1821. The suspension of the gold standard in 1797 “... had not been motivated by a credibility problem. The directors of the Bank ... [of England] ... had secured it as a preemptive measure in a period of military conflict with France” (Flandreau, 2006: 10).

Disadvantages of a precious metal standard

The main disadvantage of the use of any precious metal as monetary policy anchor is that it leaves no discretion in adjusting policy.

Secondly, precious metal prices are no longer fixed, as was the case when a gold standard enjoyed broad international support, i.e. until 1931 in the UK or 1932 in South Africa. No precious metal can therefore any longer be used as a nominal anchor for such a system.

Lastly, adherence to this policy approach under conditions of variable precious metal prices might create arbitrage opportunities, as was the case in South Africa in 1931 and 1932, before South Africa finally left the gold standard.

4.4 Exchange rate target

The targeting of an exchange rate can take many different forms, but in recent years such a policy implies the fixing of the exchange rate of one country to that of a large neighbouring or trading-partner country with a history of or commitment to low inflation or relative price stability.

One example of the application of such a policy is the Common Monetary Area (CMA), comprising the Republic of South Africa, Lesotho, Namibia and Swaziland (Metzger, 2004). Although member countries have their own currencies, these currencies are fixed at par to the South African rand and these countries also apply similar exchange controls, implying that capital flows freely between the CMA countries (Rossouw, 2006a: 249). The South African rand serves as anchor for the currencies of the CMA owing to the dominant role of the South African economy in the CMA. South Africa's GDP *per capita* is, for instance, 1,5 times that of Namibia and nearly six times larger than that of Lesotho (Masson and Pattillo, 2005: 67). In addition, South Africa's GDP comprised some 95 per cent of the GDP of the CMA by 2002 (ISS, [S.a.]).

Responsibility for monetary policy decisions in South Africa has been entrusted to the Monetary Policy Committee (MPC) of the SA Reserve Bank, chaired by the Governor and comprising officials of the Bank, but discussions on monetary policy take place between CMA member countries in as much as “[t]he Common Monetary Area Commission meets prior to the SARB’s Monetary Policy Committee, which is responsible for ... interest rates. Each member country sends a representative and advisors to the Common Monetary Area Commission, in which the different interests of the member countries in the formulation and implementation of monetary and foreign exchange policies are to be reconciled via a consultation mechanism” (Metzger, 2004; see also Bank for International Settlements, 2003: 136).

South Africa follows a policy of inflation targeting, announced for the first time in February 2000 by the South African Minister of Finance (South Africa, 2000). In terms of such a policy framework the central bank has the autonomy to adjust monetary policy, but does not have goal independence. As South Africa effectively sets monetary policy for the CMA and accepts the *de facto*, although not the *de jure*, role of central bank for the CMA, it implies in practice that Lesotho, Namibia and Swaziland indirectly follow an inflation targeting policy, with the concomitant advantages of such a policy. Inflation convergence between the CMA countries will therefore follow as a matter of course. Moreover, it implies that any country nominally following an exchange rate-targeting policy regime will implicitly be following another policy, i.e. that followed by the country in respect of which the exchange rate is targeted.

A recent example of very successful exchange rate targeting was applied by the Dutch central bank in the period leading to the introduction of a monetary union and a single currency in Europe on 1 January 2002. The Dutch guilder was pegged to the German mark and Dutch monetary policy was used to protect the peg between the two currencies. Given the high degree of international trade between the Netherlands and Germany, together with the German Bundesbank’s reputation and track record in containing inflation at the time (see for instance Weber, 2006), the Dutch economy reaped considerable benefits in the form of low inflation and relative price stability that also prevailed in Germany. Exchange rate targeting has also been used successfully by emerging economies to contain inflation (Mishkin, 2004: 490).

Alternatives to exchange rate targeting are dollarisation and the use of currency boards. Dollarisation implies, in principle, adopting as a domestic currency the stable currency of another country, although it tends to be the US dollar in practice, hence the reference to *dollarisation* (Saville et al., 2005: 681). This is confirmed by Wessels, who defines dollarisation as “ ... national economic agents ... [using] ... a foreign currency as legal tender parallel to or instead of their local currency” (2004: 325). Wessels distinguishes between official dollarisation, implying that a country “ ... has relinquished its own independent monetary policy ... ” (2004: 326) and unofficial or *de facto* dollarisation, implying the widespread use of a second alternative currency without official sanctioning (Wessels, 2004: 327).

The use of a currency board implies an arrangement in terms of which the domestic currency issued by the issuing agency, known as a currency board, is backed fully by the holding of another (reserve) currency by the issuing agency, with the clear understanding that the domestic currency will be exchanged freely for the reserve currency. An example of such an arrangement is the currency board of St. Helena, an island in the Atlantic Ocean. This currency board, established in 1976, issues St. Helena pounds covered fully by its holding of British pounds. Hanke and Sekerke (2003: 80 and 81) reach the conclusion that the currency board serves the interests of St. Helena better than the use of foreign currency.

Responsibility for setting and adjusting the explicit exchange rate target to be achieved by the central bank through adjustments in monetary policy is normally shared between the government and the central bank (or currency board) of a country following such a policy.

Advantages of exchange rate targeting

The first advantage of exchange rate targeting is that it is easily understood by the media and the general public, owing to the basic nature of this approach: financial markets report regularly on the success of this policy as the prevailing level of the exchange rate receives regular media coverage.

A second advantage of a policy of exchange rate targeting is the direct contribution of “ ... keeping inflation under control by tying the inflation rate for internationally traded goods to that found in the anchor country” (Mishkin, 2004: 489).

Thirdly, as long as market participants regard the target as credible and expect the monetary authority to adhere to the target and set monetary policy accordingly, the expected rate of inflation in the targeting country will remain anchored in the inflation rate of the targeted currency, as is the case in the CMA region. This implies the removal of any time consistency problems in the conduct of monetary policy.

Lastly, an exchange rate target has the advantage that it is set by the monetary authority, which includes the government of a particular country. To this end the government shares joint responsibility for the achievement of the target and cannot conduct policies that will put into jeopardy its achievement. It also places accountability for the target and the concurrence of constituents with the target squarely in the political arena, whereas its achievement through the conduct of monetary policy by the central bank is outside the political arena.

Disadvantages of exchange rate targeting

As is unfortunately the case with most choices, a decision to use an exchange rate target as a nominal anchor for monetary policy does not come without possible disadvantages. A first problem is the increased risk of speculation against the currency by market participants taking a view that the central bank will not be able to buy or sell sufficient quantities of foreign exchange to protect the peg at the chosen level. The best-known example of such speculation is the initial participation of the UK in the European Monetary System (EMS). After joining the EMS in October 1990, speculative pressures built against the external value of the pound sterling in September 1992. On 16 September (also known as Black Wednesday) the Bank of England stopped intervening owing to mounting foreign exchange losses (Central Banking, 2002: 28) and abandoned the exchange rate target.

A second disadvantage of this policy is the loss of the benefits of exchange rate signalling owing to fixing the exchange rate. If a country pursues unsound monetary policy, one result might be an adjustment in the exchange rate owing to market forces. However, by its very nature this system will protect the targeting country (at least for an initial period) from such an adjustment. This leads to a related problem: the loss of flexibility or autonomy in adjusting monetary policy to take cognisance of domestic economic conditions. This can be described as losing monetary autonomy to another country, i.e. the one whose exchange rate is targeted (International Monetary Fund, 2005: 166).

This disadvantage is clear in respect of the CMA arrangements. Metzger mentions that “[i]n Namibia, criticisms have increasingly been raised against the dominance of South Africa in designing monetary policy for the whole ... [CMA] ... region. These voices charge that since independence, Namibia has never had the opportunity to influence South African monetary policy, and they call for the democratisation of the CMA via the establishment of a common central bank for the CMA” (2004). At the ordinary general meeting of shareholders of the SA Reserve Bank on 24 August 2005, the Governor stated that the Bank “... participated in a study outlining the costs and benefits of the creation of a common central bank for Lesotho, Namibia, Swaziland and South Africa. The decisions in this regard will be taken by the political leaders of these countries” (Mboweni, 2005a; see also Masson and Patillo, 2005: 73).

The next disadvantage of an exchange rate target is that “... the burden of achieving the proper real exchange rate falls entirely on the level of domestic prices, and this is particularly costly in terms of output when prices are sticky because then it is output that must adjust first” (International Monetary Fund, 2005: 166).

In addition, an exchange rate target forces the central bank to use monetary policy to keep the exchange rate on or within the target range. With such a goal in mind, domestic economic considerations will take second place in the application of monetary policy. The result could be large swings in domestic economic conditions, albeit with a stable exchange rate. Friedman

refers to this shortcoming of an exchange rate target as “[i]t might be worth requiring the bulk of the economy to adjust to the tiny percentage consisting of foreign trade. If that would guarantee freedom from monetary irresponsibility ... [rather] ... let the market, through floating exchange rates, adjust to world conditions the 5 per cent or so of our resources devoted to international trade while reserving monetary policy to promote the effective use of the 95 per cent” (1968: 15).

A last possible problem of this approach is that the targeting country will not be able to conduct monetary policy independently when required (see for instance Saville et al., 2005), as explained above in respect of the CMA. Moreover, if the country in respect of which the exchange rate is targeted, adopts another monetary policy approach, this becomes the implicit policy approach of the targeting country.

A unique problem of dollarisation is that the central bank of a country adopting the US dollar as currency loses seigniorage⁴⁴ as a source of income (Saville et al., 2005: 682). The United States has not yet entered into any seigniorage sharing agreements with countries that have dollarised. The implication is that “ ... dollarisation ... [by other countries] ... represent a windfall gain for the United States” (Vernengo, 2006).

4.5 Direct control

Direct control is an alternative nominal anchor for monetary policy, using changes in monetary aggregates as intermediate target for monetary policy aiming at low inflation or relative price stability. The origins of the rationing of credit as a means of conducting monetary policy can be found as far back as the end of the eighteenth century, when limits on central bank credit were imposed for the first time by the Bank of England (De Kock, 1974: 237). However, such a policy requires for its effective use, in the words of De Kock, “ ... either a fully planned and regimented economy ... or at least a very large measure of general economic control ... ” (1974: 241). A

⁴⁴ Seigniorage as a form of income arises because banknotes are worth more than their printing costs (see for instance Cohen, 2002; Saville et al., 2005; or Vernengo, 2006). As central banks pay less in printing costs for banknotes than their issue value, they earn interest (known as seigniorage) on the assets held as collateral for banknotes in circulation.

number of developed and developing countries (e.g. Mexico, New Zealand, The Netherlands, South Africa, Switzerland, UK and United States) adopted on occasion, particularly in the 1960s, direct quantitative controls over bank credit and/or ceilings on the extension of bank credit and/or related direct control measures (e.g. deposit rate control) as means of conducting monetary policy and in order to contain inflationary pressures in their economies (Board of Governors, 1974: 83 and 89; De Kock, 1974: 240 to 242).

The SA Reserve Bank used direct control measures in one form or another from 1965 to 1980 to control bank credit extension to the private sector (Republiek van Suid-Afrika, 1985: A5). This system of direct quantitative control was supported by a comprehensive system of exchange control (SA Reserve Bank, 2005a) over residents (and on occasion also over non-residents) adopted by South Africa in 1961. Residents were not allowed to invest capital abroad without permission of the exchange control authorities, and such permission was not readily granted (SA Reserve Bank, 2005a).

Exchange controls exposed residents to domestic inflation despite its eroding effect on the capital value of certain classes of domestic assets and investments, particularly bank deposits. Without exchange control the reaction of domestic investors to inflation would have been to revert to foreign investments with a concomitant demand for foreign currency. This outflow of capital would have left the SA Reserve Bank no choice but to contain domestic inflation to a level commensurable with the levels of inflation in industrialised countries by the implementation of sound monetary policy supported by real interest rates at appropriate levels. Exchange control, at least over residents, was therefore a precondition for direct controls in the midst of inappropriate monetary policy and sustained high inflation. This observation about exchange control can, however, be applied generally to any form of unsound monetary policy, and not only to a system of direct control.

To the extent that this comprehensive control system can successfully limit overall credit extension in the economy, it can, at least in theory, succeed in containing inflation. However, as

shown in a next chapter, in the case of South Africa the adoption of this policy did not achieve the goal of low inflation or relative price stability.

Advantages of direct control

The main advantage of a system of direct control is that it gives the central bank immediate and complete control of credit creation by registered banks in the domestic economy. To the extent that the central bank can apply effectively such powers, it can control monetary expansion and the demand for money in the economy.

The second advantage is that a system of direct control is underpinned by extensive reporting to the central bank by registered banks of all their credit extension and deposit-taking activities in the domestic economy. This ensures immediate access to information about money and capital-market activities of banks.

The third advantage of a policy of credit control is the notion that it can be used for credit rationing or directing credit extension for “good use” in the economy. In this respect De Kock (1974: 245) mentions powers of central banks under such a system to:

- determine the policy in relation to advances to be followed by banks;
- give directions to the purpose for which advances may or may not be made by banks; and
- ensure that all the credit resources available in the country are put to best use.

Direct control measures have a further advantage in that the government of a particular country shares joint responsibility for the achievement of the target and cannot conduct policies that will put into jeopardy its achievement.

The last advantage (albeit limited to those individuals or institutions successful in obtaining credit despite credit ceilings) is a generally lower structure of interest rates than would otherwise be prevailing in the economy.

Disadvantages of direct control

The main disadvantages of direct control measures, particularly in a South African context, were discussed in detail by the De Kock Commission (Republiek van Suid-Afrika, 1985). The first disadvantage is that the system results in disintermediation, and therefore fails to achieve its primary objective: a limitation of the demand for credit (Rossouw, 2005: 293).

The second disadvantage is that the system must be supported by general economic controls, e.g. exchange controls over foreign lending to prevent lending from abroad in instances where domestic lenders cannot raise capital owing to the system of domestic controls.

The third disadvantage of the system is that “... restrictions of bank credit have usually been applied only to the private sector, whereas it has frequently been the excessive spending and borrowing of the public sector that has been the main cause of the over-expansion and other maladjustments of the economy” (De Kock, 1974: 244). Whereas the government is nominally party to this agreement, it can in practice apply fiscal policy not aligned to a system of direct controls.

Lastly, the application of a system of direct control results in a classical insider/outsider situation. Individuals and private-sector enterprises that manage to borrow under this system pay lower rates than under a market-oriented system; those members of society who cannot raise finance cannot borrow even if they would have been prepared to pay a premium above market rates for borrowing.

4.6 Money supply targeting

A money-supply target uses changes in growth of one monetary aggregate as an intermediate target for monetary policy aiming at low inflation or relative price stability. In many developed economies the adoption of such targets co-incided with the demise of the Bretton Woods system of fixed but adjustable exchange rates. Friedman stated that “a monetary tool is the best currently

available immediate guide or criterion for monetary policy” (1968: 15). Monetary targeting is based on the quantity theory of money, $MV = PQ$, with M = money supply, V = velocity, P = prices and Q = quantity. If V remains stable in this equation, any change in M will impact on nominal PQ , implying that control over its rate of growth will also ensure control over nominal GDP, where $GDP = PQ$ and, therefore, also control over price changes.

Responsibility for setting the explicit monetary target on an annual basis, to be achieved through adjustments in monetary policy, is normally entrusted to the central bank. In terms of such a policy, the central bank announces annually “... a target every year for the growth of a monetary aggregate on the assumption that controlling the growth of money gives control of inflation” (International Monetary Fund, 2005: 164). In this sense a monetary target tends to be viewed as “the central bank’s target”, with the government exonerating itself of responsibility for its achievement.

Advantages of monetary targeting

The first advantage of monetary targeting is that data on money and money supply growth for any period are usually available without any major time lag. This availability of data provides early information on the outlook for inflation (International Monetary Fund, 2005: 164).

The next advantage is that the nominal money supply may be more directly controllable by the central bank than inflation, and its tight control also prevents the monetisation of government debt (International Monetary Fund, 2005: 164).

The third advantage is that a policy based on monetary targets typically involves little analytical effort. The only requirements are “... yearly assumptions on trend real growth, trend money velocity and the money base multiplier” (International Monetary Fund, 2005: 164).

The last advantage is the flexibility of the central bank within this framework to adjust policy to take cognisance of domestic economic developments. Moreover, success in applying the policy can be ascertained on each occasion that monetary aggregates are published.

Disadvantages of monetary targeting

The main disadvantage of monetary targeting is that a stable relationship between any monetary aggregate used for targeting purposes and nominal GDP does not always exist in either the short or the long run. In particular, growing international financial integration weakened the required link, implying that the targeting of monetary aggregates has been abandoned increasingly since the late 1980s (Rossouw, 2005: 294). In addition, money targeting is related to the assumption that central banks have full control of the nominal money supply (International Monetary Fund, 2005: 164).

The second disadvantage of money targets is the difficulty of anchoring “... inflation expectations because money targets introduce a second numerical target to the ultimate target of policy, obscuring the task of the central bank and making it harder to monitor its performance” (International Monetary Fund, 2005: 164).

The last disadvantage has bearing on the responsibility for setting the target. To the extent in which the government might view an explicit monetary target as “the central bank’s target”, it might pursue policies not supportive of the achievement of the target. A monetary target has the disadvantage that it is mainly set by the central bank of a country. To this end the government has little responsibility for the achievement of the target and can attempt to conduct policies that will put into jeopardy its achievement. It also implies that the electorate cannot express its displeasure with the target, as the government can hardly be held accountable or responsible for a target it did not set in the first instance. This has particular relevance owing to the practice that central bank governors should have security of tenure once appointed, as security of tenure allows them the opportunity to conduct monetary policy without subjectivity in the interest of the whole country.

South Africa and the SA Reserve Bank serve as a case in point. The appointments of the Governor and deputy governors of the SA Reserve Bank are governed by Section 4 of the SA Reserve Bank Act, No 90 of 1989, as amended, and this Act does not make provision for their dismissal during their five-year periods of appointment. The implication is that the SA Reserve Bank Act would have to be changed if it is considered necessary to dismiss the Governor or any one of the deputy governors prior to the expiry date of an appointment (Rossouw, 2004: 1101), or such a continued appointment will have to be challenged in a court of law, therefore subjecting dismissal to public scrutiny. This was the case in Canada in the early 1960s, when an attempt was made to remove Coyne as Governor of the central bank before the expiry of his term of office. On 20 June 1961 the Canadian Minister of Finance introduced a bill in Parliament to declare vacant the position of the Governor of the central bank. The House of Commons passed the bill, but, after testimony by Coyne, the Senate defeated the bill. Only after the defeat of the bill did Coyne resign, thereby allowing public debate on his position (Bank of Canada, 1999).

The conclusion is that an anchor or target for monetary policy set by the central bank might result in a situation where the government attempts to limit central bank autonomy when it does not support monetary policy decisions aimed at achieving the target.

4.7 Price stability target

The targeting of price stability (sometimes also referred to as price level stability) involves setting as a target a specific level for a price index comprising a basket of goods and services, e.g. the CPI. This approach therefore differs from the targeting of the price of one good as was the case with gold or silver standards, used earlier as monetary standards (Joint Economic Committee, 2004: 2). Under a policy of targeting price stability, the central bank will try to create more or less money in such a way that the basket always retains a constant (or stable) price level close to the original level at which it was targeted. If the price of the basket rises owing to inflation, a price level target as anchor for monetary policy implies that the central bank commits

itself to reducing the price of the basket to its original level, which may involve deflation (Joint Economic Committee, 2004: 2; see also Gwartney et al., 2000: 12).

A price stability target can be set by either the central bank, by government, or jointly by the central bank and the government. If one of the latter two approaches are followed, it implies that the government is committed to the target and should set and adjust its policies accordingly.

Advantages of price stability targeting

The first advantage of a price stability target is that it serves as a clear commitment to stable prices and hence zero inflation. Secondly, it leaves no room for ambiguity about the future course of monetary policy or the application of such policy by the central bank, as it does not allow discretion in policy application.

Thirdly, to the extent that the government sets or participates in setting the price stability target, the government shares joint responsibility for its achievement, thereby obliging the government to adjust its policies in line with the achievement of the target.

Disadvantages of price stability targeting

The main disadvantage of price stability targeting is that the central bank has very little (if any) flexibility in setting monetary policy. This lack of flexibility may force the implementation of monetary policy measures on the central bank that will result in deflation after price level increases, as such an approach would be the only way of keeping prices stable over a period of time. However, such deflation “... might endanger the financial system and precipitate an economic contraction” (Bernanke et al., 1999: 289).

Once in deflation, the central bank might experience great difficulty reinflating the economy to such an extent that the price level returns to its original level, i.e. the level before the initial price

increases and the subsequent price declines. Targeting price stability might have as an unforeseen consequence continued deflation, i.e. continued declining prices.

4.8 Targeting nominal GDP

As with targeting price stability, targeting nominal GDP is close to inflation targeting as a monetary policy approach. The targeting of nominal GDP was first proposed by Tobin (Parkin, 1999: 805). Adopting such a target implies that the central bank should increase interest rates if nominal GDP increases above the target growth rate and should adjust rates downward if nominal GDP declines below the targeted rate.

A nominal GDP target implies that the authorities should announce publicly an estimate of potential, nominal and real GDP growth (Bernanke et al., 1999: 306), as it serves as the basis for targeting the nominal (i.e. the real GDP adjusted for inflation) level of the GDP. This implies that a GDP target puts some weight on output as well as on prices in the implementation of monetary policy. A decline in projected real GDP growth would require an easing of monetary policy, with the central bank introducing the necessary policy adjustment.

In the analysis of the advantages and disadvantages of the targeting of nominal GDP, it should be mentioned that no countries or central banks have considered seriously the introduction of a nominal GDP target (Bernanke et al., 1999: 307).

Advantages of a nominal GDP target

As the authorities, including the government, have to announce publicly their estimates of potential, real and nominal GDP for targeting purposes, the first advantage is that the government shares co-responsibility for the achievement of the target. The government can accordingly not follow policies that will not be conducive to the achievement of the target.

Secondly, this policy places emphasis on both output and prices in the implementation of monetary policy. A decline in the projected real output would imply an increase in inflation and therefore an easing of monetary policy, thereby requiring the central bank to reconsider its policy stance.

Disadvantages of targeting nominal GDP

The first disadvantage of a policy of targeting nominal GDP growth is that imprecise estimates of potential GDP growth would feed into imprecise targets for nominal GDP growth. Moreover, if the nominal target is set too high as a result of overestimating potential real growth, it might lead to the introduction of inflation into the economy.

Secondly, changes in nominal GDP are reported infrequently (typically quarterly) and are often the subject of *ex post* revisions. It might therefore be difficult to ascertain the policy stance or consider timely adjustments to the policy to ensure achievement of the target.

4.9 Targeting real interest rates

As in the case of targeting price stability, targeting real interest rates shows some links to the targeting of inflation. The use of this policy implies that the central bank sets interest rates at some predetermined real margin above the rate of inflation. For a closed economy, Smithin states that “... the most sensible policy advice to be given to central banks concerned with growth and unemployment outcomes is that they should aim at a cheap money policy in the sense of low (but still positive) real interest rates. They should follow a real interest rate rule, rather than a monetary growth rule or an inflation rate rule” (2002: 26 and 27).

A policy approach showing some elements of a real interest rate target was announced in Chile on 26 July 2001 and introduced from 9 August 2001 (Banco Central de Chile, 2001). In Chile’s case this policy approach was introduced in addition to its inflation target (Végh, 2002: 152). When this approach was introduced, the Chilean central bank “... set the nominal annual interest

rate at 6,5 per cent, corresponding to the current monetary policy rate of UF⁴⁵ plus 3,5 per cent. This value was established on the grounds of a real interest rate target of 3,5 per cent and expected inflation of 3,0 per cent, which is at the centre of the inflationary target range” (Banco Central de Chile, 2001).

Advantages of a real interest rate target

The main advantage of a real interest rate target is the relative ease of communication that is required to support the policy regime. This study reconfirms the importance of communication to support a monetary policy based on anchors (see for instance also Woolford, 2006: 43 and 44 in this regard). In terms of a simple application of a real interest rate target, the public can merely be informed that rates will be kept at a predetermined margin above the rate of inflation.

The second advantage is that variations in the rate of inflation translate directly into variations in the nominal interest rate (see for instance Quiggin, 1997: 179 and 180). The implication, according to Quiggin, is that “... the objective of stabilising real interest rates is equivalent to the objective of eliminating unanticipated inflation” (1997: 180).

A third advantage is that the successful targeting of real interest rates can ensure periods of relative interest rate stability once the public accepts the credibility of such a policy. Quiggin states that “[d]uring periods of price stability and political stability in the nineteenth century, real interest rates of around 3 per cent prevailed for long periods” (1997: 185).

Disadvantages of targeting real interest rates

As is the case with other monetary policy anchors, a policy of real interest rate targets also brings with it certain disadvantages. The first disadvantage is that inflation rates vary over time. Quiggin states that “[t]he difficulty of determining the equilibrium real interest rate is

⁴⁵ The UF (*Unidad de Fomento*) is a monetary unit related to the CPI updated daily in relation to inflation, internal consumer prices, and currency fluctuations. Most long-term contracts, mortgages, insurance premiums, house prices, etc. are quoted in UF, while the actual payments are made in Chilean pesos at the rate of the day.

exacerbated by the difficulty of forecasting future inflation rates. Since the principal instrument of monetary policy is the nominal interest rate, an estimate of the future rate of inflation is an essential element of a policy of stabilising the real interest rate” (1997: 186).

A second disadvantage is the problem that a larger real interest rate margin is necessary at higher rates of inflation to ensure disinflation, than at a lower rate of inflation where merely containing inflation at the level of relative price stability is required. The real interest rate margin can hardly be kept constant at all times, irrespective of variations in the level of inflation, and still be regarded as a suitable monetary policy instrument.

The third disadvantage is the selection of the rate of inflation to use for calculation purposes. The natural inclination is to accept the historical rate of inflation measured in terms of the CPI for purposes of calculating the real rate. However, as real rates are used to contain future inflation (and not historic inflation), it would be more appropriate to use some measure of expected inflation. Agreement is necessary on the measurement of expected inflation and the calculation of the real interest rate. In addition, the expected rate of inflation might turn out to have been higher or lower than the actual rate of inflation, thereby implying that the real interest rate margin deviated from the target rate.

Fourthly, increases in indirect taxes (e.g. value-added tax) feed through statistically into the rate of inflation, albeit normally for one year only. The implication is that an increase in indirect taxes can trigger an increase in nominal interest rates for the feed-through period to protect the predetermined real interest rate margin.

Lastly, although practical examples of the use of a real interest rate target are limited, the Chilean example seems to suggest that the target is set by the central bank, rather than by the government in conjunction with the central bank. In the case of Chile the central bank stated, *inter alia*, that its board took the decision about the real interest rate target (Banco Central de Chile, 2001). This is a disadvantage as the government can regard a real interest rate target as the central bank’s target, therefore not giving it the necessary policy support.

4.10 Inflation target

In this study inflation targeting as an anchor for monetary policy receives considerable attention, as this is the policy framework currently used in South Africa and, therefore, the framework within which the credibility of inflation in South Africa is considered. The IMF defines an inflation-targeting policy as an “... operational framework for monetary policy aimed at attaining price stability. In contrast to alternative strategies, notably money or exchange rate targeting ... inflation targeting involves targeting inflation directly” (International Monetary Fund, 2005: 161).

In the targeting of inflation, the credibility of monetary policy is of the utmost importance. In this regard Goodfriend states that “[a] credible commitment to low inflation prevents inflation or deflation scares that are destabilising for both output and prices. Price stability is welfare maximising monetary policy because it anchors the markup at its profit maximising value and thereby prevents fluctuations in employment and output that would otherwise occur due to sticky prices” (2004: 42). Goodfriend and King state that public confidence about a permanent low inflation environment “... would be reinforced further by a legislative mandate making low inflation a priority for monetary policy” (1997: 44 and 45), particularly because “[a] central bank has an incentive to cheat⁴⁶ on its commitment to price stability in the NNS⁴⁷ model because a monetary policy action can reduce the markup distortion and increase employment” (Goodfriend and King, 1997: 45). The anchoring of expected future inflation by means of a credible anti-inflation policy “... strengthens the leverage that interest rate policy exerts over *current* aggregate demand. In so doing, credibility for low inflation helps monetary policy make aggregate demand conform to movements in potential output” (Goodfriend, 2004: 42).

Inflation targeting as a monetary policy framework was introduced for the first time in 1990 by

⁴⁶ Goodfriend and King state that the Fed is now widely held to be responsible for inflation, particularly as low inflation has shown the long-run benefits of price stability, implying that “... the temptation for the Fed to cheat on its low-inflation commitment is much weaker than in the past” (1997: 45).

⁴⁷ Goodfriend and King use NNS as the abbreviation for new neoclassical synthesis.

New Zealand. By adopting this framework, New Zealand introduced a monetary policy approach which clearly states its ultimate objective: low inflation. According to Masson et al. (1998: 35), the prerequisites for adopting an inflation target as nominal anchor for monetary policy are a central bank with autonomy in conducting monetary policy, and the targeting of no nominal variable other than the rate of inflation (1998: 35). Long before the first adoption of inflation targeting as an anchor for monetary policy, Friedman stated in respect of the alternatives that the monetary authorities can control that “... the price level is clearly the most important in its own right. Other things being the same, it would be much the best of the alternatives ... but other things are not the same ... Perhaps, as our understanding of monetary phenomena advances, the situation will change” (1968: 15). It therefore seems that things have changed sufficiently in the period between 1968 and 1990 that New Zealand saw fit to adopt a policy of inflation targeting and other countries subsequently followed. When South Africa adopted an explicit inflation target in February 2000, it became “... the 15th country to formally adopt this framework” (Mohr and Fourie, 2004: 374) as a fully-fledged inflation-targeting country.

Mishkin (2001: 1) identifies five elements of an inflation-targeting policy. These elements are (Mishkin, 2001: 1):

- the public announcement of medium-term numerical targets for inflation;
- an institutional commitment to price stability as the primary goal of monetary policy, to which other goals are subordinated;
- an information-inclusive strategy in which many variables, and not just monetary aggregates or the exchange rate, are used for deciding the setting of policy instruments;
- increased transparency of the monetary policy strategy through communication with the public and markets about the plans, objectives, and decisions of the monetary authorities; and
- increased accountability of the central bank for attaining its inflation objectives.

In addition to fully-fledged inflation targeting, the literature also makes reference to eclectic inflation targeting and inflation targeting lite (Carare and Stone, 2003). According to Carare and Stone eclectic inflation-targeting countries “... have so much credibility that they can maintain

low and stable inflation without full transparency and accountability with respect to an inflation target. Their record of low and stable inflation and high degree of financial stability affords them the flexibility to pursue the objective of output stabilisation, as well as price stability” (2003: 3). In the case of inflation targeting lite, countries “announce a broad inflation objective, but owing to relatively low credibility are not able to maintain inflation as the foremost policy objective” (Carare and Stone, 2003: 3).

Countries are classified as fully-fledged inflation targeters when the target becomes an objective in its own right, rather than an instrument aimed at achieving general stability in the economy. Moreover, these countries do not use the inflation target in conjunction with any other monetary policy objective such as exchange rate or money-supply growth targets. Inflation targets assist the central bank in achieving price stability by providing a nominal anchor for monetary policy and inflation expectations; enhancing the credibility of the central bank in containing inflation; and improving the transparency and accountability of monetary policy. However, it is important to note “ ... the authorities’ reluctance to adopt inflation targeting at a high inflation rate ... [owing to] ... the concern about their credibility. Fearing the loss of public credibility, the central bank is more likely to adopt inflation targeting when inflation rates are low, which makes the targeted inflation rate easier to achieve” (Hu, 2003: 26).

Countries adopting inflation targeting as an anchor for monetary policy have adopted either a target range or a specific numerical target point. A target range permits flexibility in the application of monetary policy, but might induce the central bank to keep inflation just below the upper range, rather than well within the range. However, in choosing targets for the rate of inflation when adopting a policy of inflation targeting, “ ... no country so far has chosen a zero midpoint for its inflation target range ... ” (Bernanke et al., 1999: 289) to avoid some of the disadvantages of price stability targeting. The specification of the rate of inflation to be used for targeting purposes, and particularly the question whether any prices should be excluded is a matter to be considered by a country accepting an inflation target, as no single international approach is used.

A survey of practices used by central banks in inflation-targeting countries shows that “... most inflation-targeting central banks use headline CPI for targeting purposes, with the central banks in Korea and Thailand ... [as] ... exceptions ... [but] ... a number of inflation targeters that have taken the leap of faith and adopted headline inflation targets, have sought wiggle room for this with a variety of finer institutional aspects. These include widening either of the target band or the tolerance range around a point target, providing escape clauses ... [or] ... lengthening the horizon over which the target is expected to be achieved ... ” (Rietveld, 2006: 49).

In terms of finding a definition for the classification of countries as inflation targeters, the IMF states that “... inflation targeting has two main characteristics that distinguish it from other monetary policy strategies” (2005: 161 and 162). The first is a commitment to “... a unique numerical target in the form of a level or a range for annual inflation. A single target for inflation emphasises the fact that price stabilisation is the primary focus of the strategy, and the numeric specification provides a guide to what the authorities intend as price stability” (International Monetary Fund, 2005: 161). The second is the forecasting of inflation over some time horizon as “... the *de facto* intermediate target of policy” (International Monetary Fund, 2005: 162). Based on these definitions, the IMF identified 21 countries as inflation targeters in 2005, and this number increased to 23 by 2006⁴⁸ (Allen et al., 2006: 5). These countries are highlighted in Table 4.2. This table does not include “indirect” inflation targeters, for instance the CMA partner countries of South Africa, who peg their exchange rates to that of a country that targets inflation. It can naturally be argued that the table should also include such countries, but no support for such an approach could be found in literature.

Table 4.2 shows that three inflation targeters use a single-point target with no range, while eleven countries use a single-point target with a range around the single point. The remaining nine

⁴⁸ The IMF does not include the Fed and the ECB as inflation targeters because “... the former lacks a numerical specification for its price stability objective, while the latter has traditionally given a special status to a reference value for the growth of the euro area M3 broad money aggregate” (International Monetary Fund, 2005: 162). The Swiss National Bank objects to its classification as an inflation targeter, although its monetary policy framework has many features of inflation targeting (Allen et al., 2006: 5). Other than countries that joined the European Union and therefore relinquished monetary policy responsibility to the ECB, to date no country has abandoned inflation targeting as a monetary policy framework.

countries use a target range. The implication is a clear preference for some room within a target, rather than the use of a single point as target.

Table 4.2 Countries targeting inflation in 2006

Country	Date of adoption	Current target (%)*	Current inflation rate (%)**
Australia	1993	2 – 3	4,0 (2 nd quarter 2006)
Brazil	1999	4,5 (+/- 2,5)	3,8 (July 2006)
Canada	1991	1 – 3	2,4 (July 2006)
Chile	1999	2 – 4	3,8 (July 2006)
Colombia	1999	5 (+/- 0,5)	4,7 (July 2006)
Czech Republic	1998	3 (+/- 1)	2,9 (July 2006)
Hungary	2001	3,5 (+/- 1)	3,0 (July 2006)
Iceland	2001	2,5	8,6 (July 2006)
Indonesia	2005	5,5 (+/- 1)	15,2 (August 2006)
Israel	1997	1 – 3	2,4 (July 2006)
Mexico	2001	3 (+/- 1)	3,5 (August 2006)
New Zealand	1990	1 – 3	4,0 (June 2006)
Norway	2001	2,5	0,6 (July 2006)
Peru	2002	2,5 (+/- 1)	1,9 (August 2006)
Phillippines	2002	5 – 6	6,9 (2 nd quarter 2006)
Poland	1999	2,5 (+/- 1)	0,8 (2 nd quarter 2006)
Romania	2005	7,5 (+/- 1)	6,2 (August 2006)
Slovak Republic	2005	3,5 (+/- 1)	5,0 (July 2006)
South Africa	2000	3 – 6	4,9 (July 2006)
South Korea	1998	2,5 – 3,5	2,2 (August 2006)
Sweden	1993	2 (+/- 1)	1,7 (July 2006)
Thailand	2000	0 – 3,5	2,8 (2 nd quarter 2006)
United Kingdom	1992	2	2,4 (August 2006)

* The current target is either a fixed percentage point or level (e.g. Iceland), a fixed percentage point or level with a range around it (e.g. Brazil), or a target range (e.g. Canada).

** Most recent figures available in the third quarter of 2006.

Sources: Adapted from Allen et al., 2006; Gonçalves and Salles, 2005; International Monetary Fund, 2005; Rezessy, 2006; author's adjustments

Table 4.2 also shows that 12 of the inflation-targeting countries were achieving their targets by the third quarter of 2006. Of the remaining 11 countries, four had inflation rates lower than their targets and seven had rates above their targets.

Table 4.3 Inflation targets in 2006

Table 4.3a Countries that adopted inflation targets up to 1999 (before South Africa)

Country	Specification of inflation rate used for targeting purposes*	Current target (%)
Australia	Average of quarterly weighted median CPI and trimmed mean CPI, which excludes mortgage interest costs	2 – 3
Brazil	Extended headline inflation (a.k.a. IPCA), which excludes mortgage interest costs	4,5 (+/- 2,5)
Canada	CPI excluding eight volatile components (e.g. energy prices) and the effect of changes in indirect taxes and subsidies on the remaining components	1 – 3
Chile	Headline inflation (related to the <i>Unidad de Fomento</i>)	2 – 4
Colombia	Headline inflation excluding food	5 (+/- 0,5)
Czech Republic	Headline inflation excluding regulated prices and indirect taxes	3 (+/- 1)
Israel	Headline inflation	1 – 3
New Zealand	CPI excluding impact of goods and services tax and credit services, which exclude mortgage interest costs	1 – 3
Poland	Headline inflation measured quarterly, which excludes all owner-occupied housing (e.g. mortgage interest cost), food prices and fuel prices	2,5 (+/- 1)
South Korea	Headline inflation, excluding petroleum and agricultural products other than grain (a.k.a. core inflation)	2,5 – 3,5
Sweden	CPI excluding household mortgage interest expenditure and the effects of changes in indirect taxes and subsidies	2 (+/- 1)
United Kingdom	CPI excluding energy, food and tobacco, and CPI excludes cost of owner-occupied housing (e.g. mortgage interest costs)	2

Table 4.3b Countries that have adopted inflation targets since 2000

Hungary	Headline inflation, which excludes owner-occupied housing and mortgage interest costs	3,5 (+/- 1)
Iceland	Headline inflation, which excludes housing interest costs	2,5
Indonesia	Headline inflation, which excludes mortgage interest costs	5,5 (+/- 1)
Mexico	Headline inflation, which excludes mortgage interest costs	3 (+/- 1)
Norway	CPI adjusted for tax and interest changes and excluding energy products and excise duties (a.k.a. CPI-ATE)	2,5
Peru	Headline inflation	2,5 (+/- 1)
Phillippines	Headline inflation measured quarterly	5 – 6
Romania	Headline inflation	5** (+/- 1)
Slovak Republic	Headline inflation	3,5 (+/- 1)
South Africa	CPI in metropolitan and other urban areas excluding mortgage interest costs (but including certain other costs of owner-occupied housing)	3 – 6
Thailand	Core CPI measured quarterly, excluding raw food and fuel, while CPI also excludes mortgage interest costs and owner-occupied housing	0 – 3,5

* Information about the specification of the target by the different countries is not readily available for purposes of this comparison, particularly because no single international specification for the CPI used to measure inflation has been developed. The result is therefore that two countries using “headline CPI” show differences in the items included in or excluded from headline inflation, as explained in Chapter 3. Of particular importance is the treatment of owner-occupied housing, as Weideman states that “... there is no consensus ... whether to include or not to include owner-occupied housing in official CPI statistics” (2006: 11). Inflation is measured monthly by these countries except where specified otherwise.

** According to Roger and Stone (2005: 9) the target is 7,5 per cent, but it is stated as 5 per cent by the National Bank of Romania (2006: 9). On closer inspection it transpired that Romania is using a declining target range, i.e. a target of 7,5 per cent for 2005, 5 per cent for 2006 and 4 per cent for 2007.

Sources: Adapted from Bank for International Settlements, 2006: 76; OECD, 2002; Roger, 2006; Roger and Stone, 2005: 9, 46 and 47; Weideman, 2006; central bank and government websites; research by SA Reserve Bank; author’s research; e-mails and faxes to and from selected central banks.

The specification of the inflation rates used for targeting purposes is highlighted in Table 4.3. This table shows hardly any correlation between the specification of any of the targets and the inflation rates used for targeting purposes, with large differences in the inflation rate specifications. In view of these differences, comments on the choice of a target point or range should be made only once all the relevant facts have been considered. From the perspective of South Africa, it is noteworthy that Rietveld states that “... there appears to be consensus that mortgage interest charges should be excluded from headline indices for targeting purposes because, in contrast to general prices, these charges typically move – with a very short lag – in the same direction as policy rates. To include them could therefore give a perverse signal for policymakers” (Rietveld, 2006: 49). Since the adoption of inflation targeting, South Africa has achieved considerable success in containing inflation, as is evident in Table 4.4.

Table 4.4 Average inflation rates of South Africa, 1961 – 1970 to 2001 – 2006

Period	Inflation rate
1961 – 1970	2,7 per cent
1971 – 1980	10,7 per cent
1981 – 1990	14,7 per cent
1991 – 2000	9,0 per cent
2001 – 2006	5,0 per cent

Source: SA Reserve Bank *Website*; author’s calculations

Inflation targets in countries using such a policy are by and large set by their respective governments (see for instance South Africa, 2000). This approach is preferred because the government is subject to public scrutiny, at least with every general election, whereas the central bank is not. Once the target has been set, central banks focus on its achievement and regularly report on the success or otherwise in its achievement. This implies that central banks in inflation-targeting countries do not have goal independence, but have operational independence.

Governments tend to remain silent after the target announcement, with only occasional reference to the target in the annual budget speech of the Minister of Finance. This approach would not pose a problem if the relevant government takes cognisance of the target in setting its other policy actions. If the target is, however, disregarded in policy decisions of the respective government, e.g. if the announcement of the target is followed by adjustments of administrative prices well in excess of the target, the achievement of the target will be put in jeopardy if administrative prices are included in the rate of inflation specified for targeting purposes.

Owing to the forward-looking nature of an inflation-targeting regime, central banks in inflation-targeting countries have generally adopted three important support measures for their policy frameworks (Rossouw, 2002; Rossouw, 2005: 295): inflation forecasting, explanation or escape clauses and measuring inflationary expectations (opinion polls on inflation). In addition, certain central banks have also introduced communication strategies to enhance the general understanding of monetary policy decision-making (see for instance Rossouw and Powers, 2005).

The first two of these support measures are broadly within the sphere of control of the central bank and/or the government. Under an inflation-targeting policy regime, the central bank has the operational autonomy to employ the necessary human and other resources to develop and maintain forecasting capacity. The explanation or escape clause and its use are subject to agreement between the government, responsible for setting the inflation target, and the central bank, responsible for achieving the target and for explaining any deviations from the target (Woglom, 2003:401), and is therefore also within their sphere of control.

South Africa uses an explanation clause in support of its inflation target. If the target is not achieved, the SA Reserve Bank has to explain to Parliament and other stakeholders the reasons why it is not achieved and the measures instituted to ensure its achievement within a reasonable time. On the contrary, New Zealand serves as a case in point for the use of an escape clause measure in a different fashion.

In the case of New Zealand the Minister of Finance and the Governor of the central bank have to

agree on and publish a Policy Target Agreement (PTA), which sets out specific inflation targets (Reserve Bank of New Zealand, 2004). However, “... the Government has the power to override the PTA ... by directing the Reserve Bank to use monetary policy for a different economic objective ... [i.e. other than the achievement of price stability] ... altogether for a 12 month period, although it must make the instruction public” (Reserve Bank of New Zealand, 2004). This option has not been exercised to date by the New Zealand government.

The third measure (inflation expectations) is not within the immediate sphere of control of the authorities (Mishkin, 2004: 419), although they can monitor inflation expectations. Inflation expectations are informed over time by the policy actions of the authorities and are measured by means of inflation opinion surveys. The most obvious way of sampling inflation expectations is by means of opinion polls; an approach that has been followed in South Africa since 1999⁴⁹ (Kershoff and Smit, 2002: 445). Central banks use inflation expectation surveys mainly “... to forecast inflation and evaluate the credibility of their inflation fighting policies” (Kershoff and Smit, 2002: 445 and 446). However, inflation expectation surveys tend to focus on the first, rather than the second, objective.

Central banks using inflation targets measure their performance against the actual inflation rate and assess inflation expectations, but do not generally measure (albeit with a few exceptions as is explained in Chapter 2) whether the general public believes and generally accepts the published inflation figures as an accurate reflection of price increases in the economy. Any distrust of the published rate will be reflected in inflation expectations in the long run, which does not support the notion that “[i]nflation would be eliminated at once with no loss of output if the policy is credible” (Mishkin, 2004: 673).

Although the clear final objective of monetary policy, i.e. low inflation, which is “... readily understood by the public and thus highly transparent” (Mishkin, 2004:504), is one of the advantages of an inflation target, this transparency increases considerably the obligation of central banks in inflation-targeting countries to communicate clearly and unambiguously with all

⁴⁹ The sampling of inflation expectations in South Africa is discussed in Chapter 7.

their stakeholders. Moreover, under an inflation-targeting regime a central bank with responsibility for achieving the target, also has responsibility for explaining any deviations from the target (Woglom, 2003:401), as highlighted above.

If the inflation target is not achieved in the case of South Africa, the SA Reserve Bank has an obligation to explain to Parliament and other stakeholders the reasons for its non-achievement and the measures instituted to ensure its achievement within a reasonable time. This responsibility implies, however, that the SA Reserve Bank cannot limit its communication to periods of problems with achieving the inflation target only, and has therefore embarked on a programme of improving its communication with all stakeholders since the introduction of an inflation-targeting monetary policy regime, as explained in Chapter 5.

Fracasso et al. state that since the effectiveness of monetary policy "... crucially depends on market perceptions, it is now increasingly recognised that transparency is of the essence" (2003: xvii). This implies that communication is a central challenge facing a central bank with an inflation-targeting framework. This view is also supported by Kohn, who states that "[a] basic tenet of economics is that markets work better ... with more information. Because central banks are key players in financial markets, a better public understanding of central bank behaviour should improve pricing in those markets" (2005). Despite agreement about the importance of communication, it should be noted that "... there is no consensus among central banks about the best way to communicate policy ... Communication policy differences go beyond simply deciding whether or when to issue information after policymaking meetings" (Moskow, 2003). Blinder et al. note that "... the fact that communications policy differs considerably from one central bank to another – and yet seems to work – serves as a reminder that the outsiders care little for the details, no matter how important these details may look to the insiders ... we might say that a central bank is communicating well and is transparent enough when it is so predictable that the public does not care about who runs it and how" ([S.a.]).

The benchmarking of communication strategies of central banks is problematic. The ECB states that central banks have "... to choose an appropriate communication strategy" (European Central

Bank, 2007: 65). Ehrmann and Fratzcher assessed the effectiveness of the communication strategies of the Fed, the Bank of England and the ECB in terms of “... the content, timing and consistency of statements by the policy committees and its individual members, as well as the voting behaviour ...” (2004). Their conclusion is that these three central banks follow different communication strategies, “... with the Federal Reserve pursuing an approach that stresses the individual accountability of FOMC ... [Federal Open Market Committee] ... members, whereas the European Central Bank has been pursuing a more collegiate, and the Bank of England an intermediate approach⁵⁰” (Ehrmann and Fratzcher, 2004). The Governor of the Bank of England stated that “... the Bank was failing to explain to markets how it was likely to respond to economic data” (Gilles and Daneshku, 2007: 1) in response to a Reuters poll indicating a perception that “... in the past year the Bank had become less effective in communicating policy” (Gilles and Daneshku, 2007: 1). The Dutch central bank (De Nederlandsche Bank) considered the transparency of monetary policy decisions of central banks in view of their communication strategies and states that “[s]leutel voor een succesvol monetair beleid ... is niet zozeer transparantie als wel geloofwaardigheid” [the key for successful monetary policy is not transparency but credibility⁵¹] (*DNB Magazine*, 2007: 18).

In summary a “... central finding is that the predictability of policy decisions and the responsiveness of financial markets are equally good for the Fed and the ECB, though there are important differences in the type of communication that financial markets react to. This suggests that there may not be a single best approach to central bank communication, and that the most effective way of communication depends on the circumstances and the environment a central bank operates in” (Ehrmann and Fratzcher, 2004).

⁵⁰ The approach of the ECB is sometimes referred to as “... the *single voice* principle adopted by the Governing Council” (European Central Bank, 2007: 71).

⁵¹ Author’s translation.

Table 4.5 Experience with containing inflation in selected inflation-targeting and non-targeting countries over different periods*

	Inflation rates	
	1980 to 1991 (pre-targets)	1992 to 1995 (post-targets)
Inflation rates in 21 advanced economies	7,2	3,3
Inflation rates in 7 advanced economies targeting inflation from 1990 or later	8,0	2,7

Comparison of inflation rates for periods 1985 to the year before adopting an inflation target, and the year from adopting inflation target to 2000**

	Pre-targets	Post-targets
Australia	6,3	2,3
Canada	4,4	2,0
Chile	21,3	9,6
Finland	4,7	1,3
New Zealand	11,3	2,3
Spain	6,2	3,0
Sweden	6,3	1,5
United Kingdom	5,7	2,6

Sources: * Adopted from Masson et al., 1998

** Adopted from Hu, 2003

In its analysis of inflation targeting, the IMF reached the conclusion that “[i]nflation targeting appears to have been associated with lower inflation, lower inflation expectations, and lower inflation volatility relative to countries that have not adopted it. There have been no visible

adverse effects on output, and performance along other dimensions – such as the volatility of interest rates, exchange rates, and international reserves – has also been favourable” (International Monetary Fund, 2005: 179). In comparing the data of countries following an inflation target, Hu states that “... the inflation rate of the inflation targeters moves from a level higher than that of non-targeters to a level lower than that of non-targeters ...” (2003: 18) and concludes that “... inflation targeting does play a significant role in lowering inflation ... [and] ... also significantly improves GDP growth and lowers GDP growth variability” (2003: 25). This conclusion is also supported by Masson et al. (1998), and is highlighted in Table 4.5.

Advantages of inflation targeting

The advantages of an inflation target have received considerable public attention (see for instance Casteleijn, 2001; De Wet, 2003; Du Plessis, 2003; or Mishkin, 2004). The most obvious advantage of an inflation target is the clear final objective of monetary policy, i.e. relative price stability, which is “... readily understood by the public and thus highly transparent” (Mishkin, 2004: 504). Moreover, “[i]nflation targeting is said to impose discipline on reserve banks ... and foster the credibility of the reserve bank. This serves to anchor expectations of future inflation, and can help to resolve the time inconsistency problems associated with monetary policy” (Saunders, 2003: 419). In their analysis of monetary policy, Goodfriend and King (1997: 3) reached the conclusion that an inflation target is the most suitable anchor for monetary policy.

Secondly, an inflation target confirms the autonomy and independence of the central bank in selecting or adjusting policy instruments in its endeavours to achieve the target. As the policy framework is relatively easy to understand, it also enhances the transparency of policy decisions.

Thirdly, there can be no ambiguity about the conduct of monetary policy. Without a clear single goal, a central bank can be entrusted with seemingly conflicting goals to achieve. A case in point is the Fed in the United States, which has responsibility for more goals than only price stability, although it is argued that the Fed uses price stability to achieve its other goals, as is explained in Section 4.11 below.

Fourthly, an inflation target increases the credibility of the central bank, provided that the public remains convinced of its commitment to the target. An inflation target is usually specified as a medium-range target, which gives the central bank flexibility in the application of monetary policy. This approach, as well as the use of an escape or explanation clause that allows the central bank to miss the target in the case of an unexpected shock, increases the flexibility in the application of an inflation-targeting policy.

The fifth advantage is that the adoption of an inflation target leads to improved communication about monetary policy, as such a policy enhances accountability and transparency in policy implementation.

Lastly, the adoption of an inflation target imposes considerable discipline on the government. Whereas other policy approaches might result in an unfortunate situation where the government distances itself from the goals, objectives or aims of monetary policy, arguing that their achievement is the sole responsibility of the central bank, a policy of inflation targeting removes any such ambiguity, as the government typically sets the inflation target – South Africa serves as a case in point, with the government setting the target and the Minister of Finance announcing it. This implies that the government shares responsibility for implementing sound broad macroeconomic and fiscal policies that support the achievement of the target. This places accountability for the choice of the target and the concurrence of constituents with the target squarely in the political arena, whereas its achievement through the conduct of monetary policy by the central bank is outside of the political area.

Disadvantages of inflation targeting

Inflation targeting as a monetary policy framework is not without disadvantages or criticism. The disadvantages of such a policy can be summarised as delayed signalling about the stance of monetary policy; too much of a rigid rule imposed on policymakers; the potential for output fluctuations; sustained low economic growth; reliance on economic forecasts; and factors outside

the control of the central bank can influence inflation (see for instance Mishkin, 2004: 506; or Mohr and Fourie, 2004: 557).

The first disadvantage is that the rate of inflation cannot be controlled easily by the central bank owing to the lagging effect of changes in monetary policy. The result is that inflation outcomes of policy are noticeable only after a considerable period of time. The signalling of the monetary policy stance to the market can therefore be delayed, which may increase the cost of containing inflation.

Secondly, an inflation-targeting policy raises questions about the appropriate rate of inflation to target. As is explained in an earlier chapter, changes in any one of a number of indices could be used for the measurement of inflation. It is therefore necessary to identify the most suitable measure for targeting purposes under such a regime. Although this problem is not limited to an inflation-targeting regime only, it is more pronounced under such an approach owing to the increased public focus on the inflation rate. Owing to international differences in the composition of the CPI, an approach followed in one country cannot be readily applied for use in any other country.

Thirdly, the hopes of some countries “ ... that the costs of disinflation would decline as a result of inflation targeting were not fulfilled ... ” (Bernanke et al., 1999: 282 and 283), although this disadvantage is not limited only to inflation targeting as a monetary policy anchor. Credibility in applying monetary policy is not achieved immediately by the central bank upon the announcement of an inflation-targeting monetary policy regime (Bernanke et al., 1999: 308).

Fourthly, the adoption of an inflation target requires co-operation in respect of the setting of administered prices. If administered prices are set persistently above the target range, it might not only put the credibility of the target in jeopardy, but could contribute to price increases moving outside the target range, even if such prices are excluded from the index used for targeting purposes. Co-operation in respect of aligning adjustments in administered prices with the target range is therefore important and any misalignment might put the target in jeopardy.

Fifthly, as an inflation target entrusts a single goal (i.e. relative price stability) to central bankers, this goal should be pursued to the exclusion of all other objectives. This implies, however, that the discretion or ability of central bankers to react to unforeseen circumstances in or shocks to the economy will be limited, particularly in respect of the possible development of asset price bubbles in an economy (Roach, 2006a; Roach, 2006b: 56 and 57).

In the sixth place a policy of inflation targeting prescribes flexible interest rate adjustments in order to contain rising inflation. If a rise in inflation coincides with a decline in economic activity or if stagflation (i.e. a period of inflation associated with a recession) occurs, the policy reaction of the central bank should be to adjust nominal interest rates upwards. This adjustment would prolong the period of subdued output, as underlying economic activity would dictate lower, rather than increased, interest rates. The policy might result in a limitation of employment creation and economic growth in as much as real interest rates are kept at a level higher than the level required simply to contain inflation. This disadvantage will depend to a large extent on the question whether the policy announcement of inflation reduction is credible or not (see for instance Parkin, 1999: 809).

The next disadvantage is that inflation targeting can increase exchange rate volatility as it could imply that central banks in inflation-targeting regimes have to neglect the exchange rate – such central banks cannot target the inflation and exchange rates at the same time. This was indeed the case in South Africa in 2001, when the country experienced large instability in its exchange rate (SA Reserve Bank, 2002).

In the eighth place, the IMF states that “[i]nflation targeting cannot work in countries that do not meet a stringent set of preconditions, making the framework unsuitable for the majority of emerging market economies. Preconditions often considered essential include, for example, the technical capability of the central bank in implementing inflation targeting, absence of fiscal dominance, financial market soundness, and an efficient institutional setup to support and motivate the commitment to low inflation” (International Monetary Fund, 2005: 166 and 167).

Lastly, one of the measures supporting inflation targets is the ability of the central bank to employ the necessary resources to support its inflation forecasting capacity. As forecasting remains at best an uncertain business despite a central bank's best efforts, a disadvantage of a policy of inflation targeting is the heavy reliance on econometric models in an uncertain environment, implying that the target could be missed. Indeed, if the target is repeatedly missed owing, *inter alia*, to underdeveloped forecasting capacity, the central bank's credibility in the conduct of monetary policy could be put in jeopardy.

The next section deals with the monetary policy approach of the United States, as that country does not use any of the policy anchors discussed so far in this chapter.

4.11 Current monetary policy approach used in the United States

During the 1970s inflationary pressures developed in the United States owing to a combination of factors such as an expansionary monetary policy, the collapse of the Bretton Woods system and the oil price shock of 1973. In October 1979 the Fed assumed implicit responsibility for containing inflation by emphasising the role played by money growth in the inflation process (Goodfriend and King, 1997: 45). At the same time the Fed also announced a change in operating procedures to control money growth (Goodfriend and King, 1997: 45). Subsequent research by Collard and Dellas (2004: 18), using the tools of the new neoclassical synthesis, has shown that inflation in the United States during the 1970s was caused to a large extent by excessively loose monetary policy. The conclusion is that the policy mistake was the result of imperfect information, rather than tolerance of inflation, as a large decrease in actual output following a persistent downward shift in potential output was interpreted by the Fed as a decrease in the output gap, rather than lower potential output growth (Collard and Dellas, 2004: 18).

The Fed has no explicit anchor for its monetary policy, but rather uses an implicit target for controlling inflation in the United States in the long run, referred to by Mishkin as a "just-do-it approach" (2004: 509 and 510; see also Bernanke et al., 1999: 307). Although this approach has

advantages as is evident in practice by the achievement of the desired objective of low inflation, some of the possible disadvantages of this approach are a lack of transparency, a strong reliance on the skills of staff at the Fed and entrusting considerable autonomy to a non-elected body (see for instance Mishkin, 2004; Parkin, 1999; or Samuelson and Nordhaus, 2001).

Whereas central banks in countries following monetary policy anchored in an explicit nominal target have one objective with monetary policy, i.e. achieving the target, it is noteworthy that the Fed has been entrusted with multiple objectives that could be in conflict with one another during economic hardship or a period of stagflation. Samuelson and Nordhaus (2001: 544) describe these objectives as a responsibility for economic growth, a high level of employment, stability in the purchasing power of the currency and moderate long-term interest rates. Lacker points out that “[i]f you go back and look at the direction Congress gave us — it appears in Section 2A of the Federal Reserve Act and was most recently revised in 1977 — you find that they actually gave us three mandates: maximum employment, stable prices, and moderate long-term interest rates. Nobody mentions the third mandate, moderate long-term interest rates, and for good reason. It is widely understood that the best contribution monetary policy can make to keeping long-term interest rates low is by keeping expected inflation low, because this minimizes the inflation premium built into nominal long-term rates” (2005). Stable prices therefore foster maximum employment and interest rate moderation (Pianalto, 2005). Against this background, views supporting and opposing the adoption of inflation targeting as an explicit anchor for monetary policy in the United States have recently been raised.

Santomero is of the opinion that “[i]ncreasing the degree of central bank transparency is one reason I and some of my colleagues have spoken in favour of an explicit inflation-targeting program. I believe we have reached a point where institutionalising inflation targeting simply makes good sense from an economic perspective” (2005). Lacker states that “... the Federal Reserve has made low inflation and the stabilisation of inflation expectations a priority as never before in our history. My reading of the recent monetary history ... leads me to favor the adoption of an inflation target” (2005). The case for an independent Fed entrusted with a single goal, is also supported by Parkin, who states that “[a] radical suggestion for strengthening the

Fed's reputation as the guardian of price stability is making the Fed more independent of government and to charge it with the single responsibility of achieving and maintaining price level stability" (1999: 809).

To the contrary, Frank⁵² has stated that the adoption of an inflation target by the Fed would be a mistake (Guha, 2007: 4). Frank states that the Fed has been entrusted the responsibility of achieving low inflation and low unemployment, and one of these objectives should not be afforded higher priority by means of adopting an inflation target (Guha, 2007: 4).

This debate continues after the succession of Greenspan as Chairman of the Fed by Bernanke early in 2006, as Bernanke has expressed support not only for an explicit target for monetary policy, but supported in particular the adoption of an inflation target as monetary policy anchor, and the appointment in July 2006 of Mishkin to the Board of the Fed, as "... Mishkin ... is one of the most high-profile advocates of inflation targeting" (Central Banking, 2006b: 3).

4.12 Implications of monetary policy anchors for developing economies

This chapter leaves little doubt about the benefits to be reaped in the form of consistent low inflation by countries adopting a monetary policy anchor. This is arguably not only true for developed economies, but also for developing countries.

The selection of a suitable anchor is more of a challenge for a developing economy than for a developed country. The use of an inflation target serves as a case in point. A developing economy without the necessary technical skills and expertise required to support an inflation-targeting framework, cannot adopt such a target for purposes of monetary policy, despite certain advantages.

⁵² Frank is a Democratic member of the US Congress chairing one of two house committees with responsibility for oversight of the Fed.

The approach followed by South Africa's partners in the CMA can serve as a useful example for some developing countries, although due cognisance should be taken of the disadvantages of a policy of exchange rate targeting highlighted earlier in this chapter. In terms of containing inflation, South Africa's CMA partners currently reap the benefits of South Africa's successful implementation of an inflation-targeting monetary policy, without overcoming the technical challenges underpinning such a policy.

This gives rise to the question whether SADC countries outside the CMA should consider adopting the same exchange rate regime as CMA countries in the interest of containing inflation. Maintaining a nominal exchange rate as an anchor for monetary policy has brought considerable advantages for South Africa's partner countries in the CMA (see for instance Rossouw, 2006a). South Africa already has a seigniorage sharing agreement in place with its CMA partner countries (see for instance Bank for International Settlements, 2003; Glick, 2006; Guillaume and Stasavage, 1999; or Republic of South Africa, 2005), implying that the adoption of such an arrangement by the SADC countries will not expose themselves to any loss of seigniorage income. The adoption of an exchange rate target with the South African currency by SADC countries can introduce indirectly the use of an inflation target as an anchor for monetary policy in these countries.

The first step for developing countries in containing inflation, however, is to recognise the time inconsistency problem and remain committed to low inflation, even in the wake of adverse developments. Once such a commitment has been made, the search for a suitable anchor can follow. On the contrary, the announcement of a suitable anchor for monetary policy, but without a clear and consistent commitment to contain inflation, will hardly achieve any success owing to the time consistency problem. Once the commitment has been made, the final choice of a suitable anchor depends to a large degree on a country's particular circumstances, skills and expertise.

4.13 Conclusions

An explicit anchor for the conduct of monetary policy is preferred as it prevents any time inconsistency problems. A central bank without a clear anchor requires strong leadership (e.g. the Fed under Volcker or Greenspan) to convince the public of its commitment to low inflation. To this end a policy such as inflation targeting with an anchor for monetary policy serves the best interests of central banks and the public in countries committed to low inflation, but without a long history of success in containing inflation.

The most important disadvantage of anchoring monetary policy, as is the case with most other sound economic policy approaches, is that it cannot be applied without any cost to the economy. At best the cost of application can be limited, which might happen if the announcement of the introduction of a policy framework based on rules using an explicit anchor is a credible one. Any time lag between the announcement of such a policy and the achievement of its goals will be characterised by real interest rates at levels higher than would otherwise be required. This would imply a delay of investment decisions, with concomitant lower economic growth and employment creation. As it will never be possible to predict the length of this lag for any economy, the true cost of implementation of a policy based on an anchors will therefore differ on a case-by-case basis.

The advantages of such a policy can simply be summarised as a scrapping of discretionary policy, which forces the central bank to follow a consistent monetary policy approach. This will ensure an optimal situation if the target is realistically achievable. In the selection of a policy regime for use as an anchor, targets set by government for achievement by the central bank have a clear and permanent advantage. This ensures the commitment of the government to the target, and also subjects the target to public scrutiny, as it is one of the policy measures put to the public for scrutiny and reconsideration at the time of a general election. This is confirmed by Casteleijn, who states that the main disadvantage of policies with a target anchor not set by the government, is that government "... could not be expected to elicit the same commitment to policy co-ordination that would follow if the government had formally endorsed or set the target" (2001: 6).

Based on this last criterion, it leaves inflation, exchange rate, nominal GDP and price stability targets, as well as a precious metal standard and direct control as available options for a target. In choosing between these six options, it is necessary to consider their potential disadvantages. A precious metal standard can no longer be applied, as precious metal prices are no longer fixed for long periods of time. Disintermediation and international financial integration have ended the usefulness of direct control. The loss of independent monetary policy and the possibility of speculative attacks on the currency are the main disadvantages of an explicit exchange rate target. The main disadvantage of a price stability target is that price increases in any period might force an economy into deflation in any subsequent period to ensure its achievement. Projections of potential and nominal GDP can be imprecise, while nominal GDP figures are often subject to *ex post* revisions. The main disadvantage of an inflation target is delayed signalling about its achievement and larger output fluctuations if the target is a rigid rule and the sole focus is on inflation only. The potential difficulties of inflation targeting can, however, be overcome with more ease than the potential disadvantages of the other available alternatives.

South Africa's choice of an inflation target as explicit anchor for monetary policy is accordingly to be welcomed. The South African Government retains responsibility for setting the target to be achieved by the SA Reserve Bank, implying that the target remains squarely subject to political accountability to the electorate at the time of general elections. This implies that the SA Reserve Bank does not have goal independence, but has the autonomy to adjust monetary policy to achieve the inflation target.

The remaining issue to consider is the forum where macroeconomic policy choices, e.g. the specification of the target, should be considered between the central bank and the government. In this regard Padayachee favours "... the establishment of institutionalised state/bank consultations over the setting and monitoring of inflation targets or similar approaches to monetary policy" (2000: 499). The conclusion is that this proposal of Padayachee deserves serious consideration in those countries where such fora are not in place, as it ensures easier co-ordination in the implementation of policies conducive to sustained low inflation.

Differences in the specifications of the CPI used for targeting purposes by countries using an inflation-targeting policy confirm that comments on the choice of a single target point, a target point with a range around it or a target range for purposes of the application of an inflation-targeting policy should be made with caution only, and only once all the relevant facts have been considered. Targets differ considerably between the different countries using this policy model. Inflation rates set for targeting purposes and used to monitor achievement of the target (and hence the success or otherwise of the policy), also differ considerably.

CHAPTER 5

SOUTH AFRICA'S EXPERIENCE WITH INFLATION: A CENTRAL BANK PERSPECTIVE

5.1 Introduction

Although a country's experience with inflation can be reviewed from different perspectives (e.g. the government, the statistical agency responsible for recording inflation, producers, consumers or savers), this chapter reviews South Africa's experience with inflation from the perspective of the SA Reserve Bank. The SA Reserve Bank was chosen because this study focuses on inflation from a monetary perspective. Reliable inflation data for South Africa are published as far back as 1921⁵³, co-inciding with the establishment of the SA Reserve Bank, although rudimentary data on price levels are available as far back as 1895.

South Africa's problems with accelerating inflation since the 1970s are well documented (see for instance De Kock, 1981; De Kock, 1984; Republiek van Suid-Afrika, 1985; Rupert, 1974a; Rupert, 1974b; or Stals, 1989), but various parts (or regions) of what constitutes today the Republic of South Africa have experienced problems with inflation, rising prices or currency depreciation well before 1921. The first example of early inflation in South Africa was caused by currency depreciation. At the time of the second British annexation of the Cape in 1806, the Dutch riksdaalder ("riksdollar") served as the major local currency in circulation. During the tenure of Caledon, Governor of the Cape Colony from 1807 to 1811, and Cradock, Governor from 1811 to 1814, riksdollar notes in circulation were increased by nearly 50 per cent (Engelbrecht, 1987: 29). As could be expected under circumstances of increasing currency in circulation, the value of the riksdollar in comparison to the British pound sterling and in terms of its purchasing power declined from 4 shillings in 1806 to 1 shilling and 5½ pennies in 1825 (or

⁵³ Tables A1 to C1 in Appendices A to C highlight South Africa's experience with inflation, as measured by changes in the CPI since 1921.

1/6, according to *Die Huisgenoot*, 1938: 43), a decline in value of 4,86 per cent per annum, with a concomitant increase in the prices of consumer goods (Engelbrecht, 1987: 29).

Secondly, domestic spending financed by bank credit during World War I resulted in domestic price increases in South Africa (De Kock, 1954: 9). De Kock (1954: 9) mentions that the index of retail prices covering food, fuel, light, rent and sundries increased at an average rate of nearly 15 per cent per annum in the period 1914 to 1920. Whereas the main focus of this study is the period commencing in 1921, which co-incides with the establishment of the SA Reserve Bank and the comprehensive measurement of inflation by means of changes in the CPI, these two examples show that domestic inflation is not a problem limited only to the period under review.

This chapter commences with a discussion of the establishment of the SA Reserve Bank in Section 5.2. Sections 5.3 to 5.14 consider various phases since 1921 and the SA Reserve Bank's successes (or otherwise) in containing inflation. Section 5.15 highlights initiatives of the SA Reserve Bank aimed at improving communication since the adoption of an inflation target in 2000. The conclusions follow in Section 5.16.

5.2 Establishment of the SA Reserve Bank⁵⁴

The earliest proposals for the establishment of a central bank in South Africa were made as far back as 1879 by the Afrikaner Bond, a political party in the then Cape Colony (D'Assonville, 1999: 203; De Kock, 1954: 3; SA Reserve Bank, 1971: 9)⁵⁵. Financial and economic turmoil in

⁵⁴ The first bank established in South Africa was the Lombaard Bank in Cape Town, which opened its doors for business on 23 April 1793 (Arndt, 1928: 191). Although this bank was fully-owned by the Cape Colonial Government, it was established with commercial activities in mind (Arndt, 1928: 191), and was not envisaged to function in any way as a central bank. This bank was closed in 1842, *inter alia*, as it did not meet the banking requirements of the Cape Colony at the time.

⁵⁵ In the period between 1897 and the establishment of the SA Reserve Bank in 1921, various calls were made for its establishment (SA Reserve Bank, [S.a.]: 1). Examples are a series of articles in the early 1890s in a newspaper, *De Paarl*, at the time edited by du Toit, the founding leader of the Afrikaner Bond (D'Assonville, 1999: 125); calls for the establishment of a central bank to co-incide with Unification in South Africa in 1910 (SA Reserve Bank, [S.a.]: 1); and a speech in 1912 by Postmus of De Nederlandsche Bank voor Zuid-Afrika, who was appointed as Governor of the SA Reserve Bank in 1932 (SA Reserve Bank, [S.a.]: 1).

the period after the Great War (later known World War I) accelerated the establishment of the SA Reserve Bank.

Before the establishment of the central bank, commercial banks in South Africa printed their own banknotes for issue (SA Reserve Bank, [S.a.]: 1). These notes were backed fully by gold in terms of a gold standard, i.e. the notes could be exchanged for gold. At the time of the establishment of the SA Reserve Bank, the power of commercial banks to issue banknotes was internationally a long-established practice, albeit under “review”, as banks of issue (as central banks were initially known) were established in various countries, particularly in Europe, in the nineteenth century (SA Reserve Bank, [S.a.]: 1).

During the Great War the South African currency remained on a gold standard and commercial banks were obliged to redeem their notes for gold (De Kock, 1954: 11) in terms of an arrangement where the domestic currency was pegged to the British currency (pound sterling), which in turn was pegged to the US dollar and, therefore, the gold price, in each instance at a fixed exchange rate. This arrangement ended in March 1919 when the peg of pound sterling to the US dollar came to an end, with pound sterling depreciating against the US dollar and gold (Gelb, 1989: 54). As a result, gold obtained in South Africa through the conversion of banknotes at commercial banks could be sold at a premium in London (SA Reserve Bank, 1971: 10). At the same time, domestic commercial banks had to buy gold at the same premium in London to provide the necessary backing for their banknotes in issue in terms of the gold standard applied in South Africa. In reaction to the call on government by the commercial banks to be released of this obligation to “trade at a loss”, a Gold Conference was convened in Pretoria in October 1919 (De Kock, 1954: 11).

One of the resolutions of the Gold Conference was to request government to introduce one uniform Bank Act for the country (De Kock, 1954: 13), as no such legislation had been introduced since the unification of the country in 1910. Following on this proposal, the Government engaged the services of Strakosch (later Sir Henry), a British banker, who was instrumental in a proposal that a domestic central bank should be established (De Kock, 1954: 14;

see also Gelb, 1989: 48). This culminated in the Currency and Banking Act, No 31 of 1920, which provided, *inter alia*, for the establishment of a central bank with the power to issue domestic banknotes⁵⁶ (De Kock, 1954: 23; Engelbrecht, 1987: 95 and 96; Mboweni, 2000b: 1; SA Reserve Bank, 1971: 11 and 12). The SA Reserve Bank opened on 30 June 1921 (SA Reserve Bank, 1971: 12) and issued its first banknotes to the public on 19 April 1922 (SA Reserve Bank, 1971: 22). Commercial banks were accordingly instructed to cease issuing or re-issuing their own banknotes with effect from 30 June 1922.

The name chosen for the central bank of South Africa, the SA *Reserve* Bank, reflects reference to the Federal *Reserve* System. De Kock states that “[t]he features which the South African Reserve Bank had in common with the Federal Reserve Banks at that time were ... [t]he designation of Reserve Bank, which had previously been adopted only in the United States ...” (1954: 38). Subsequently, the word *Reserve* has been used in the names of the central banks of Peru (albeit in Spanish, *Reserva*), established in 1922; New Zealand, established in 1933; El Salvador (albeit in Spanish, *Reserva*), established in 1934; India (1935); Australia (1945); Malawi (1964); Zimbabwe (originally the central bank of Rhodesia) (1964); Fiji (1973); Vanuatu (1980); and Tonga (1989).

By 1921 the majority of central banks had private shareholders (or stockholders as they were occasionally called), and a similar structure was introduced for the SA Reserve Bank. This approach changed internationally in the 1930s, when certain governments started nationalising the central banks in their countries (De Kock, 1956: 312). Since its inception, the ownership structure of the SA Reserve Bank has not been amended, i.e. it remains a juristic person in terms of its own Act, which provides for private shareholders. The support of the Select Committee of Parliament with responsibility for the promulgation of the Currency and Banking Act for establishing a central bank “... seems to have been based to an important extent on its view that only by centralising the issuing of banknotes in a single non-commercial banking institution

⁵⁶ The establishment of a central bank was not supported unanimously (see for instance SA Reserve Bank, 1971: 12). It is of interest to note that Jorrison of De Nederlandsche Bank voor Zuid-Afrika who opposed the timing of its establishment, nevertheless accepted the position as the first Deputy Governor of the SA Reserve Bank in January 1921 (De Kock, 1954: 13; Meiring, 1994: 125).

would it be possible to prevent a recurrence of an unduly rapid and inflationary increase in note circulation” (SA Reserve Bank, 1971: 11). De Kock (1956: 123) states that central banks have increased their focus on the control of credit to stabilise the price level after the abolition of the gold standard⁵⁷.

At the time of its inception, the SA Reserve Bank had to deal with a situation in terms of which the country was nominally on a gold standard, but the system was effectively suspended. Government could issue gold certificates in exchange for gold bullion or specie or banknotes, but declare the certificates non-convertible, albeit for a limit period of time only (SA Reserve Bank, 1971: 26). Clegg, the first Governor, did not only find (understandably so) a lack of people knowledgeable in central banking, but the SA Reserve Bank also had to encourage “... the further development of a local money market in South Africa and made strenuous efforts to secure the more widespread use of trade bills and other money market instruments, partly with a view to enabling it to apply its discount rate policy and open-market operations in a more effective manner” (SA Reserve Bank, 1971: 21). The problem of underdeveloped money and capital markets and a lack of suitable instruments to use for open-market operations, remained a problem in the implementation of monetary policy in South Africa until deliberate steps were taken by the authorities to ensure the development of these markets after World War II.

Over the period 1921 to 2006 average prices, as reflected by changes in the CPI, increased considerably in South Africa. In terms of an index with 1922 = 100, the index value for 2006 is 9 083,5, or an increase of 5,51 per cent per annum on average. Put differently, the implication is that the purchasing power of R1,00 in 1922 was only some 1,1 cents in 2006. At the same time, an average basket of goods and services that sold for the equivalent of R1,00 in 1922, will cost about R90,84 today.

⁵⁷ Although this historic overview confirms an implicit or explicit focus on inflation in the conduct of central banking since the 1930s, the SA Reserve Bank’s enabling legislation was changed only in 1989 to make provision for this objective. From the literature, however, it transpires that the SA Reserve Bank focused attention on mitigating inflation well before 1989 (see for instance De Kock, 1954; De Kock, 1956; or SA Reserve Bank, 1971).

In the analysis of domestic monetary policy since 1921 it is important to note that “[r]eadily available information on South African interest rates dates back to the period following Unionisation in 1910. Interest rate statistics for this early period are, however, very limited and coverage was only slightly expanded between then and the end of the Second World War” (Republic of South Africa, 1985: 105). As far back as 1921, the Fed and the Bank of Finland were the only two central banks in the world with regular statistics publications, and the publication of such a report by the SA Reserve Bank commenced only in 1946 (Meiring, 1996: 32). The SA Reserve Bank’s first “... *Quarterly Bulletin of Statistics* was dated 12 September 1946 but, according to the annals, appeared on 8 October 1946” (Meiring, 1996: 32), comprising monthly data of the SA Reserve Bank’s assets and liabilities. Its publication followed on the appointment of De Jongh, a later Governor of the Reserve Bank, as its first Statistician on 1 January 1946 (Meiring, 1994: 45). In ensuing issues, the data included in the *Quarterly Bulletin* increased considerably, to the extent that by 1974 the *Quarterly Bulletin* “... received the highest ranking among all economic periodicals used by South African researchers” (Meiring, 1996: 59).

From its small beginnings, the SA Reserve Bank grew to its current position, where it “... performs virtually the full range of functions and duties that are customarily carried out by central banks” (Mboweni, 2000b: 1). In its growth over many years, the statute of the SA Reserve Bank was not only replaced by new legislation on two occasions (1944 and 1989), but the legislation was also amended on numerous occasions to cater for changing circumstances challenging the implementation of monetary policy. The following 12 sections deal with various phases and periods in South Africa’s monetary policy and changes in the inflation rate since 1921.

5.3 Gold standard: 1921 to 1931⁵⁸

The SA Reserve Bank’s approach to monetary policy after its inception in 1921 was the application of credit and interest rate policies aimed, in orthodox gold standard fashion, at bringing about the necessary conditions for an eventual return to such a standard. At the time non-convertibility (in the true sense of the word, i.e. into gold specie or coin) was seen as merely

⁵⁸ Except where stated otherwise, this section draws on De Kock, 1954.

a temporary measure, and policy debates focused on the embargo on gold exports and the acceptability of not linking the South African pound to the British pound sterling. South Africa reintroduced the gold standard at the pre-war conversion rate on 18 May 1925. This put the South African pound on par value with the UK pound sterling, as the UK returned to a gold standard on 25 April 1925, also at the pre-war conversion rate (Sloman, 1994: 607)⁵⁹.

For purposes of analysing the SA Reserve Bank's credit policy during 1921 to 1931, the period could be split into two sub-periods. During the first sub-period, the SA Reserve Bank applied its credit policy with the restoration of the gold standard in mind. During the second sub-period, the aim of the SA Reserve Bank's credit policy was to maintain the gold standard. The aim of its policy was therefore to maintain stability between the exchange rate of the domestic currency and those of other countries on a gold standard, rather than to stabilise the general price level. The SA Reserve Bank not only successfully restored the gold standard and currency convertibility, but also succeeded in establishing a reasonably close relationship between Bank rate, used for discounting purposes, and the lending rates of commercial banks, which ensured that the SA Reserve Bank had an influence over domestic interest rates and credit conditions, necessary to apply effective monetary policy. The use of a gold standard domestically and internationally was underscored at the time, by " ... the general belief and conviction ... that exchange rate stability was of paramount importance for the maintenance of international confidence and the conduct of international trade ... " (De Kock, 1956: 123).

As is evident in tables A1 to C1 in Appendices A to C, South Africa experienced deflation from 1921 to 1931, with prices declining on average by some 3,2 per cent per annum. However, when analysing the movement in prices, it is interesting to note the level of and changes in domestic interest rates over the same period (Republic of South Africa, 1985). The prime overdraft rate of commercial banks fluctuated around 7 per cent (Republic of South Africa, 1985: 106). Moreover, "[f]rom 1922 to 1932 the margin between Bank rate ... [i.e. the rediscount rate for commercial banks at the SA Reserve Bank] ... and the commercial banks' minimum overdraft

⁵⁹ Sloman (1994: 607) is highly critical of the decision of the UK to restore the gold standard, as its adoption required the introduction of deflationary policies in the UK. Similar conditions applied to South Africa.

rate ranged from 0,75 to 1,6 per cent ... ” (Republic of South Africa, 1985: 106). As the rate of inflation over the period 1921 to 1931 declined by an average of some 3,2 per cent per annum, it implies that the real average minimum overdraft rate was slightly above 10 per cent per annum. Low inflation or relative price stability were not achieved, but rather moderate deflation – which was the objective of the policy, i.e. to restore price levels to those prevailing before the Great War.

5.4 Abolition of the gold standard: 1932⁶⁰

Following a crash in the prices of shares on the New York Stock Exchange in October 1929, first the United States and thereafter many other countries entered a period of sharp contraction in economic activity and price deflation (Parkin, 2003: 722). This period is referred to as the Great Depression, and lasted until 1933. Whereas a recession is defined as “[a] downturn in real GDP for two or more successive quarters” (Samuelson and Nordhaus, 2001: 774), no formal definition exists in economics for a depression. According to Samuelson and Nordhaus, “[d]epression is said to have been used first by President Herbert Hoover around 1930, because it sounded less frightening than words such as panic or crisis. But the Great Depression of the 1930s gave that word ugly associations, and it was replaced by yet another euphemism, recession” (1985: 902). Keynes (1930) initially referred to this downturn as a slump.

In the midst of these depressing economic conditions, the UK suspended the gold standard on 21 September 1931 (De Kock, 1956: 142). As South Africa also suffered the consequences of the world-wide depression at the time, it was necessary for the country to consider whether it should retain or abandon its own gold standard. The three alternatives available to South Africa were to (i) retain the gold standard independently from the UK – which was the option chosen by the authorities; (ii) allow the domestic currency to depreciate, i.e. to link it to a higher gold price; or (iii) peg the domestic currency to the British pound sterling, rather than to gold. Full convertibility of banknotes for gold was retained and no restrictions were placed on the export or import of gold. Retaining full convertibility and free exportation caused an immediate large

⁶⁰ Except where stated otherwise, this section draws on De Kock, 1954.

speculative capital outflow from South Africa. This capital outflow exacerbated the domestic consequences of the depression and raised questions about the continued viability of the SA Reserve Bank⁶¹.

The gold standard controversy duly developed into a political issue, with government supporting it and the opposition arguing that the gold standard should be abandoned and the domestic currency should follow the British pound sterling (SA Reserve Bank: 1971: 34). Owing to the depressed conditions, the mining (other than gold mining), manufacturing and agricultural sectors, as well as many private individuals, suffered severe hardship owing to declines in international demand and the appreciation of the domestic currency, relative to the value of British pound sterling, the currency of South Africa's major trading-partner country (see for instance Dommissie, 2005: 40 and 41; or SA Reserve Bank, 1971: 36)

The economic hardship resulted in dwindling support for the Government, evidenced by election results in by-elections during the course of 1932, in constituencies falling vacant and filled in terms of the electoral system then used in South Africa. Roos, a former leader in the then Transvaal of the National Party which was in power at the time of the controversy in 1931 and 1932, announced on 21 December 1932 that he would return to politics with the goal of establishing a coalition party aiming at the abolition of the gold standard. This led to a renewed demand for the conversion of domestic banknotes into gold at the SA Reserve Bank, which soon became untenable. The Government duly issued a proclamation on 28 December 1932 in terms of the Finance Emergency Regulations Act of 1932, abolishing the convertibility of banknotes into gold from that date (SA Reserve Bank, 1971: 37). This was considered a temporary emergency measure. Until a new note series was issued in 1992, known owing to the serving Governor at the time as the second Stals-issue (Van Rensburg, 2003: 295), South African banknotes continued to carry a promise of convertibility.

⁶¹ Owing to questions about the financial position of the SA Reserve Bank, the Minister of Finance confirmed towards the end of October 1931 in a statement that government would ensure the SA Reserve Bank's continued financial viability. The need for issuing a statement of this nature places central bank autonomy in jeopardy. If a central bank cannot ensure its own financial viability, it can hardly be argued that it should be afforded the autonomy to conduct its operations without interference of the government, for whose account those operations will be.

Looking back after more than 70 years on the brief period between the announcement by Roos and South Africa leaving the gold standard which finally ended the convertability of gold, it might be with some surprise that the reader realises the speed at which developments took place. The necessary decisions to leave the gold standard were taken and the announcements were made within seven days from the announcement by Roos without technology and equipment employed in the twenty-first century. Moreover, this period included Christmas and Boxing Day (currently 26 December is known as the *Day of Goodwill* public holiday in South Africa), which were at the time also two public holidays in South Africa. From a twenty-first century perspective, the observation has to be made that the central bank and Government must have had some prior contingency planning in place which could simply be implemented after the announcement by Roos. This makes the lack of clear policy direction after the abolition of the gold standard, explained in the next section, even less understandable.

Analysing the situation with the benefit of hindsight shows that South Africa should have followed the UK in the abolition of the gold standard in September 1931. The policy of maintaining the gold standard exacerbated the domestic depression, thereby aggravating economic hardship. This is evident in Tables A1 to C1 in Appendices A to C, showing that South Africa experienced sharp price deflation in 1932, with prices declining by 4,5 per cent. By 1932 the minimum lending rate of the commercial banks was 7,3 per cent (Republic of South Africa, 1985: 106), implying that the real minimum lending rate was 11,8 per cent, which aggravated the difficulties caused by the Great Depression and the maintenance of the gold standard. Relative price stability was therefore not achieved, and the country experienced sharp deflation.

5.5 After the gold standard: 1933 to 1938⁶²

After the abolition of the gold standard on 28 December 1932, it was necessary to consider the issue of adopting an alternative policy approach. However, under the circumstances it was

⁶² Except where stated otherwise, this section draws on SA Reserve Bank, 1971.

decided by the monetary authorities⁶³ “ ... to leave the future monetary policy of the country to be determined by Parliament ... ” (De Kock, 1954: 191), due to reconvene early in 1933. Today such a decision would certainly be viewed as abandoning responsibility for policy formulation and implementation by the relevant authorities.

In the period between the abolition of the gold standard and the finalisation of a new policy by Parliament, the SA Reserve Bank withdrew from the foreign exchange market, therefore allowing the domestic currency to find its own level in the foreign exchange market. Parliament passed the Currency and Exchanges Act, No 9 of 1933, early in March 1933 and, as was widely expected, the value of the domestic currency was linked to that of British pound sterling.

De Kock states that “[i]n considering the transition from the abandonment of the gold standard to the adoption of the policy of linking the South African pound with sterling, it would appear that the Union’s monetary authorities ... allowed an unnecessary amount of confusion and uncertainty ... through hesitancy and lack of leadership. Taking into account the fact that the Government and the Reserve Bank had been actively involved with exchange rate problems during the previous fifteen months ... it is difficult to understand why, following South Africa’s departure from gold, matters were again allowed to drift, even for a short while” (1954: 194). The most appropriate approach would have been to link the domestic currency in terms of the Finance Emergency Regulations Act of 1932 to sterling at the time of announcing the abolition of the gold standard.

From an analysis of South Africa’s domestic economic conditions and international economic relations, the finding is that “... the abandonment of the gold standard and the depreciation of the South African pound to the level of sterling were decidedly beneficial to the Union” (De Kock, 1954: 212). Moreover, the abolition of the gold standard provided the SA Reserve Bank with the leeway to ease monetary policy, with the first reduction in Bank rate announced on 20 February 1933, after the Treasury reduced the Treasury bill rate and commercial banks reduced deposit rates already on 11 January 1933.

⁶³ The Treasury (as it was known at the time) and the SA Reserve Bank.

The improvement in general economic conditions gave rise to the question whether the SA Reserve Bank would be able to control inflation successfully, particularly in view of increasing domestic liquidity after the abolition of the gold standard, as “... commercial banks ... no longer had to avail themselves of the credit facilities of the Reserve Bank. Had the Bank deemed it necessary to raise its discount rate in order to restrict credit, it would ... have experienced great difficulty in making the higher rate effective” (De Kock: 1954: 233). The Government came to the aid of the SA Reserve Bank by mopping up surplus domestic liquidity by means of loans and even small budget surpluses, and by redeeming foreign loans. De Kock states that “... the prestige of the Bank and the degree of co-operation between it and the commercial banks had risen to a point where the Bank’s moral influence on monetary conditions was by no means negligible” (1954: 233). Despite the concerns, South Africa experienced only mild inflation between 1933 and 1938, as is evident from Tables A1 to C1 in Appendices A to C, with prices increasing on average by 0,6 per cent per annum. The average price level returned to the level of 1931 only by 1939.

The average minimum overdraft rate of commercial banks was about 5,5 per cent, with a constant margin of 2 percentage points between this rate and Bank rate maintained for a period of 10 years from 1935 (Republic of South Africa, 1985: 106), whereas the average real minimum lending rate was about 5 per cent. Despite the problems of the SA Reserve Bank in restricting credit, it achieved the maintenance of relative price stability.

5.6 World War II: 1939 to 1945⁶⁴

As the exchange rate of the domestic currency traded at a fixed rate to British pound sterling, South Africa elected to remain a member of the Sterling Area at the outbreak of World War II. This implied that South Africa accepted the exchange control measures introduced in respect of the Area. In terms of these control measures, free international payments were permitted

⁶⁴ Except where stated otherwise, this section draws on SA Reserve Bank, 1971.

between countries comprising the Area, but permission was required from the exchange control authorities to make payments to countries outside the Area.

This arrangement, i.e. the first introduction of a form of exchange control in South Africa, forms the foundation of the subsequent system of exchange control adopted in 1961 and still in place in one form or another at the time of completion of this study. The exchange control regulations empower the National Treasury to control all dealings in gold and foreign currency and to control the export of gold. The administration of these powers was delegated to the SA Reserve Bank, an arrangement that remains in place. However, since democratic elections in South Africa in 1994, considerable progress has been made with the gradual liberalisation of exchange control.

Owing to a surplus on the current account of South Africa's balance of payments during World War II, the domestic "... monetary situation ... was characterised by even greater liquidity than the 1933-39 period" (De Kock, 1954: 257), which resulted in a reduction in Bank rate on 2 June 1941. This reduction brought domestic interest rates down to their lowest level from the inception of the SA Reserve Bank. However, the country's favourable balance-of-payments position, rather than the monetary policy stance, resulted in the easing of the domestic liquidity position.

In an effort to reduce domestic liquidity and contain the development of increasing inflationary pressures, the SA Reserve Bank and the Treasury, "... with the co-operation of the British authorities, initiated their special wartime scheme of external debt repatriation and redemption. This arrangement was successful in reducing the quantity of money and in helping to prevent any further decline in interest rates, and to that extent at least diminished the internal inflationary pressure" (De Kock, 1954: 273). As the possibility of open-market operations, particularly the sale of securities, by the SA Reserve Bank was still very limited owing to the underdevelopment of the money and capital markets in South Africa at the time and the limited stock of securities held by the SA Reserve Bank that it could sell, the only alternative at the time would have been an increase in taxes, i.e. a tightening of fiscal policy.

Rather than relying solely on monetary policy to curb the inflationary pressure building up in the economy, the South African Government elected to curtail it through the use of an extensive system of control measures, e.g. price, rent, wage and building controls and food subsidies. Under these circumstances, the inflation suffered by South Africa at the time is described by De Kock as “ ... the suppressed rather than the open variety ... [which] ... brought with it the disadvantages of the former rather than the latter” (1954: 268). As could be expected with a system of extensive controls, inflation as measured in terms of actual price increases, rather than as measured in terms of shortages, increased substantially in the period after the relaxation or abolition of the control measures, as discussed in the next section.

The SA Reserve Bank’s enabling legislation, the Currency and Banking Act, No 31 of 1920, as amended, was replaced by the SA Reserve Bank Act, No 29 of 1944, which consolidated matters pertaining to the SA Reserve Bank. At the time the National Party was in opposition in Parliament and advocated a limitation of the autonomy of the SA Reserve Bank, arguing in favour of it being controlled directly by the Government. However, this view did not receive the Parliamentary majority and the SA Reserve Bank’s autonomy was retained in the Act of 1944.

Following an adjustment in 1941, the minimum overdraft rate of commercial banks was 5,5 per cent during the remainder of the war period, with a constant margin of 2 percentage points between this rate and Bank rate, which was adopted in 1935, retained until 1945 (Republic of South Africa, 1985: 106). Inflation was at an average annual rate of about 4,1 per cent, implying that the average real minimum lending rate was about 1,4 per cent. Owing to the limited scope for the application of monetary policy over this period, the authorities were generally not successful in achieving the overarching objective of relative price stability. Moreover, price increases were suppressed by control measures, implying that the rate of inflation cannot be used as a reflection of inflationary conditions in the economy.

5.7 The immediate post-war period: 1946 to 1954⁶⁵

The domestic economy was generally sound at the end of World War II, with a favourable current-account balance supporting sound fiscal policy, but South Africa experienced some consequences of inflationary pressures emanating from policies adopted during the War. At the time monetary policy was based on two conventional premises, i.e. money “ ... was a unique financial asset which played a strategic role in the determination of the total demand for goods and services. And the second was that the SA Reserve Bank and the commercial banks ... were the only financial institutions which could create money ... [while] ... bank credit and money exerted an important influence on ... prices and the balance of payments, and needed to be controlled in the interests of general economic stability and ... to maintain stable exchange rates under the Bretton Woods system” (Republic of South Africa, 1985: 144).

The Bretton Woods system of fixed but adjustable exchange rates, introduced after World War II, emanated from a meeting of 730 delegates, representing all 44 Allied nations participating in the War, in July 1944 at the Mount Washington Hotel, situated in the New Hampshire resort town of Bretton Woods (see for instance Braithwaite and Drahos, 2000; or McAleese, 2004). The delegates discussed the envisaged economic system to be introduced after the War and finally signed the Bretton Woods Agreement on 22 July 1944. Apart from providing for the establishment of the International Bank for Reconstruction and Development (the World Bank) and the IMF, the agreement imposed on each country the obligation to follow a monetary policy course that maintained the exchange rate of its currency within a fixed value (plus or minus one percent) in terms of gold (with the US dollar convertible into gold at a fixed price); but in terms of which participating countries had the option to devalue or revalue these fixed values. The system eventually collapsed in 1971 when the United States suspended the convertibility of the US dollar into gold (see for instance Braithwaite and Drahos, 2000; or McAleese, 2004: 5).

When the UK decided to devalue British pound sterling by some 30 per cent against the US dollar on 18 September 1949, the South African Government followed the devaluation, with the

⁶⁵ Except where stated otherwise, this section draws on De Kock, 1954.

link in the value between the domestic currency and sterling retained, but the value in terms of the US dollar declining from £1 = \$4,03 to £1 = \$2,80. The main reasons driving the decision to devalue were the gradual deterioration in the balance-of-payments position from 1946; to restimulate capital inflow for investment; and to increase the prospective lives of the gold mines (SA Reserve Bank, 1971: 52). The devaluation was preceded by the reintroduction in 1948 of controls on imports from non-Sterling Area countries by means of foreign exchange rationing and by the reintroduction of extensive import controls on 24 February 1949, to take care of the deterioration of South Africa's balance-of-payments position, which started some three years earlier, i.e. in 1946.

At the time of the devaluation it was clear to the Government and the SA Reserve Bank that continued inflationary pressures would be one consequence of such a step, but it was the prevailing view that the consequences of not devaluing the currency outweighed the dangers of an increasing build-up of inflationary pressures. Moreover, the devaluation allowed South Africa to retain its membership of the Sterling Area, which was considered beneficial to the country at the time. Following the devaluation of the currency, the SA Reserve Bank increased in October 1949 its interest rates for the first time since 1941, when Bank rate was increased from 3 per cent to 3,5 per cent. However, despite this increase in interest rates, the SA Reserve Bank still had to apply anti-inflationary policies, and “ ... from 1951 repeatedly stressed the desirability of a contraction of bank credit ... ” (SA Reserve Bank, 1971: 55). This resulted in a further increase of Bank rate to 4 per cent in March 1952, a level retained until September 1955.

A significant step in the development of South Africa's financial structure occurred in 1949, with the establishment of the National Finance Corporation (NFC), which commenced operations on 20 September 1949 (Republiek van Suid-Afrika, 1985: 113; see also De Kock, 1956: 171). The NFC aimed at developing a domestic money market and the utilisation of capital in the best economic interests of South Africa. Its liquidity was guaranteed in terms of an agreement that the SA Reserve Bank will discount its Treasury bills as and when required, at the rates at which the NFC acquired the bills. This implied that the SA Reserve Bank performed a “ ... function of lender of last resort, being called upon to grant accommodation to the Government and the

commercial banks only after all the other sources have been exhausted through the medium of the National Finance Corporation” (De Kock, 1956: 171). The function of lender of last resort⁶⁶ is described by De Kock as a function that was flowing from the central bank’s function as bank of rediscount, and is defined as “ ... the assumption of the responsibility of meeting, directly or indirectly, all reasonable demands for accommodation from commercial banks, discount houses and other credit institutions, subject to certain terms and conditions which constitute the discount rate policy of the central bank” (1956: 98).

The SA Reserve Bank’s main focus in the decade following on World War II was disinflation in view of increasing inflationary pressures, as the Governor pointed out as early as 1948 that domestic economic expansion proceeded at too rapid a rate and called for a consolidation of economic progress. However, by 1954 the Governor reported that considerable progress had been made in restoring internal and external economic stability and declared in 1955 that the need for consolidation no longer required special emphasis (SA Reserve Bank, 1971: 56).

In assessing monetary policy in the decade after World War II, special reference should be made to the establishment of the NFC as an initiative to develop a formal money market, the lack of which has severely hampered the SA Reserve Bank in the execution of monetary policy since its inception in 1921. Government and quasi-government institutions reverting to central bank credit severely hampered the implementation of disinflationary policies by the SA Reserve Bank, with the Governor calling on occasion for the need to consolidate economic progress in the wake of inflationary pressures.

The minimum overdraft rate of commercial banks fluctuated between 4,5 per cent until 1949, 5 per cent in 1950 and 5,5 per cent until 1955, with a constant margin of 1,5 percentage points

⁶⁶ This description of the lender-of-last-resort function seems to describe normal central banking discounting to qualifying institutions. The meaning of *lender of last resort* has seemingly changed over time, and has recently been described by Mishkin as a system of providing “ ... reserves to banks when no one else would, thereby preventing bank and financial panics” (2004: 402). This happened in South Africa as early as early as 1921, when the SA Reserve Bank provided special assistance to the National Bank (SA Reserve Bank, 1971: 23). Although outside the scope of this study, it seems that a clear understanding of *lender-of-last-resort* assistance is necessary. The terminology *emergency liquidity assistance* might be a more appropriate description of this responsibility of central banks.

between this rate and Bank rate maintained for a period of 12 years from 1946 (Republiek van Suid-Afrika, 1985: 113). Inflation averaged 4,4 per cent per annum, implying that the average real minimum lending rate was about 1 per cent, depending on the specific year in the period considered. As was pointed out by the Governor at the time, monetary policy was generally less than successful in supporting relative price stability, and higher real interest rates were perhaps necessary.

5.8 The late fifties: 1955 to 1960⁶⁷

The late fifties is characterised by the implementation of Keynesian policies aimed at stabilising economic activity, as was the case in the rest of the world. In the case of South Africa, “... the official approach ... was, in effect, a form of conservative Keynesianism which contained important elements of what later came to be known as monetarism. This was evident, for example, from the important role assigned to the money supply” (Republic of South Africa, 1985: 144). Despite the importance attached to changes in the money supply and its influence on investment and spending, “... no thought was given during this phase to setting either published or unpublished targets for M1, M2, cash base or any other monetary aggregate” (Republic of South Africa, 1985: 144).

Taking cognisance of the fact that South Africa was still part of the world-wide Bretton Woods system of fixed but adjustable exchange rates and the Sterling Area, the SA Reserve Bank based monetary policy decisions on its assessment of all available economic data, but with exchange rate stability enjoying a high priority among the goals set for monetary policy. Certain exchange control measures dealing with the transferability of capital abroad by residents were introduced in reaction to increasing interest rates in the UK vis-à-vis South African rates.

From 1946 the minimum overdraft rates of commercial banks were set at a margin of 1,5 percentage points above Bank rate, in terms of an agreement between the SA Reserve Bank and the commercial banks. This margin was changed to 2 percentage points in March 1958.

⁶⁷ Except where stated otherwise, this section draws on SA Reserve Bank, 1971.

Maintaining this margin enabled the SA Reserve Bank to exert a direct influence over the rates charged by commercial banks. Bank rate moved between 4 per cent and 4,5 per cent, with the average minimum overdraft rate at 6 per cent for this period. Inflation was at an average annual rate of about 2,3 per cent, implying that the average real minimum lending rate was about 3,7 per cent. Monetary policy therefore achieved the objective of relative price stability.

5.9 The early sixties⁶⁸

South Africa introduced a new decimal currency system in 1961, replacing the previous system comprising pounds, shillings and pennies (£/s/d). The SA Reserve Bank assumed a leading role in decimalisation, with Arndt, the Deputy Governor of the Reserve Bank, heading “ ... the task force to convert the South African currency and payments arrangements to a decimal system. The work of *Daan Desimaal* culminated in the issue of token quantities of new bank notes in Rand currency by the SA Reserve Bank on 14 February 1961 ... ” (Stals, 1996). South Africa introduced a system of rands and cents, with an official conversion rate of £1 = R2. This followed on the report of the Decimal Coinage Commission submitted on 1 August 1958 and the acceptance of its recommendation of the introduction of a 10-shilling (= R1) and cent system, owing to the fact that it would allow easier conversion from the previous system. The rand as name for the currency comes from Witwatersrand (the *White Water Ridge*), the shelf of gold in the Transvaal on which Johannesburg was established (Wordorigins Archive, [S.a.]).

Following political events in Sharpeville on 21 March 1960 (see for instance Reeves, [S.a.]), South Africa experienced large outflows of foreign capital, mainly in the form of the sale of shares of local companies listed on the domestic securities exchange, that could not be covered by the small surplus on the current account of the balance of payments. Owing to this outflow, the country’s gold and foreign exchange reserves declined by more than 50 per cent between January 1960 and May 1961 and the SA Reserve Bank adopted a monetary policy stance aimed, *inter alia*, at protecting the country’s official gold and foreign exchange reserves. In formulating monetary policy, “ ... the need to maintain stable exchange rates under the prevailing Bretton

⁶⁸ Except where stated otherwise, this section draws on SA Reserve Bank, 1971.

Woods par value system remained a major consideration” (Republic of South Africa, 1985: 146). Bank rate was increased to 4,5 per cent in August 1960, followed by an increase to 5 per cent in May 1961. Bank rate was subsequently dropped to 3,75 per cent, but was increased in July and December 1964, when it again reached the level of 4,5 per cent.

Exchange control measures were expanded as South Africa left not only the Commonwealth when the country became the independent Republic of South Africa on 31 May 1961, but also the Sterling Area. Restrictions were placed on foreign investment by residents to limit the outflow of capital, accompanied by the introduction of the securities rand in terms of which the sales proceeds of domestic securities had to be retained in South Africa, and could only be used for reinvestment in domestic securities. The securities rand system evolved over time into the financial rand system, which became the cornerstone of a system of exchange control over non-residents. This system was abolished briefly between 1983 and 1985, and retained until final abolition in 1995. In addition, import control was tightened and customs and excise duties on imported luxury and semi-luxury items and on motor vehicles were also increased. These measures had the desired results and, owing to sustained surpluses on the current account of the balance of payments, the country’s gold and foreign exchange reserves exceeded the level of January 1960 by 1962. The SA Reserve Bank and the Government applied a successful mix of policies to retain domestic economic stability.

This period is also characterised by a unique development at the SA Reserve Bank. Currently the SA Reserve Bank Act, No 90 of 1989, as amended, stipulates in Section 7 that “[t]he Governor shall preside at the meetings of the Board ... [but] ... the Minister ... [of Finance] ... may designate any other director to act as chairman of the Board during the Minister’s pleasure”. Similar provision was made in the SA Reserve Bank Act of 1944, and Donges, the Minister of Finance, exercised this option in 1962 (Rossouw, 2004: 1101). During the latter part of 1962 and most of 1963, Rissik, the Governor, did not serve as chair of the Board of the SA Reserve Bank, as De Kock, the previous Governor, was appointed as Chairperson of the Board after stepping down from his previous position on 30 June 1962. This decision to split the responsibilities was soon found not to be in the best interests of the SA Reserve Bank and this practise was ended in

1963 (Rossouw, 2004: 1102). Complicating factors, for instance, were (i) the question whether the Governor or the Chairperson should address the annual general meeting of the SA Reserve Bank's stockholders on monetary policy; and (ii) a lack of clarity on the split in decision-making authority between the Chairperson and the Governor. The option of such a split in responsibilities is still available to the Minister of Finance, but has since not been used.

The report of a Technical Committee on banking and building society legislation was published in 1964 (Republic of South Africa, 1964). Although monetary policy fell outside the mandate of the Committee, "[t]he Technical Committee recommended two major modernisations of the earlier conventional approach to monetary policy. The first was the recognition that, in addition to money, there were also significant amounts of what was in those days called near-money, i.e. deposits or other financial assets which served as close substitutes for money ... [and, secondly] ... in addition to the Reserve Bank and commercial banks, there were several other kinds of deposit-taking institutions in South Africa ... which could also participate in the process of creating money or near-money on a multiple basis" (Republic of South Africa, 1985: 145). The Committee accordingly recommended uniform legislation for all banking institutions, which was embodied in the Banks Act of 1965 (Republic of South Africa, 1985: 146). In analysing the approach of the Committee and its recommendations, it is noteworthy that " ... changes in the rate of growth of the money supply were not regarded as necessarily the main source of changes in economic activity or in the rate of inflation ... [implying that] ... the Committee did not recommend the use of monetary targets, but favoured a policy of demand management based on a broad assessment of current and expected economic and financial conditions" (Republic of South Africa, 1985: 146).

The minimum overdraft rates of commercial banks were retained at a margin of 2 percentage points above Bank rate adopted in March 1958. As in the preceding period, the maintenance of this margin enabled the SA Reserve Bank to exert direct influence over the rates of commercial banks. Bank rate averaged about 4 per cent, but moved between 3,75 per cent and 5 per cent, with a concomitant movement in the minimum overdraft rate, averaging at 6 per cent. Inflation was at an average annual rate of about 1,6 per cent, implying that the average real minimum

lending rate was about 4,4 per cent. Relative price stability was therefore achieved during this period.

5.10 Direct controls: 1965 to 1980⁶⁹

By 1965 the world was still characterised by the Bretton Woods system of fixed (but adjustable) exchange rates, with the US dollar as anchor for the exchange rate system and convertible into gold at a fixed price. The exchange rates of various countries could be adjusted in terms of the Bretton Woods system by means of devaluations or revaluations (Mohr and Fourie, 2004: 436). However, this “ ... system came under immense pressure during the late 1960s and eventually broke down in 1971, when the major industrialised countries switched to a system of floating currencies ... ” (Mohr and Fourie, 2004: 436).

The United States suffered the inflationary consequences of the Vietnamese War and a deficit on the current account of its balance of payments. As its currency served as the reserve currency in terms of the Bretton Woods system, it was the one currency that could not adjust its value by means of a formal devaluation to help the adjustment of the domestic economy. Consequently, “[o]n August 15, 1971, President Nixon formally severed the link between the dollar and gold, bringing the Bretton Woods era to an end” (Samuelson and Nordhaus, 2001: 628). The abolition of the Bretton Woods system introduced the current era of floating exchange rates, with market forces of supply and demand largely determining the exchange rate of a currency, although governments and central banks can adopt exchange rate regimes such as managed floating, pegging or even an explicit nominal anchor for the exchange rate of the currency.

In the aftermath of the abolition of the Bretton Woods system, the Group of 10 major industrial countries “ ... succeeded on 18 December 1971 in reaching agreement on the realignment of their exchange rates ... [with] ... a devaluation of the US dollar of 7,89 per cent in terms of gold, i.e. for an increase in the official dollar price of gold from \$35 to \$38 per fine ounce ... South Africa

⁶⁹ Except where stated otherwise, this section draws on Republic of South Africa, 1985.

reacted to this currency realignment by devaluing the rand on 21 December 1971 by 12,28 per cent” (SA Reserve Bank, 1971: 81).

Following the breakdown of the Bretton Woods system, the SA Reserve Bank had to establish a new exchange rate framework for the country. The authorities pegged the exchange rate, albeit at varying levels after formal devaluations in December 1971 and in September 1975, initially to pound sterling, then to the US dollar, then a peg to a basket of currencies, and again to the US dollar before a system of managed floating was introduced from January 1979. The SA Reserve Bank increased Bank rate to 5 per cent in March 1965 in an attempt to curb domestic demand. This increase “ ... was part of a more comprehensive set of restrictive measures involving fiscal changes such as the imposition of a loan levy and a surcharge on income tax ... ” (SA Reserve Bank, 1971: 65). In addition, “[f]rom November 1965 the Bank also began to employ a new form of credit control never used before in South Africa, namely the imposition of credit ceilings ... ” (SA Reserve Bank, 1971: 66). Credit rationing by means of control measures was employed as an instrument of credit control by the Bank of England in the latter part of the eighteenth century, as the Bank of England was prohibited at the time by British usury legislation to increase its discount rate beyond 5 per cent (De Kock, 1974: 237). The Bank of England abolished such controls after legislative amendments in 1844, which enabled it to rely upon its Bank rate to ration credit effectively, and direct credit rationing by means of credit controls was employed again (albeit not by the Bank of England) only after World War I, mainly by Germany, Mexico and the Soviet Union (De Kock, 1974: 238). Credit rationing was also employed by certain central banks after World War II.

In the case of South Africa, credit controls and related measures were used, despite many disadvantages, “ ... because of the difficulties of controlling bank liquidity at a time when the government sector was financing its expenditure in an inflationary manner and thereby providing the banks with additional cash or liquid assets” (SA Reserve Bank, 1971: 66). As inflationary pressures continued to increase, new initiatives were introduced in July and August 1966 to curb inflation. These initiatives included, *inter alia*, fiscal measures aimed at curbing demand, the

relaxation of import control, an increase in Bank rate to 6 per cent and an extension of credit ceilings on banks (SA Reserve Bank, 1971: 67).

The SA Reserve Bank's use of quantitative measures (mainly credit ceilings) from 1965 to 1972 and again from 1976 to 1980 to limit the supply of bank credit by commercial banks to the private sector, was supported by an array of other measures. Deposit rate control, prescribing the maximum interest rate on bank deposits, was used from March 1965 to July 1966, December 1969 to August 1970 and March 1972 to March 1980, *inter alia*, to contain interest rates (Republiek van Suid-Afrika, 1985: A5). This system of direct controls in South Africa was supported by a comprehensive system of exchange control (SA Reserve Bank, 2005a), highlighted in Chapter 4. Interest rates were adjusted on a number of occasions, but owing to the extensive use of direct controls, rates were not at the market clearing level, i.e. where the demand for loanable funds were in equilibrium with the supply of such funds. The use of direct controls implies that the demand for loanable funds was artificially contained and interest rates accordingly did not reflect the market equilibrium position.

Direct controls and the general approach to monetary policy, including adjustments to Bank rate, did not achieve the desired outcome: low inflation as measured by changes in the CPI. Inflation accelerated between 1965 and 1980: “[i]nflation established itself firmly between the levels of 10 and 20 percent, and the natural development of financial markets was suppressed by the need for direct controls over banks and other financial institutions” (Stals, 1996). Although 1965 to 1980 are taken as a period owing to the use of direct controls, in respect of inflation it should be split into to sub-periods: up to 1973, when inflation was at single digits, and from 1974 to 1980, when South Africa suffered sustained double-digit inflation, which continued in the 1980s.

Between 1965 and 1973, Bank rate moved between 5,75 per cent and 6,25 per cent, with an average of 6 per cent. At the same time the minimum overdraft rate of banks were no longer fixed at a constant margin above Bank rate, although a semi-formal link between Bank rate and the prime rate of banks was retained until 1982 (Stals, 1996). The link was subsequently reintroduced, *inter alia*, because the actual rediscount rate charged for SA Reserve Bank

accommodation frequently differed from the official Bank rate, implying that the minimum lending rate rather followed other money market rates. Banks' minimum lending rate averaged about 8 per cent during the first sub-period (1965 to 1973), but varied between 6 per cent and 9 per cent. Inflation was at an average annual rate of about 4,6 per cent, but accelerated sharply from 1968 to the end of this sub-period, implying that the average real minimum lending rate was about 3,4 per cent. Monetary policy therefore supported relative price stability during this sub-period, but failed to address the acceleration in inflation. This is confirmed by the fact that the domestic inflation problem already received attention by the mid-sixties, as well as by the analysis of the next sub-period below.

Increasing domestic inflationary pressures gave rise to a decision of the Council of the Economic Society of South Africa on 1 April 1966 to arrange a conference on the matter (Richards, 1967: 278). The conference was hosted on 24 and 25 August 1967 in Johannesburg and six papers on various aspects pertaining to inflation were considered (Richards, 1967: 278). Some debate on the definition to be used for inflation is recorded in the conference proceedings, as different delegates used different definitions (see for instance Du Plessis, 1967: 365; Samuels, 1967: 341; or Van der Horst, 1967: 323).

At the conference, Hobart Houghton stated that “[t]he main strength of the inflation of our time was that we expected it to continue ...” (1967: 292). This view was supported by Samuels, who stated that “... once the market's expectations ... are broken, the problems of the transition to a non-inflationary era will become progressively easier. The eradication of inflationary expectations will not be easy” (1967: 355). Reflecting on this conference some 40 years later, the reaction is that *the issues remain the same, only the names of the conferences considering them change*.

The second sub-period (1974 to 1980) deals with inflation accelerating to a level above 10 per cent per annum and staying at that level for a sustained period – in this event until 1992, as is highlighted below. Between 1974 and 1980, banks' minimum lending rates moved between 8 per cent and 12,25 per cent, with an average of 10 per cent. As was the case in the first sub-

period, the minimum overdraft rate of banks was no longer fixed at a constant margin above Bank rate, but some semi-formal link was nevertheless retained. Bank rate averaged about 8 per cent during this sub-period, but moved between 5,75 per cent and 9 per cent. Inflation was at an average annual rate of about 12,1 per cent, but continued to accelerate sharply towards the end of this sub-period, implying that the average real minimum lending rate was about minus 4,1 per cent. Monetary policy, therefore, did not contain inflation during this sub-period, while direct controls resulted in the adoption of interest rates obviously too low in comparison to the general rate of increase in the price level.

The major monetary policy changes associated with 1981 discussed in the next section (i.e. the movement from direct controls to a market-oriented monetary policy associated with the appointment of De Kock as Governor with effect from 1 January 1981), were indeed announced by De Jongh, his predecessor, in 1980. At the SA Reserve Bank's sixtieth ordinary meeting of stockholders held on Tuesday, 26 August 1980, it was announced that credit ceilings would be abolished with effect from 1 September 1980 (De Jongh, 1980: 10).

5.11 Stubbornly high inflation: 1981 to 1985⁷⁰

After the unsatisfactory experience with direct controls between 1965 and 1980, at the beginning of the 1980s the SA Reserve Bank decided to revert to more market-oriented economic policies. This period can be described as a transition phase in monetary policy (Nel, 1993: 120) after the extensive use of direct controls. Casteleijn describes monetary policy as a “ ... mixed system during transition ... ” (2001: 5), while Gidlow describes this period (and the period 1985 to 1989) as one of a market-oriented mixture of conservative Keynesian demand management and monetarism, with the focus on discretionary demand management (Gidlow, 1995: 4).

Owing to the distortions caused by direct controls, the De Kock Commission's interim recommendation that South Africa should follow market-oriented monetary policy was adopted and implemented (Republiek van Suid-Afrika, 1985: A14). Money-supply growth targets served

⁷⁰ Except where stated otherwise, this section draws on Stals, 1996.

as anchor for market-oriented monetary policy. For this purpose, a broadly defined money supply figure, M3 (notes and coin in circulation; cheque, transmission and savings deposits; and call, short, medium and long-term deposits) was selected, as narrower definitions of the money supply are subject to seasonal movements. This new policy approach resulted in more flexible and frequent adjustments in interest rates, as rates had to reflect changes in the growth of the M3 money supply. As a consequence, the domestic economy faced the challenge of adjusting not only to higher interest rates than before, but also to more frequent interest rate movements.

In the historic assessment of the conduct of monetary policy in South Africa, the adoption of the recommendations of the De Kock Commission was indeed an important philosophical change. Market forces, rather than direct controls, determine interest rates and therefore the conduct of monetary policy. Despite further amendments to the conduct of monetary policy in South Africa since 1981, the SA Reserve Bank has not departed from the principle of market-oriented monetary policy.

The period under review is characterised by three remarkable occurrences. First, the world experienced a large surge in the gold price, with concomitant major advantages for the domestic economy, as the price of gold reached a record of US\$850 per fine ounce in January 1980. This resulted in rapid domestic economic growth, large increases in domestic liquidity, increased tax collection by the Government and an appreciation in the exchange rate, as the rand was allowed at the time to float on the foreign exchange market against foreign currencies. However, the gold price thereafter declined to below US\$300 per ounce by June 1982. This decline forced difficult adjustments onto the domestic economy, as it had to cope with problems such as smaller real tax collections, declining exports, declining domestic liquidity and a depreciating exchange rate. As the price of gold again recovered towards the end of 1982 and in early 1983, the financial rand, which replaced the securities rand as the main measure of exchange control over non-residents, was abolished in February 1983, and with it exchange control over non-residents (Republic of South Africa, 1985: 131). However, as is shown below, the financial rand was reintroduced in 1985.

Secondly, in terms of the political system with constituencies electing representatives to Parliament used in South Africa at the time, the Government faced a crucial by-election in the Primrose constituency on Thursday, 29 November 1984. From August 1984, interest rates were at a new record-high level, with the prime overdraft rate at 25 per cent (SA Reserwebank, 1985: 26), which resulted in widespread domestic unhappiness about the macroeconomic management of the economy and, in particular, the conduct of monetary policy. The SA Reserve Bank dropped interest rates shortly before the by-election, on 19 November 1984 (SA Reserwebank, 1985: 26), seen at the time as a move to alleviate pressure on the Government and the governing party at the time, the National Party (see for instance *Finweek*, 2006: 8). The SA Reserve Bank's justification at the time for the drop in rates was, according to its *Quarterly Bulletin* of December 1984 " ... the cooling-down of the economy and the improvement in the balance of payments and the exchange rate of the rand ... [and] ... a general downward movement in short-term rates" (SA Reserve Bank, 1985: 13 and 14). Shortly after the by-election (on 8 January 1985), the SA Reserve Bank increased rates to their previous levels *inter alia*, " ... in response to a marked further decline in the price of gold and an accompanying sharp depreciation of the rand" (SA Reserve Bank, 1986: 16).

This temporary drop of interest rates subsequently became known as the Primrose prime incident. Already at the time of the drop in rates, it was stated that " ... there is no escaping the fact that ... [the] ... cut in prime interest rates was most likely the opportunity cost of the National Party winning the Primrose by-election. Despite Reserve Bank Governor Gerhard de Kock's firm denial, this obvious political manoeuvre has all the signs of a quick fix ... " (*Financial Mail*, 1984: 35). At the time, this incident placed in serious jeopardy the ability and autonomy of the SA Reserve Bank to conduct monetary policy in the best interests of all the people of the country. This gave rise to serious doubts about the future conduct of monetary policy, owing to uncertainty whether statements by the SA Reserve Bank could be taken on face value after this incident: evidence therefore of a time consistency problem, as explained in an earlier chapter of this study, with the subsequent negative consequences for the conduct of monetary policy and central bank credibility. It also reminds of the existence of a political business cycle (Nordhaus, 1975).

Thirdly, up to the middle of 1985, South Africa's balance-of-payments situation deteriorated progressively, and capital outflows increased substantially after the Rubicon⁷¹ speech of Botha, the President of the country at the time (see for instance *Finweek*, 2006: 21). The country did not exercise exchange control over non-residents at the time, owing to the abolition of the financial rand in February 1983. Botha made the speech on 15 August 1985 at the National Party Conference in Durban, at a time when the South African situation attracted wide international attention. Expectations were raised before the time that important announcements would be made that would change the South African political dispensation, at the time characterised by a system of apartheid.

The speech was described by the African National Conference, at the time the major liberation movement in exile, as “... an arrogant reaffirmation by P. W. Botha that the apartheid system will continue unchanged. At a time when every thinking person in our country and abroad is saying apartheid must end now, the ruling group could not help but show itself for what it is – a clique of diehard racists, hidebound reactionaries and bloodthirsty fascist braggarts who will heed nobody except themselves. Systematically, Botha rejected each and every measure whose implementation could be construed by some as possibly contributing to the solution of the South African problem. He prescribed the same solutions which have produced the crisis that is now devouring the lives of our people daily. In particular, while falsely and cynically claiming to be a democrat, he scorned the very notion of the right of all South Africans to vote for the government of their choice. He pledged to perpetuate the criminal bantustan system, further to balkanise our country and to continue the land dispossession of the African majority, which is confined to a little more than ten per cent of South Africa” (Tambo, 1985).

⁷¹ Reference was made to the proverbial crossing of the Rubicon in the speech (the name by which it subsequently became known); a reference to Julius Caesar's crossing of the Rubicon river in 49 BC. By crossing the Rubicon with his army without permission for a triumphal march through the streets of Rome, Caesar committed a grave crime against the state, viewed as an attack on the city. The phrase *crossing the Rubicon* has survived to refer to any person committing irrevocably to a risky course of action (Encyclopaedia Britannica, 2005). However, in the instance of the infamous Rubicon speech, the reference to the crossing of the Rubicon was viewed as an entrenchment of an unacceptable political system, rather than a new dawn for South Africa.

From an economic perspective, the Rubicon speech was a turning point for the worse, as it resulted not only in an outflow of foreign capital from South Africa, but foreign credit lines were also withdrawn, with South African borrowers unable to refinance their foreign short-term borrowing. On 28 August 1985, the temporary closure of the foreign exchange market was announced and on 1 September 1985 South Africa announced a standstill on the repayment of its foreign debts and the reintroduction of the financial rand. This was followed by debt rescheduling agreements, with the final tranche of rescheduled debt repaid only on 15 August 2001, when “ ... the arrangements for the repayment of loans in terms of the Debt Standstill Agreements concluded from 1985 onwards, were ended. On that date, the final authorisation was issued for the repayment of all the outstanding capital on loans in the standstill net. This brought to an end an unfortunate part of our history. South Africa has, however, meticulously honoured all the capital redemption schedules and interest payments on this indebtedness in accordance with the agreements made with foreign creditors” (Mboweni, 2001).

In 1985 the final report of *The Commission of inquiry into the monetary system and monetary policy of South Africa* (De Kock Commission) was published (Republic of South Africa, 1985). The Commission recommended far-reaching amendments to the conduct of monetary policy, which was adopted and implemented from 1986. In view of the Primrose prime incident described above, it is noteworthy that Chapter 25 of the report of the Commission covered the autonomy of the central bank in the implementation of monetary policy (Republic of South Africa, 1985: 251 to 255). In its analysis of the position of the SA Reserve Bank, the Commission’s assessment was that the intention of the legislator in establishing the SA Reserve Bank was “[t]o ensure the Bank’s independence and particularly its freedom from party political pressure. In this respect the Commission has found no evidence that the intentions of the legislator have not been realised. The Bank jealously guards its reputation for objectively formulating and applying monetary policy in the interest of the whole community” (Republic of South Africa, 1985: 253). Stating this less than one year after the Primrose prime incident implies that the commissioners either had selective memory or no memory at all.

The Commission made a number of recommendations on the autonomy of the SA Reserve Bank, the most noteworthy of which is that “[w]hile the Reserve Bank and the Treasury acting tighter as the *monetary authorities* [own emphasis] should jointly share the responsibility for broad monetary policy ... the Reserve Bank ... should primarily be charged with the responsibility for maintaining monetary stability and protecting the internal and external value of the currency. To perform this task effectively, the Bank should be ensured of considerable independence in matters of monetary policy – subject to only the constraints of the broad policy framework laid down by the Government” (Republic of South Africa, 1985: 253). Two issues in this quotation justify further comment:

- the Commission propagated the notion of the *monetary authorities* with joint responsibility for monetary policy, whereas better policy results are obtained in the long run with a policy approach in terms of which the government (or the Minister of Finance) sets, or sets jointly with the central bank, the monetary policy objective, but leaves the implementation of policy to the central bank for achievement through the implementation of monetary policy; and
- the Commission recommended that the SA Reserve Bank “ ... should primarily be charged with ... protecting the internal and external value of the currency” (Republic of South Africa, 1985: 253). When a mission for the SA Reserve Bank was formulated for the first time in 1990, it referred to the objective of protecting the internal and external value of the rand. This objective, albeit in a revised format (protect the value of the currency) is also contained in the Constitution of South Africa, Act 108 of 1996.

Not only was the SA Reserve Bank’s lending rates changed frequently, with concomitant changes in wholesale and retail interest rate patterns, but the domestic economy was also characterised by nominal rates at a higher level than before. Although these changes should be expected in view of a policy focus changing from direct controls to a market approach, such movements made financial planning increasingly difficult for businesses and households, with claims that the SA Reserve Bank kept rates at artificially high levels. This matter was addressed as early as in the *Governor’s Address* of 1981, when it was stated that “[a] basic feature of the monetary developments of the past year has certainly been the sharp increase in both short and long-term interest rates. The point must nevertheless be made that, even after these increases, the present

level of South African interest rates is not high in relation to either the domestic rate of inflation or real interest rates abroad. If the rate of inflation in South Africa is taken at 14,5 per cent, Bank rate in real terms is still minus 2 per cent ... [compared to] ... a Bank rate in real terms of 7,7 per cent in Canada, 4,4 per cent in the United States and 1,5 per cent in Germany ... Moreover, although the present Bank rate of 12½ per cent is a record for South Africa in nominal terms, it has on various past occasions been much higher in real terms. In 1968, for example, it was about 4 per cent in real terms ... ” (De Kock, 1981: 10). Bank rate did not play the role normally associated with such a rate at the time of this statement by the Governor, but merely served as a signalling mechanism for the SA Reserve Bank, i.e. adjusted to signal to the market that the SA Reserve Bank expects rates to move in a particular direction. From 1921 to 1932, when Bank rate indeed played the role normally associated with such a rate, it was much higher in real terms.

A further characteristic of the period was the difficulties for monetary policy implementation owing to inappropriate fiscal policy. De Kock mentioned in November 1984 that “ ... the mix of fiscal and monetary policy during the past two years has not been ideal” (1984: 1). Whereas the prevailing economic conditions called for disinflationary or contractory fiscal policy, the fiscal policy turned out to be unduly expansionary (De Kock: 1984: 4). The central government’s budget for the 1983/84 fiscal year provided for an increase of 10,3 per cent in expenditure which, compared to actual and projected inflation at the time at over 11 per cent, represented declining real expenditure. In addition, the deficit before borrowing was budgeted to be 2,4 per cent of GDP. Actual expenditure increased by 16 per cent, combined with an actual deficit before borrowing of 3,5 per cent of GDP (Gidlow, 1995: 13). The same tendency repeated itself in the 1984/85 fiscal year, with a budgeted deficit before borrowing of 3 per cent of GDP increasing to an actual deficit of 3,4 per cent, owing to an expenditure overrun (De Kock, 1985a: 7).

The SA Reserve Bank used two distinctly different approaches to monetary policy and the discounting facility to accommodate liquidity shortages in the market. From 1978 the SA Reserve Bank used a structure of refinancing rates, set at various margins above the Treasury bill rate, for different classes of discountable assets (Van der Merwe, 1999: 234). Bank rate in the true sense of the word played no meaningful part in refinancing operations or the structure of

domestic interest rates, and the refinancing rates were determined truly by market forces, as the SA Reserve Bank merely followed changes in the Treasury bill rate in setting the rediscount rate.

The approach changed in December 1983, with “... Bank rate and the other refinancing rates ... set by and varied at the discretion of the Reserve Bank. Changes in Bank rate and associated refinancing rates were then used to influence the general level of interest rates in the economy and, through the transmission mechanism, other economic aggregates such as money supply, bank credit extension and the rate of inflation” (Van der Merwe, 1999: 234). Bank rate once again became the SA Reserve Bank's basic rate for rediscounting Treasury Bills in 1985, thereby reassuming the classical role normally associated with such a rate. This change preceded the adoption of money-supply targeting as a new anchor for monetary policy.

In January 1985 it was announced that “... the Reserve Bank will in future limit its accommodation to discount houses to the discounting of assets owned by them, and overnight loans to these institutions will only be granted against the collateral of assets owned by them. Banking institutions wishing to make use of temporary Reserve Bank credit will therefore have to come directly to the SA Reserve Bank for such assistance” (De Kock, 1985b: 1). One of the aims of the new discount policy was to “... enable the Reserve Bank to penalise institutions which, in its opinion, expand their credit excessively and then need abnormally large amounts of Reserve Bank credit, by applying higher rediscount and interest rates, without compelling the Bank to raise all its discount rates” (De Kock, 1985b: 2). This role of Bank rate at the time restored its position as the single most important price in the financial system, as changes in Bank rate resulted in concomitant changes in interest rates in the domestic economy and, therefore, total domestic demand (Gidlow, 1995: 79 and 80). As inflation was at an average annual rate of about 14 per cent, monetary policy did not achieve the objective of relative price stability.

5.12 The period 1986 to 1989⁷²

In the 1986 budget speech it was announced that Government had accepted the recommendations of the De Kock Commission. One of the implications was that the SA Reserve Bank would set specific growth targets for one or more of the money supply aggregates (Du Plessis, 1986). It is important to note, in view of the discussion in the preceding chapter of the available monetary policy targets, that the money-supply targets were set by the central bank, rather than the government or jointly by the central bank and the government. In a sense this policy approach exonerates the government from the obligation to follow policies supporting the target, because it does not have primary responsibility for the target, as is the case with an inflation target set by the government for achievement by the central bank.

Table 5.1 Money-supply growth targets, 1986 to 1989

	1986	1987	1988	1989
Target (% change)	16 – 20	14 – 18	12 – 16	14 - 18
Actual % change	10,1	15,5	26,5	23,5
Change in velocity	+ 7,6	+ 0,5	- 7,3	- 5,7
Effective % change				
in money supply	18,4	16,1	17,3	16,5

Source: Gidlow, 1995: 36

The SA Reserve Bank adopted low-profile, adjustable money-supply growth targets rather than fixed targets, as the latter would not have allowed discretion in the application of monetary policy if not achieved. The target set by March 1986 was to keep the growth rate of the broadly-defined M3 money supply between 16 and 20 per cent between the fourth quarter of 1983 and the fourth quarter of 1984 (Gidlow, 1995: 25). However, in the first year of following a money-supply

⁷² Except where stated otherwise, this section draws on Stals, 1996.

growth target, the SA Reserve Bank already realised that the growth rates of the M3 money supply is subject to large swings in the velocity of circulation of money. Whereas the growth in M3 over the period was 10,1 per cent, its effective growth, i.e. M3 multiplied with its velocity, amounted to 18,4 per cent. The M3 growth targets and the effective change in the money supply for the period 1986 to 1989 are highlighted in Table 5.1.

This period is characterised by a problem similar in nature (but slightly different in application) to the Primrose prime incident, although this latter occurrence is not as well known. In 1988 Government accepted the *Proposed Action Plan for Combating Inflation*, prepared by the Economic Advisory Council of the State President (Stals, 1989: 10). In terms of this action plan, inflation had to be addressed with a broad spectrum of measures, including restraint in respect of government expenditure. The implicit understanding was that all important prices in the economy and wages should be retained at current levels, rather than be increased – in effect therefore a low-key control approach. The wage focus naturally included salaries and wages of civil servants, and the focus on important prices not to be increased also encompassed the level of interest rates. Gidlow mentions that the discretionary policy followed at the time by the SA Reserve Bank “... kan op die mees doeltreffende wyse toegepas word in ‘n milieu waar die sentrale bank volkome onafhanklik is. Dit was in 1988 byvoorbeeld nie die geval nie toe die owerhede moeilikheid ondervind het om rentekoerse hoër op te stoot op ‘n tydstip toe die betalingsbalansposisie en inflasionistiese druk versleg het” [... can be applied most effectively if the central bank has completely autonomy. This was for instance not the case in 1988 when the authorities experienced difficulty to increase interest rates at a time when the balance-of-payments position deteriorated and inflationary pressures increased⁷³] (Gidlow, 1995: 9).

As inflation was at an average annual rate of about 15,6 per cent, monetary policy did not achieve the objective of relative price stability between 1986 and 1989. The final pronouncement on the period 1985 to 1989 indeed comes in the form of a statement in the *Governor's Address* of 1989, i.e. “[d]uring the period 1985 – 1987 ... [i]nflation was ... not regarded as South Africa's main economic problem” (Stals, 1989: 9).

⁷³ Author's translation.

The SA Reserve Bank's enabling legislation, the SA Reserve Bank Act, No 29 of 1944, as amended, was replaced by the SA Reserve Bank Act, No 90 of 1989.

5.13 A new beginning: 1990 to 1999⁷⁴

The tone for monetary policy in the 1990s was actually set by the Governor on Tuesday, 29 August 1989. Stals was appointed Governor of the SA Reserve Bank on 8 August 1989, after the previous Governor passed away on 7 August 1989. The SA Reserve Bank's sixty-ninth ordinary general meeting of shareholders was held on 29 August 1989. This meeting was the first ever referred to as a meeting of *shareholders* of the SA Reserve Bank. Use of this term was brought about by the SA Reserve Bank Act of 1989, as Sections 1 and 14 of the SA Reserve Bank Act of 1944, as well as the regulations framed under Section 23 of that Act, referred to *stockholders* of the SA Reserve Bank, and it had ordinary general meetings of stockholders, rather than shareholders, until 1988.

The Governor announced a renewed initiative to contain inflation, which remained stubbornly high during the 1980s. It was explained that “[a]t a time when most of the industrial countries of the world pursued strong anti-inflationary policies, South Africa was pre-occupied with short-term economic problems ... [and] ... [i]nflation was at that stage not regarded as South Africa's main economic problem ... [but] ... the main emphasis of monetary policy has ... [now] ... been switched to the curtailment of inflation ... In the circumstances it can no longer be regarded as appropriate to continue to accommodate price increases through large increases in SA Reserve Bank credit and in the monetary policy” (Stals, 1989: 10). The view was that “[t]hrough a disciplined monetary and fiscal policy approach ... it will be possible to reduce the rate of inflation in South Africa over the next few years” (Stals, 1989: 10). Padayachee (2001: 753) refers to the fact that the SA Reserve Bank had no real autonomy before 1989, as it “ ... was largely subservient to political agendas ... ” (Padayachee, 2000: 500). The implication is

⁷⁴ Except where stated otherwise, this section draws on Van der Merwe, 1999.

therefore that the SA Reserve Bank managed to regain its autonomy in monetary policy after 1989, as indicated by the analysis in this section.

The renewed focus on containing inflation resulted in a typical time consistency problem in South Africa. Given a period of double-digit inflation that commenced in 1974 and numerous announcements of intentions to contain inflation in the ensuing period that was not implemented successfully, public economic agents reacted with skepticism to the announcement of 1989. To put it bluntly: the market did not believe the new Governor. The result was sustained double-digit inflation until 1992, i.e. for more than three years after the announcement that the SA Reserve Bank will conduct policy aimed at containing inflation. The result of the time consistency problem was a very painful adjustment period in the domestic economy, with negative economic growth rates in 1990, 1991 and 1992. However, by 1993 the policy focus started bearing fruit, with a general declining trend in inflation since that date.

Owing to factors such as international financial integration, growth in the money supply lost its usefulness domestically and internationally as an anchor for money policy by the early 1990s (Casteleijn 2001: 6; see also Rossouw, 2005). It was time for a new approach. South Africa replaced money supply growth targets with money-supply growth guidelines in the early 1990s, which was replaced, in turn, by eclectic monetary policy in 1996. In terms of the latter policy approach, broad economic indicators, e.g. changes in bank credit extension, overall liquidity in the banking system, the yield curve, the overall balance-of-payments position, the foreign reserve position, the exchange rate and movements in the rate of inflation, were considered in the formulation of monetary policy (Van der Merwe, 1997: 2).

The SA Reserve Bank adopted (and still follows today) the classical cash reserve system after the abolition of direct control measures at the beginning of the 1980s. In terms of this system the SA Reserve Bank refinances the money-market shortage fully on certain predetermined terms, conditions and costs, e.g. banks requiring refinancing providing the required collateral (Van der Merwe, 1997: 2 and 3). By 1997 the refinancing system used by the SA Reserve Bank started to show certain shortcomings that had to be addressed. A cornerstone of the new approach,

introduced on 13 March 1998, was a variable repurchase (repo) rate system, in terms of which the SA Reserve Bank would be able to signal its intentions to the market, which would enhance the transparency of monetary policy. However, under exceptional conditions, the SA Reserve Bank retained the right to fix the repo rate and use it as a tool to give the market a clear interest rate signal. Banks could tender on a regular basis for central bank liquidity, with the aim of making domestic liquidity management the most important operational tool of monetary policy (Van der Merwe, 1997: 15). An additional aim was to improve the functioning of the interbank market for liquidity.

When liquidity problems started developing in South Africa during May 1998, following similar problems in other emerging-market economies, it became obvious that the variable repo rate did not respond with enough flexibility to the changed circumstances. The SA Reserve Bank accordingly fixed the repo rate, but after a discussion of the signalling mechanism with the major banks, it was allowed to fluctuate again. It was clear, however, that the banking sector had difficulty interpreting the signalled intentions of the SA Reserve Bank in offering liquidity to the market. To prevent nervousness over the millennium change-over period, the SA Reserve Bank again fixed the repo rate late in 1999, and as this approach has delivered the desired result since then, the policy of fixing the repo rate has been retained.

In March 1998 it was decided that the SA Reserve Bank would strive to align domestic inflation with the rates of inflation in South Africa's major trading-partner countries, with an informal inflation target range of 1 to 5 per cent to be followed (Casteleijn, 2001: 6), together with eclectic monetary policy and money growth guidelines. The main disadvantage of this targeting approach was "... that it could not be expected to elicit the same commitment to policy co-ordination that would follow if the government had formally endorsed or set the target" (Casteleijn, 2001: 6).

Inflation was at an average annual rate of about 9,9 per cent during the period 1990 to 1999, while the prime overdraft rates of banks were retained at a level of 3,5 percentage points, initially above Bank rate and subsequently above the repo rate. The average annual real prime rate was at a level of 8,3 per cent. Despite the level of real prime rate, monetary policy seemingly did not

achieve the overarching objective of relative price stability, but it is important to analyse the SA Reserve Bank's performance in more detail before making a final pronouncement. Inflation started off at a level of 14,4 per cent per annum, as the central bank had to deal with a time consistency problem. Although the Governor clearly announced the intention to follow sound policy aimed at containing inflation during the 1990s in the *Governor's Address* in August 1989, private economic agents expected the SA Reserve Bank to act in accordance with previous examples, i.e. announcing a renewed tough policy against inflation, but conducting a different and altogether more accommodating policy. The trend in inflation, rather than the actual level, is therefore a better indication of the success of monetary policy. Based on this criterion, monetary policy achieved its goal of a new beginning, as inflation ended the period at an annual rate of 5,2 per cent, a level not seen since 1967 when annual inflation was 5,7 per cent.

Since 1990 the autonomy of the central bank was also restored, as problems such as the Primrose prime incident were not repeated, as is evident by the fact that the SA Reserve Bank refrained from adjusting interest rates to coincide with general elections. Neither at the time of the first democratic elections in April 1994, nor at the time of subsequent elections in April 1999 and April 2004, did the SA Reserve Bank lower interest rates.

After democratic elections in 1994, South Africa embarked on a policy of gradually abolishing exchange control. The dual-exchange-rate (financial rand) system was abolished in 1995, thereby removing the major exchange control arrangements in respect of non-residents. This was subsequently followed by the introduction of foreign investment allowances for residents and domestic companies, and numerous other steps aimed at the eventual complete removal of exchange controls. In as much as sound monetary policy is pursued, exchange control is no longer required to protect the economy against the negative consequences of bad policy.

This policy of gradually abolishing exchange control is not universally supported. Epstein (2002) argues for the stricter enforcement of the system of exchange control by the SA Reserve Bank and the South African Government, rather than any gradual relaxation of the policy. Epstein (2002) also favours the introduction of other measures to insulate the domestic economy from

global pressures, e.g. the introduction of transaction taxes on international transactions. The best known of such proposals is a Tobin tax, i.e. the introduction of a small tax on capital transactions in foreign currencies, aimed at reducing the attractiveness of such transactions for speculative purposes.

The SA Reserve Bank applied consistently since 1990 sound policies that contained inflation over time and reduced it structurally. It also reasserted its autonomy in the implementation of monetary policy since 1990. It is nevertheless important to note the conclusion of Khabo that “... 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 the 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 per cent band, but that was never given” (2002: 151). Casteleijn (2001: 6) states that this approach was not confirmed by government.

5.14 Inflation targeting: monetary policy since 2000

On 23 February 2000, the Minister of Finance announced a new monetary policy framework for South Africa: inflation targeting (South Africa, 2000). This announcement confirms beyond any doubt that the Government sets the target to be achieved by a central bank with operational autonomy through the application of sound monetary policy. As highlighted in an earlier chapter, this is indeed one of the advantages of inflation targeting over money-supply targets as an anchor for monetary policy: the government cannot distance itself from the policy or follow other economic policies that will put the target in jeopardy, as it is indeed its own target.

In South Africa's instance the target is specified in terms of changes in CPIX, which has the somewhat cumbersome definition of changes in the CPI for metropolitan and other urban areas excluding changes in the interest costs of mortgage bonds⁷⁵ (Mboweni, 2005c; see also Van der Merwe, 2004). At the time of the announcement of the target, it was set for achievement for the

⁷⁵ The use of the word *bonds* in this definition might be somewhat problematic in certain English-speaking countries, as a bond can also be defined as “... a certificate issued by a government or a public company promising to repay borrowed money at a fixed rate of interest at a specified time” (Soanes and Stevenson, 2004: 157).

first time by 2002. The main difference between CPI and CPIX is the exclusion of changes in the interest costs of mortgage bonds, with a weight of 10,32 per cent in the overall CPI (Statistics SA, 2001). It is noteworthy that this exclusion is aimed at limiting the immediate effect of interest rate changes on the inflation figure used for targeting purposes, but that all changes in interest costs are not excluded. Changes in interest costs (of loans other than mortgage bonds) and bank charges account for a weight of 1,05 per cent in the CPI (Statistics SA, 2001), although no clear split is provided. Ideally these components should be split and published separately by Statistics SA. Moreover, CPIX does not cover rural areas.

In its specification of the target, the South African government selected a target range rather than a specific point. Setting a specific point as a target “... is clear and straightforward and focuses attention, expectations and policy actions on a single numerical value ... [but] ... implies a degree of precision which cannot realistically be expected of monetary policy, especially in a small, open economy” (Casteleijn, 2001: 8). Under the circumstances the announcement of a target range was more appropriate for South Africa, as it improved the probability of achievement by the central bank: an important precondition for the announcement of a credible inflation target. The advantage of the specification of the inflation target as a range rather than a specific point is the discretion available to the central bank under such an approach (see for instance Van der Merwe, 2004). If the target is specified as a specific point, the central bank is expected to change course whenever the rate is not on target, despite expectations of movements in the rate in the near future.

The Governor stated at the time that “[i]nflation targeting is a monetary policy framework characterised by an announcement of a numerical target for the inflation rate that is intended to be achieved over a specified time period” (Mboweni, 2000a: 3), but added that “[t]he objective of the exercise is, after all, to achieve the target range” (Mboweni, 2000a: 3). The target in terms of CPIX was specified as an average annual rate of increase of between 3 and 6 per cent per annum in the CPIX in 2002. At the time of the announcement it was necessary to “... use this medium-term target in view of long lags between monetary policy steps and their impact on inflation.

Changes in interest rates in South Africa generally take from 18 to 24 months to have a material influence on the underlying rate of inflation” (Mboweni, 2000a: 4).

In 2001 the Minister of Finance announced that “[t]he inflation target will remain an annual average increase of between 3 and 6 per cent in CPIX in 2003. For the 2004 and 2005 year, the target will be 3 to 5 per cent” (Manuel, 2001: 6). Owing to negative inflation movements emanating from a depreciating exchange rate of the rand, rising oil prices and sharp increases in food prices in the period following the respecification of the target in 2001, the Minister of Finance announced in 2002 that “... Governor Mboweni and I have agreed that the inflation target should remain 3 to 6 per cent for 2004. The 3 to 5 per cent target falls away until further notice” (Manuel, 2002: 4). The target of 3 to 6 per cent was still in use at the time of the completion of this study.

A further amendment to the specification was announced in 2003, when the Minister of Finance said that “I am pleased to report that we have agreed on a number of amendments to the inflation targeting framework within which the SA Reserve Bank conducts its monetary policy responsibilities. Rather than expressing the target as an annual average for each calendar year, the 3 to 6 per cent range will now be a continuous target within which the SA Reserve Bank will seek to maintain the monthly rate of CPIX inflation, as measured on a year-on-year basis. This range will remain in place for 2006 and future years, until a revised target is set” (Manuel, 2003b: 6).

With the introduction of the inflation-targeting monetary policy framework, “... the monetary authorities ... [target] ... the rate of inflation directly in stead of following the previously applied eclectic monetary policy approach in which intermediate objectives still played an important role” (Mboweni, 2000a: 1). Since the adoption of inflation targeting, the SA Reserve Bank also announced modifications to the repo system, aimed at increasing the effectiveness of monetary policy (see for instance Casteleijn, 2001: 13; De Angelis et al., 2005: 658; Mboweni, 2001; or SA Reserve Bank, 2001a: 2) The most recent of these changes was announced in May 2005, aimed at reducing “... [t]he daily involvement of the Bank in influencing money-market liquidity in

order to facilitate a better functioning interbank market and liquidity management by banks” (Mboweni, 2005a: 6), and to make the Bank’s refinancing operations simpler and more transparent. The more important changes can be summarised as (Mboweni, 2005a: 7):

- the estimated average liquidity requirement for the week, as well as the estimated range within which the daily liquidity requirement is expected to fluctuate, are announced prior to the weekly repurchase auctions on Wednesdays;
- the use of supplementary square-off auctions is limited to exceptional circumstances; and
- final clearing facilities have been replaced by standing facilities at the SA Reserve Bank, providing access to overnight repurchase facilities for all banks at 50 basis points below or above the repurchase rate for surplus or deficit positions, respectively.

The adoption of the inflation-targeting policy framework was preceded by the establishment of an MPC for the SA Reserve Bank in 1999, entrusted with the responsibility to set and adjust monetary policy. The MPC, chaired by the Governor, considers a broad selection of economic data in its deliberations, e.g. projections about economic trends and expected movements in the rate of inflation (CPIX, the rate used for targeting purposes), and macroeconomic and financial market reviews. The MPC also reviews the monetary policy statement released after each MPC meeting. On the basis of the comprehensive analysis and deliberations of the MPC, the SA Reserve Bank announces its monetary policy stance and, if necessary, the change to its repo rate.

In assessing the use of an inflation-targeting framework, Casteleijn states that “... [t]he inflation-targeting policy framework provides a fair measure of flexibility for the Bank ... [as] ... the policy allows for some discretion in the case of serious supply shocks to avoid costly losses in terms of output and jobs” (2001: 15). This is indeed still the case, and currently the policy of using an inflation target as a nominal anchor for monetary policy serves South Africa’s best interests. Since the adoption of an inflation target the minimum overdraft rates of commercial banks were retained at a margin of 3,5 percentage points above the repo rate. As was the case in the preceding period, the maintenance of this margin enabled the SA Reserve Bank to exert a direct influence over the rates charged by commercial banks. The real repo rate averaged about 4,7 per cent between 2000 and 2006, and inflation measured in terms of changes in the CPI was

at an average annual rate of about 5,2 per cent, implying that the average nominal minimum lending rate was about 13,4 per cent. Monetary policy achieved the overarching objective of relative price stability, confirmed by the fact that CPIX remained within the target range of 3 to 6 per cent between September 2003 and April 2007. As was the case in the 1990s, the SA Reserve Bank retained its autonomy in the implementation of monetary policy after the adoption of an inflation-targeting monetary policy. The Governor has “... stressed that the days of the Primrose prime are gone, such as when then President P W Botha called Gerhard de Kock on the eve of a crucial by-election requesting a cut in interest rates, and the late governor was happy to oblige” (Garrow, 1999).

Despite the transparency of an inflation-targeting policy and the central bank’s best efforts to improve communication as is explained below, private economic agents, journalists and market watchers nevertheless remain susceptible to misinterpretation of policy actions of the SA Reserve Bank. A case in point highlighting this matter is the decrease in the repo rate announced by the SA Reserve Bank in April 2005. At the time some commentators interpreted the change in the repo rate as a change in the objective of the SA Reserve Bank from its inflation anchor to an exchange rate target or anchor of some or another sort. The Governor, however, explained later that “... changes in the exchange rate are important in the inflation process in South Africa. The stronger rand (at the time of the announcement in April 2005) was expected to have a direct impact on inflation through the price of imports. At the same time, there is an indirect effect through the negative impact of the strong exchange rate on the export and import-competing sectors of the economy. This resultant widening in the gap between actual and potential output would also have a moderating effect on the inflation outlook. The reduction in the repurchase rate was, therefore, not a result of a focus on the strong rand, but on the favourable inflation outlook” (Mboweni, 2005a: 6). The fundamental point is that the SA Reserve Bank does not have goal independence: the Government has entrusted the achievement of the inflation target to the SA Reserve Bank. The inflation target is not the SA Reserve Bank’s to change, e.g. from relative price stability to an exchange rate target. It can only be changed (or even adjusted) by the South African Government by means of public announcement. Given the misinterpretation in

April 2005, it is fair to conclude that the SA Reserve Bank faces a formidable communication challenge, as is explained in the next section.

5.15 Improved communication by the SA Reserve Bank⁷⁶

Since the announcement of an inflation target in South Africa, any ambiguity about the conduct of monetary policy has, in theory, been removed owing to the adoption of a nominal anchor. The smooth conduct of an inflation-targeting framework implies a good deal of trust and confidence on the part of the public in a central bank's ability and determination to achieve the target. Without this credibility in the eyes of the public, a central bank's policy goal might be unachievable. Credibility is enhanced by communication. Mishkin states that "[i]nflation targeting involves ... increased transparency of the monetary policy strategy through communication with the public and the markets about the plans and objectives of monetary policy makers ..." (2004: 501). Moreover, "[b]ecause the central bank's intentions are clearly stated, the public is able to understand and monitor central bank actions. This improves the transparency of monetary policy, making communication with the public more effective, while providing increased discipline and accountability for central bank activities" (Aninat, 2000).

Despite the lack of uniformity in central banks' communication strategies explained in Chapter 3, the SA Reserve Bank has introduced a number of initiatives to improve communication with all its stakeholders since the introduction of an inflation targeting policy framework in 2000. Wessels observes that "... the introduction of a numerical inflation target increased the transparency of the Bank's policy objectives substantially, and contributed to the public's understanding of what the Bank is explicitly held accountable for" (2002: 978). The Governor pointed out in 2002 that "[i]nflation targeting has also been accompanied by major improvements in the Bank's communication with the public and markets and there has been a significant upgrade in monetary policy transparency" (Mboweni, 2002). In the case of the SA Reserve Bank, the most important stakeholders are (in alphabetical order) government, labour, media, Parliament, public, and shareholders and staff members of the SA Reserve Bank.

⁷⁶ This section was presented as a conference paper in Nicosia in March 2007 (Rossouw, 2007a).

The most important initiative to improve communication about the formulation of monetary policy was the establishment of an MPC with responsibility for setting the repurchase rate, i.e. the rate at which the SA Reserve Bank provides liquidity to domestic banks. The establishment of the MPC, which held its first meeting on 13 October 1999 (Mboweni, 1999; SA Reserve Bank, 1999), was indeed a precursor in the period running up to the formal introduction of an inflation-targeting policy framework. Since its inception, the composition and frequency of meetings of the MPC have on a number of occasions been revised to serve the best interests of the SA Reserve Bank and its various stakeholders. However, the MPC introduced certainty about adjustments in monetary policy in as much as:

- (i) responsibility for monetary policy decision-making is entrusted to the Committee, rather than an individual who can surprise the public and markets with adjustments in interest rates;
- (ii) the Committee meets at predetermined intervals and on predetermined dates, published up to a year in advance;
- (iii) any element of surprise about the timing of monetary policy decisions (although not about the decision itself) is removed;
- (iv) a detailed statement accompanies the announcement of the MPC's decision. Although not formal minutes of the MPC meeting, the statement details the rationale and assessment of economic conditions that led to the decision; and
- (v) the Committee's decision is announced after each meeting at a media conference and in a media statement. In conjunction with a local national television network, the SA Reserve Bank broadcasts the MPC announcement after each meeting live to ensure that everyone receives the information about the decision on interest rates at the same time.

In addition to the improvement in communication owing to the role of the MPC, and through its statements, the Governor highlighted in 2002 as further examples of an upgrade in monetary policy transparency and communication “... the biannual *Monetary Policy Review* ... and the national and regional Monetary Policy Forums” (Mboweni, 2002).

The first *Monetary Policy Review* (the *Review*) of the SA Reserve Bank was published in March 2001, as “... part of the Reserve Bank’s attempt to broaden the understanding of the aims and conduct of monetary policy” (SA Reserve Bank, 2001b). By and large the *Review* analyses developments in and factors influencing inflation, assesses recent policy developments and considers the outlook for inflation (SA Reserve Bank, 2005b). The *Review* reports on the MPC’s assessment of inflation and the SA Reserve Bank’s inflation forecast, hence providing an *ex post* insight into matters deliberated by the MPC.

The first meeting of a Monetary Policy Forum was held in Pretoria on 20 March 2000 (SA Reserve Bank, 2000). Currently the SA Reserve Bank hosts Forums biannually in Bloemfontein, Cape Town, Durban, East London, Kimberley, Mafikeng, Polokwane, Port Elizabeth, Pretoria and Nelspruit. These forums provide for discussions on monetary policy over a broad geographical spectrum involving a large cross-section of stakeholders, including trade union representatives, analysts, academics and the media.

The SA Reserve Bank also improved its statutory reporting. The SA Reserve Bank Act stipulates in Section 32(1)(b) that “[t]he Bank shall ... within three months after the close of its financial year, transmit to the Department of Finance ... [known as the National Treasury since the merger of the Departments of Finance and State Expenditure] ... two copies of its financial statements ...” (1989), for subsequent tabling in Parliament. In addition, regulations 67 to 70 (SA Reserve Bank Act, 1989) stipulate that the SA Reserve Bank must keep accounts, including an income statement and a balance sheet, that must be approved by its shareholders at the annual meeting of shareholders.

The SA Reserve Bank published *Annual Financial Statements* until 2002, but reporting and disclosure in the statements increased and improved to the extent that its name was changed to *Annual Report and Financial Statements* in 2003 and to *Annual Report* in 2006. The revised name reflects its nature: the SA Reserve Bank reports on matters much broader than only its financial affairs. Owing to its approval by shareholders and its tabling in Parliament, the *Annual Report* attracts considerable media attention, enhancing the accuracy of reporting on the SA

Reserve Bank.

During 2004 the SA Reserve Bank introduced biennial shareholder briefings. The SA Reserve Bank is one of a small group of central banks that still has private shareholders. Lybek and Morris (2004: 7) identified the central banks of Austria, Belgium, Greece, Italy, Japan, Pakistan, South Africa, Switzerland and the United States as institutions with shareholders other than their respective governments. The management of the SA Reserve Bank identified the importance of briefing this group of stakeholders on occasions other than at annual ordinary general meetings. Shareholders are invited by the Governor to these briefings, which are hosted in three or four major cities in South Africa. These briefing sessions are, *inter alia*, used to brief shareholders informally on the conduct of monetary policy and the implementation of an inflation-targeting monetary policy.

For many years the SA Reserve Bank has published the abridged version of the *Governor's Address* to shareholders in a variety of publications in Afrikaans and English. Since 1999 the SA Reserve Bank has proceeded to publish the *Governor's Address* in additional official languages. In 1999 the *Governor's Address* was published in five languages and since then in six languages, in both instances including English and Afrikaans, in a variety of newspapers and magazines so as to broaden its reach and make it more accessible to the public.

The SA Reserve Bank is ultimately accountable to Parliament as the representative body of all the people in South Africa, and submits its *Annual Report* to Parliament. The Governor meets periodically with members of the Parliamentary Portfolio Committee on Finance. In addition, during March 2007 the Board of Directors of the SA Reserve Bank (as represented by its Remuneration Committee chaired by a non-executive director) met with this same Parliamentary Committee to enhance accountability (Ensor, 2007: 2).

Apart from the formal external communication approaches followed by the SA Reserve Bank, a number of other communication channels are also employed. These include briefing sessions with media representatives and speeches by the Governor, deputy governors and other senior

officials. As a case in point, the Internet website of the SA Reserve Bank (online: <http://www.reservebank.co.za>) reports 10 public addresses by the Governor during 2005 and 16 addresses during 2006, excluding the *Governor's Address* at the annual general meeting of shareholders and the announcements of the MPC's decisions. In addition, the SA Reserve Bank's website is used extensively to alert the media and staff to various happenings.

The SA Reserve Bank has also introduced steps to improve communication with its staff members and former (i.e. retired) staff members since 2000. An annual general management conference, comprising the Governor, the deputy governors, all staff at the level of assistant general manager and above, and branch managers, was introduced by the SA Reserve Bank in 2004. The aim of the conference is to ensure that the general management and branch managers are briefed about new developments, which enables them to communicate with staff. Moreover, they are also briefed at the conference about the SA Reserve Bank's successes in containing inflation and achieving the target. Retired staff members are invited to discussions with the SA Reserve Bank's executive management on an *ad hoc* basis.

Judging from these initiatives, it seems that the SA Reserve Bank values the importance of communication supporting a policy of inflation targeting, despite the lack of international benchmarks for successful central bank communication (see for instance Blinder, [S.a.]; or Ehrmann and Fratzcher, 2004).

5.16 Conclusions about South Africa's experience with inflation

The central finding of this chapter is that the problem of inflation in South Africa has occurred in different forms and has occupied the attention of monetary authorities over many years. Inappropriate economic policy, and monetary policy in particular, contributed to conditions conducive for the development of inflationary conditions. In containing inflation there is no single solution that could be applied universally, except to state the obvious: countries should prevent unsound policies that will foster inflation.

Since the establishment of the SA Reserve Bank in 1921, South Africa has experienced varying degrees of success in containing or combating inflation. In the period before World War II, the SA Reserve Bank achieved remarkable success in containing inflation, although inappropriate policies were followed on occasion, albeit with the support of the Government or even in support of the policy stance of the Government. During and immediately after World War II the SA Reserve Bank was less successful in containing inflation, but regained monetary control by the late 1950s and the 1960s.

From 1968 domestic inflation started accelerating, and in the ensuing years the SA Reserve Bank seemed incapable of controlling it effectively. Reviewing the 20-year period from 1974 to 1993, however, reveals that the SA Reserve Bank was one of very few central banks in the world that managed to contain inflation between 10 per cent and 20 per cent per annum, without it developing into runaway inflation (see for instance Table 3.5). An *ex post* analysis gives the impression that the SA Reserve Bank followed an inflation target of between 10 and 15 per cent per annum, with monetary tightening whenever inflation breached 15 per cent, and monetary relaxation whenever inflation declined to levels slightly above 10 per cent. This was indeed not due to the policy approach, but the result of inconsistent policy application. It nevertheless confirms that the SA Reserve Bank all along had the tools and knowledge to contain inflation, but lacked the autonomy during this period to follow consistently policies aimed at achieving this goal.

A comprehensive system of exchange controls, at least applied to residents, is a precondition for inappropriate monetary policy causing sustained high domestic inflation. Without such controls domestic investors would have reverted to foreign investments with a concomitant demand for foreign currency, leaving the central bank no choice but to adapt sound monetary policy to lower inflation to a level commensurable with the levels of inflation in industrialised countries.

Since the 1990s the SA Reserve Bank has again been successful in containing inflation, albeit with the use of different policy models. Moreover, coinciding with an inflation-targeting policy from 2000, the SA Reserve Bank has embarked on major initiatives to improve communication

with its stakeholders. Owing to a lack of benchmarks for assessing the communication strategies of central banks and the different approaches followed by different banks, the challenge for the SA Reserve Bank is to ensure maximum efficiency and consistency of its communication within the ever-present economic constraint of limited resources.

The adoption of an inflation target set by Government for achievement by the SA Reserve Bank implies a clear commitment to low inflation and relative price stability, therefore removing any time consistency problems from the application of monetary policy. An important question, however, is whether the rate of inflation reflects accurately over time average increases in the prices of goods and services in an economy. This question is addressed in respect of South Africa in the next chapter.

In the interest of easier communication and in clarifying the exact reasons for excluding interest rates from the inflation rate used for targeting purposes, South African authorities should reconsider its somewhat cumbersome definition. It is questionable whether the CPIX, defined as changes in the CPI for metropolitan and other urban areas excluding changes in the interest costs of mortgage bonds, serves South Africa's best interests from the perspective of ease of communication. The definition is particularly problematic in as much as it does not exclude all interest rates and does not cover rural areas.

CHAPTER 6

SOUTH AFRICAN PRICE AND SALARY CHANGES MEASURED AGAINST INFLATION SINCE 1921

6.1 Introduction

The aim of this chapter is to ascertain whether changes in the CPI accurately reflect price increases in the South African economy over time, thereby testing the sub-hypothesis of this thesis. This hypothesis is tested by comparing the price increases of selected identifiable consumer goods and services, as well as increases in salaries, to changes in the South African CPI over different periods. The purpose of the comparison is to ascertain whether the actual prices of goods and services, and salaries, increased at rates slower or faster than the CPI.

In the second section of this chapter certain difficulties in comparing goods, services and prices over time are discussed. In the third section a methodology is developed to compare the historic prices of selected goods and services adjusted by changes in the CPI with current prices, and an inflation accuracy indicator (IAI) is developed. Section 6.4 provides a comparison of same-item prices over a period of 32 years. In Section 6.5 a first attempt is made to compare historic salaries with current salaries. Owing to difficulties identified in the initial comparison, a methodology is developed in Section 6.6 for a detailed comparison of salaries and inflation. The use of the analysis in this chapter by developing economies is highlighted in Section 6.7. The conclusions follow in Section 6.8.

6.2 Difficulties in historic comparisons

The identification and selection of products (other than food) and services to use for purposes of historic comparisons pose a challenge, as the nature of products and services used by an average household have changed considerably over time. Some of the most obvious changes and

challenges are summarised below. Problems in respect of the identification of salaries for comparative purposes are also highlighted below.

Quality improvements

Consumable products and services have undergone numerous quality improvements over the period of comparison. As the detail of such improvements is too vast to discuss in detail, it is sufficient to mention that the true value enhancement of many improvements to products and services can hardly be expressed in monetary terms.

For purposes of this chapter, identifiable products and services will, despite quality improvements, be assumed to be homogeneous over the period of comparison, implying that the true value of such quality improvements will be taken simply as price increases for comparative purposes. Various techniques have been developed to adjust data over time to compensate for quality adjustments, but are not applied for purposes of comparison in this chapter, *inter alia*, because the period of comparison for the measurement of the majority of products (2004 to 2006) and their nature (mainly food) is such that quality changes will not have a major influence on the conclusions reached in this chapter. Moreover, such adjustments also do not apply in respect of remuneration.

Relative scarcity

The main function of prices is to reflect the relative scarcity of goods and services. Changes in relative scarcity should accordingly be reflected in prices, thereby signalling to consumers that consumption patterns should be amended in accordance with changes in the relative scarcity. For purposes of the comparison in this chapter, it is necessary to discard price changes owing to changed relative scarcity, as such changes cannot be constructed *ex post*, and all price increases are therefore attributed to an increase in the general price level in the economy. However, an important conclusion is reached in respect of changes in relative prices and salaries.

Decimalisation

South Africa adopted a decimal currency system, replacing the previous system comprising pounds, shillings and pennies (£/s/d) on 14 February 1961 (see for instance SA Reserve Bank, 1971). In terms of the £/s/d system, 20 shillings (s) comprised £1 and 12 pennies, abbreviated as d from the abbreviation for *denarius*, a Roman coin similar to a penny, comprised 1 shilling. For purposes of this chapter, the official conversion rate used at the time of the introduction of decimalisation on 14 February 1961 is used to convert pre-1961 prices to rands and cents: £1 = R2; 10 shillings = R1; 12 pennies = 10 cents; 2½ pennies = 2 cents; and 1 penny = 1 cent (see for instance Engelbrecht, 1987).

Metrification

South Africa has moved from an imperial system of measurements and weights to a metric system on 1 April 1971. For purposes of this chapter, the following conversion rates will be used where applicable (see for instance Simetric, [S.a.]):

1 inch = 2,54 centimetres;

1 pound = 454 grams;

1 ounce = 28 grams;

26 fluid ounces = 750 millilitres;

1 pint = 0,57 litres; and

1 gallon = 4,55 litres.

Relaxation of controls

South Africa, as many other countries, has a history of extensive control measures, e.g. import control; price control; wage control; and controlled standardisation in terms of weight and measurement (see for instance Wessels, 1996). Control measures have been relaxed gradually over many years in the case of South Africa, particularly because these measures were used primarily during periods of armed conflict such as World War II. Currently price controls over

petrol and illuminating paraffin and the single exit price controls in respect of medicine are the best-known examples of products still subjected to such controls in South Africa.

One result of such relaxation is that a degree of standardisation in goods (and to a lesser extent services) has disappeared. For purposes of this study, any large degree of maintained standardisation would have made for easier historic comparison, as sizes, packaging and weights would not have differed between outlets or over time. The necessary adjustments to ensure comparability are highlighted in this chapter.

Rationing

As was the case internationally (see for instance Tomkins, 2006: 2), quantitative rationing rather than price as a means to limit demand was also used in South Africa, particularly during World War II (see for instance Chetty, [S.a.]: 17; Chetty, 2001: 20; Sloman, 1994: 292; or Wessels, 1996). It was also used after the first oil shock in 1973, when fuel sales were rationed by means of restricting of selling hours.

One effect of rationing was that market prices did not reflect supply, demand or market equilibrium, as the authorities had set prices. This might have distorted prices for comparative purposes at the time, but as this is no longer practiced in South Africa, it is assumed that it no longer has any influence on current domestic prices. However, historic prices might be reported at artificially low levels.

Relative wealth and productivity

Over the period of comparison, relative wealth of consumers changed. Another way to refer to this notion of relative wealth could be a reference to the work/leisure balance. This is naturally related to improvements in productivity. This point is also related to the number of hours of work required to purchase a particular item. Cox and Alm (1997: 4) explain that it took an average American 30 minutes of labour to earn enough to buy a pound of ground beef in 1919,

whereas the labour time required decreased to 6 minutes by 1997. The implication is that the work/leisure time allocation balance has moved significantly over the period of comparison. Marber (2003: 25) states that an average American had to work some 260 hours in 1895 to purchase a bicycle, while it took only 8 hours of work to purchase a bicycle in 2003.

One result of this increase in relative wealth, is increased leisure time available to consumers. To this end Fogel (2000: 185) states that the average American worker laboured 3 069 hours per year in 1870 (six 10-hour days per week), compared to 1 730 hours per year currently. This reduction in the number of hours worked per week, combined with full-time education until a higher age than in the 19th century and increased life expectancy, have lead to a situation where “[f]rom 1880 to 1990, the average American’s life-long spare time increased from 48 300 hours to 246 000 hours” (Marber, 2003: 147). However, the comparison in this chapter cannot account for increases in leisure time, decreases in the number of hours of work required to afford any particular purchase, or improvements in productivity in the comparison of remuneration.

Remuneration

Numerous difficulties have to be overcome in the identification of suitable positions for purposes of comparing historic and current remuneration (salaries and cost-to-company remuneration). Owing to its emotional nature, information about remuneration is not readily available. In the collection of data for research purposes, Boyd et. al. (1977: 380) state that refusals to answer questions in sampling “... may occur on specific questions, particularly those relating to income”.

The identification of salaries poses the problem that employers have increasingly abandoned the approach of structuring remuneration as a salary plus add-on benefits in favour of a “cost-of-employment” approach. In terms of the latter approach, the full cost of employment, rather than a salary and other identifiable components in remuneration, e.g. employer contributions to medical and retirement provision, has become the norm for comparing remuneration. To

overcome this difficulty, the portion of a cost-of-employment package on which retirement contributions is based, will be taken as the “salary” for purposes of this comparison.

In analysing salaries and remuneration over time and adjusting them to real (current) levels by means of changes in the CPI, it is important to note that “... volgehoue inflasie die enkele vernaamste rede is hoekom verhogings op 'n gereelde grondslag aan werkers toegestaan word” [... sustained inflation is the single most important reason why increases are granted to workers on a regular basis⁷⁷] (Rossouw, 1983: 58). The use of changes in the CPI is therefore the most suitable index to adjust historic salaries or cost-to-employer remuneration to current levels for comparative purposes. However, this comparison will not provide any answer to the question whether the current remuneration is at an appropriate level, as no judgement can be made about the appropriateness of the identified remuneration in the base period. Conclusions can only be drawn about the comparison between adjusted historic remuneration and current remuneration and changes in the cost of living as reflected by the rate of inflation.

Despite the difficulties highlighted in this section, suitable methodology could be developed to ensure that prices and salaries could be compared over time. The next section highlights the selection of products and services used in the comparison of prices with changes in the CPI.

6.3 Identification and selection of products and services for comparison

For comparative purposes, the prices of various goods and services at different dates since 1921 have been identified for use in this section. The guiding principle in the identification of prices of goods and services was availability of information. A number of valuable sources of detailed unprocessed data pertaining to prices were obtained.

First, the *Official Yearbook of the Union of South Africa and of Basutoland, Bechuanaland Protectorate and Swaziland – No 5, 1922* (Union of South Africa, 1923), published annually from 1919, reported actual prices and weights (or quantities) of food and other household items

⁷⁷ Author’s translation.

for a number of cities (called towns at the time) and regions. For purposes of this study the data published for 1921 are used, because this corresponds with the starting point of the comprehensive CPI data available in South Africa.

Secondly, an edition of a magazine, *Die Huisgenoot* published in 1938 contained useful information for purposes of comparison.

Thirdly, copious records of private household expenditure (Cillie, [S.a.]) were obtained, and some of the information recorded could be used for purposes of comparison.

In the fourth place, it was noted that two vehicles were launched in South Africa quite a number of years ago and are still being sold domestically, albeit with some minor modifications: the Nissan 1400 pick-up truck (which started out as the Datsun 1200) and the VW Citigolf, which was launched in the 1970s as the first VW Golf series.

Lastly, the BMR at the University of South Africa, which collected data annually for the compilation of a research paper (Bureau of Market Research, 2004), still has available some actual unprocessed price data for March 2004. This data could be used for purposes of comparing adjusted historic and current prices. Each of these sources and the available price information are considered below.

Official statistics from the year book

The *Official Yearbook of the Union of South Africa and of Basutoland, Bechuanaland Protectorate and Swaziland – No 5, 1922* (Union of South Africa, 1923), reports somewhat comprehensive data on retail prices of selected items from 1921, although incomplete data pertaining primarily to certain foodstuff, paraffin, coal and housing rent are available from 1895 (Union of South Africa, 1923: 327). This publication states that “[w]hile variations in prices and variations in average rentals are calculable by methods giving accurate results, the same cannot be said of other items of necessary expenditure in an average household, particularly items such

as clothing, boots, etc ... [and] ... sundries was approximately one-third of the household expenditure ... [in 1921] ... ” (Union of South Africa, 1923: 343). The necessary adjustments to record accurately the price levels of such items until 31 March 1922, and subsequently after that date, were undertaken in 1922 and 1923 (Union of South Africa, 1923: 343). In respect of wholesale price data, some information is reported as far back as 1910 (Union of South Africa, 1923: 325).

The retail prices reported as the average of price levels per item “ ... for nine principal towns of the Union ... ” (Union of South Africa, 1923: 326), are used in this study, although price information for seven regions was also recorded (Union of South Africa, 1923: 326). The nine principal towns included for reporting purposes are Bloemfontein, Cape Town (including Wynberg), Durban, East London, Johannesburg (including other Witwatersrand towns), Kimberley, Pietermaritzburg, Port Elizabeth and Pretoria (Union of South Africa, 1923: 341). The weighted average prices reported per item are used for comparative purposes in this study, and are compared to current price levels in Pretoria, also to align them with the data obtained from the BMR described below.

In the period 1910 to 1921 the weighted average increase in prices in these nine cities was 49,4 per cent, or on average 3,72 per cent per annum (Union of South Africa, 1923: 341). The largest increase over this period was recorded in Cape Town, where prices increased by 4,96 per cent per annum, while the highest price levels for 1921 were recorded in Pretoria (Union of South Africa, 1923: 341). The source provides no explanation for either this increase in Cape Town or for the price level in Pretoria. The information obtained from this source is highlighted in Appendix H. For purposes of projecting expected current prices, the actual CPI figure for June 2006 has been used in Appendices H to K and Table 6.1. The CPI for June 2006, with CPI = 100 in 2000, was 133,6.

Price information obtained from Die Huisgenoot

In an advertisement in *Die Huisgenoot*, P. J. Joubert wine merchants of Johannesburg advertised 12 bottles of Montac brandy at 69/- (or R6,90, implying an equivalent price of R 0,57½ per bottle) in 1938 (*Die Huisgenoot*, 1938: 14).

Volkskas Co-operative Bank advertised in 1938 shares in its permanent capital at a price of 4/-, or R0,40, payable in two equal payments, but a minimum of 5 shares had to be bought (*Die Huisgenoot*, 1938: 32). These shares were subsequently converted to ABSA shares on 22 March 1991 at a ratio of 100 Volkskas shares for 240 ABSA shares. The price of ABSA shares at the time was R 7,10/share.

Meisieskool Oranje of Bloemfontein advertised hostel accommodation at a rate of £10/10/- (R21) per quarter per learner (*Die Huisgenoot*, 1938: 35), implying that accommodation at Bloemhof Meisieskool of Stellenbosch was comparatively cheaper at £9 (R18) per learner per quarter (*Die Huisgenoot*, 1938: 158), which was also the rate at Hoër Jongenskool Wellington (*Die Huisgenoot*, 1938: 190). At the same time, all-inclusive hostel accommodation at the University of Potchefstroom (today the Potchefstroom campus of the University of North West) was advertised at £50 (R100) per annum (*Die Huisgenoot*, 1938: 130).

J. L. van Schaik Publishers of Pretoria advertised the *Grootwoordeboek* by Kritzinger, Steyn, Schoonees and Cronjé for 20/-, or R2,00, and the *Verklarende Afrikaanse Woordeboek* by Kritzinger, Labuschagne, Pienaar, Rademeyer and Steyn for 9/-, or R0,90 (*Die Huisgenoot*, 1938: 146).

Admission to the Kango caves was advertised at 5/- (or R0,50) for adults and 1/3 (R0,12½) for children under 16 (*Die Huisgenoot*, 1938: 58), and Aspro was advertised at 3/6 (R0,35) for 60 tablets (*Die Huisgenoot*, 1938: 84). The information obtained from *Die Huisgenoot* is summarised in Appendix I, with adjustments according to changes in terms of the CPI over the

period to provide projected current prices, should prices have moved strictly in accordance with changes in the CPI over the relevant periods to 2006.

Records of Cillie

Over many years Cillie, an engineer, kept copious records of his personal expenditure on a monthly basis (Cillie, [S.a.]: various pages). Although a wealth of information has been recorded, much of it cannot be used for purposes of this research owing to the fact that either descriptions (e.g. exact type of goods or services purchased), exact quantities, or relevant periods pertaining to payments were not recorded. Moreover, no record has been kept of the number of people whose needs were covered by purchases, e.g. the number of people in the household whose consumption was covered by certain purchases of services (e.g. water and electricity). Despite these shortcomings, the records of payments reveal some useful information, which is summarised in Appendix J.

Car prices

In respect of the Nissan 1400 pick-up truck and the VW Citigolf, price information for any period since their respective launches could actually be used. However, as both vehicles did undergo quality improvements from time to time, it was decided to use a relatively shorter, rather than longer period, to account for some of the improvements since their initial launch. This analysis is highlighted in Table 6.1, and the cheapest model available at the time is used for purposes of comparison. It is interesting to note from comparing Table 6.1 and Appendix L the change in relative prices between the two vehicles. While the Citigolf was more expensive in 1988, it was cheaper than the Nissan in 2006.

Table 6.1 Historic prices adjusted in accordance with relevant changes in CPI, 1988 to 2006

Item	Historic price in 1988	CPI in 1988, 2000 = 100	Projected price, CPI June 2006 = 133,6
Nissan 1400	R17 000	32,4	R70 099
VW Citigolf 1300	R18 210	32,4	R75 088*

* Citigolf 1400

Sources: *Car*, 1988: 253 and 254; Statistics SA; author's calculations

Information obtained from the BMR

In terms of the prices of groceries (household consumables, including food), detailed information pertaining to March 2004 was obtained for three shops in the Pretoria area, used by the BMR at the University of South Africa in the compilation of their research report (Bureau of Market Research, 2004). Some data on four surveyed shops were available, but extensive comparative data were available in respect of three shops only. Although the research of the BMR covered 13 cities or regions in South Africa to provide a representative geographical sample of cost of living for all areas and population groups in South Africa (Bureau of Market Research, 2004: 3), the collated information in the report cannot be disaggregated to basic information on actual prices of individual items. Unprocessed data for Pretoria were accordingly chosen for use as a representative proxy for prices in South Africa at the time.

The actual sample survey data were obtained from the BMR for purposes of comparative research. The data reflecting the average price per item based on actual prices for the three stores are summarised in Appendix K. It has been ascertained from the BMR that the cheapest price for each product was recorded for use in their surveys. Accordingly, for comparative purposes in this chapter, the same approach is used in respect of goods where more than one brand or more than one model is available. While older price data are adjusted by means of annual CPI figures in respect of the base year, the relatively brief period that lapsed in respect of the data obtained

from the BMR necessitated a different approach. The actual CPI figure for March 2004 was used as a basis for adjusting the prices to projected prices for June 2006.

Comparison of prices

In Appendix L the projected prices of all the products and services highlighted in Appendices H to K and in Table 6.1, are compared with the current prices of such goods and services. The selection of shops and other retail outlets to record prices for comparative purposes was a matter for consideration. In view of the approach followed by the BMR to select the cheapest example of an item used for survey purposes, it was decided to use the shop that recorded the lowest total price for the basket of goods identified in Appendix K, and obtain prices for as many items as possible for comparative purposes from that store. On further examination it has been ascertained that the shop where the lowest prices had been recorded, had merged with one of the other shops used for data collection in the BMR survey. This “new” shop was accordingly used, also because it “represents” two stores included in the earlier survey. In respect of the other goods and services, the relevant sources are reported with Table L1 in Appendix L.

This analysis shows that certain actual prices exceed projected prices, but in other instances projected prices are higher, implying that changes in the CPI “overmeasured” the rate of price increases in those instances. No systematic trend of actual prices exceeding projected prices is discernable. This confirms that perceptions about inflation can easily be distorted and that inflation credibility is more likely than not to be influenced by recent purchasing experiences of consumers.

In respect of food prices, the finding is that the actual prices of food and food-related items were lower than projected prices in 28 instances over the period since 1921, and higher in 12 instances. In view of the analysis in Tables 3.1, 3.2 and 3.3, this finding is important as food and food-related items impact more heavily on the rate of inflation of the low income group in South Africa, rather than the overall price index, where the weight of food in the spending basket

carries a much smaller weight. This finding provides limited grounds for low inflation credibility among the low income group in South Africa.

Of the 104 items covered by this analysis, the prices of 38 (or 36,5 per cent) increased at rates faster than the rates of inflation over the relevant periods, while the prices of the rest of the items increased at slower rates. This analysis and the methodology used in this paper can be applied to calculate an inflation accuracy indicator (IAI). The IAI is calculated around a reading of zero, with readings lower than zero indicating that a larger number of prices analysed increased at rates exceeding the rate of inflation. It is calculated by deducting the percentage of prices that increased at a rate higher than the rate of inflation from zero, and adding the percentage of prices that increased at a rate slower than the rate of inflation to the result, to provide the IAI reading. Applying this to the analysis for South Africa in this section, the IAI reading is + 27 (zero minus 36,5 plus 63,5). This result indicates that most of the prices increased at a rate slower than the rate of inflation over the period of comparison.

The IAI has certain shortcomings which might limit its usefulness under certain circumstances. First, it allocates the same importance in its calculation to all items, irrespective of actual weights or importance in the spending basket of an average household. Secondly, the IAI provides no clarity on changes in relative prices over time. Changes in relative prices influence consumer behaviour, but the IAI is merely a static measure of prices and cannot shed any light on spending patterns. Thirdly, it makes no allowance for quality improvements.

Despite its shortcomings and the need for further development of the IAI, periodic measurement in terms of the IAI can show a trend in the correlation between actual price increases and the rate of inflation over time. A stable trend in the IAI of any particular country can serve as an indication that the rate of inflation shows a correlation with actual price changes over time.

Price declines recorded in an economy are also not immediately obvious to consumers. A case in point is price declines occurring at wholesale level, rather than retail level, illustrated by movements in tractor prices and in the price of weed killers. From October 2002 to October

2003, the price index of weed killers declined by 16 per cent (Brink, 2006: 23). The declining trend in the price of tractors is even more pronounced. The index for tractor prices declined by 1,6 per cent over the period October 2002 to October 2003, then by 6,8 per cent in the year to October 2004 and by a further 3,6 per cent in the year to October 2005 (Brink, 2006: 23). As an index, tractor prices declined from 195,6 index points in October 2002 to 172,9 index points in October 2005 (Brink, 2006: 23).

6.4 Comparison of same-item prices over time

The analysis in the previous section provides no basis for a low credibility of inflation figures over any period of comparison. In this section the conclusion reached in the previous section is tested by means of the comparison of same-item prices over a period of 32 years, i.e. from 1974 to 2006. For purposes of this analysis, historic price data were obtained from the Institute for Planning Research, an Institute at the University of Port Elizabeth which subsequently merged with other institutions of higher learning to form the Nelson Mandela Metropolitan University.

The Institute calculated minimum living wages for different income groups on an annual basis from 1974. The prices of groceries (household consumables, including food) and clothing are available from that date. Records are available until 2004, when it was decided to discontinue the research. In collecting price data, the Institute used the same approach as the BMR, i.e. to record the cheapest prices for purposes of comparison. The data of the Institute were obtained for research purposes early in December 2006 and are therefore compared to price data in December 2006. It was decided to sample prices of groceries at the same shop used for sampling purposes in respect of the price data of the BMR to ensure some alignment in the approaches followed in the comparison of prices. In respect of items not stocked by the grocer, shops in the same complex were used to sample prices for comparative purposes.

The actual sample survey data for 1974, 1984, 1994 and 2004 were obtained from the Institute for purposes of comparative research. The data reflecting the prices per item for these periods are summarised in Tables M1 to M4 in Appendix M. While older price data (including that for

2004⁷⁸) are adjusted by means of annual CPI figures in respect of the base year, the data for 2006 are adjusted in terms of the CPI figure for December 2006. The results are summarised in Tables M1 to M4 in Appendix M, with the data for 1974, 1984, 1994 and 2004 forming the four base periods of comparison.

As is the case in Section 6.3, the analysis in this section over all four periods of comparison shows that certain actual prices exceed projected prices, but in other instances projected prices are higher, implying that changes in the CPI “overmeasured” the rate of price increases in those instances. No systematic trend of actual prices exceeding projected prices is discernable over this period of 32 years. The two most noteworthy trends over this period are that the actual prices of:

- household consumables (mainly household cleaning material) with a current weight of 1,25 per cent in the CPI basket often exceeded projected prices; and
- clothing and footwear (with a weight of 3,25 per cent in the CPI basket) are generally lower than the price levels projected in terms of the CPI.

The principles used for the development of the IAI in the previous section can also be applied to the analysis of the data obtained from the Institute. In total the prices of 47 items could be used in the analysis of price movements over the period of 32 years. Not all the price data could be used over the full period of analysis, implying that the projected and actual prices of items could be compared 409 times. Of these 409 comparisons, 251 actual prices (or 61,4 per cent of the prices) are lower than the projected prices, and 158 prices (or 38,6 per cent of the prices) are higher. Based on this data, the IAI reading is + 22,8 (zero minus 38,6 plus 61,4). This result indicates that more prices increased at a rate slower than the rate of inflation over the period of comparison than at a rate faster than the rate of inflation. The reading is closer to zero than the reading obtained from the analysis of price changes in the previous section (22,8 against 27), indicating more of a spread between prices increasing faster and slower than the rate of inflation.

⁷⁸ While the approach used in respect of the data for September 2004 differs from the approach used in respect of the March 2004 data of the BMR, it was decided to use the annual CPI figure for 2004 in respect of the September 2004 data in this instance to ensure a better basis of comparison with the data for 1994, 1984 and 1974. The use of the actual September 2004 CPI figure (124,1 with 2000 = 100), rather than the annual CPI figure of 123,8 for 2004, would not have changed the conclusions reached in this section.

As is the case in the previous section, no adjustment can be made for changes in quality or relaxation of control measures that could have influenced the prices of any of the items.

This analysis reconfirms that perceptions about inflation can easily be distorted. Inflation credibility is more likely than not influenced by the most recent purchasing experiences of consumers. No systematic basis for low inflation credibility is indicated by this analysis.

6.5 Comparison of salaries over time and with the CPI

In this section historic salaries of identifiable positions are adjusted in accordance with changes in inflation over the relevant period for a comparison with current salaries of the same positions. In the identification of comparable positions, some difficulty is experienced owing to “*job-title inflation*” that took place over the past two decades. By and large, positions carry more impressive titles than 20 years ago, e.g. chief executive, rather than managing director; divisional managing director, rather than general manager; chief operations officer, rather than manager, etc. Some positions nevertheless remained fairly homogeneous both in scope of responsibilities and in terms of job titles. This section analyses the salaries of two such positions; in the one instance at two different periods.

Kapp (2005: 63) mentions the appointment of Franken to the first chair of French at the University of Stellenbosch (US) in 1929. He mentions that “Franken se salaris was £718-15. Senior professore aan die US se salaris het toe tussen £900 en £1 000 per jaar gewissel” [Franken’s salary was £718-15. At the time the annual salaries of senior professors at the US ranged between £900 and £1 000⁷⁹] (2005: 64), implying that the salary of Franken was equal to some 79,8 per cent of the lowest salary notch. The reference to the salary of Franken is interpreted as £718 and 15 shillings per annum, or £718/15/-, as South Africa did not use a decimal system at the time, as is implied by Kapp. The relevant rand amounts for comparative purposes are R1 437,50, R1 800 and R 2 000. These figures are analysed in Table 6.2. Current information about remuneration was obtained from the US and pensionable remuneration was

⁷⁹ Author’s translation.

taken as salary. In 2006 the remuneration package of a professor at the University ranged from R262 471 to R372 096 per annum, and 75 per cent of the package constitutes pensionable emoluments, which is regarded as salary for purposes of comparison (Arangies, 2006).

Table 6.2 Historic annual salaries, projected salaries and actual salaries of a number of identifiable positions, various periods

Position	Year and historic salary	CPI in relevant year	Projected salary, CPI June 2006 = 133,6	Current salary	Difference + = larger actual - = smaller actual
Professor	1929 = R1 800,00	1,4	R171 771	R 196 853	+ R25 082
Professor	1929 = R2 000,00	1,4	R190 857	R 279 072	+ R88 215
Professor	1929 = R1 437,50	1,4	R137 179	R 157 089*	+ R19 910
Reverend	1947 = R1 400,00	1,9	R98 442	R 152 540	+ R54 098
Synod	1966 = R2 280,00	3,5	R87 031	R 105 600	+ R18 569
Synod	1966 = R4 500,00	3,5	R171 771	R 152 640	- R19 130

* Calculated as 79,8 per cent of the lowest notch for professors

Sources: Kapp, 2005; NG Kerk Noordelike Sinode, 2005; NG Gemeente Suid-oos Pretoria, 2006; Statistics SA; University of Stellenbosch, 2006; Van der Watt, 1997; author's calculations

In 1947 the top notch of the salary scale of a reverend of the Dutch Reformed Church amounted to £700 (or R1 400), according to Van der Watt (1997: 19), who reported information on the NG Kerk Suid-oos Pretoria congregation. The same source mentions in respect of the same congregation that “[d]ie traktament ... is gedurende Junie 1966 volgens die sinodale aanbeveling aangepas, en wel op die skaal van R2 280 + 120 – 3 600 + 150 – 4 500. Daarby word ‘n vakansiebonus van 5 persent van die salaris bygevoeg en die reistoelae is op R750 per jaar vasgestel” [the salary was reviewed in June 1966 in accordance with the prescriptions of the synod to R2 280 + 120 – 3 600 + 150 – 4 500 per annum. An annual holiday bonus of 5 per cent

of the salary and an annual travel allowance of R750 were also set⁸⁰] (Van der Watt, 1997: 52). The salary information is summarised in Table 6.2. For comparative purposes current information about remuneration was obtained from the congregation and pensionable earnings were taken as salary.

The analysis in Table 6.2 shows only one period where the actual salary did not grow faster than the rate of inflation, i.e. that of reverends at the top notch over the period 1966 to 2006. The other salaries in this comparison moved ahead in real terms. However, trend changes in remuneration and changes in taxation (e.g. a broadening of the tax base owing to the introduction of fringe benefit taxation) might distort these results, implying that a more detailed analysis is required. Employers have increasingly moved from salaries plus add-on benefits, to cost-to-employer remuneration. Accordingly a need for a more detailed comparative analysis, taking into consideration also these changes, has been identified. This analysis is explained in the next section.

6.6 Detailed comparison of cost-to-employer remuneration over time and with the CPI

In this section methodology is developed to ensure a detailed analysis of cost-to-employer remuneration. Changes in taxation over the period of comparison are also taken into consideration. Some difficulty was experienced in identifying suitable positions and to obtain historic remuneration data, but an article appeared in November 1984 in *Finansies en Tegnies* (at the time a monthly publication) that analysed the salaries, cost-to-employer remuneration packages and retirement benefits of two homogeneous and identifiable positions in the civil service (Director-General and Assistant-Director), in considerable detail (*Finansies en Tegnies*, 1984). Table 6.3 shows the remuneration information as at November 1984.

⁸⁰ Author's translation.

Table 6.3 Annual salaries and cost-to-employer remuneration of two civil service positions, November 1984

Type of remuneration	Assistant-Director	Director-General
	R	R
Salary	30 408	66 225
Service bonus	2 357	5 132
Housing subsidy	6 222	6 222
Additional housing subsidy	2 937	2 937
Car allowance	n/a	6 990
Employer pension contribution	9 223	14 569
Employer medical contribution (3 dependents)	660	660
Total cost to employer	51 807	102 735

Source: *Finansies en Tegnies*, 1984

The most obvious way of comparing the real remuneration of these two positions would be to adjust the respective salaries and cost-to-employer remuneration with changes in the inflation rate for the same period and to compare the results with the current salaries and cost-to-employer remuneration of a Director-General and an Assistant-Director. As was explained above, the focus in remuneration since 1984 has moved from salaries to cost-to-employer remuneration, also in view of the introduction of income tax on fringe benefits. For purposes of comparing salaries in the classic sense of the word, pensionable emoluments are therefore used. In 1984 the salaries (= pensionable emoluments) of these two positions were respectively 64,5 per cent and 58,7 per cent of cost-to-employer remuneration. In addition, the ratio of the salary and cost-to-employer remuneration of an Assistant-Director to that of a Director-General were 45,9 per cent and 50,4 per cent, respectively.

The comparative salaries and cost-to-employer remuneration of a Director-General and an Assistant-Director in July 2005 are highlighted in Table 6.4. As incumbents of both these positions are remunerated in accordance with salaries and cost-to-company remuneration that increase according to notches, with incumbents receiving one notch increase annually based on satisfactory performance, and because the civil service currently has two remuneration levels for Assistant-Directors, it is necessary to make certain assumptions for purposes of comparison.

The annual bottom and top notches applicable to the salary of a Director-General as at July 2005 were R500 551,20 and R539 229,60, with six notches in total, including the bottom and the top. Similarly the bottom and top notches applicable to the cost-to-company remuneration of a Director-General ranged between R834 250,00 and R898 716,00, with four notches between the bottom and the top. This implies that the pensionable component of the remuneration, described as a salary in this analysis, amounts to 60 per cent of the cost-to-company remuneration, whereas it amounted to 64,5 per cent in November 1984.

The annual bottom and top notches applicable to the salary of an Assistant-Director as at July 2005 were R139 302,00 and R201 852,00, spread over two job levels, albeit with the same job title, with sixteen notches and two special notches at the lower level and an additional sixteen notches at the higher level. The bottom and top notches applicable to the cost-to-company remuneration of an Assistant-Director (albeit over two job levels) ranged between R185 675,76 and R261 569,76. This implies that the pensionable component of the remuneration, described as a salary in this analysis, amounts to 75 per cent of the cost-to-company remuneration, whereas it amounted to 58,7 per cent in November 1984.

For comparative purposes, it is assumed that the analysis in November 1984 used the highest possible remuneration levels or top notches of the respective positions, as the article at the time aimed at reaching the conclusion that the remuneration of civil servants exceeded that of comparable positions in the private sector, and therefore had an incentive to use the highest figures available. In this regard the article stated, *inter alia*, that “ ... selfs op ‘n hoër, maar steeds betreklik junior vlak begin die byvoordele van die staat so ‘n verskil maak dat die private

sektor moeilik vind om kers vas te hou” [... even at a higher, but still fairly junior level the fringe benefits of the civil service make such a difference that the private sector has difficulty competing⁸¹] (*Finansies en Tegniek*, 1984: 13). The highest salary and cost-to-company remuneration notches applicable to these two positions are accordingly used for purposes of this comparison. It is also necessary to assume that the incumbents have a spouse and two dependant children for purposes of comparing medical aid benefits.

Table 6.4 Annual top-notch salaries and cost-to-employer remuneration of two civil service positions, July 2005

Type of remuneration	Assistant-Director	Director-General
	R	R
Salary	201 852,00	539 229,60
Service bonus	16 821,00	44 935,80
Housing subsidy	4 488,00	n/a
Car allowance	n/a	224 679,00
Employer pension contribution	26 240,76	70 099,85
Employer medical contribution	12 168,00	n/a
Total cost to employer	261 569,76	898 716,00

Source: Republic of South Africa, [S.a.]

Results of adjusting the salaries and remuneration packages for inflation, are highlighted in table 6.5. Table 6.5 indicates that the real salary of an Assistant-Director nearly kept pace with inflation⁸², but total cost-to-company remuneration declined sharply in real terms. Both the salary and the cost-to-company remuneration of a Director-General increased in real terms over the period 1984 to 2005.

⁸¹ Author's translation.

⁸² The average inflation rate over this period of 21 years was 9,82 per cent per annum, while the average annual rate of increase in salary was 9,43 per cent.

It is noteworthy that the salaries of the Director-General and Assistant-Director in 2005 were respectively 60 per cent and 75 per cent of cost-to-employer remuneration, compared to 64,5 per cent and 58,7 per cent, respectively, of cost-to-employer remuneration in 1984. In addition, the ratio of the salary and cost-to-employer remuneration of an Assistant-Director to that of a Director-General were 37,4 per cent and 29,1 per cent, respectively, compared to respectively 45,9 per cent and 50,4 per cent in 1984.

Table 6.5 Inflation adjustment of the salaries and remuneration packages of an Assistant-Director and a Director-General, 1984 to 2005

	Assistant-Director		Director-General	
	Salary	Remuneration	Salary	Remuneration
Position 1984	R30 408	R51 807	R66 225	R102 735
CPI index 1984	17,9	17,9	17,9	17,9
CPI index 2005	128,0	128,0	128,0	128,0
Projected real position	R217 443	R370 463	R473 564	R734 641
Actual position	R201 852	R261 570	R539 230	R898 716
Real difference	- R15 591	- R108 893	R65 666	R164 074

Sources: *Finansies en Tegniek*, 1984; Republic of South Africa, [S.a.]; Statistics SA [S.a.]; author's calculations

Although this comparison cannot provide any answer to the question whether the current remuneration or the adjusted real remuneration are at appropriate levels as no judgement can be made about the appropriateness of the identified remuneration in the base period, it is noteworthy that the salary and remuneration of a Director-General have increased considerably in real terms when compared to that of an Assistant-Director.

Table 6.6 After-tax incomes of an Assistant-Director and a Director-General, 1984 and 2005

	R
Taxable income of an Assistant-Director in 1984:	32 765
Tax on R32 765 (after rebates):	7 372
Net remuneration	25 393
Taxable income of a Director-General in 1984:	71 357
Tax on R71 357 (after rebates):	27 379
Net remuneration	43 974
Taxable income of an Assistant-Director in 2005:	223 161
Tax on R223 161 (after rebates):	37 706
Net remuneration	187 455
Taxable income of a Director-General in 2005:	696 505
Tax on R696 505 (after rebates):	238 302
Net remuneration	458 203

Sources: *Finansies en Tegniek*, 1984; Republic of South Africa, [S.a.]; SA Revenue Service [S.a]; author's calculations

In an effort to account for this difference in real growth in remuneration, an obvious explanation might be found in taxation applicable to the two positions. In addition to adjusting the salaries and cost-to-employer remuneration of these two positions for inflation only, an assessment of the real after-tax income of these two positions would show whether changes in income tax had any dramatic influence that had to be neutralised by means of differentiated remuneration adjustments, particularly owing to taxation of fringe benefits. For the purpose of this further comparison, it is assumed that for the 2006 tax year the tax deduction on fringe benefits calculated in terms of the tax table is sufficient to cover the tax liability, and that no additional payment would be required. This implies implicit assumptions about the use of fringe benefits such as the price and usage of a vehicle and medical aid contributions. Moreover, it is also assumed that the relevant person is married, has a spouse and two dependant children and is

under 60 years of age, to take account of children's rebates still applicable in 1984, as well as differentiated income tax rates at the time for married and unmarried tax payers and additional rebates for tax payers over the age of 60 in the 1985 tax year. The tax table for the 1985 tax year takes account only of tax on income (defined as salary and bonus), as taxation of fringe benefits (other than bonuses) was introduced in South Africa on a phasing-in basis from the 1986 tax year only. The tax table for the 1985 tax year is given in Appendix N. The tax payable on salaries and fringe benefits for the 2006 tax year is displayed in Appendix O.

In the calculation of the tax payable by incumbents of the two positions for the 2006 tax year, it should be noted that housing benefits are taxed as income, and two-thirds of medical aid contributions are tax free. For comparative purposes it is assumed that the full amount of employer medical-aid contribution shown in respect of an Assistant-Director is deductible for tax (i.e. comprises the two-thirds portion). A similar amount is assumed as tax deductible in respect of the Director-General, and is accordingly deducted in the calculation of taxable income. Car allowances in the 2006 tax year are subject to a 50-per-cent deduction for Pay-As-You-Earn (PAYE) at the marginal rate. The after-tax salaries and cost-to-employer remuneration of a Director-General and an Assistant-Director are compared on this basis in Table 6.6.

Table 6.7 highlights a comparison of the calculated real adjusted after-tax incomes and actual incomes of the two positions under review. In real terms (after income tax has been taken into consideration) the remuneration of both an Assistant-Director and a Director-General not only kept pace with inflation, but moved ahead of inflation, albeit more so in the case of the Director-General. The conclusion from this analysis of the financial positions of two identifiable positions in the civil service is therefore that actual spending patterns in terms of a consumer basket at a particular point in time and movements in spending patterns over time, rather than a lack of remuneration adjustments to cater for inflation and concomitant price increases on an after-tax basis, would result in a perception that actual inflation is higher than the published official inflation figures. It is also important to note the relative change in the remuneration of these positions.

Table 6.7 Inflation adjustment of the after-tax remuneration of an Assistant-Director and a Director-General, 1984 and 2005

	Assistant-Director Remuneration	Director-General Remuneration
Position 1984	R25 393	R43 974
CPI index 1984	17,9	17,9
CPI index 2005	128,0	128,0
Projected real position	R181 581	R314 451
Actual position	R187 455	R458 203
Real difference	R5 874	R143 752

Sources: *Finansies en Tegnies*, 1984; Republic of South Africa, [S.a.]; Statistics SA, [S.a.]

This comparison of real after-tax remuneration raises questions about changes over time in the affordability of big-ticket expenditure items for an average household. The analysis in Appendix L addressed to some extent the affordability of motor vehicles, one important big-ticket expenditure item for an average household. However, the tables do not cover in any way the affordability over time of home ownership for an average household. For purposes of such an analysis only the position of an Assistant-Director is considered, as this position has shown a smaller increase in real remuneration than a Director-General. It is necessary to make a number of assumptions:

- the typical price that an Assistant-Director pays for a house is equal to the cost-to-employer remuneration of a Director-General;
- no deposit is paid;
- the whole purchase price is borrowed as a bond and repaid over 240 months;
- transfer fees, legal fees and commissions are disregarded for purposes of this comparison; and
- bond rates were equal to the average prime overdraft rates in 1984 and 2005, i.e 21,25 per cent and 10,5 per cent, respectively.

Table 6.8 highlights the comparative positions of assistant-directors in 1984 and 2005 in terms of affordability of houses. The analysis shows an assumed repayment in 1984 at an unacceptable ratio to the net remuneration of an Assistant-Director (87,3 per cent), while the ratio of affordability improved to 57,4 per cent by 2005. However, in both instances the houses used in the example are priced outside the affordability range of an Assistant-Director.

An analysis from an affordability perspective, based on an assumption that 27 per cent of net remuneration can be used for bond repayment (ABSA, [S.a.]), shows that a house of R31 786 could have been afforded in 1984 at an interest rate of 21,25 per cent, with a monthly repayment of R571,34 on a 100-per-cent home loan over a period of 20 years. Adjusted with the rate of inflation, the price would have been R227 297 in 2005. However, on the 27-per-cent affordability assumption, an Assistant-Director would have been able to afford a house of R422 458 in 2005, with a monthly bond repayment of R4 217,74 on a 100-per-cent home loan at a rate of 10,5 per cent over 20 years. Based on these assumptions, it seems that housing became more, rather than less, affordable, provided that remuneration after tax kept pace with inflation.

Table 6.8 Comparable affordability of houses, 1984 and 2005

	1984	2005
Net remuneration	R25 393	R187 455
Assumed house price	R102 735	R898 455
Ratio	4,05	4,79
Monthly bond repayment	R1 846,60	R8 972,60

Source: Author's calculations

A more complete picture emerges when actual house price movements are compared. ABSA, a commercial bank in South Africa, publishes an index of house prices (ABSA, [S.a.]). Before the establishment of ABSA in 1991, this index was published by the United Building Society, which merged with other banks to form ABSA. With 2000 = 100, the index was 28,6 for 1984 and

259,6 for 2005. Based on this index, the price in 2005 of a house priced at R31 786 in 1984 would have been R288 519, which would clearly have been more affordable for an Assistant-Director.

In addition to the actual index, ABSA also publishes two house price data series:

- the purchase prices of all sizes of old and newly-built middle-range houses for the whole of South Africa; and
- reports real house prices in terms of prevailing prices in 2000.

In terms of the first series, the average house price in 1984 was R79 048, and in 2005 it was R706 130 (Du Toit, 2006). In terms of the second index, average real house prices moved from R442 485 in 1984 to R551 432 in 2005 (Du Toit, 2006). These increases exceeded the rate of inflation, but housing affordability compared in terms of salaries, remuneration and affordability in terms of monthly repayments improved over this period.

This analysis shows that this big-ticket expenditure item has also become more affordable over the period under consideration, as is the case with the two motor vehicles used for comparative purposes in Table 6.1 and Appendix L, particularly when the general lower interest rate environment is also taken into consideration.

Although a matter outside the scope of this study, the methodology developed in this section can be applied to assist in calculating fair and reasonable adjustments in remuneration negotiations.

6.7 Use of historic price information by developing economies

Developing economies can use the methodology developed in this chapter to validate the accuracy of their rates of inflation over time, particularly in instances where countries suffered sustained inflation over a prolonged period⁸³. The methodology serves as a simplified measure to assess the accuracy of inflation data and to ascertain whether a lack of inflation credibility is

⁸³ See for instance Coorey et al. (2007) for a discussion on the accurate measurement of sustained inflation.

based on fact or perception. This method does not require the use of any technical or statistical measures or capacity that might not be readily available in, or at the disposal of, developing economies. To the contrary, the requirements are simply sufficient data about historic prices at different periods in time, current price information and inflation data over the same time periods. The same applies in comparing historic and current remuneration in terms of this analysis: suitable positions should simply be identified for comparison over time, and relevant information about historic remuneration levels of such positions should be available.

Developing economies can publish periodically the results of such analyses to enhance public awareness of the link between price movements and the rate of inflation – provided the data confirm that the inflation figures reflect with a large degree of accuracy average movements in prices and remuneration over time. Such publicity will improve the credibility of inflation data, therefore anchoring inflation expectations in current inflation figures.

It is important that the agency entrusted with responsibility for the analysis should have trustworthiness in the public eye, thereby validating the analysis. Generally speaking, central banks should ideally not be entrusted with this responsibility, as it could be argued that central banks have a vested interest in the confirmation of the accuracy of inflation data, because such confirmation might support the implementation of monetary policy.

Maxwell states that “[t]he impact of central bank independence on employment in developing countries is an important area for future research” (1997: 147). This matter is, however, not only of importance in developing countries. In respect of two of the objectives of the Fed (low inflation and low unemployment), it was recently observed that if one of these objectives is targeted and not the other, the objective used for targeting purposes will receive most of the attention (Guha, 2007: 14). The debate about the possible impact of monetary policy on unemployment is therefore not limited to developing countries only. The comparison of actual price increases with average price increases measured in terms of the consumer price index might shed some light on this debate. Any research about the impact of monetary policy on inflation and unemployment based on inaccurate inflation data not supported by average actual price

increases over any period of time, will distort the research results. If inflation cannot be verified over time by means of a comparison between actual and projected price and remuneration increases, the possibility of distortions in other economic data (e.g. employment data) should also be considered.

The publication of results based on the methodology followed in this study will enhance its usefulness. Publishing detailed research results will help to ensure that public and private-sector decision-makers and international investors anchor their planning and decision-making in current inflation rates – provided that the accuracy of inflation figures is confirmed by acceptable readings of the IAI.

6.8 Conclusions

Despite the difficulties in comparing historic prices and remuneration adjusted in terms of changes in the CPI with current prices and remuneration, highlighted at the outset of this chapter, suitable adjustments could be made to ensure a basis of comparison.

Historic prices of a broad variety of goods and services could be identified and adjusted for comparative purposes, and same-item comparisons could also be done for a period of 32 years. Over periods of comparison no systematic over-reporting or under-reporting of changes in prices in terms of the CPI was discernable. As should be expected with adjustments reflecting average price increases, the current prices of some goods and services were lower than projected prices, while the actual prices of other goods and services exceeded projected prices. Based on this analysis, no basis for a low credibility of inflation figures as an accurate indication of price increases in the South African economy could be found. The methodology developed for purposes of this analysis is suitable for use in future to revalidate the accuracy of inflation figures, using the research results in this study as a benchmark.

In respect of the prices of food and food-related items, some items increased to price levels much higher than their projected price levels, based on historic prices adjusted for CPI. This could

provide some basis for low-income earners to attach less credibility to inflation figures than high-income earners. In as much as the spending pattern of housewives correspond to a larger degree with the spending patterns of low income earners than with average spending patterns, this finding could indicate that the credibility of inflation figures might be lower among housewives than among the population in general.

This analysis was also used to assess the affordability of big-ticket items. Over the period 1984 to 2005 the affordability of motor vehicles and houses improved, therefore showing no tendency that big-ticket items became less affordable as a result of sustained high inflation.

A precondition for the efficient functioning of a market in any economy is that producers and consumers must be able to identify changes in the relative prices of goods and services over time. The identification of changes in relative prices allows producers and consumers to take appropriate economic decisions in the allocation of productive resources and in consumption expenditure, respectively. Producers and consumers will take decisions not only to their own detriment, but also to the detriment of the economic system as a whole, if they cannot distinguish between increasing prices reflecting changes in relative scarcity and price increases owing to an ongoing inflationary process. Relative remuneration of positions also changes over time. If such changes are viewed merely as inflationary adjustments, prospective employees might make wrong career decisions.

An IAI was calculated for South Africa, based on the data collected for this study. Despite its shortcomings, it can be used to enhance inflation credibility, particularly because it is easy to understand. If calculated periodically by countries, it can serve as a benchmark for the measurement of inflation accuracy. The ease of calculation of the IAI makes it a particularly useful instrument for use by developing countries. In further research some modifications to the IAI might be considered, e.g. in respect of the items to be included; the period or periods of comparison; and the treatment of changes in relative scarcity and quality improvements.

The research in this chapter can be applied by developing economies in as much as trends and changes in prices and remuneration over time can be compared with inflation data – provided that reliable inflation data are available. To this end the importance of reliable economic data in general and, for purposes of this study, inflation data in particular, cannot be overemphasised. Confirmation of accurate inflation data can be an important tool for anchoring inflation expectations in developing countries where the necessary tools for other statistical analyses or forecasting capacity are not available.

In this chapter no basis, other than possible problems for low-income earners and housewives in respect of food purchases, has been found to justify low inflation credibility. To this end the sub-hypothesis, i.e. the prices of various identifiable consumer goods and services and remuneration increased on average in accordance with the official overall rate of inflation over time, has been proved. This hypothesis was tested by comparing the actual price increases of various identifiable consumer goods and services, as well as increases in remuneration, with the South African CPI for different periods.

The final conclusion from this comparison is therefore that any low readings of an inflation credibility barometer is based on perception, or at best own spending patterns, rather than a general tendency of prices of goods and services increasing at a faster pace, and remuneration increasing at a slower pace, than the CPI. In view of this analysis, the next chapter highlights the measurement of inflation credibility in terms of an inflation credibility barometer following the finding that price and remuneration increases in South Africa broadly remained in step with the rate of inflation.

CHAPTER 7

MEASURING INFLATION CREDIBILITY

7.1 Introduction

The anchoring and measurement of inflation expectations are of importance to central banks within an inflation targeting country. Expectations are informed over time by the policy actions of the authorities and are sampled by means of opinion polls; an approach that has been followed in South Africa since 1999 (Kershoff and Smit, 2002: 445).

Inflation expectations are formed by and large through the historic policy decisions of central banks and their success in containing inflation, rather than through public announcements of the future intentions of the central bank. According to Mishkin, “... an essential ingredient to a successful anti-inflation policy is the credibility of the policy in the eyes of the public ...” (2004: 658). One approach to achieve this objective could be to make the central bank “... more independent from government and to charge it with the single responsibility of achieving and maintaining the price level” (Parkin, 1999: 809; see also Mishkin, 2004: 352 to 354; or Arnone et al., 2007: 5). De Wet confirms the view that “... the more independent the central bank is, the lower the inflation rate will be”, citing a number of studies that found that “... independence and inflation are highly negatively correlated”. (2003: 799)

Roach (2006a) is, however, of the view that an inflation target might be too narrow a scope for monetary policy, even if central banking autonomy has been established. It raises questions about the degree of autonomy that should be entrusted to a central bank, as well as the required degree of flexibility, if any, necessary in the setting of a nominal anchor for the central bank. In this regard Padayachee states that “[t]he key issue is ... to establish institutional mechanisms by which ... [central banks] ... can be held more accountable for their actions and their decisions be made to reflect the interests of the broader society” (2001: 750).

In instances where countries have been successful in containing inflation, central banks are not only allowed instrumental independence in achieving the goal of relative price stability, but inflation expectations have also been contained successfully. Lacker states “ ... low and stable inflation expectations have enhanced the ability of monetary policy to react flexibly to both positive and negative shocks ... ” (2005). Any lack of credibility of published inflation figures will therefore serve as an early warning of a possible change in inflation expectations, as “ ... a central bank ... does not have control over expectations of inflation” (Mishkin, 2004: 419). If the general public does not accept the rate of inflation as a true reflection of price increases in an economy, the benefits of anchoring inflation expectations in the current rate of inflation could be forfeited in the long run (Rossouw, 2005: 298). Moreover, a lack of credibility of current inflation figures as a true reflection of average price increases will feed into inflation expectations over time.

The next section considers the sampling of inflation expectations in South Africa. Section 7.3 highlights an assessment of the inflation experience of a typical middle-income South African household. Section 7.4 highlights national research on the percentage of respondents regarding the efforts of the authorities to contain inflation as successful. Sections 7.5 and 7.6 describe the development of a methodology to measure inflation credibility in South Africa and analyse conclusions from its use in five initial pilot studies and one extensive pilot study. Section 7.7 sets out the development and reports the results of the first representative study on inflation credibility in South Africa, using the methodology developed in Sections 7.5 and 7.6. Section 7.8 provides an analysis of the possible use of an inflation credibility barometer by developing economies, with particular reference to its possible use in SADC. The conclusions follow in Section 7.9.

7.2 Sampling of inflation expectations in South Africa.

Since the adoption of an inflation-targeting monetary policy regime in South Africa, the SA Reserve Bank has used the Bureau for Economic Research (BER) at the US to conduct inflation expectation surveys on its behalf (Kershoff, 2000: 1). Inflation expectations can be described as the expected future values of the inflation rate. Economic agents (e.g. consumers in consumption

decisions, trade unions in wage negotiations or producers in pricing decisions) build their inflation expectations into wage demands, asset prices and selling prices (Kershoff, 2000: 1). The problem of inflation expectations sustaining an inflationary process was identified as far back as 1967 by Samuels, who stated that “... once the market’s expectations ... are broken, the problems of the transition to a non-inflationary era will become progressively easier. The eradication of inflationary expectations will not be easy” (1967: 355).

The findings of inflation expectation surveys are used by central banks to evaluate the credibility of their inflation-fighting policies (Kershoff and Laubscher, 1999: 6). To the extent that private economic agents (consumers, trade unions, businesses, etc.) believe that the central bank is committed to achieving low inflation, they expect lower future inflation and plan accordingly. To this end the containment of inflation can become a self-fulfilling strategy. Such increased credibility can help to reduce the output loss that often accompanies disinflationary monetary policies (Kahn and Parish, 1998: 7). Kershoff and Laubscher state that “[t]he issue of the credibility of monetary policy is crucial. If actual inflation and expected inflation is the same, then the presumption is that society reaches a better economic outcome” (1999: 6). A central bank puts its credibility at risk if possible changes in the trend of inflation are not identified timely.

The BER samples the inflation expectations of business people, market analysts, trade unionists and households on a quarterly basis. While the BER does the sampling of the first three groups directly by means of questionnaires, the sampling of the inflation expectations of households is undertaken by AC Nielsen on behalf of the BER, as it involves sampling by means of personal interviews. This approach is followed because other alternatives will not provide satisfactory results in South Africa, e.g. postal surveys cannot be used owing to a high rate of illiteracy; and an unequal distribution of fixed-line telephones implies that telephone surveys will reach only a small portion of the population.

For purposes of sampling among business people, market analysts and trade unionists, questionnaires are mailed to respondents three weeks before the due date. The questionnaire

covers views of respondents on CPI and CPIX inflation for the current and following two years, as well as a number of other domestic economic indicators. In respect of households, AC Nielsen conducts personal interviews with a sample of 2 500 households, covering Blacks and Whites in metropolitan areas, cities, towns and villages throughout South Africa. The views of Coloured and Asian respondents are sampled only in the major metropolitan areas.

Table 7.1 Summary of inflation expectation survey results, third quarter 2006

	Analysts	Business people	Trade unions	Average	
Expected CPI during					
	2006	4,8	4,8	4,9	4,8
	2007	5,4	5,1	4,9	5,2
2008	4,6	5,1	4,9	4,9	
Expected CPIX during					
	2006	4,8	5,0	5,0	4,9
	2007	5,4	5,4	5,2	5,3
2008	4,7	5,4	4,9	5,0	

Source: BER, 2006

To cater for the possibility that respondents sampled by ACNielsen might not understand the meaning of inflation, the question to households takes the form of a statement on price increases over the preceding five years and the preceding year, followed by a question on expected price increases in the current year (see for instance Kershoff, 2000). While the other groups of respondents are requested to provide expectations for the current and following two years, the high cost of personal interviews makes it impossible to survey the inflation expectations of households for subsequent years (Kershoff, 2000). The survey results are published on a quarterly basis in considerable detail, e.g. in terms of income groups in respect of households. Table 7.1 provides a summary of the survey results for the third quarter of 2006.

The measurement of inflation expectations described in this section should, however, not be confused with the measurement of inflation perceptions described in Chapter 2. Inflation expectations in no way measure the credibility of published inflation figures. To the extent that published inflation figures lack credibility, there is a risk that inflation expectations might not be anchored in current figures. Measurements showing low inflation credibility or low credibility of current inflation figures as an accurate indicator of prevailing price increases, will therefore serve as an early warning system for authorities that inflation expectations might change. To this end this study reports on the measurement of inflation credibility in South Africa. Sections 7.6 and 7.7 of this chapter analyse conclusions from five initial pilot studies and an extensive pilot study measuring inflation credibility in South Africa, respectively, and the results of a first representative study on inflation credibility is discussed in Section 7.8.

7.3 Assessment of the inflation experience of a typical middle-income South African household

During October 2005, Momentum, a South African life assurance company, published an assessment of the inflation experienced by an average South African household⁸⁴. At the time of the assessment, South African inflation as measured in terms of changes in the South African CPI basket, covering approximately 1 500 goods and services, “... for the 2004 calendar year was 1,4 per cent – the lowest average level since 1963” (Momentum, 2005). Momentum assessed whether “... the average middle class household experience inflation at these low levels or are they in fact becoming poorer as result of their own spending patterns (baskets), increasing ahead of official inflation numbers” (Momentum, 2005).

⁸⁴ Momentum provides no definition for or description of an *average* South African household in the analysis.

Table 7.2 Percentage increase in prices of selected items between August 2004 and August 2005

Item	Percentage change	Weight in CPI	Weight in CPIX
Education	8,7	3,38	3,77
Reading matter	5,3	0,36	0,40
Transport	9,4	13,72	15,30
Medical care and health expenses	6,5	6,90	7,70
Domestic workers	12,1	3,22	3,59
Household operation	9,4	4,68	5,22
Cigarettes, cigars and tobacco	11,8	1,21	1,35
Alcoholic beverages	5,2	1,52	1,70
Non-alcoholic beverages	4,3	1,13	1,26

Sources: Momentum, 2005 (original source Statistics SA), and author's calculations of relative weights in CPI and CPIX

The assessment revealed that the rate of change in the prices of certain items was above the official total inflation figure for the period under review – as could be expected. However, the point made in the Momentum assessment is that “... for most households, these items above the official rates are broadly the larger numbers on the monthly budget spreadsheet. These items include things like medical costs, education, reading matter, transport and entertainment” (Momentum, 2005), and are highlighted in Table 7.2. For the period under review (August 2005 compared to August 2004), the rates of change of the CPI and CPIX was 3,9 per cent and 4,8 per cent, respectively.

This analysis demonstrates that the rate of inflation measured in terms of changes in the CPI is indeed averaged: the *average* rate of increase in prices for an *average* household based on an *average* spending pattern. As a result, “... the average household does often not experience

inflation at ... [the low reported] ... levels and, in most cases, find that their monthly budget is under siege by certain budget items increasing in excess of official rates” (Momentum, 2005). This assessment accordingly confirms the important point that individual households will experience inflation in accordance with their actual spending patterns, rather than the official rate of inflation, a conclusion also highlighted by Jonung (1981: 1) in respect of Sweden.

It should be borne in mind that the items included in the Momentum study comprises only 36,12 per cent of the CPI consumer basket and 40,29 per cent of the CPIX, respectively. The implication is, nevertheless, that individual households could express distrust of official inflation figures as an accurate indication of the rate of average price increases to the extent that their own spending patterns differ from the average pattern used to calculate changes in the CPI or CPIX.

7.4 Views on the success of authorities in containing inflation in South Africa

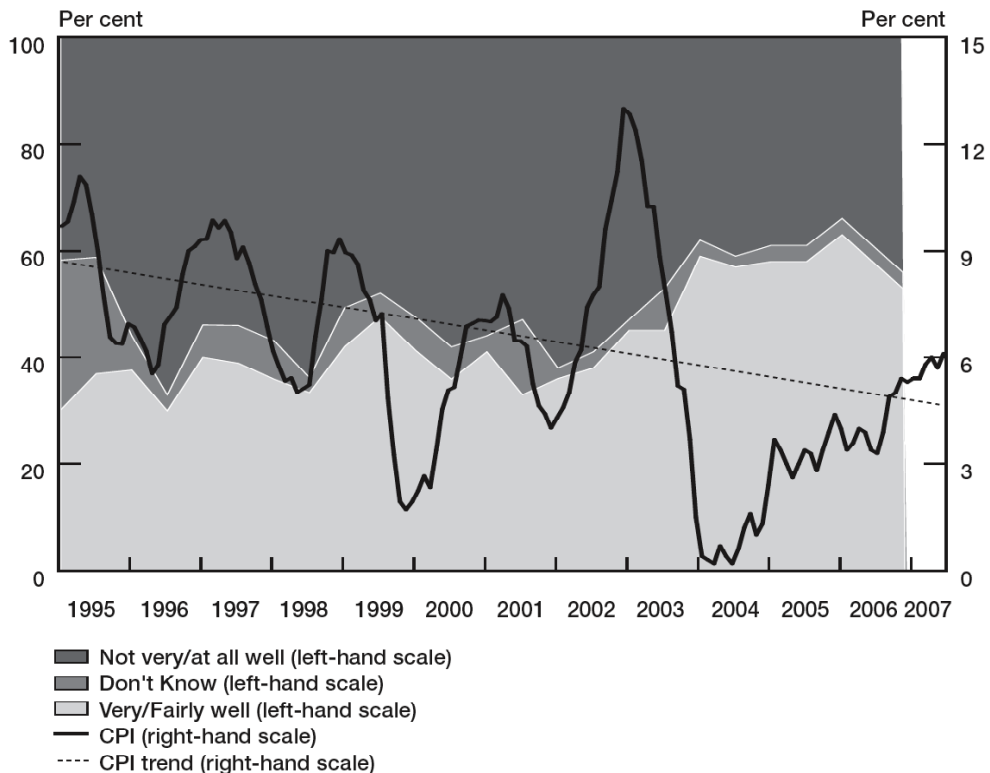
A South African market research company, Markinor⁸⁵, launched its *Government Performance Barometer* survey in its current format in May 1995. The survey has been expanded since inception and currently samples performance and delivery of the government on 23 critical areas, one of which pertains to inflation. The sample comprises 3 500 face-to-face interviews with randomly selected respondents drawn from the whole country. It is conducted every six months (in April/May and in October/November) and, for purposes of the survey, *government* is demarcated as the President; the Deputy President; the National Government; the nine provincial premiers; the nine provincial governments and local authorities. The performance of the SA Reserve Bank is therefore not covered by the scope of the sample.

Markinor’s *Government Performance Barometer* can be regarded as a composite measure of government performance, as it is a survey that polls the opinions of South Africans on the general direction in which the country and its government is moving, including the performance of the President, Deputy President and provincial governments. Specific issues covered include perceptions of respondents about the government’s performance in relation to overcoming

⁸⁵ Please see section 7.8 below for a discussion of Markinor.

corruption; maintaining transparency and accountability; promoting gender equality; delivery of basic services; improving health services; and reducing unemployment. Of particular interest for this study, however, is the inclusion in the questionnaire since 1995 of a question on perceptions on how well government is controlling inflation. In as much as containing inflation is a responsibility of the SA Reserve Bank, rather than of the South African Government, it can naturally be argued that the question should be formulated differently. However, for purposes of assessing perceptions about inflation over time, the formulation of the question in the Markinor survey does not limit in any way its usefulness for purposes of this study.

Figure 7.1 Perceptions on how well government is controlling inflation compared with actual rate of South African inflation, 1995 to 2006



Sources: Markinor, 2006; SA Reserve Bank, [S.a.]; Statistics SA, [S.a.]; author's calculations

Figure 7.1 compares the perceptions of respondents in the Markinor sample since May 1995 with the rate of inflation, measured in terms of changes in the CPI over the same period. The most significant finding is that perceptions about how well government is controlling inflation have improved in conjunction with an overall declining trend in changes in the domestic CPI since 1995. However, towards the end of 2006 the perception on how well government is controlling inflation did show a declining trend compared to the readings earlier in 2006 and of 2004 and 2005, which corresponds with an acceleration in inflation. The information was released for this research in conjunction with the research results reported below in Section 7.8, and is therefore published for the first time in this study.

The conclusion from this comparison is that perceptions about improvements in containing price increases are linked to movements in the rate of inflation, with an increasing trend in inflation towards the end of 2006 leading to a decline in the number of respondents indicating that government is controlling inflation fairly well or very well. The implication is therefore that declining inflation should enhance the credibility of inflation figures. The first measurements of inflation credibility in South Africa are reported in this chapter, but it will be necessary to measure it periodically over a period of time to ascertain whether it reflects the same trend as the responses recorded in the *Government Performance Barometer*.

7.6 Pilot studies on inflation credibility in South Africa⁸⁶

In an attempt to measure the credibility of changes in the CPI and/or CPIX as accurate indicators of the rate of change of prices in the South African economy, the researcher conducted five pilot studies aimed at such measurement at the University of Pretoria. This approach was necessary as methodology had to be developed for measuring inflation credibility. Despite the use of different questionnaires in the various pilot studies, it was decided in all the studies to provide the most recent official inflation figure at the time to respondents, as Kershoff and Smit state that “[t]he benefit of providing historical information is that all respondents have the same information

⁸⁶ The results of some of the pilot studies were published as Rossouw and Joubert, 2005a, and Rossouw and Joubert, 2005b.

available when completing the questionnaire ... [as] ... historic information provides respondents with a benchmark” (2002: 453).

The pilot studies⁸⁷ were conducted to ascertain whether similar research can be undertaken with a representative sample of respondents, and to obtain answers to the following questions, formulated, *inter alia*, in view of international experience with the measurement of inflation perceptions:

- (i) whether an inflation credibility barometer can be calculated;
- (ii) whether respondents generally accept inflation figures as accurate;
- (iii) whether respondents have a clear understanding of the meaning and measurement of inflation;
- (iv) the extent to which knowledge and information improve inflation credibility;
- (v) the optimal scope of a questionnaire for use to measure inflation credibility in a broad sample of the population;
- (vi) which particular measurement of inflation (CPI or CPIX) records a higher degree of acceptance as an accurate indicator of price increases in the economy and is therefore more suitable to use for sampling purposes;
- (vii) ascertain differences in the inflation perceptions of different genders in South Africa; and
- (viii) ascertain differences in the inflation perceptions of different population groups in South Africa.

The first pilot study aimed at measuring inflation credibility used a questionnaire (attached as Appendix P) based on earlier proposals for the content of such a questionnaire to use for the compilation of an inflation credibility barometer (Rossouw, 2003b: 84). In this pilot study the aim was to obtain answers to questions (i), (ii) and (iii) above. Three groups of respondents were selected to complete the questionnaire and were requested to indicate whether the latest available month-on-month inflation figure stated in the questionnaire is a true reflection of average price increases. For control purposes and to prevent a situation where one respondent could complete

⁸⁷ See for instance Struwig and Stead (2001) on the advisability of using pilot studies before sampling a representative population.

more than one questionnaire, respondents were requested in all instances to identify themselves in the completed questionnaire.

The second question in the questionnaire provided in section (a) an option of stating that inflation was lower than published to cater for such perceptions. In the alternatives in question 2 (b), dealing with a perception that inflation was higher than published, three possible alternatives that would not contribute to increases in the price level (e.g. expensive food) were deliberately included.

The first questionnaire was completed under supervision as a first phase of the first pilot study by 20 Master of Business Administration (MBA) preparatory students at the University of Pretoria during 2005. This group was selected as a first sample owing to the small number of students. As students participating in the first phase of the first pilot study experienced no difficulties in completing the questionnaire, two larger groups of second-year economics students following the EKN 213 and EKN 215 courses, respectively, at the same University during 2005 subsequently completed it as a second phase of the first pilot study.

The responses of the MBA preparatory students are highlighted in Appendix R. As only one student accepted the inflation figure as accurate, the credibility barometer reads 5 (out of a possible 100). The questionnaire was distributed before any lecturing on or explanation of inflation and its measurement. A large proportion of respondents displayed little understanding of inflation, as is evident by the fact that they have highlighted an item not contributing to price increases as a reason for not accepting the inflation figure as accurate.

As a second phase of the first pilot study, the responses of two groups of second-year students in the first pilot study are highlighted in Appendices S and T, respectively. The sample comprised eleven EKN 213 and ninety EKN 215 students. The analysis of the results obtained from the EKN 213 and EKN 215 students confirmed that an inflation credibility barometer could be constructed by expressing the total number of “yes” responses to the first question as a percentage of the total responses, but that it has a very low reading owing to a low degree of

credibility of the official inflation figure as a true reflection of average price increases.

In respect of the EKN 213 students, the credibility barometer reads 18 (out of a possible 100), as two out of 11 students accepted the inflation figure as accurate. Only one student mentioned a perception of price increases lower than the inflation figures. It is important to note that three students (some 27 per cent), mentioned as reasons for a perception of higher inflation an item (high prices) that is not used for measuring the rate of inflation. Broadly similar results were obtained from the questionnaires completed by the EKN 215 students. In this case the credibility barometer reads 13 (out of a possible 100) as 12 out of 90 students accepted the inflation figure as accurate. About 6 per cent of students indicated that price increases were lower than the inflation figures. In addition, 17 students (i.e. about 19 per cent) mentioned as reasons for a perception of higher inflation one of the items that are not used for measuring the rate of inflation.

The responses provided a satisfactory answer to question (i) above (an inflation credibility barometer can be constructed, albeit with a very low reading), but not to questions (ii) and (iii), casting some doubt on people's understanding of the meaning of inflation figures. Owing to these unsatisfactory survey results obtained from the first pilot study, revised second and third pilot studies were conducted, using the same groups of respondents, *inter alia*, to ascertain whether knowledge and information improve the credibility of inflation data. In the second pilot study, one group of respondents used before was requested to complete the first questionnaire for a second time. In the third pilot study a shortened second questionnaire, highlighted in Appendix Q, was developed for completion by the two other groups of respondents used in the second phase of the first pilot study. It comprises one question only, pertaining to the accuracy of the rate of inflation used for targeting purposes, rather than the overall rate of inflation.

As the group of 20 MBA preparatory students had no previous formal post-school training in economics and in view of the unsatisfactory findings about the acceptance of inflation figures, they were requested in the second pilot study to complete the first questionnaire for a second time. This followed an extensive lecture on the measurement of inflation, inflation targeting as a

monetary policy framework and the use of inflation targets in South Africa, which addresses question (iv) above. Moreover, the study also attempted to find satisfactory answers to questions (ii) and (iii), which were not answered satisfactorily in the first pilot study.

A comparison of the results of the first phase of the first pilot study and of the second pilot study, highlighted in Appendix R, confirms that knowledge and information increase the credibility of inflation figures. The credibility barometer reads 45 in the second pilot study, indicating a much higher degree of acceptance of the inflation figure as an accurate indicator of inflation after the lecture on inflation. This confirms that knowledge and information improve inflation credibility, despite the fact that three respondents still mentioned as reasons for a perception of inflation at a level higher than the official rate items not used for measuring the rate of inflation. This casts some doubt on the ability of people to understand fully in a reasonably short period of time the meaning of inflation figures. To the extent that this group of students reflects a cross-section of the general public, the finding is that communication increases the public's general level of understanding inflation, albeit that prolonged communication might be required for this purpose.

The second pilot study also provided satisfactory answers to questions (ii) and (iii) in as much as a higher credibility of inflation figures was recorded and less respondents selected as reasons for not accepting inflation figures as accurate an item not contributing to price increases.

In an attempt to find an answer to question (v), i.e. whether a long questionnaire, particularly one that allows for a choice in the answering of questions, might "induce" negative responses by respondents to ensure participation in subsequent questions, and to ascertain the optimum scope for a questionnaire, a more concise questionnaire was compiled for completion in a third pilot study by the same two second-year student groups who participated in the second phase of the first pilot study. The second questionnaire stated the inflation figure used for targeting purposes (CPIX), rather than the overall CPI inflation figure. For control purposes respondents were again requested to identify themselves.

The results of the third pilot study are summarised in Appendices S and T, respectively. The

sample comprised 16 students registered for EKN 213 and 62 registered for EKN 215. In the second sample of EKN 213 students, the credibility barometer reads 81 (out of a possible 100) as 13 out of 16 respondents accepted the inflation figure used for targeting purposes as accurate. In respect of the EKN 215 students, the credibility barometer reads 63 (out of a possible 100) as 39 out of 62 respondents accepted the inflation figure as accurate. In both cases a marked improvement in the reading of the barometer was recorded.

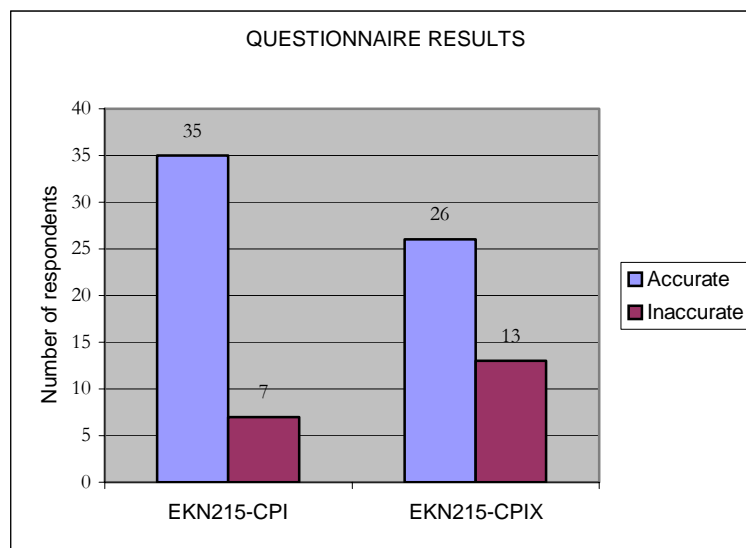
Owing to the fact that an answer could not yet be provided to question (vi) dealing with the particular index used for the measurement of inflation, a fourth pilot study was conducted. Two abridged questionnaires, attached as Appendices U and V, were developed for the fourth pilot study. Both questionnaires contained only one question on inflation, providing the latest relevant inflation figure to respondents. The one questionnaire provides the most recent official overall inflation figure (changes in the CPI in metropolitan and other urban areas) and the other provides the most recent inflation figure used for inflation-targeting purposes (changes in the CPI in metropolitan and other urban areas excluding changes in mortgage interest costs, i.e. CPIX). The respondents were randomly split into two groups and each group completed one of the questionnaires.

The purpose of using two questionnaires was to compare which measure of inflation recorded the higher degree of acceptance on the inflation credibility barometer and, therefore, to find an answer to question (vi). The two questionnaires were completed by the same group of second-year students following the EKN 215 course at the University of Pretoria who had completed the questionnaire in the earlier pilot studies. Based on experience gained from the earlier pilot studies, it was considered unnecessary to use more than one group of respondents. Respondents were requested to identify themselves in the completed questionnaire for control purposes and to prevent a situation where one respondent could complete more than one questionnaire. The sample comprised 81 EKN 215 students and the results are summarised in figure 7.2.

The credibility barometer for students who completed the questionnaire stating the CPI reads 83 (out of a possible 100), as 35 out of 42 students accepted the CPI as an accurate indication of

current inflation. In respect of CPIX the barometer reads 67, as 26 out of 39 students accepted it as accurate. This pilot study led to the conclusion that respondents attach a higher degree of credibility to changes in the CPI as an accurate indication of inflation, than to changes in the CPIX.

Figure 7.2 Inflation credibility: summary results of the surveys of the credibility of CPI and CPIX, respectively



As the first four pilot studies provided answers to the first six questions highlighted above only, and based on the conclusions from the analysis of international samples to measure inflation credibility highlighted in Chapter 2, it was decided to conduct one further pilot study, with four goals in mind. The first goal of the fifth pilot study was to establish differences, if any, in the inflation perceptions of the different genders in South Africa. This analysis was necessary to align the findings of the pilot studies with the results obtained in respect of gender groups by the measurement of inflation perceptions internationally and also to provide an answer to question (vii) above.

Secondly, given the observation of Bryan and Ventaku (2001b) about inflation perceptions of

different population groups and in view of South Africa's population composition and political history, it was decided to assess any possible differences in inflation perceptions of the different population groups in South Africa. Although it might be argued that it is less than desirable to make any attempt to split respondents in terms of population groups for research purposes, such a split was necessary to address question (viii) above.

Thirdly, as the next logical step following the pilot studies would be to measure the credibility of inflation figures of a broad sample of respondents, the fifth pilot study was used to test the suitability of a questionnaire designed specifically for use with a broader sample.

Lastly, it was decided to use the participants in the fifth pilot study as enumerators (fieldworkers) for the fieldwork of the broad study. By using these participants for a pilot study, care was taken to ensure that they understood the aim of the research and could complete the questionnaire. Moreover, such participation would increase their own understanding of the inflation perceptions of the broader population.

Owing to the four aims of the fifth pilot study it required elaborate planning, particularly also because it had to lay the foundation for a broader and more extensive pilot study on inflation credibility, discussed in Section 7.7 below. A concern was that some respondents could construe questions pertaining to population groups and gender to be of a controversial nature. To put it bluntly: it is not always considered politically correct to touch on issues of population classification and gender, even if it is done in the interest of scientific research. To prevent any possible negative consequences, the draft questionnaire and intended research were discussed with a randomly selected focus group of ten people from the envisaged sample of respondents identified for the fifth pilot study. Members of the focus group did not foresee any difficulty with the completion of the questionnaire, and particularly no difficulty with the questions pertaining to population group and gender. The 2006 group of EKN 215 students at the University of Pretoria was selected to complete the questionnaire (attached as Appendix W) under supervision, which was finalised for use only after the necessary approval had been obtained for its use in the fifth pilot study and the broad pilot study, as is explained in the next section dealing with the design,

methodology and execution of the broad pilot study.

The questionnaire contained only one question on inflation, providing the most recent official overall inflation figure (changes in the CPI in metropolitan and other urban areas) to respondents, based on the finding of an earlier pilot study that this figure recorded the highest reading on the inflation credibility barometer.

Table 7.3 Distribution of inflation credibility barometers in subsamples according to gender and population groups of a class of 2006 EKN 215 students

	Male	Female
	Number	Number
Subsample	32	65
Asian	3	5
Black	17	46
Coloured	*	*
White	12	14
	Credibility barometer	Credibility barometer
Subsample	56 (18/32)	62 (40/65)
Asian	66 (2/3)	60 (3/5)
Black	53 (9/17)	65 (30/46)
Coloured	*	*
White	58 (7/12)	50 (7/14)

* No respondents identified themselves as Coloured

The sample comprised ninety-seven EKN 215 students and the credibility barometer reads 60 (out of a possible 100), as 58 out of 97 students accepted the CPI as an accurate indication of current inflation. The inflation credibility barometers of different population groups and genders are summarised in Table 7.3. With only nine exceptions, all the EKN students were from the Faculty of Economic and Management Sciences of the University. The responses were therefore

not analysed in terms of faculty. Students reported no negativity on the questions pertaining to population group and gender when they completed the questionnaire under supervision.

Table 7.3 shows that the inflation credibility barometer for different groups ranges from as low as 50 for White females to as high as 66 (albeit on a small subsample) for Asian males. The barometers for the genders show a smaller range. However, these ranges confirm that a similar analysis with a larger sample of respondents showing differences in perceptions between genders and population groups, should provide a useful insight into the inflation perceptions of subsamples within the South African population. Questions (vii) and (viii) were therefore answered satisfactorily.

The five pilot studies provided satisfactory answers to the eight questions stated at the outset of this section. In respect of the first question, the finding is that an inflation credibility barometer can be constructed, albeit with a very low reading in certain instances. In general, respondents reported different degrees of acceptance of the accuracy of inflation figures under different circumstances in the pilot studies. However, the overall results are encouraging enough to justify the sampling of the inflation perceptions of broader samples of the South African population.

The results of the pilot studies show that respondents have a lot of misconceptions about inflation and its measurement, implying that a satisfactory answer has not necessarily been found to the second question. These misconceptions might be an obstacle in measuring inflation credibility in as much as respondents could report perceptions about price levels, rather than price changes. This remark also addresses the third question: the dissemination of information improves the understanding of inflation and therefore increases the credibility of inflation figures.

The findings of the pilot study provide an answer to the fourth question: in the long run a continued communication campaign by the central bank or another authority can improve inflation credibility.

The pilot studies show that the optimal scope for measuring inflation credibility in a broader sample of the population is a shorter and more concise questionnaire, rather than a longer questionnaire, as the shorter questionnaires delivered better results, which provides the answer to the fifth question above. Moreover, it would not be appropriate to request respondents to identify themselves in a broader sample, as was done for control purposes only in the pilot studies in both the longer and the shorter questionnaires.

In respect of the sixth question, the findings of the pilot studies show that changes in the CPI has measured the highest reading on the inflation barometer and should therefore be used for more representative sampling of the South African population.

In respect of question seven, dealing with differences in the inflation perceptions of the different gender groups, the finding is that it differs between these groups. However, the international finding that women have a higher perception of inflation than men (Bryan and Ventaku, 2001b: 4), and therefore attach a lower credibility to inflation figures, is not confirmed by the pilot studies: on the contrary, the inflation credibility barometer of female respondents reads 62, as opposed to a reading of 56 for male respondents. This point is discussed in more detail in the next section. However, large discrepancies are observed in the barometer readings of different subsamples within the gender differentiation.

Lastly, in dealing with question (viii) above, the pilot studies recorded differences in the inflation perceptions of the different South African population groups. The inflation credibility barometers recorded in the pilot studies range from a low of 50 for White females to 66 for Asian males.

Based on the insights gained from the literature review and particularly the analysis of the international measurement of inflation perceptions, and the methodology developed and tested in the five pilot studies discussed in this section, a broad pilot study measuring inflation credibility in South Africa was undertaken, as is explained in the next section.

7.7 Broad pilot study on inflation credibility⁸⁸

Based on the conclusions reached from the analysis of the international measurement of inflation perceptions and the five domestic pilot studies on inflation credibility, the methodology, design and findings of a extensive pilot study on the measurement of inflation credibility are discussed in this section. This research was undertaken after respondents in the fifth pilot study did not respond negatively to the questionnaire, as they were used as enumerators in this extensive study.

Despite the large degree of difference in the approaches of the small number of jurisdictions measuring inflation perceptions, the analysis in Chapter 2 and the findings of the pilot studies lead to the conclusion that the broad pilot study should:

- allow for the reporting of survey results from a sufficiently large group of respondents;
- ensure anonymity for respondents answering the question or questions in questionnaires;
- be stratified to provide for the separate reporting of the inflation perceptions of male and female respondents; and
- be stratified to provide for the separate reporting of the inflation perceptions of different population groups in South Africa.

In planning and executing the broad pilot study, the objective was therefore to find answers to the following five questions, rather than to all eight questions considered in the pilot studies:

- (i) whether inflation credibility barometers for a broad sample and subsamples can be calculated;
- (ii) whether respondents generally accept inflation figures as accurate;
- (iii) whether respondents studying in different faculties of a university report large discrepancies in their perceptions of the accuracy of the official rate of inflation;
- (iv) ascertain differences in the inflation perceptions of different genders in South Africa; and
- (v) ascertain differences in the inflation perceptions of different population groups in South Africa.

⁸⁸ A summary of this section was published as Rossouw and Padayachee, 2007.

From the experience gained from the five pilot studies, it has been concluded that coverage of these five aspects would be sufficient and that the broad pilot study:

- should use a short and concise questionnaire, as the shorter questionnaires delivered better results;
- should measure the credibility of changes in the CPI (and not the CPIX), as such changes have measured the highest reading on the inflation barometer; and
- should not measure the importance of knowledge and information in the understanding of the meaning and measurement of inflation, as this was confirmed beyond doubt in the pilot studies.

Respondents in the fifth pilot study (EKN 215 students) were used as for fieldwork in this study. Enumerators were requested to sample the inflation perceptions of five fellow students, using the questionnaire attached as Appendix W, which was also used for the fifth pilot study. As this was done without supervision, there was no way to prevent a situation where any enumerator could complete more than one or even all the questionnaires personally, which might cast a degree of doubt over the validity of the results of the broad study. In an effort to entice students into obtaining views of fellow students, they had each been asked initially to obtain the views of ten fellow students. Subsequently, the request was changed: the enumerators were asked to obtain the views of five fellow students, rather than ten as originally requested. Owing to this reduction in the number of students to be approached, students did commit themselves to the research at the planning stage, as the goal (obtaining views from five, rather than 10 students) became more achievable. It was also not possible to ascertain whether any particular respondents provided responses to more than one enumerator, implying that the response of one respondent could have been sampled and reported more than once.

In total, 95 out of 188 students registered for EKN 215 participated as enumerators and submitted 497 completed questionnaires, implying that a small number of students obtained the view of

more than five respondents each⁸⁹. The responses of four “respondents” handed in by one student were clearly photocopies of the same original, and these four “responses” were therefore discarded for purposes of this broad sample. This section deals therefore with the responses of 493 respondents.

The overall credibility barometer reads 51,9 out of a possible 100, as 261 respondents (out of a sample of 493) accepted the CPI as an accurate indication of price increases. The detail of the responses in respect of population groups is highlighted in Table 7.4.

Table 7.4 Responses of all respondents and according to subsample of population groups

Population group	Number of respondents	Barometer
Asian	54	53,7 (29/54)
Black	221	51,6 (114/221)
Coloured	32	56,3 (18/32)
White	179	53,1 (95/179)
Not indicated*	7	71,4 (5/7)
Total	493	51,9 (261/493)

* In total, seven respondents preferred not to answer the question about population group, or provided answers that could not be used, e.g. all the groups or other. Of these seven respondents, five accepted the inflation figure as a true reflection of price increases, giving a barometer reading of 71,4. However, owing to the small size of this subsample, these responses are discarded in the analysis pertaining to population group, implying that only 486 responses are analysed.

The barometer reading according to population group shows broadly similar readings for all the population groups, ranging from 51,6 for Blacks to 56,3 for Coloureds, albeit on a relatively small sample in the last instance. The detail of the responses in respect of population groups is highlighted in Table 7.5.

⁸⁹ Enumerators mentioned that some respondents requested the opportunity to answer *don't know*, rather than to choose between *yes* or *no*.

The barometer reading according to gender reconfirms the finding of the fifth pilot study, but contrasts findings abroad, particularly in the case of Sweden and the Federal Reserve Bank of Cleveland. Contrary to findings abroad, the inflation credibility barometer reading for female respondents in this sample and in the fifth pilot study is higher than for male respondents: 54,3 for this group of female respondents, as compared to 51,0 for the male respondents. The barometer ranges between 45,5 at the low end for Coloured males and 61,9 for Coloured females, albeit on relatively small samples in these two instances. This matter is reviewed in the discussion of the findings of the study below.

Table 7.5 Distribution of inflation credibility barometers in subsamples according to gender in terms of Asians, Blacks, Coloureds and Whites

	Male			Female		
	Accurate	Not accurate	Total	Accurate	Not accurate	Total
Subsample	123	118	241	133	112	245
Asian	20	15	35	9	10	19
Black	55	47	102	59	60	119
Coloured	5	6	11	13	8	21
White	43	50	93	52	34	86
	Credibility barometer			Credibility barometer		
Subsample	51,0 (123/241)			54,3 (133/245)		
Asian	57,1 (20/35)			47,4 (9/19)		
Black	53,9 (55/102)			49,6 (59/119)		
Coloured	45,5 (5/11)			61,9 (13/21)		
White	46,2 (43/93)			60,5 (52/86)		

In respect of respondents from the nine faculties at the University of Pretoria, the barometer readings are summarised in Table 7.6. However, as could be expected in view of the fact that the

majority of enumerators were from the Faculty of Economic and Management Sciences, more respondents from this faculty were sampled, obtaining an overrepresentation of students from this faculty, compared to student numbers. After submitting a written request stating, *inter alia*, the reasons for the request to obtain student numbers of the University, it was confirmed that 39 178 students registered (at all levels of study) at the University for the 2006 academic year. The Faculty of Economic and Management Sciences had the most students and the Veterinary Science Faculty had the smallest number of students, i.e. 706 (De Bruyn, 2006: 1).

Table 7.6 Inflation credibility barometer of CPI figures according to faculty, based on acceptance of CPI figures by respondents

	Number of respondents			Barometer
	Accurate	Not accurate	Total	
Economic and Management Sciences	143	115	258	55,4
Education	14	8	22	63,6
Engineering, the Built Environment and Information Technology	33	36	69	47,8
Health Sciences	13	12	25	52,0
Humanities	5	7	12	41,7
Law	18	21	39	46,1
Natural and Agricultural Sciences	30	29	59	50,8
Theology	3	1	4	75,0
Veterinary Science	2	3	5	40,0
Total/weighted average	261	232	493	52,9

Whereas 52,3 per cent of respondents was drawn from the Faculty of Economic and Management Sciences, the student numbers of the University of Pretoria for 2006 show that 23,7 per cent of students (9 293 in total) were registered for study in this faculty (SANSO, 2006). The credibility

barometers show that the highest reading was obtained among theology students and the lowest reading among students studying veterinary science. However, the samples of students from these two faculties are so small that no definitive conclusions are possible. A sample or subsample can be regarded as small if less than 30 respondents are included (Wegner, 1993: 197).

In respect of larger samples (i.e. $n > 30$) of respondents from specific faculties, the highest credibility is reflected among students in the Faculty of Economic and Management Sciences and the lowest among law students. Although it was not an initial objective of the extensive pilot study to measure the influence of knowledge and information on the credibility of inflation, this finding confirms a positive relationship between knowledge and information as an assumption can be made that students studying in the fields of accounting, economics, finance and management sciences will be the best informed about inflation and the accuracy of its measurement. This reconfirms the earlier finding that communication is important in enhancing inflation credibility.

The broad pilot study was planned and executed to find answers to the five questions stated earlier in this section. As could be expected, the different subsamples of respondents reported different degrees of acceptance of the accuracy of inflation figures. However, the overall results are encouraging enough to justify the sampling of the inflation perceptions of a representative sample of the South African population. The results of sampling for the whole group and subgroups could be reported by means of inflation credibility barometers, and the broad sample therefore provides a satisfactory answer to the first question.

The barometer readings vary between 45,5 for Coloured males (the lowest reading) and 75 for the small sample of students from the Theology Faculty (the highest reading). These results indicate that the inflation perceptions of different subsamples of the population do indeed differ considerably, implying that no general answer can be provided to the second question.

Thirdly, in respect of question (iii), the extensive pilot study reports a large difference in credibility between students in different faculties. However, in certain instances the samples are

not large enough to support any final conclusions, but in respect of faculties represented by larger samples ($n > 30$), the finding is that credibility differs considerably between faculties. Moreover, the research confirms that knowledge and information enhance the credibility of the measurement of inflation.

In respect of question (iv), the finding is that inflation perceptions differ between genders. However, the international finding that women have a higher perception of inflation than men (Bryan and Ventaku, 2001b: 4) and therefore attach a lower credibility to inflation figures, is not confirmed by the pilot studies: on the contrary, the inflation credibility barometer of female respondents reads 62, as opposed to a reading of 56 for male respondents. In addition, Bryan and Ventaku conclude that “... all we can say with any confidence is that it does not appear that women have a higher perception of inflation than men because of the things they buy, the frequency of their shopping, or their knowledge of officially reported statistics” (2001b: 4).

To the contrary, Jonung concluded that “... [w]ith respect to the perceived rate ... [of inflation] ... , the major difference was found between men and women ... [which] ... is most easily explained by a larger rise in food prices than in the consumer price level ... As women are responsible for the major share of the food purchases within Swedish households, they are more exposed to movements in food prices than men” (1981: 968). The broad sample, conducted among students (and in particular female students) who are normally not exposed to purchasing food or household requirements for a whole household, shows a higher (rather than a lower) degree of inflation credibility among females, as was found in credibility samples in other countries. However, large discrepancies are observed in the barometer readings of different subgroups within the gender differentiation, as explained below.

Lastly, in dealing with question (v) above, the finding of the extensive pilot study is that differences indeed occur between the inflation perceptions of the different South African population groups. Naturally the reaction would be to equate population groups to income differentials, but this does not provide any satisfactory answer to these discrepancies, particularly as the same trends are not reflected by subsamples of the same population group. As is the case

with the different genders, this matter justifies broader analysis, e.g. the calculation of confidence indicators. This finding also impacts on the findings in respect of question (iv) above, as the inflation perceptions in terms of gender differ considerably when analysed in terms of population group: the barometer readings vary between 45,5 for Coloured males (the lowest reading) and 61,9 for Coloured females (the highest reading).

In dealing exclusively with the fifth question above, the finding is that the barometer readings range between 45,5 and 57,1 for different male population groups and 47,4 and 61,9 for different female population groups, implying that the credibility of published inflation figures differs considerably between different population groups.

The aim of research is to obtain the view of a population on a specific matter, but without necessarily conducting interviews with every member of the population. In the broad pilot study the aim is to obtain some reflection of a sample of the South African population's perceptions about the credibility of South African inflation figures. In the comparison of the measurement of inflation perceptions internationally, reported in Chapter 2, it was ascertained that the Federal Reserve Bank of Cleveland reported inflation perceptions with a 90-per-cent confidence interval,

based on the formula $\bar{x} - 1,645 \frac{\sigma_x}{\sqrt{n}} \leq \mu_x \leq \bar{x} + 1,645 \frac{\sigma_x}{\sqrt{n}}$ (Bryan, 2006),

where \bar{x} = sample mean;

σ = population standard deviation;

n = sample size; and

μ = mean value (true population mean).

Based on this information, a confidence interval was also calculated for the respondents in the broader sample. Sampling techniques have been developed to limit errors in results when the opinions of a sample of a population are obtained to ensure that the results reflect as closely as possible the opinions or views of the entire population. To this end, confidence intervals provide an estimate of the possible size of any error in sampling data, highlighting the degree or level of accuracy (or confidence in) the statistical estimates, e.g. means, standard deviations, and

correlations. Confidence intervals are dependent on a value of a statistical estimate; the standard error (SE) of the measure; and the required size of the confidence interval, implying that it could be declared with the relevant degree of certainty that the results obtained from the sample reflects the view of the population from which the sample was drawn.

A confidence interval can be described as an area within which a researcher can declare with certain specified level of confidence that a population parameter lays (see for instance Easton and McColl, [S.a.]). In using a 90-per-cent confidence interval, a researcher can indicate with a confidence level (or degree of certainty) of 90 per cent that the result is within the spread of the normal distribution. With a normal probability distribution, 90 per cent of the area the curve will be included between the values of $z = -1,645$ and $z = 1,645$.

For the purpose of calculating a 90-per-cent confidence interval, the following information was used:

Number of observations in the sample	(n)	493
Number of successes	(x)	261
Proportion	(p)	$261 \div 493 = 0,529$; $\therefore q = 0,471$
Standard error	(SE)	$\sqrt{\frac{0,529 \times 0,471}{493}} = 0,0224$
Normal probability distribution	(z)	1,645 for a 90-per-cent confidence interval

The confidence interval at a level of 90 per cent is calculated as:

$$[0,529 - 1,645(0,0224)] \leq \Pi \leq [0,529 + 1,645(0,0224)]$$

$$0,4922 \leq \Pi \leq 0,5658$$

This implies that there is a 90-per-cent probability that the actual population represented by the sample in this study who believes that the official rate of inflation is an accurate indication of price increases, lies between 49,2 per cent and 56,6 per cent.

The responses according to gender were analysed at a 90-per-cent confidence interval for a number of a null hypotheses, based on the relevant data. The first analysis was done in respect of respondents who did not agree that the rate of inflation is an accurate indication of price increases in the economy:

		Male	Female
Number of observations in the sample	(n)	241	245
Number of <i>no</i> responses	(x)	123	133
Proportion	(p)	0,5104	0,5428
Pooled estimate		$\frac{123 + 133}{241 + 245} = 0,5267.$	

Assuming no difference in accuracy at a 10-per-cent significance level (i.e. $z = 1,645$):

$$H_0 = \Pi_1 - \Pi_2 = 0$$

Therefore accept H_0 if Z_{calc} falls between $-1,645$ and $+1,645$.

$$Z_{calc} = \frac{0,5104 - 0,5428}{\sqrt{(0,5267 \times 0,4733) \left(\frac{1}{241} + \frac{1}{245} \right)}} = -0,715.$$

The value $-0,715$ falls within the area of acceptance, i.e. between $-1,645$ and $+1,645$. The conclusion is that at the 10-per-cent significance level there is no difference between the proportion of males and females that believe the rate of inflation is an accurate indication of price increases in the economy. However, owing to the important difference in findings between the broad pilot study and international studies about the inflation perceptions of male and female respondents, the conclusion is nevertheless that a sample used for such measuring should be stratified according to gender.

Similarly, the responses of the different population groups in the broader sample were analysed at a 90-per-cent confidence interval on a null hypothesis that there is no difference between the inflation perceptions of respondents from the different population groups in the sample. For this

purpose, the sample data of the groups reporting the largest and smallest credibility, i.e. Coloureds and Blacks, respectively, were used, based on the following data:

		Coloured	Black
Number of observations in the sample	(n)	32	221
Number of successes	(x)	18	114
Proportion	(p)	0,5625	0,5158
Pooled estimate		$\frac{18+114}{32+221} = 0,5217.$	

Assuming no difference in accuracy at a 10-per-cent significance level (i.e. $z = 1,645$):

$$H_0 = \Pi_1 - \Pi_2 = 0$$

Therefore accept H_0 if Z_{calc} falls between - 1,645 and + 1,645.

$$Z_{calc} = \frac{0,5158 - 0,5625}{\sqrt{(0,5217 \times 0,4783) \left(\frac{1}{32} + \frac{1}{221} \right)}} = - 0,494.$$

The value - 0,494 falls within the area of acceptance, i.e. between - 1,645 and + 1,645. The conclusion is that at the 10-per-cent significance level there is no difference between the proportions of different population groups that believe the rate of inflation is an accurate indication of price increases in the economy. In view of this finding and taking cognisance of the statement about population groups by Bryan and Ventaku made in respect of the different genders, i.e. that “[i]n an analysis of the reasons for such a large discrepancy ... even after adjustments between the genders to account for differences in ... [*inter alia*] ... race, ... women still perceived historic inflation as 1,9 percentage points higher than men” (2001b: 1), the conclusion from this analysis is that it might be unnecessary to stratify a sample measuring inflation credibility in terms of population groups⁹⁰.

The next section considers the application of the insights obtained from the pilot studies on a first

⁹⁰ Despite this finding, it was decided to stratify the representative study according to population group, so as to reassess this finding.

representative study of South African inflation credibility.

7.8 First representative study of inflation credibility in South Africa

The conclusions from the analysis of the international measurement of inflation perceptions, the five pilot studies on inflation credibility and the design and findings of a first extensive pilot study on the measurement of inflation credibility undertaken in South Africa, form the backdrop for a first representative study on inflation credibility in South Africa, and the construction of an inflation credibility barometer for a representative sample of the population. This section describes the design, planning, execution and conclusions of this representative study. As research into inflation credibility has not been undertaken on this scale in South Africa before, the findings of the pilot studies provided the methodology used in the sample and served as guidelines for the research design.

A challenge facing this representative study was to obtain responses on inflation credibility from a representative sample of the South African population. An alternative was for the researcher to conduct the research personally. However, it would have been time consuming to obtain sufficient results by means of personal interviews of a representative sample of the population to reach any conclusions about the degree of credibility of the inflation figures. Another alternative was the possible use of telephone research by means of Telkom telephone directories, but as only some 30 per cent of South Africans have residential landline telephones (National Gambling Board, 2005: 5), this possibility was discarded.

Other than undertaking the research personally, a number of possibilities for obtaining such results by means of research institutions were considered, e.g. in conjunction with the BMR of the University of South Africa. The possibility of using Consulta Research, a subsidiary of the campus company of the University of Pretoria, BE at UP (Pty) Ltd, was also explored. Actual cost of sampling would have depended on sample size, but would have been quite expensive. The quote of Consulta to obtain 274 responses amounted to R14 280,00, while the cost would have amounted to R44,91 per response to do a dedicated sample of 548 respondents. Moreover,

the sample would have been done by means of telephone interviews, therefore covering only respondents with Telkom landlines, which could result in sample biases.

After a consideration of the available possibilities, it was decided to use Markinor for sampling purposes. Markinor was established in 1972 and describes itself as “... the leading South African provider of research solutions” (Markinor, [S.a.]), and is a member of the Gallup International Association and the Walker Information Global Network. Markinor has a client base ranging from small companies to multinationals, and the client base covers clients active in diverse areas such as, for instance, financial services, health care, media, telecommunications, travel and tourism (Markinor, [S.a.]). Markinor regards as its main competitors the companies AC Nielson, Research International and Research Surveys. However, none of these competitors have a suitable product at a similar price that could be used for purpose of this research, and the development of a dedicated sample for purposes of this research would have been more expensive than the cost of research conducted by Markinor.

The decision to use Markinor was informed by a number of factors. First, Markinor conducts biannual sampling, known as its M-bus, which covers a broad number of questions on consumer behaviour and perceptions. Additional questions can be added to this survey at a prescribed fee, as the infrastructure to conduct the research is already in place⁹¹. This survey comprises sampling by means of personal interviews (thereby avoiding the possible sampling bias of telephone interviews) and does not only provide a broad sample of responses from respondents, but a minimum of 20 per cent of each interviewer’s work is back-checked on each project (Markinor, [S.a.], Markinor, 2006).

The second factor in support of the choice of Markinor was the size of the sample of respondents that could be reached, i.e. 3 500⁹², as well as the number of criteria in terms of which the sample

⁹¹ The use of omnibus research to contain the cost of sampling is an accepted research practice and is used by many different disciplines of study (see for instance Camponovo, 2006; Kearney et al., 1999; or Lindenmann, 2001). The same omnibus research approach was followed by the Federal Reserve Bank of Cleveland (Bryan, 2006).

⁹² After a 20-per-cent back-check was conducted to validate the results of the sampling of inflation credibility, the number of interviewees was adjusted to 3 493 adult South Africans of age 16 years and older (Markinor, 2006).

could be split, e.g. gender, income, employment status, etc. Markinor applies a statistically-based sampling procedure, in which each qualifying person in South Africa (i.e. 16 years and older) has a measurable chance for selection, which ensures a nationally representative sample.

The number of respondents for purposes of the survey corresponds broadly with the number of respondents (i.e. 3 100) covered by the most recent survey on gambling in South Africa (National Gambling Board, 2005: 6), which is regarded as a representative sample of the population. Moreover, the number of respondents covered by the Markinor research is substantially larger than the 1 441 respondents covered by the BMR in its living-standards measure group research (Bureau of Market Research, 2005: 17).

The third factor influencing the decision to use Markinor is related to the second one above. Whereas certain of the quotes for sampling amounted to as much as R52,17 per respondent, the Markinor sample covered the responses of 3 500 respondents at a cost of R10 174,50, or some R2,90 per respondent (a copy of the Markinor invoice is attached as Appendix X). Moreover, Markinor offered added value in as much as it made available as part of this research the results of its survey on perceptions about the successful containment of inflation since 1995 (see Section 7.4 in this regard).

The preparatory work required for the representative sample was undertaken in conjunction with Markinor over the period August to October 2006, with sampling completed in October and November 2006. Markinor made the results available in the second week of December 2006. There is no doubt in the mind of this researcher that it was the correct choice to use Markinor, rather than to make an attempt to do the sampling personally.

Despite the large degree of differences between countries measuring inflation perceptions or inflation credibility, an analysis of the salient features of the approaches used led to the conclusion that a first comprehensive research project measuring and reporting inflation credibility for a country or region with any degree of confidence should:

- be large enough to report survey results with at least an acceptable confidence interval to ensure international comparability;
- ensure anonymity for respondents answering the question or questions in questionnaires; and
- be stratified to provide for the separate reporting of the inflation perceptions of male and female respondents.

From the domestic experience with pilot studies, it has been concluded that the research project should:

- raise only one question, as short questionnaires delivered better results during the pilot studies;
- measure the credibility of changes in the CPI, as such changes have measured the highest reading on the inflation barometer during the pilot studies; and
- culminate in the construction of an inflation credibility barometer.

In planning and executing this representative study, these six salient features were used as guiding principles. The objectives of the representative study were to find answers to the following questions:

- (i) whether inflation credibility barometers can be calculated for a representative sample and subsamples;
- (ii) to ascertain differences in the inflation perceptions of different genders in South Africa;
- (iii) to ascertain differences in the inflation perceptions of different population groups in South Africa; and
- (iv) to include for the first time “don’t know” in the questionnaire⁹³, to prevent a situation where those respondents who have no knowledge about the rate of inflation answers “no”, hence

⁹³ It transpired from the broad pilot study discussed in Section 7.7 that some respondents indicated a preference to answer *don’t know*. This approach is also followed by the ECB (Bechtold and Linz, 2005: 8).

over-reporting non-acceptance of the rate of inflation as an accurate indication of price increases in the economy⁹⁴. The inclusion of this possible answer corresponds with the research of Markinor on perceptions about the success of government in controlling inflation, which also provides for “don’t know” as a response.

An extract from the questionnaire, dealing with the section on inflation credibility, is attached as Appendix Y. The detailed responses according to a number of criteria in terms of which the sample could be split, are highlighted in Appendices Z to DD.

The sampling process reports that 52,9 per cent of respondents indicated that they did not know whether the rate of change of 5,4 per cent in the CPI in August 2006 is a true indication of price increases. Of the remaining respondents, 18,5 per cent said that the official CPI was a true reflection of average price increases, while 28,6 per cent believed that it is not a true reflection of price increases in the economy. Although a higher degree of acceptance of the accuracy of inflation figures would naturally have been encouraging, the findings of this study cannot be compared with any other representative domestic research results. Domestically similar research has not been undertaken before, and this study accordingly sets the benchmark for future research of a similar nature.

The high ratio of *don’t know* as a response confirms that the sampling of inflation credibility should provide for *don’t know* as a possible response, as the omission of this possibility might result in the overmeasurement of other responses. This response was higher among women than among men; among Black respondents; among people with no employment (either unemployed or voluntarily outside the labour market); among people with no education; among respondents in the lowest income bracket up to R1 199 per month; among respondents living in a village or rural

⁹⁴ Three earlier pilot studies (discussed in section 7.6) provided respondents with the opportunity to highlight reasons why they did not believe the accuracy of published inflation figures (i.e. to explain why they answered *no* to the question). In one of the pilot studies some 27 per cent of the respondents mentioned as their reason for a perception of inflation higher than the official rate something (i.e. high prices) that is not used for measuring the rate of inflation. In another pilot study about 19 per cent of the respondents also mentioned as reasons for a perception of higher inflation items that are not used in measuring the rate of inflation. In view of these unsatisfactory results it was decided not to ask reasons for negative responses.

community; among respondents living in the Limpopo province; speaking Xhosa⁹⁵; and in the 16-to-24 age group.

The highest percentage of respondents accepting the inflation rate as a true reflection of price increases was recorded among men, among White respondents; among people who are employed; among people with tertiary education; among respondents in the income bracket R12 000 + per month; among respondents living in cities; among respondents living in the Western Cape; speaking Afrikaans; and in the 25-to-34 age group.

The profile of respondents not accepting the inflation rate as a true reflection of price increases corresponds to a large degree with the profile of respondents accepting the inflation rate as an accurate indicator of price increases. The highest ratio of these responses was recorded among men, among White respondents; among people who are employed; among people with tertiary education; among respondents in the income bracket R12 000 + per month; and among respondents living in the Western Cape, as was the case with respondents accepting the inflation figures as an accurate indication of price increases. However, the highest ratio of respondents not accepting the inflation figures is English speaking; are in the 50 + age group and living in large and small towns.

The implication is that respondents represented in both groups obviously had views about the rate of inflation, either positive or negative, while respondents in other groups refrained in relatively larger numbers from responding to the question, preferring to answer *don't know*.

The inflation credibility barometer reading is 41,9 per cent among male respondents (391 out of 542) and 35,7 (254 out of 457) among female respondents if only the responses are used of those who answered *yes* or *no*. This finding about male and female respondents does not correspond

⁹⁵ The findings about the Limpopo province and Xhosa-speaking respondents seemed somewhat contradictory at first glance, as most Xhosa-speaking respondents live in the Eastern Cape. The sampling results show that the Eastern Cape is the province reporting the second-highest number of *don't know* responses, and as such serves as an explanation for the finding on Xhosa-speaking respondents. The same number of respondents was sampled in both these provinces, but the Eastern Cape is a more homogeneous province from a language perspective.

with the findings of the pilot studies reported above, but confirms the international finding that women have a higher perception of inflation than men (Bryan and Ventaku, 2001b: 4; Jonung, 1981: 968) and therefore attach a lower credibility to inflation figures. The sampling results do not provide any reasons for this finding, as it was outside the scope of the research.

Again considering only the responses of respondents who answered *yes* or *no*, the highest inflation credibility barometer reading of 42,9 was recorded among Coloured respondents, and the lowest reading of 32,3 was recorded among Asian respondents. In considering the whole sample, Whites recorded the highest reading on the inflation credibility barometer of 30,7, and Blacks recorded the lowest reading of 14,8. The spread between Asians, Blacks, Coloureds and Whites can be attributed to the prevalence of *don't know* answers.

Based on the analyses of the Federal Reserve Bank of Cleveland and the calculation of 90-per-cent confidence intervals in the previous section, the sample results were also used to calculate a number of 90-per-cent confidence interval levels, with the value $z_{0,05} = 1,645$ and a normal distribution implying that 0,9 (or 90 per cent) of the area below the curve is included between $z = -1,645$ and $z = 1,645$. The following data were used for analysing the responses of respondents who indicated that they had a view (i.e. did not answer *don't know*) on the question whether the rate of inflation was an accurate indicator of price increases in the economy.

Number of observations in the sample	(n)	3 493
Number of successes	(x)	1 644
Proportion	(p)	$1644 \div 3493 = 0,471$; $\therefore q = 0,529$
Standard error	(SE)	$\sqrt{\frac{0,471 \times 0,529}{3493}} = 0,0084$
Normal probability distribution	(z)	1,645 for a 90-per-cent confidence interval

The confidence interval at a level of 90 per cent is calculated as:

$$[0,471 - 1,645(0,0084) \leq \Pi \leq [0,471 + 1,645(0,0084)]]$$

$$0,4572 \leq \Pi \leq 0,4848$$

This implies that there is a 90-per-cent probability that the actual population represented by the sample that has a view on the official rate of inflation (i.e. did not answer *don't know*), lies between 45,2 per cent and 48,5 per cent. Similarly, there is a 90-per-cent probability that the actual population represented by the sample that does not know whether the official rate of inflation is a true indication of price increases in the economy, lies between 51,5 per cent and 54,8 per cent.

In total, 645 respondents accepted the rate of inflation as an accurate indicator of price increases in the economy.

Number of observations in the sample	(n)	3 493
Number of successes	(x)	645
Proportion	(p)	$645 \div 3493 = 0,185; \therefore q = 0,815$
Standard error	(SE)	$\sqrt{\frac{0,185 \times 0,815}{3493}} = 0,0066$
Normal probability distribution	(z)	1,645 for a 90-per-cent confidence interval

The confidence interval at a level of 90 per cent is calculated as:

$$[0,185 - 1,645(0,0120)] \leq \Pi \leq [0,185 + 1,645(0,0120)]$$

$$0,1653 \leq \Pi \leq 0,2047$$

This implies that there is a 90-per-cent probability that the population represented by the sample who believes that the official inflation rate is an accurate indicator of price increases, lies between 16,5 per cent and 20,5 per cent. This is a somewhat disconcertingly low percentage range, implying that the general public can easily reach the conclusion that inflation targeting in South Africa brings simply only pain of higher interest rates without any benefits of lower inflation.

For the purpose of calculating a 90-per-cent confidence interval for respondents with a view on the accuracy of the inflation rate, only the *yes* and *no* responses of the relevant 1 644 respondents (or 47,1 per cent of respondents) were used. Of these 1 644 respondents, 645 accepted the rate of inflation as accurate, and 999 did not accept the inflation rate as accurate.

Number of observations in the sample	(n)	1 644
Number of successes	(x)	645
Proportion	(p)	$645 \div 1644 = 0,392; \therefore q = 0,608$
Standard error	(SE)	$\sqrt{\frac{0,392 \times 0,608}{1644}} = 0,0120$
Normal probability distribution	(z)	1,645 for a 90-per-cent confidence interval

The confidence interval at a level of 90 per cent is calculated as:

$$[0,392 - 1,645(0,0120)] \leq \Pi \leq [0,392 + 1,645(0,0120)]$$

$$0,3723 \leq \Pi \leq 0,4117$$

This implies that there is a 90-per-cent probability that the population with a view on the rate of inflation represented by the sample and believing that it is an accurate indication of price increases, lies between 37,2 per cent and 41,2 per cent.

The responses of all male and female respondents and of male and female respondents who had a view on the accuracy of the rate of inflation were analysed at a 90-per-cent confidence interval on a null hypothesis that there is no difference between male and female respondents in the population. In respect of the full sample, the following data were used:

		Male	Female
Number of observations in the sample	(n)	1 748	1 745
Number of successes	(x)	391	254
Proportion	(p)	0,2237	0,1456
Pooled estimate		$\frac{391 + 254}{1748 + 1745} = 0,1847.$	

Assuming no difference in accuracy at a 10-per-cent significance level (i.e. $z = 1,645$):

$$H_0 = \Pi_1 - \Pi_2 = 0$$

Therefore accept H_0 if Z_{calc} falls between $-1,645$ and $+1,645$.

$$Z_{calc} = \frac{0,2237 - 0,1456}{\sqrt{(0,1847 \times 0,8153) \left(\frac{1}{1748} + \frac{1}{1745} \right)}} = +5,8284.$$

The value $+5,8284$ falls outside the area of acceptance, i.e. not between $-1,645$ and $+1,645$. The conclusion is that at the 10-per-cent significance level there is a statistical difference between the overall proportion of males and females that believe the rate of inflation is an accurate indication of price increases in the economy.

For the calculation of a similar null hypothesis for male and female respondents who had a view on the accuracy of the rate of inflation and therefore answered either *yes* or *no* to the question, the following data were used:

		Male	Female
Number of observations in the sample	(n)	933	711
Number of successes	(x)	391	254
Proportion	(p)	0,4191	0,3572
Pooled estimate		$\frac{391 + 254}{933 + 711} = 0,3923.$	

Assuming no difference in accuracy at a 10-per-cent significance level (i.e. $z = 1,645$):

$$H_0 = \Pi_1 - \Pi_2 = 0$$

Therefore accept H_0 if Z_{calc} falls between $-1,645$ and $+1,645$.

$$Z_{calc} = \frac{0,4191 - 0,3572}{\sqrt{(0,3923 \times 0,6077) \left(\frac{1}{933} + \frac{1}{711} \right)}} = +2,5369.$$

The value + 2,5369 falls outside the area of acceptance, i.e. not between - 1,645 and + 1,645. The conclusion is that at the 10-per-cent significance level there is statistical difference between the proportion of males and females that believe the rate of inflation is an accurate indication of price increases in the economy. For the whole sample and for the subsection of the sample that responded to the question, the statistical significance of the difference in responses of male and female respondents is such that separate measurement is justified. Taking cognisance of the statement of Bryan and Ventaku (2001b: 1) in respect of genders, the finding from this analysis is that a sample measuring inflation credibility should be stratified in terms of gender.

Similarly, all the responses of Asians, Blacks, Coloureds and Whites and their responses only in respect of those respondents who answered the questions, were analysed at a 90-per-cent confidence interval on a null hypothesis that there is no difference between the inflation perceptions of respondents. For the purpose of these two analyses, the sample data of relevant respondents reporting the largest and smallest credibility were used. In respect of all responses, this implied the use of the following data:

		Black	White
Number of observations in the sample	(n)	2 463	587
Number of successes	(x)	364	180
Proportion	(p)	0,1478	0,3066
Pooled estimate		$\frac{364 + 180}{2463 + 587} = 0,1784.$	

Assuming no difference in accuracy at a 10 per cent significance level (i.e. $z = 1,645$):

$$H_0 = \Pi_1 - \Pi_2 = 0$$

Therefore accept H_0 if Z_{calc} falls between - 1,645 and + 1,645.

$$Z_{calc} = \frac{0,1478 - 0,3066}{\sqrt{(0,1748 \times 0,8216) \left(\frac{1}{2463} + \frac{1}{587} \right)}} = - 9,1264.$$

The value - 9,1264 falls outside the area of acceptance, i.e. outside - 1,645 and + 1,645. The conclusion is that at the 10-per-cent significance level there is a statistical difference between the proportion of Asians, Blacks, Coloureds and Whites that accept the rate of inflation is an accurate indication of price increases in the economy.

For the respondents who had a view on the accuracy of the rate of inflation and therefore answered either *yes* or *no* to the question, the following data were used:

		Coloured	Asians
Number of observations in the sample	(n)	163	96
Number of successes	(x)	70	31
Proportion	(p)	0,4294	0,3229
Pooled estimate		$\frac{70 + 31}{163 + 96} = 0,3900.$	

Assuming no difference in accuracy at a 10-per-cent significance level (i.e. $z = 1,645$):

$$H_0 = \Pi_1 - \Pi_2 = 0$$

Therefore accept H_0 if Z_{calc} falls between - 1,645 and + 1,645.

$$Z_{calc} = \frac{0,4294 - 0,3229}{\sqrt{(0,3900 \times 0,6100) \left(\frac{1}{163} + \frac{1}{96} \right)}} = + 1,6985.$$

The value + 1,6985 falls outside the area of acceptance, i.e. outside - 1,645 and + 1,645. The conclusion is that at the 10-per-cent significance level there is a statistical difference between the proportion of Asians, Blacks, Coloureds and Whites that believe the rate of inflation is an accurate indication of price increases in the economy. Based on these two null hypotheses, the separate measurement and reporting of inflation credibility in terms of an inflation credibility barometer for Asians, Blacks, Coloureds and Whites are justified.

In planning and executing this representative study, the objectives were to find answers to the four questions stated at the outset of this section. The conclusion in respect of the first question is

that inflation credibility barometers for a representative sample and subsamples can indeed be calculated. However, the disconcerting finding is not only the relatively low readings of the barometer for the overall sample and the various subsamples, but also the high number of respondents who did not know whether the rate of inflation is a true indication of price increases in the economy. The implications of this conclusion are discussed in more detail below.

Secondly, the inflation perceptions of men and women in South Africa differ considerably. Sampling of inflation credibility should therefore make provision for and report separately the inflation credibility barometers of the different genders. A related question for consideration, that is outside the scope of this research, is whether the measurement and reporting of inflation expectations should not also make provision for a separation of the inflation expectations of the different genders.

Thirdly, the inflation perceptions of Asians, Blacks, Coloureds and Whites differ considerably. Not only is the differentiated measurement of such perceptions therefore justified, but as is the case with the measurement of the different genders, the question should be asked whether the measurement and reporting of inflation expectations should not also make provision for a separation of the inflation expectations of Asians, Blacks, Coloureds and Whites.

Fourthly, the frequency of the alternative *don't know* as a response by respondents confirms that its inclusion was indeed justified. Its inclusion clearly prevented a situation where those respondents who have no knowledge about the rate of inflation answered *no*, hence over-reporting non-acceptance of the rate of inflation as an accurate indication of price increases in the economy. As is the case with the first conclusion, this conclusion also confirms the need for continued communication.

The last conclusion is somewhat disconcerting. The degree of credibility of the inflation figures and the perceptions of how well government is controlling inflation, discussed in Section 7.4 above, delivered seemingly contradictory results. On the one hand, respondents report not only a low degree of credibility of the inflation figures as an accurate indicator of price increases in the

economy, but there are also a high number of respondents who do not know whether the figure is an accurate indicator of price increases. On the other hand, respondents report an increasing perception of government's success in controlling inflation, with a very small percentage of respondents who do not know how successful government is in this regard. However, towards the end of 2006, with an increasing trend in inflation, the number of respondents indicating that government is controlling inflation well or fairly well has shown a decline. The timing of this sampling corresponded with the sampling for the measurement of inflation credibility for purposes of measuring inflation credibility in terms of an inflation credibility barometer. This possible discrepancy between the responses in these two samples and any corresponding trends are areas for further research.

The first and fourth conclusions confirm that communication aimed at increasing awareness of the calculation of the rate of inflation and its measurement should be a continued strategy of a central bank following an inflation-targeting monetary policy. This is necessary to ensure that the public does not reach the conclusion that inflation targeting brings only the pain of higher interest rates without any tangible benefits in the form of lower inflation. The successes of such a policy framework will only be recognised and supported by the public if they are aware of such achievements. The importance of communication supporting a policy of inflation targeting might be underestimated, particularly as no international benchmarks for successful central bank inflation have as yet been developed (see for instance Blinder, [S.a.]; *DNB Magazine*, 2007; or Ehrmann and Fratzcher, 2004).

The further important implication is related to the identification of anticipated and unanticipated inflation (see the discussion in this regard in Chapter 2 above). If the majority of respondents do not know whether the rate of inflation is a true indication of price increases in the economy, questions should be raised about their ability to anticipate inflation. Likewise, if people do not know what the inflation rate is, questions should be raised about adaptive expectations, i.e. the degree to which people base their expectations of inflation on past inflation rates (Sloman, 1994: 849).

7.9 Application of an inflation credibility barometer by developing economies with particular reference to its possible use in SADC

One of the stated development goals of the African Union is to build a monetary union for the entire continent in stages, starting with each of the subregions. As one of the important subregions on the African continent, SADC has set macroeconomic convergence criteria that will lead the region to monetary unification and a single central bank. This section highlights the benefits of the use of an inflation credibility barometer for developing economies, with specific reference to the achievement of SADC's convergence target for inflation rates.

The first of the macroeconomic convergence criteria set by SADC should be achieved by 2008. The Committee of Central Bank Governors (CCBG) of SADC, chaired by the Governor of the SA Reserve Bank, monitors progress towards the achievement of these macroeconomic convergence criteria. Satisfactory progress is necessary to achieve the goal of monetary union and a single central bank for SADC by 2016.

The SADC region has as member countries Angola, Botswana, Democratic Republic of the Congo (DRC), Lesotho, Malawi, Mauritius, Mozambique, Namibia, Republic of South Africa, Swaziland, Tanzania, Zambia and Zimbabwe, while Madagascar joined during August 2005. A previous member, the Seychelles, left SADC owing to a number of reasons, *inter alia*, cost of membership considerations. The SADC Secretariat is located in Gaborone, Botswana (Background information on SADC, 2000).

SADC was established as the Southern African Development Co-ordination Conference on 1 April 1980 in Lusaka, and changed its name to SADC on 17 August 1992 in Windhoek (Background information on SADC, 2000). South Africa joined SADC in 1994.

Although member countries in the SADC region are committed to various goals, their main economic goals can be summarised as development and economic growth; poverty alleviation; improvement of living standards; harmonisation of socioeconomic policies; and the establishment

of suitable institutions and mechanisms for the mobilisation of resources to implement the programmes of SADC (Background information on SADC, 2000).

SADC countries have agreed on a number of targets to enhance co-operation and integration in the region and to support its various goals. These targets are embodied in SADC's *Regional Indicative Strategic Development Plan* which was launched on 12 March 2004 in Arusha, Tanzania (Gaolathe, 2004: 4; ISS, [S.a.]). The targets can be summarised as follows (see for instance Mboweni, 2003; or Southern African Development Community, 2002):

- Target 1: a SADC free-trade area by 2008;
- Target 2: completion of negotiations on a SADC Customs Union by 2010;
- Target 3: completion of negotiations on a SADC common market by 2015;
- Target 4: diversification of industrial structure and exports to enhance value addition across all economic sectors by 2015;
- Target 5: macroeconomic convergence targets for inflation rates, budget deficits as a ratio of GDP, and nominal value of public and publicly guaranteed debts as a ratio of GDP;
- Target 6: achievement of other financial indicators, i.e. reserves/import cover, central bank credit to government, domestic savings levels, domestic investment levels, interconnected payment and clearing systems, currency convertibility, dual and cross listings on regional securities exchanges, liberalisation of exchange control, and increased credit extension to women and SMEs; and
- Target 7: establishment of a SADC monetary union by 2016.

These targets of SADC are important in the promotion of regional integration and their achievement will have a positive impact on regional economic activity. Page states that “[e]ffective regional integration is essential if Africa’s landlocked economies are to deepen their links to the global economy” (2006: 539).

In setting macroeconomic convergence criteria, SADC has also agreed to “... a set of indicators that will allow monitoring of progress towards ... convergence” (Masson and Pattillo, 2005:

114). This aligns SADC with initiatives aimed at promoting "... economic development in Africa. Article 44 of the Abuja Treaty calls for the harmonisation of economic policies across the African continent. The Treaty emphasises two important pillars of economic integration across the African continent: the promotion of intra-Africa trade and the enhancement of monetary co-operation. The African Monetary Co-operation Programme seeks to operationalise the monetary co-operation mandate of the Abuja Treaty. In the main, this involves a single monetary area, encompassing a common currency and a common central bank ... [for Africa] ... by the year 2021" (Mboweni, 2003). In aiming for a monetary union and a central bank by 2016, SADC countries are aligned to the broader objectives for Africa.

In the consideration of progress with macroeconomic convergence an analysis of these targets, and particularly targets 5 and 6, is somewhat problematic. The goals stated in terms of target 5 are clearly macroeconomic convergence criteria. However, some of the goals stated in target 6, particularly goals regarding reserves/import cover and central bank credit to the government, can also be regarded as convergence criteria, although they are not primarily identified as such, while the other goals stated in target 6 are clearly not convergence criteria.

A further review of literature on SADC reveals a *Memorandum of Understanding* (MoU) between SADC countries that deals with macroeconomic convergence (Southern African Development Community, 2002). This MoU states in Section 3 that macroeconomic convergence in the SADC region will be measured and monitored in terms of the (i) rate of inflation in each country; (ii) ratio of the budget deficit to GDP; (iii) ratio of public and publicly-guaranteed (i.e. government) debt to GDP; and (iv) balance and structure of the current account (Southern African Development Community, 2002). The MoU defines some of the convergence criteria or elements of the criteria as follows (Southern African Development Community, 2002):

- budget deficit is the difference between government's expenditure and receipts from revenue and grants;
- inflation means the rate of change of the general price level using a headline index;
- public and publicly guaranteed debt comprises loans to government and includes loans to public enterprises and private companies enjoying government guarantees; and

- current account reflects transactions in goods, services, income and current transfers between residents of one country and another.

This paper uses for purposes of analysing progress with convergence the four criteria stated in the MoU, although these criteria show overlap to some extent with targets 5 and 6 in the in SADC's *Regional Indicative Strategic Development Plan*. Convergence goals (see for instance Mboweni, 2003; Rossouw, 2006a; or Rossouw, 2006b⁹⁶) were set for 2008, 2012, and 2018 for these indicators in SADC's *Finance and Investment Protocol* (SADC, 2003). The macroeconomic convergence goals for the relevant years are summarised in Table 7.7.

Table 7.7 Macroeconomic convergence criteria and goals for SADC, 2008 to 2018

Criterion	2008	2012	2018
Inflation rate	Single digits	5%	3%
Budget deficit	5% or less of GDP	3% of GDP as anchor, with a range of 1%	3% of GDP as anchor, with a range of 1%
Government debt	Less than 60% of GDP	Less than 60% of GDP	Less than 60% of GDP
Current account	Single digits	Single digits	Single digits

Sources: Southern African Development Community, 2002; see also Rossouw, 2006a; Rossouw, 2006b.

Co-operation aimed at achieving macroeconomic convergence in SADC and regional integration are enhanced by “... the harmonisation of legal and operational frameworks of SADC central banks, the SADC payment, clearance and settlement systems, as well as the co-ordination of training of central bank officials” (Gaolathe, 2004: 5). Progress with the goal of achieving the convergence criteria is monitored by the CCBG in terms of SADC's *Regional Indicative*

⁹⁶ Assessed in terms of the MoU, Rossouw, 2006a and Rossouw, 2006b erroneously also included central bank credit extension to the government as one of the macroeconomic convergence criteria.

Strategic Development Plan, launched on 12 March 2004 in Arusha, Tanzania (Gaolathe, 2004: 4).

Of the identified convergence criteria, the goals set for inflation have a direct bearing on this study. Progress in the convergence of the inflation rates of SADC countries (or lack of such progress) between 1999 and 2005, as well as compliance by 2005 with the inflation goal set for 2008, are highlighted in Table 7.8.

The analysis in Table 7.8 shows that 11 SADC countries made satisfactory progress during the period 1999 to 2005 towards achieving the goal set for inflation convergence by 2008, or stayed within the target range over this period. By 2005 seven countries already achieved the target set for 2008. The use of an inflation credibility barometer will provide SADC countries with a useful instrument to measure the extent to which inflation perceptions in their countries are anchored in the credibility of prevailing inflation figures. If SADC countries achieve the conversion goal set for inflation by 2008, but consumers in those countries have a perception that the figures do not reflect accurately price changes, the countries run both the danger of losing the gains made from low inflation and losing the opportunity of achieving the more challenging inflation goals set for periods following 2008. The credibility of inflation figures can also be jeopardised when one currency is replaced with another, as happened in Europe since 2002 (Issing, 2006). Timely steps aimed at enhancing inflation credibility are accordingly called for. To this end the use of an inflation credibility barometer will provide SADC countries with a useful instrument to measure the anchoring of inflation perceptions. The barometer will also serve as an early warning system for any delinking of perceptions and actual inflation rates.

The barometer can also be used by countries without the necessary capacity for inflation forecasting, as it serves as an indication of movements in credibility of published inflation figures over time. It can also find application as a suitable tool in instances where the necessary capacity for the measurement of inflation expectations does not exist. In as much as barometer readings change, it can serve as an early warning for possible changes in inflation expectations.

Table 7.8 Goal for SADC inflation rates: single digits by 2008

Country	1999	2005	Progress towards target/ remained within target	Target achieved by 2005
Angola	329,0	17,6	Y	N
Botswana	8,4	11,4	N	N
DRC	483,7	21,3	Y	N
Lesotho	8,6	3,4	Y	Y
Madagascar	14,4	18,4	N	N
Malawi	44,7	15,4	Y	N
Mauritius	6,9	4,9	Y	Y
Mozambique	6,2	6,4	Y	Y
Namibia	8,6	2,3	Y	Y
South Africa	5,2	3,4	Y	Y
Swaziland	5,9	4,8	Y	Y
Tanzania	7,9	4,4	Y	Y
Zambia	26,8	15,9	Y	N
Zimbabwe	58,5	585,8	N	N

Source: Bank of Namibia, 2006: 17; Committee of Central Bank Governors, 2005.

As an initial step in the preparation for macroeconomic convergence and the use of an inflation credibility barometer, SADC countries should harmonise the techniques used in the measurement of inflation. Large discrepancies in measuring price increases cannot only be an obstacle in comparing progress towards and compliance with the inflation criterion set for the different time periods, but might also limit the use of an inflation credibility barometer for sampling the credibility of inflation rates as an accurate indication between the SADC countries. The harmonisation of the measurement of inflation will go a long way towards overcoming these difficulties.

7.10 Conclusions from measuring inflation credibility in South Africa

The general conclusions from the first attempts at measuring South African inflation credibility and constructing an inflation credibility barometer are summarised in this section. The measurement of the credibility of an inflation rate by means of an inflation credibility barometer differs from the approaches followed by the Swedish Riksbank, the ECB, the Reserve Bank of New Zealand, the Federal Reserve Bank of Cleveland and Mexico, discussed in Chapter 2. An exact and accurate degree of acceptance of an inflation figure is measured by the barometer, whereas:

- (i) the ECB measures perceptions as a quantitative indicator, calculated as a difference in percentage points between the proportion of respondents stating that the cost of living was higher and the proportion of respondents stating that the cost of living was lower or unchanged;
- (ii) the Swedish Riksbank measures perceptions about changes in the current rate of inflation, but reports the average view;
- (iii) the Reserve Bank of New Zealand measures perceptions about changes in the current rate of inflation, but reports the mean and median perceptions;
- (iv) the Federal Reserve Bank of Cleveland measured the variation between the average perceived inflation and the official rate of inflation; and
- (v) Mexico's use of ISO certification provides neither for any pronouncement on the degree of accuracy with which the inflation figures reflect actual price increases in the economy, nor for any measurement of general public acceptance of the rate of inflation.

The first conclusion is that the inflation credibility barometer delivers significantly better results than the international approaches reported in Chapter 2, in as much as it (i) provides a comparable indication of the degree of acceptance of the accuracy of current inflation data; (ii) highlights any change in the degree of such acceptance over time at each occasion of measurement; (iii) can easily be communicated to the general public; and (iv) provides a measurement of inflation credibility that can be compared internationally between countries. The

overall results justify a recommendation for the periodic sampling of the inflation perceptions of a representative sample of the South African population.

The second conclusion is that a representative sample of inflation credibility for a country or region should be disaggregated by gender, by population group and by income group, as these respondents report statistically significant differences in the credibility of inflation figures.

The next conclusion is that an abridged questionnaire should be used to measure inflation credibility, as the inclusion of subsequent questions could “induce” respondents to respond negatively to the question on the credibility of inflation. Credible results were obtained with the abridged questionnaire, confirming that such a questionnaire is suitable for use with larger groups of respondents to establish the credibility of published inflation figures.

The fourth conclusion is that the CPI should be used to measure inflation credibility, as it recorded a higher level of general acceptance of the inflation figure than the CPIX.

The fifth conclusion is that a questionnaire measuring the credibility of inflation figures should provide respondents with the opportunity to answer that they are unsure (i.e. *don't know*) about the accuracy of the inflation figures. If respondents are not provided with such an opportunity, their response seems to be that they do not believe the figures, hence over-reporting the negative responses with a concomitant undermeasurement in terms of the inflation credibility barometer. Although a higher degree of acceptance of the accuracy of inflation figures would naturally have been encouraging, this study sets the benchmark for future research of a similar nature.

The next conclusion is that communication strategies to increase awareness of the calculation of the rate of inflation and its measurement should be a continued initiative of a central bank following an inflation-targeting monetary policy. The successes of such a policy framework will only be recognised and supported by the public if they are aware of such achievements. The importance of communication supporting the containment of inflation was perhaps underestimated, particularly as no specific international benchmarks for successful central bank

communication have as yet been developed (see for instance Blinder, [S.a.]; *DNB Magazine*, 2007; or Ehrmann and Fratzcher, 2004).

Based on the findings in Section 7.8, the occurrence of anticipated and unanticipated inflation should be reconsidered. If the majority of the population does not know whether the rate of inflation is a true indication of price increases in the economy, a possible implication is that all inflation might become unanticipated inflation. However, the further analysis of this question is outside of the scope of this study.

The eighth conclusion is that the sampling of responses in respect of the inflation credibility barometer and the responses in respect of perceptions on how well government is controlling inflation, seem somewhat incompatible. Any possible discrepancy between the responses in these two samples and any corresponding trends are areas for further research.

The ninth conclusion is that use of an inflation credibility barometer by developing economies, and particularly by SADC countries aiming at an inflation convergence goal, will provide the relevant authorities with an additional instrument to monitor whether progress with achieving lower inflation is indeed perceived as such by the general public, or whether it should be supported by communication initiatives.

The tenth conclusion is that SADC countries should harmonise the techniques used in the measurement of inflation in the interest of macroeconomic convergence in SADC. Such harmonisation will enhance the use of an inflation credibility barometer for sampling the credibility of inflation rates as an accurate indication between the SADC countries. Moreover, if SADC countries other than South Africa adopt inflation targeting as a nominal anchor for monetary policy in the period running up to the introduction of a monetary union in the region in 2016, alignment of the rates of inflation used for targeting purposes will become particularly important.

Finally, individual households will express distrust of official inflation figures as an accurate indication of the rate of average price increases to the extent that their own spending patterns differ from the average pattern (or basket) used to calculate changes in the CPI or CPIX. Moreover, female respondents normally not exposed to purchasing food or household requirements (e.g. female students at the University of Pretoria), report a higher degree of inflation credibility than is observed nationally and internationally. Certain purchases therefore undoubtedly have a negative demonstration effect on inflation perceptions.

CHAPTER 8

CONCLUSIONS

8.1 Introduction

This chapter provides by means of a summary an overview and assessment of the various conclusions reached at the end of each of the chapters of this study and recommends areas for possible further research. This study used as point of departure the view that inflation is associated with the introduction of money into an economy and can take the form of:

- literally debasing the currency, i.e. reducing the metal content of gold or silver coins;
- reducing the value of a currency in terms of another through an adjustment of the exchange rate; or
- increasing liquidity in the economy without a commensurate increase in the production of goods and services for consumption, resulting in a continuous increase in the price level.

The word inflation owes its origin to the Latin word *inflare*, which literally means "to blow into", from *flare*, "to blow". This is an accurate description of the current understanding of inflation: a process of increasing prices. In the consideration of price increases in any economy, consensus should be reached about price increases to be classified as such and the measurement of inflation in terms of a predetermined indicator. The next section reflects on the two hypotheses tested in this study, while the conclusions from this study are discussed in Section 8.3. Recommendations from this study follow in Section 8.4.

8.2 Reflecting on the aims of the study

The main aims of this study were threefold: a historic consideration of inflation since 1921 from a central bank perspective; an analysis of the accuracy of the measurement of inflation over the same period; and the development of a suitable instrument to measure the credibility of inflation figures. The study also covered a selected review of literature on monetary theory and

considered policy frameworks aimed at containing inflation. Although the main focus of the study was South Africa's experience with inflation, international comparisons were used when applicable. A sub-hypothesis and a main hypothesis were tested.

Sub-hypothesis (Hypothesis 1):

The prices of various identifiable consumer goods and services, as well as salaries, increased on average in accordance with the official overall rate of inflation over time.

This hypothesis was tested by comparing the actual price increases of various identifiable consumer goods and services, as well as increases in salaries, with changes in the South African CPI over the period since their identification. The purpose of the comparison was to distinguish between perception and reality by ascertaining whether the prices of goods and services and salaries increased at a slower or faster pace than the CPI.

Main hypothesis (Hypothesis 2):

A suitable instrument can be developed to measure the degree in which the general public accepts the published official inflation figures as an accurate indication of general price increases in the South African economy.

This hypothesis was tested by an analysis of questionnaires completed on the credibility of published inflation figures in terms of an inflation credibility barometer by various groups of respondents. Based on the results obtained from the respondents, inflation credibility barometers were constructed, measuring the degree of acceptance of inflation credibility out of 100. Related to this hypothesis are questions such as:

- the suitability of questionnaires used in various pilot studies for use in representative samples;
- differences in the inflation perceptions of various groups of respondents; and
- the level of understanding of the meaning and measurement of inflation of different groups of respondents.

In terms of testing the sub-hypothesis, the study shows that certain items and services recorded price increases above the rate of inflation, but numerous other items and services reflected much lower price increases, therefore resulting in “average” price increases commensurate with the rate of inflation. The rate of inflation therefore reflects average price increases experienced by an “average” household. Salaries have also kept pace with inflation, confirmed by a comparison of the real, after tax income over time of two positions identified and analysed in detail, although productivity changes or improvements were not taken into consideration. The research accordingly confirms the sub-hypothesis.

The main hypothesis was tested by means of five pilot studies, one broad pilot study and one representative study sampling inflation credibility. The main finding from these studies is that the inflation credibility barometer is a suitable instrument to measure the varying degrees in which the general public accepts the accuracy of the published official inflation figures as an accurate indication of general price increases in the South African economy. Although the research confirms the main hypothesis, a central finding is that knowledge of and information about the calculation of the rate of inflation and what is measured, increase the credibility of the rate of inflation, also in view of the respondents who did not know whether the inflation figures reflected accurately price increases in the economy.

8.3 Specific conclusions

The first conclusion is that the sustained application of sound monetary policy enabled developed and some developing countries to contain inflation after an acceleration in the rate of price increases in many countries in the 1960s and 1970s. A commitment to the application of sound policies limits the scope for a political business cycle and time inconsistency problems. The use of sound monetary policy, however, does not appear to have contributed significantly to alleviating the unemployment problems of many countries, with South Africa serving as a case in point. A literature review accordingly shows continued debate between different schools of

economic thought on the best combination of policies to achieve the goals of low inflation and low unemployment.

The problem of inflation in South Africa has occurred in different forms and has occupied the monetary authorities over many years. Inappropriate economic policy, and monetary policy in particular, contributed to conditions conducive to the development and maintenance of inflationary conditions. In containing inflation there is no “one-size-fits-all” solution that could be applied universally, except to state the obvious: countries should not follow unsound policies that will foster inflation. In the period before World War II, the SA Reserve Bank was successful in containing inflation. During and immediately after World War II the SA Reserve Bank was less successful in containing inflation, but regained monetary control by the late 1950s and early 1960s. From 1968 domestic inflation started accelerating and in the ensuing 25 years the SA Reserve Bank seemed incapable of controlling it effectively, although it was contained between 10 per cent and 20 per cent per annum from 1974 to 1992. An *ex post* analysis gives the impression that the SA Reserve Bank followed an inflation target of between 10 and 15 per cent per annum, with monetary tightening whenever inflation breached 15 per cent, and monetary relaxation whenever inflation declined to levels slightly above 10 per cent. This was indeed not the policy approach, but the result of inconsistent policy application. All along the SA Reserve Bank had the tools and knowledge to contain inflation, but lacked the political autonomy to follow consistently policies aimed at achieving this goal. Since 1990 the SA Reserve Bank has again been successful in containing inflation, but unemployment remains at an unacceptably high level.

An explicit anchor or target for monetary policy is preferred as it prevents any time inconsistency problems in the application of policy measures. Despite the merits of a real interest rate target as an anchor, this study prefers the use of inflation targeting for such a purpose. No anchor can be adopted as a costless option to contain inflation, but it seems that the application of a real interest rate target brings more difficulty than an inflation target. An inflation target has the added advantage that it is set by governments for achievement by central banks in the countries using this policy model. This ensures that the government remains committed to the achievement of

the target; particularly if an inflation-targeting regime is supported by institutionalised consultations between the government and the central bank over monitoring the success of the target. International differences in the specification of the CPI used for targeting purposes imply that countries using this policy approach use different inflation targets. Comments on the choice of a single target point, a target point within a range or a target range should accordingly take cognisance of the specification of the inflation rate used for targeting purposes. As no “single best rate” exists, no “single best target” can be advocated.

The second conclusion is that communication strategies to increase awareness of the calculation of the rate of inflation and its measurement should be a continued initiative of central banks following an inflation-targeting monetary policy. The importance of communication supporting the containment of inflation should never be underestimated, particularly because no standard international benchmarks for successful central bank communication have as yet been developed. The lack of knowledge about the actual inflation rate and its reflection as an accurate indicator of price increases in South Africa confirm the importance of a communication strategy.

The third conclusion is that the methodology and results of the measurement of inflation differ considerably between countries. Inflation rates cannot be compared internationally without the necessary circumspection and should not be equated to a cost-of-living index without the necessary adjustments. Consumption baskets used for the calculation of inflation are “fictitious” in as much as they provide for purchasing preferences of an “average” household, which cannot exist. Countries do not use a standardised application of international benchmarks in the calculation of inflation rates. Closer adherence to such a benchmark will harmonise the calculation of inflation rates between countries and support economic development by leveling the playing field between developed and developing countries in their quest for international investment.

Fourthly, a distinction should be made between anticipated inflation and unanticipated inflation. While the economic costs of anticipated inflation depend on the rate of inflation, the main consequences of unanticipated inflation are a redistribution of income and wealth; distortions in

the relative prices of goods and of services; distortions in output and employment; and unforeseen adjustments in relative wages and salaries. As inflation is in reality often unanticipated, hence leading to unforeseen costs in an economy, this study recommends relative price stability as the goal for monetary policy.

Fifthly, difficulties experienced in measuring inflation can result in the overstating, rather than the understating, of price changes in an economy. In an effort to overcome these difficulties, different statistical methods to calculate price indices have been developed, the use of which will result in differences in the measurement of price changes over time. Regular revisions of the index used for measuring price levels are required to ensure that it continues to reflect average spending patterns of consumers. Any statistical errors in the calculation of the rate of inflation should be subject to public scrutiny when rectified.

An IAI was calculated for South Africa, based on the data collected for this paper. Despite its shortcomings, it can be used to enhance inflation credibility, particularly because it is easy to understand. It can also be used to reconfirm inflation accuracy over time. Although the IAI might require modifications, its ease of calculation makes it a particularly useful instrument for developing countries.

No systematic over-reporting or under-reporting of changes in South African prices in terms of changes in the CPI as measured by an IAI could be detected over any of the periods used for comparative purposes. As should be expected with adjustments reflecting average price increases, the projected prices of some goods and services were lower than actual prices, while the actual prices of other goods and services exceeded projected prices. Based on this analysis, no general grounds for a low credibility of inflation figures as an accurate indication of price increases in the South African economy could be found, but individual spending patterns result in differences in the credibility of inflation figures.

This is evident by increasing food prices in South Africa, particularly as the food component of the CPI basket of low-income earners is much larger than that of high-income earners or the

average CPI. Food prices increasing faster than other prices might be the basis on which low-income earners attach less credibility to inflation figures than high-income earners. As the spending pattern of housewives correspond to a larger degree to the spending patterns of low-income earners than with the average inflation rate, this finding might indicate that the credibility of inflation might be lower among housewives than among the population in general.

Salaries and remuneration of positions identified for comparative purposes did not decline in real terms, albeit after taking into consideration the effect of reductions in direct taxation in a detailed analysis. The affordability of two big-ticket spending items of households (motor vehicles and housing) improved over the period under consideration.

Changes in relative prices and remuneration can be disguised by prolonged inflation, in as much as relative price changes are not immediately obvious under such conditions. A historic price analysis is necessary to reveal relative price changes and to ensure efficient allocation under conditions of sustained inflation. It is a precondition for the efficient functioning of a market economy that producers and consumers should be able to identify changes in the relative prices of goods and services over time.

The sixth conclusion is that an inflation credibility barometer delivers better results in the measurement of inflation credibility than the international approaches to measure inflation perceptions analysed in this study as it (i) records the degree of acceptance of the accuracy of current inflation data; (ii) highlights any change in the degree of such acceptance over time at each occasion of measurement; (iii) can easily be communicated to the general public; and (iv) provides a measurement of inflation credibility that can be compared internationally between countries.

A questionnaire measuring the credibility of inflation figures should provide respondents with the opportunity to answer that they are unsure (i.e. *don't know*) about the accuracy of the inflation figures. If respondents are not provided with such an opportunity, their responses seem to be that they do not believe the figures, hence over-reporting the negative responses with a concomitant

undermeasurement in terms of the inflation credibility barometer. The questionnaire should also provide for the disaggregated reporting of sampling results by gender, by population group and by income group, as statistically significant differences were recorded between these groups in the credibility of inflation figures. Such differentiation will help to target accurately communication campaigns aimed at enhancing credibility.

The last conclusion is that the use of an IAI and an inflation credibility barometer by developing economies, and particularly by SADC countries aiming at an inflation convergence goal, will provide the relevant authorities with additional instruments to monitor whether progress with achieving lower inflation is indeed perceived as such by the general public. With an inflation convergence goal in mind, SADC countries should harmonise the techniques used in the measurement of inflation in the different countries, thereby enhancing at a regional level the credibility of inflation rates.

8.4 Recommendations

The first recommendation pertains to communication about monetary policy in general and inflation in particular. This study has revealed a lack of knowledge about inflation that can only be bridged by means of communication. The need to improve communication is particularly relevant for central banks using an inflation target as a nominal anchor for monetary policy. The successes of such a policy framework will only be recognised and supported by the public to the extent that they believe in the achievement of the goal of low inflation.

To this end a standard international benchmark for successful central bank communication should be developed. In the interest of easier communication with the general public on the objectives of monetary policy, central bankers should agree on:

- the standardised use of *relative price stability* rather than *price stability* in describing the objectives and achievements of monetary policy, as the latter has different meanings for different people; and
- a standardised definition or description for *relative price stability*.

The second recommendation is that countries should follow more closely the methodology in the *ILO manual* (International Labour Organization, 2004) to compile their consumer price indices and measure inflation, particularly in respect of owner-occupied housing. This will increase the comparability of inflation rates between countries and can serve as a basis for communication campaigns aimed at increasing the credibility of the inflation rate.

The third recommendation is the establishment of a forum between governments and central banks for consideration of macroeconomic policy choices and implementation (as is currently in existence in South Africa) in those countries where such fora are not in place. It will enhance co-ordination in the implementation of policies conducive to sustained low inflation.

The fourth recommendation is that countries using inflation targets should consider measuring the credibility of inflation by means of an inflation credibility barometer serving as an early indication of any possible delinking of inflation expectations from the current rate of inflation. In this regard a specific recommendation is that South Africa's inflation expectations survey should be expanded to:

- include an inflation credibility survey with the aim of constructing and reporting an inflation credibility barometer; and
- provide for a separation in the reporting of the inflation expectations of the different genders; of Asians, Blacks, Coloureds and Whites; and of different income groups; thereby aligning it with the inflation credibility barometer.

The fifth recommendation is that developing countries should endeavour to ensure that their rates of inflation remain an accurate indicator of price increases. Inaccurate measurement of inflation may result in the adoption of inappropriate macroeconomic and monetary policies. Developing countries accordingly stand to gain from initiatives to standardise the measurement and international comparison of inflation. To this end the importance of reliable economic data in general and, for purposes of this study, inflation data in particular, cannot be overemphasised. Developing countries can use an IAI, similar to the one calculated for South Africa, to enhance

inflation credibility. Its use is recommended particularly because it is easy to understand and can serve as a benchmark over time for countries calculating it periodically.

The sixth recommendation is that what might be discrepancies reported in South Africa between the sampling responses in respect of the inflation credibility barometer and the responses in respect of perceptions on how well government is controlling inflation, should be assessed in more detail in future research. Any possible discrepancies between the responses in these two samples should be clarified in such research.

The remaining question for debate in the case of South Africa is whether the use of CPIX for purposes of inflation targeting is appropriate in view of the challenge to enhance the communication required to inform the general public about the true meaning and measurement of inflation, aimed at anchoring inflation expectations. An alternative, i.e. CPIXX (defined as changes in the CPI excluding interest costs), rather than CPIX, should be considered for use as an inflation target specification, owing to its less cumbersome definition; exclusion of all interest costs; coverage of the whole (i.e. inclusive of rural areas) country; and relative ease of communication.

REFERENCES

AA of SA. [S.a.]. [Online].

<http://www.aa.co.za/Travel+and+Routes/International+Travel/International+Driving+Permit.htm>

<http://www.aa.co.za/AdviceandInformation/Road+Reports/South+African+Toll+Fees+2006.htm>

[Accessed on 30 June 2006].

ABSA. [S.a.]. [Online].

<http://www.absa.co.za/absacoza/>

[Accessed on 3 July 2006].

http://www.absa.co.za/absacoza/generated/files/acd405a058dab010VgnVCM1000003511060aRCRD/5June2006.pdf?F_C_ID=175c1de195033010VgnVCM1000003511060aRCRD

[Accessed on 3 July 2006].

Ackermans, Silverton. [S.a.]. *Personal visit*. 4 December 2006.

Agénor, R.-P. and Montiel, P. J. 1996. *Development Macroeconomics*. 1st edition. Princeton University Press: Princeton.

Akerlof, G. A. 2002. Behavioural Macroeconomics and Macroeconomic Behaviour. *American Economic Review*. Vol 92: 3. June.

Allen, M., Baumgartner, U. and Rajan, R. 2006. *Inflation targeting and the IMF*. International Monetary Fund: Washington.

Aninat, E. 2000. *Closing Remarks at the high-level seminar on the implementation of inflation targets*. 21 March. International Monetary Fund: Washington. [Online].

<http://www.imf.org/external/np/speeches/2000/032100.htm>

[Accessed on 6 June 2005].

Arangies, G. 2006. E-mail received from Ms Gretchen Arangies, Manager: Human Resources Operations, University of Stellenbosch at mm2@sun.ac.za on 13 November.

Arestis, R and Sawyer, M. 2002. Can monetary policy affect the real economy? *Working Paper No. 355*. The Levy Institute of Bard College. Annandale-on-Hudson. October. [Online].
<http://www.levy.org/vdoc.aspx?docid=111>
 [Accessed on 2 February 2008].

Arndt, E. H. D. 1928. *Banking and currency development in South Africa, 1652 – 1927*. Juta: Cape Town.

Arnone, M., Laurens, B. J., Segallotto, J-F. and Sommer, M. 2007. Central bank autonomy: Lessons from global trends. *IMF Working paper WP/07/88*. April. International Monetary Fund: Washington, D C.

Aryeetey, E. 2003. Recent developments in African financial markets: Agenda for further research. *Journal of African Economies*. Vol 12: Suppl 2. September.

Aryeetey, E. and Nissanke, M. 2003. Financial policies and financial sector development in Sub-Saharan Africa. In Nissanke, M. and Aryeetey, E. (eds). *Comparative development experiences of Sub-Saharan Africa and East Asia*. Ashgate Publishing Limited: Aldershot.

Authers, J. 2006. Know yourself, know success: welcome to the world of neurofinance. *Financial Times*. 9/10 December.

Aycan, Z. 2002. Leadership and teamwork in developing countries: Challenges and opportunities. In Lonner, W. J., Dinnel, D. L., Hayes, S. A., and Sattler, D. N. (eds). *Online Readings in Psychology and Culture*. Cross-Cultural Research, Western Washington University. Washington. [Online].

<http://www.ac.wvu.edu/~culture/aycan.htm>

[Accessed on 29 January 2007].

Bache, W. I. 2003. Critical Realism and Econometrics. *Working Paper 2003/4*. Norges Bank: Oslo.

Background information on SADC. 2000. [Online].

<http://www.sadc-sqam.org/>

[Accessed on 12 April 2005].

Bain, K. and Howells, P. 2003. *Monetary economics: Policy and its theoretical basis*. Palgrave Macmillan: Hampshire and New York.

Bale, J. R., Stoll, B. J., and Lucas, A. O. (eds). 2003. *Improving birth outcomes: Meeting the challenge in the developing world*. The National Academies Press: Washington.

Banco Central de Chile. 2001. *Press release*. 26 July. [Online].

http://www.bcentral.cl/eng/studies/central-banking/pdf/v2/151_182vegh.pdf

[Accessed on 4 June 2007].

Banco de Mexico. [S.a.]. [Ista na Internet]

<http://www.banxico.org.mx/inpc/>

[Obtido 23 Junio 2005].

Translation assistance by Ms I. Gaspar, SA Reserve Bank.

Banco de Moçambique. 2005. *Integrated paper on recent economic developments in SADC*. October.

Bank Leumi Le-Israel B. M. and subsidiaries. 2003. *Condensed Financial Statements as at 30 September*. Central Bank of Israel.

Bank of Canada. 1999. *A history of the Canadian dollar by James Powell*. [Online].
<http://www.bankofcanada.ca>
 [Accessed on 3 August 2004].

Bank of Namibia. 2006. *Integrated paper on recent economic developments in SADC*. October.

Bank for International Settlements (BIS). 2003. Regional currency areas and the use of foreign currencies. *BIS Papers No 17*. September.

Bank for International Settlements (BIS). 2006. *Seventy-sixth Annual Report*.

Barro, R. and Gordon, D. 1983a. A positive theory of monetary policy in a natural rate model. *Journal of Political Economy*. Vol 91: 4. August.

Barro, R., and Gordon, D. 1983b. Rules, discretion and reputation in a model of monetary policy. *Journal of Monetary Economics*. Vol 12: 1. January.

Bechtold, S. and Linz, S. 2005. *Enhancing the credibility of the consumer price index*. [Online].
<http://www.oecd.org/dataoecd/22/46/35281409.pdf>
 [Accessed on 9 November 2005].

Bedford-Strohm, H. 2006. *Public theology and the global economy. Ecumenical social thinking between fundamental criticism and reform*. Paper delivered at the David de Villiers Memorial Lecture at the Faculty of Theology, University of Pretoria. Pretoria. 28 August.

Beeld. [S.a.]. [Online].

<http://www.news24.com/Beeld/Home/>

[Accessed on 30 June 2006].

BER. 2006. *Press release*. 12 October.

Bernanke, B. S., Laubach, T., Mishkin, F. S. and Posen, A. S. 1999. *Inflation targeting – lessons from the international experience*. Princeton University Press. Princeton: New Jersey.

Bhorat, H., Hanival, S. and Kanbur, R. 2006. Poverty, trade and growth in Sub-Saharan Africa: Introduction to the special issue. *Journal of African Economies*. Vol 14: 4. December.

Bhorat, H. and Oosthuizen, M. 2005. The relative inflation experience of poor urban South African households. *Labour Market Frontiers*. SA Reserve Bank. September.

Biology-online. [S.a.]. *Website*. [Online].

http://www.biology-online.org/dictionary/Developing_countries

[Accessed on 29 January 2007].

Blinder, A. S. [S.a.]. Keynesian Economics. *The Concise Encyclopedia of Economics*. [Online].

<http://www.econlib.org/library/Enc/KeynesianEconomics.html>

[Accessed on 9 January 2007].

Blinder, A. S. 1988. The fall and rise of Keynesian economics. *Economic Record*. Vol 64: 187. December.

Blinder, A., Goodhart, C., Hildebrand, P., Lipton, D. and Wyplosz, C. [S.a.]. *How do central banks talk?* Geneva: ICMB.

Bloemhof Meisieskool. [S.a.]. *Webblad*sy. [Aanlyn].

<http://www.bloemhofschoon.co.za/skoolgelde.htm>

[Internettoegang op 29 Junie 2006].

Board of Governors. 1974. *The Federal Reserve System – Purposes and Functions*. 6th edition. United States of America: Washington, D C. September.

Boettke, P. J. and Leeson. P. T. 2003. The Austrian School of Economics: 1950 – 2000. In Samuels, W., Biddle, J. and Davis, J. (eds). *A Companion to the History of Economic Thought*. Blackwell Publishing Ltd: Oxford.

Bordo, M. D. [S.a.]. Gold Standard. *The Concise Encyclopedia of Economics*. [Online].

<http://econlib.org/library/ENC/GoldStandard.html>

[Accessed on 5 December 2006].

Boyd, H. W., Westfall, R. and Stasch, S. F. 1977. *Marketing research: Text and cases*. Richard D. Irwin Inc: Illinois.

Brachinger, H. W. 2005. *Measuring perceived inflation: a prospect theory approach*. International Statistical Institute, Voorburg, The Netherlands. 55th session in Sydney. 5 to 12 April.

Braithwaite, J. and Drahos, P. 2000. *Global Business Regulation*. Cambridge University Press: Cambridge.

Brannon, I. 2006. *We were all Keynesians then*. Cato Institute. 9 January. [Online].

http://www.cato.org/pub_display.php?pub_id=5362

[Accessed on 12 January 2007].

Brink, F. 2006. Belangrike ekonomiese aanwysers en prystendense. *SA Graan*. Tydskrif van Graan SA. Februarie.

Brunell, D. 2006. North Korea proves economic freedom and personal freedom go hand in hand. *Association of Washington Business*. 3 November. [Online].
<http://www.awb.org/cgi-bin/absolutenm/templates/?a=1347&z=10>
 [Accessed on 30 January 2007].

Bryan, M. F. 1997. On the origin and evolution of the word inflation. *Economic Commentary*. Federal Reserve Bank of Cleveland. 15 October.

Bryan, M. F. 2006. E-mails received from Mr Michael Bryan, Vice President and Economist of the Federal Reserve Bank of Cleveland at michael.f.bryan@clev.frb.org on 21 February.

Bryan, M. F. and Ventaku, G. 2001a. The curiously different inflation perspectives of men and women. *Economic Commentary*. Federal Reserve Bank of Cleveland. November.

Bryan, M. F. and Ventaku, G. 2001b. The demographics of inflation opinion surveys. *Economic Commentary*. Federal Reserve Bank of Cleveland. October.

Bureau of Market Research. 2000. *Household expenditure in South Africa by province, language group and product*. Report 277. [Online].
<http://www/Unisa/Unisa Online-report 277.htm>
 [Accessed on 14 December 2005].

Bureau of Market Research. 2004. *Minimum and supplemented living standards in the main and other selected urban areas of the RSA*. Research Report 334. March. University of South Africa. Pretoria.

Bureau of Market Research, 2005. *Total household cash expenditure in South Africa by living standards measure (LSM) group and product, 2005*. Research Report 347. University of South Africa. Pretoria.

Campbell, A. 2006. E-mail received from Ms Alison Campbell, PA to the Board of Directors and Communications Team, Reserve Bank of New Zealand at Alison.Campbell@rbnz.govt.nz on 27 January.

Camponovo, G. 2006. *Conceptual models for designing information systems supporting the strategic analysis of technology environments*. Unpublished PhD thesis. University of Lausanne. Lausanne.

Car. 1988. New vehicle prices. November.

Carare, A. and Stone, M.R. 2003. Inflation Targeting Regimes. *IMF Working Paper, WP/03/9*, January.

Casteleijn, A. 2001. *South Africa's monetary policy framework*. Paper prepared for the conference on monetary policy frameworks in Africa, 17 to 19 September. SA Reserve Bank: Pretoria.

Central Banking. 2002. The art of central banking – interview with Mr I Plenderleith. *Central Banking*. Vol 13: 2. November. Central Banking Publications Ltd: London.

Central Banking. 2006a. Opinion. *Central Banking*. Vol 17: 1. August. Central Banking Publications Ltd: London.

Central Banking. 2006b. People. *Central Banking*. Vol 17: 1. August. Central Banking Publications Ltd: London.

Central Statistical Service. 1987. *The consumer price index*. December.

Central Statistical Service. 1991. *The consumer price index – 1990 weights*. 4 October.

Central Statistical Service. 1997. *Statistical release P0141.5*. 27 February.

Chetty, S. [S.a.]. *The Visual Construction of Gender and Race in the South African Military 1939 – 1945*. [Online].

<http://www.history.und.ac.za/Sempapers/Chetty2003.pdf#search=%22Rationing%20in%20South%20Africa%22>

[Accessed on 30 August 2006].

Chetty, S. 2001. *Gender under fire: Interrogating war in South Africa, 1939 – 1945*. Unpublished MA dissertation. University of Natal. Durban.

Chamberlains Waterkloof Glen. 2006. *Telefoniese navraag*. 29 Junie.

Chatterjee, S. 1999. A Legacy of Countercyclical Policies. *The Region*. Federal Reserve Bank of Minneapolis. March.

Christensen, A-K., Dupont, J. and Schreyer, P. 2005. *International Comparability of the Consumer Price Index: Owner-occupied housing*. Paper read at the OECD seminar on Inflation Measures: Too High - Too Low - Internationally Comparable? Paris. 21 and 22 June.

Cigan, H. R. 2006. E-mail received from Ms Heidi Cigan of the Economic and Financial Unit at Monetary Affairs of the European Commission at Heidi-Renata.CIGAN@cec.eu.int on 20 January.

Cillie, G. G. [S.a.]. *Rekord van persoonlike uitgawes: Januarie 1977 tot Januarie 2003*. Aantekeninge oor persoonlike uitgawes deur dr G. G. Cillie. Ongepubliseer.

City of Tshwane Metropolitan Municipality. [S.a.]. *Telephonic enquiry*. 12 July 2006.

Coddington, A. 1983. *Keynesian Economics: The search for first principles*. Allen and Unwin: London.

Cohen, B. J. 2002. *Monetary instability: Are national currencies becoming obsolete?* Paper 15 of the Global and International Studies Program. University of California. Santa Barbara.

Collard, F. and Dellas, H. 2004. The great inflation of the 1970s. *International Finance Discussion Papers*. Number 799. Board of Governors of the Federal Reserve System. April.

Committee of Central Bank Governors. 2005. *Recent economic developments and statistics for SADC countries*. Secretariat of the Committee of Central Bank Governors. SA Reserve Bank: Pretoria.

Contreras, R. 1999. Competing Theories of Economic Development. In Carrasco, E. R. and Berg, K. R. (eds). *The E-Book on International Finance and Development*. [Online].

[http://papers.ssrn.com/sol3/papers/Documents and Settings\p132209\Desktop\Competing Theories of Economic Development.htm](http://papers.ssrn.com/sol3/papers/Documents_and_Settings\p132209\Desktop\Competing Theories of Economic Development.htm)

[Accessed on 31 January 2007].

Coorey, S., Clausen, J. R., Funke, N., Munoz, S. and Ould-Abdallah, B. 2007. Lessons from high inflation episodes for stabilising the economy of Zimbabwe. *IMF Working Paper No/07/99*. April. International Monetary Fund: Washington.

Corden, W. M. 1987. The relevance for developing countries of recent developments in macroeconomic theory. *Research Observer*. The World Bank. Vol 2: 2. July.

Cournède, B. 2005. *Do house price developments matter for inflation-targeting monetary authorities? A view from the euro area experience*. Paper read at the OECD seminar on Inflation Measures: Too High - Too Low - Internationally Comparable? Paris. 21 and 22 June.

Cox, W. M. and Alm, R. 1997. *Time well spent: The declining real cost of living in America. Annual Report of the Federal Reserve Bank of Dallas*. Federal Reserve Bank: Dallas.

D'Assonville, V. E. 1999. *S. J. du Toit van die Paarl (1847 tot 1911)*. 1e uitgawe. Marnix: Pretoria.

Davidson, P. 2005. The Post-Keynesian school. In Snowdon, B. and Vane, H. R. (eds). *Modern Macroeconomics: Its origins, development and current state*. Edward Elgar: Cheltenham, UK and Northampton, US.

De Angelis, C., Aziakpono, M. J., and Faure, A. P. 2005. The transmission of monetary policy under the repo system in South Africa: An empirical analysis. *South African Journal of Economics*. Vol 73: 4. December.

De Bruyn, A. 2006. E-mail received from Ms Annemarie de Bruyn of the Bureau of Institutional Research and Planning at the University of Pretoria at annemarie.debruyn@up.ac.za on 1 June.

De Jongh, T. W. 1980. *Governor's Address*. Address at the sixtieth ordinary general meeting of stockholders. 26 August.

De Kock, G. 1954. *A history of the South African Reserve Bank (1920 – 52)*. J. L. van Schaik Ltd: Pretoria.

De Kock, G. 1981. *Governor's Address*. Address at the sixty-first ordinary general meeting of stockholders. 25 August.

De Kock, G. 1984. *The “mix” of monetary and fiscal policy*. Address to the *Financial Mail Investment Conference*. 16 November.

De Kock, G. 1985a. *Governor’s Address*. Address at the sixty-fifth ordinary general meeting of stockholders. 27 August.

De Kock, G. 1985b. *Statement regarding the Reserve Bank’s conditions for accommodation to banks and discount houses and the Bank’s operations in the foreign exchange market*. SA Reserve Bank. 29 January.

De Kock, M. H. 1956. *Central Banking*. Third edition. Staples Press Limited: London.

De Kock, M. H. 1974. *Central Banking*. Fourth edition. Crosby Lockwood Staples: London.

Del Giovane, P. and Sabbatini, R. 2005. *The introduction of the euro and divergence between officially measured and perceived inflation: the case of Italy*. Paper read at the OECD seminar on Inflation Measures: Too High - Too Low - Internationally Comparable? Paris. 21 and 22 June.

Department of Home Affairs. [S.a.]. [Online].

<http://www.home-affairs.gov.za/forms.asp?topic=travel>

[Accessed on 30 June 2006].

Dercon, S. 2005. Risk, poverty and vulnerability in Africa. *Journal of African Economies*. Vol 14: 4. September.

Development Gateway. [S.a.]. [Online].

<http://topics.developmentgateway.org/poverty/rc/ItemDetail.do~1059980?itemId=1059980>

[Accessed on 5 May 2006].

De Wet, G. L. (red). 1987. *Inflasie in Suid-Afrika*. Butterworths: Durban.

De Wet, W. 2003. Coping with inflation and exchange rate shocks in South Africa. *South African Journal for Economics*. Vol 70: 3. March.

Die Huisgenoot. 1938. Gedenkuitgawe. Desember. Nasionale Pers Beperk: Kaapstad.

Diewert, E. 2003. *Methodological Problems with the Consumer Price Index*. Paper presented at the joint UNECE/ILO Meeting on Consumer Price Indices, held at the Palais des Nations, Geneva. 4 and 5 December. [Online].

<http://www.econ.ubc.ca/diewert/problems.pdf>

[Accessed on 5 December 2005].

Diewert, E. 2005. *Identifying Important Areas for Future Price Work at the International Level*. Paper read at the OECD Seminar on Inflation Measures: Too High - Too Low – Internationally Comparable? Paris. 21 and 22 June. [Online].

<http://www.econ.ubc.ca/diewert/hmpgdie.htm>

[Accessed on 21 November 2005].

DNB Magazine. 2007. Dossier: transparantie, voorspelbaarheid en sukses van het monetaire beleid: De woorden en daden van centrale banke. Een uitgawe van de Nederlandsche Bank. April.

Dommissie, E. 2005. *Anton Rupert: 'n Lewensverhaal*. Tafelberg Uitgewers: Kaapstad.

Dornbusch, R. and Fischer, S. 1988. *Macroeconomics*. 3rd reprint. McGraw-Hill: New York.

Du Plessis, B. J. 1986. *Budget Speech*. 17 March.

Du Plessis, F. J. 1967. Opsomming van meningsverskille van die konferensie. *Suid-Afrikaanse Tydskrif vir Ekonomie*. Vol 35: 4. Desember.

Du Plessis, S. A. 2003. Much ado about nothing: a note on the modified inflation target. *South African Journal of Economics*. Vol 71: 2. June.

Du Toit, A. P. T. 1988. Some misconceptions surrounding the consumer price index and the producer price index. *The Securities Markets*. Number 10. Fourth Quarter.

Du Toit, J. 2006. E-mails received from Mr Jacques du Toit, Senior Economist of ABSA at jacques@absa.co.za on 4 July.

Easton, V. J. and McColl, J. H. [S.a.]. *Statistics Glossary*. Vol 1. [Online].

http://www.cas.lancs.ac.uk/glossary_v1.1/confint.html#confinterval

[Accessed on 4 June 2007].

Economist.com. [S.a.]. *Website*. [Online].

<http://www.economist.com/research/Economics/alphabetic.cfm?letter=D#developingcountries>

[Accessed on 29 January 2007].

Ehrmann, M. and Fratzcher, M. 2004. *Central Bank Communication: Different Strategies, Same Effectiveness?* Paper presented at the annual meeting of the American Economic Association.

[Online].

Published as *ECB Working Paper No 557*. European Central Bank: Frankfurt.

http://www.aeaweb.org/annual_mtg_papers/2005/0109_1015_0704.pdf

[Accessed on 3 June 2005].

Elahi, K. and Danopoulos, C. P. 2004. Democracy, Capitalism and Development. *Journal of Security Sector Management*. Vol 2: 2. June.

Encyclopaedia Britannica. 1988. *Micropaedia*. Vol 6. Encyclopaedia Britannica Inc: United States of America.

Encyclopaedia Britannica. 2005. *Encyclopaedia Britannica Premium Service*. Encyclopaedia Britannica Inc: United States of America. [Online].

<http://www.britannica.com/eb/article-9047255>

[Accessed on 8 December 2005].

<http://www.britannica.com/eb/article-9064321/Rubicon>

[Accessed on 4 June 2007].

Engelbrecht, C. L. 1987. *Geld in Suid-Afrika*. Tafelberg Uitgewers: Kaapstad.

Ensor, L. 2007. Pay increases in pipeline for governor's deputies. *Business Day*. 28 March.

Epstein, G. 2002. Employment-Oriented Central Bank Policy in an Integrated World Economy: A Reform Proposal for South Africa. *Working Paper No 39 of the Political Economy Research Institute of the University of Massachusetts*. [Online].

<http://www.peri.umass.edu/Publication.236+M573c699e0e3.0.html>

[Accessed on 22 August 2006].

ESA. [S.a.]. *Economics and Statistics Administration*. [Online].

<https://www.esa.doc.gov/1997.cfm>

[Accessed on 8 December 2005].

European Central Bank (ECB). 2002. *Monthly Bulletin*. July.

European Central Bank (ECB). 2003. *Monthly Bulletin*. October.

European Central Bank (ECB). 2005. *Monthly Bulletin*. April.

European Central Bank (ECB). 2007. *Monthly Bulletin*. February.

Exclusive Books, Brooklyn. [S.a.]. *Personal visit*. 8 July 2006.

Federal Statistical Office. [S.a.]. *Try out the index calculator and understand price statistics: What is it about?* [Online].

<http://www\Federal Statistical Office Germany-Prices-Index calculator.htm>

[Accessed on 9 November 2005].

Finance Week. 1984. Various articles covering the 1984/85 budget. 29 March to 4 April.

Financial Mail. 1984. Hallucinations now, reality later. 23 November.

Finansies en Tegniek. 1984. DG's kry meer as R 100 000 – maar dis staatsdiens se “voetvolk” wat die grootste probleme gee. November.

Finweek. 2006. Bylae oor die Suid-Afrikaanse Reserwebank. 21 September.

Fischer, S. 1990. Rules versus Discretion in Monetary Policy. In Friedman, B. M. and Hahn, F. H. (eds). *Handbook of Monetary Economics*. Vol. II. The Netherlands: Elsevier, Amsterdam.

Fisher, I. 1926. A Statistical Relationship Between Unemployment and Price Changes. *International Labor Review*. Vol 13: 6. June. Reprinted in 1973 with the title: I Discovered the Phillips Curve. *Journal of Political Economy*. Vol 81: 2 March/April.

Flandreau, M. 2006. *Pillars of globalisation: A history of monetary policy targets, 1797 to 1997*. Paper delivered at the 4th ECB Central Banking Conference. 9 to 10 November.

Fogel, R. W. 2000. *The fourth awakening and the future of egalitarianism*. University of Chicago Press: Chicago.

Foldvary, F. E. 2006. The Austrian School of Economics. *The Free Liberal*. 3 October. [Online].

<http://www.freeliberall.com/archives/002345.html>

[Accessed on 10 January 2007].

Forder, J. 2004. "Credibility" in context: Do central bankers and economists interpret the term differently? *Econ Journal Watch*. Vol 1: 3. December. [Online].

<http://www.econjournalwatch.org/pdf/ForderComment1December2004.pdf>

[Accessed on 27 June 2006].

Fracasso, A., Genberg, H. and Wyplosz, C. 2003. *How do Central Banks Write?* ICMB: Geneva.

Friedman, M. (ed). 1956. *Studies in the Quantity Theory of Money*. University of Chicago Press: Chicago.

Friedman, M. 1968. The role of monetary policy. *The American Economic Review*. Vol LVIII: 1. March.

Friedman, M. 1972. *Monetary Policy in Developing Countries: Inflation and Development*. The Horowitz Lectures. [Online].

<http://www.freetochoose.net/lecture1k.html>

[Accessed on 11 April 2006].

Friedman, M. and Friedman, R. D. 1980. *Free to choose*. Penguin Books Ltd: Middlesex.

Galbraith, J. K. 1975. Consumer behaviour and the dependence affect. In Mansfield, E. (ed). *Microeconomics – selected readings*. 2nd edition. W W Norton and Company Inc: New York.

Gaolathe, B. 2004. *Official Opening Speech*. CCBG meeting in Gaborone. 30 April.

Garrison, R. W. 2005. The Austrian School. In Snowdon, B. and Vane, H. R. (eds). *Modern Macroeconomics: Its origins, development and current state*. Edward Elgar: Cheltenham, UK and Northampton, US.

Garrow, C. 1999. Mboweni placed it all in the public domain. *Business Times*. [Online].
<http://www.btimes.co.za/99/1114/columns/columns7.htm#top>
 [Accessed on 11 October 2005].

Gelb, S. 1989. The origins of the South African Reserve Bank, 1914 – 1920. In Mabin, A. (ed). *Organisation and economic change*. Southern African Studies Vol 5. Ravan Press: Johannesburg.

Gidlow, R. M. 1995. *Monetêre beleid onder dr Gerhard de Kock: 1981 – 1989*. SA Reserwebank: Pretoria.

Gilles, C. and Daneshkhu, S. 2007. King vows to improve Bank's guidance on rates. *Financial Times*. 3 May.

Glick, R. 2006. *Monetary Unions: Experiences and Lessons*. Presentation at the FRBSF/BOE/WBI Global seminar on Capital Flows and Global External Imbalances for senior policymakers. Paris. 3 to 6 April.

Godley, W. and Lavoie, M. 2004. Features of a realistic banking system within a Post-Keynesian stock-flow consistent model. *Working Paper 12*. Cambridge Endowment for Research in Finance. University of Cambridge. Cambridge. [Online].
<http://www.cerf.cam.ac.uk/publications/index.php?current=4>
 [Accessed on 2 February 2008].

Gonçalves, C. E. S. and Salles, J. M. 2005. *Inflation targeting in emerging economies: What do the data say?* Seminar at the University of Sao Paulo. San Paulo. 27 June. [Online].

http://www.econ.fea.usp.br/seminarios/2005_2/11_08_2005_carlos_eduardo.pdf#search=%22%22inflation%20targeters%22%22

[Accessed on 21 August 2006].

Goodfriend, M. 2004. Monetary policy in the New Neoclassical Synthesis: A primer. *Economic Quarterly*. Vol 90: 3. Summer. Federal Reserve Bank of Richmond.

Goodfriend, M. and King, R. G. 1997. The new neoclassical synthesis and the role of monetary policy. *Working Paper 98/5 of the Federal Reserve Bank of Richmond*. June.

Goodfriend, M. and King, R. G. 2001. The case for price stability. *Working Paper 8423 of the National Bureau of Economic Research*. August.

Gordon, R. J. 2000. *Macroeconomics*. 8th edition. Addison-Wesley: New York.

Greenspan, A. 1989. *Statement before the Committee on the Budget, United States Senate*. 28 February.

Guha, K. 2007. Fed chief warned on inflation target. *Financial Times*. 20 February.

Guillaume, D. and Stasavage, D. 1999. *Making and breaking monetary policy rules: the experience of African countries*. WPS/99-2: Oxford University. Oxford. January.

Guðnason, R. 2005. *Market prices and user cost*. Paper read at the OECD seminar on Inflation Measures: Too High - Too Low - Internationally Comparable? Paris. 21 and 22 June.

Gwartney, J. Schuler, K. and Stein, R. 2000. *Achieving monetary stability at home and abroad*. Discussion document prepared for the Cato Institute's 18th Annual Monetary Conference (Co-sponsored with *The Economist*). Washington, D.C. 19 October.

Haberler, G. [S.a.]. Money and the Business Cycle. In Wright, Q. (ed). 1932. *Gold and Monetary Stabilization*. Lectures on the Harris Foundation. University of Chicago Press: Chicago.

Haberler, G. 1966. *Inflation: Its causes and cures*. American Enterprise Institute for Public Policy Research: Washington.

Hanke, S. and Sekerke, M. 2003. St Helena's forgotten currency board. *Central Banking*. Vol 13: 3. February. Central Banking Publications Ltd: London.

Hansen, A. H. 1953. *A Guide to Keynes*. 1st edition. Economic handbook series. McGraw-Hill Publishing Company Ltd: London.

Hansen, B. 1951. *A study in the theory of inflation*. George Allen and Unwin Ltd: London.

Hansen, F. 2007. The downhill slide of CPI. *Business Finance Mag.com*. (Originally printed in the May 1998 issue of *Controller Magazine*). [Online].

<http://www.businessfinancemag.com/magazine/archives/article.html?articleID=4644&pg=2>

[Accessed on 12 January 2006].

Harcourt, G. C. 2006. *The structure of Post-Keynesian economics: The core contributions of the pioneers*. Cambridge University Press: Cambridge.

Harford, T. 2006. *The undercover economist*. Little, Brown: UK.

Haslag, J. H. 1997. Output, growth, welfare and inflation: A survey. *Economic Review*. Second Quarter. Federal Reserve Bank of Dallas.

Hawtrey, R. G. 1932. *The Art of Central Banking*. Longmans, Green and Co: London.

Heckelman, J. C. 2001. Historical political business cycles in the United States. *Economic History Services Encyclopedia*. [Online].

<http://eh.net/encyclopedia/article/heckelman.political.business.cycles>

[Accessed on 11 January 2007].

Heilbroner, R. L. 1975. *The making of economic society*. 5th edition. Prentice-Hall Inc: New Jersey.

Hobart Houghton, D. 1967. Second discussant of a paper by L. M. Lachmann: Causes and consequences of the inflation of our time. *South African Journal of Economics*. Vol 35:4. December.

Hodgson, G. M. 2004. Some claims made for critical realism in economics: two case studies. *Journal of Economic Methodology*. Vol 11: 1. March.

Hogendorn, J. S. 1987. *Economic Development*. Harper and Row, Inc: United States of America.

Howard, G. 2005. E-mail received from Mr Graham Howard of the Reserve Bank of New Zealand at Graham.Howard@rbnz.govt.nz on 20 June.

Howard, G. and Wright, M. 2003. The Reserve Bank Inflation Calculator in Reserve Bank of New Zealand. *Bulletin*. Vol 66: 4. December.

Hu, Y. 2003. *Empirical investigations of inflation targeting*. [Online].

<http://www.iie.com/publications/wp/03-6.pdf>

[Accessed on 1 November 2005].

Huguenot Secondary School, Wellington. [S.a.]. *Telephonic enquiry*. 29 June 2006.

Human Sciences Research Council. 2004. *Fact Sheet: Poverty in South Africa*. 26 July.

[Online].

<http://www.sarpn.org.za/documents/d0000990/index.php>

[Accessed on 11 December 2006].

Institute for Planning Research. [S.a.]. *The household subsistence level in the major urban centres of the Republic of South Africa*. October 1974; September 1984; September 1994; and August 2004. University of Port Elizabeth: Port Elizabeth.

International Labour Organization. 2004. *Consumer Price Index Manual. Theory and practice*.

International Labour Organization: Geneva.

International Monetary Fund (IMF). [S.a.]. *Dissemination Standards Bulletin Board*. [Online]

<http://dsbb.imf.org/Applications/web/dsbbhome/>

[Accessed on 29 April 2005].

International Monetary Fund (IMF). 2005. *World Economic Outlook*. September.

Isa, J. 2003. Profiles of world economists: Paul Anthony Samuelson. *BIATEC*. Vol XI: 2.

Narodna Banka Slovenska (National Bank of Slovakia). Bratislava.

ISS (Institute for Security Studies). [S.a.]. *Africa fact files: Regional Indicative Strategic Development Plan (RISDP) of SADC*. [Online].

http://www.iss.org.za/AF/RegOrg/unity_to_union/pdfs/sadc/risdpc/toc.htm

http://www.iss.co.za/AF/RegOrg/unity_to_union/pdfs/sadc/risdpc/c2.pdf

[Accessed on 15 April 2005].

Issing, O. 2006. *Einführung in die Geldtheorie*. 14., Auflage. Verlag Franz Vahlen: München. Translation assistance by Mr H. H. van Gass, SA Reserve Bank.

Jett, W. 2006. The Learning Curve of the Federal Reserve: U.S. Monetary Policy 1965 – 2005. *The Supply Side Forum*. 1 November. [Online].

<http://www.supplysideforum.com/>

[Accessed on 11 January 2007].

Johnson, D. S., Reed, S. B. and Stewart, K. J. 2005. *What has happened to price measurement since the Boskin Report? The U.S. Experience*. Paper read at the OECD seminar on Inflation Measures: Too High - Too Low - Internationally Comparable? Paris. 21 and 22 June.

Joint Economic Committee. 2004. *Price stability and inflation targets: a legislative history*. A Joint Economic Committee Study. July. [Online].

<http://www.house.gov/jec/>

[Accessed on 1 November 2005].

Jonung, L. 1981. Perceived and expected rates of inflation in Sweden. *American Economic Review*. Vol 71: 5. December.

Kahn G. A. and Parish, K. 1998. Conducting monetary policy with inflation targets. *Economic Review*. Third quarter. Federal Reserve Bank of Kansas City.

Kango caves. [S.a.]. *Telephonic enquiry*. 30 June 2006.

Kapp, P. 2005. ‘n Historiese driehoek: ‘n Verband tussen die Anglo-Boereoorlog, die Franse Hugenote en die Universiteit van Stellenbosch. *Bulletin 42*. Hugenote-vereniging van Suid-Afrika.

Kearney, J. M., Kearney, M. J., McElhone, S. and Gibney, M. J. 1999. Methods used to conduct pan-European Union survey on consumer attitudes to physical activity, body weight and health. *Public Health Nutrition*. Vol 2: 1. January.

Kershoff, G. 2000. *Conducting inflation expectation surveys in South Africa*. Publication of the Bureau for Economic Research: University of Stellenbosch. Stellenbosch. 24 October.

Kershoff, G. J. and Laubscher, P. 1999. *Measuring inflation expectations – the international experience*. Publication of the Bureau for Economic Research: University of Stellenbosch. Stellenbosch. 24 December.

Kershoff, G. J. and Smit, B. W. 2002. Conducting inflation expectation surveys in South Africa. *South African Journal for Economics*. Vol 70: 3. March.

Keynes, J. M. 1930. *A Treatise on Money: The Applied Theory of Money (Volume II)*. Macmillan and Co Ltd: London.

Keynes, J. M. 1942. *The General Theory of Employment Interest and Money*. 1st edition reprint. Macmillan and Co Ltd: London.

Khabo, V. S. 2002. *An evaluation of the impact of monetary policy on a small and open economy: the case of the Republic of South Africa*. Unpublished D.Comm dissertation. University of Pretoria. Pretoria.

Khan, H. 2005. Macroeconomic models for developing economies: Some characteristics related to dualism in South Asia. *Discussion Paper No 22*. 22 January. Asian Development Bank Institute: Mandaluyong City.

Kohn, D. L. 2005. *Central Bank Communication*. Remarks at the annual meeting of the American Economic Association. Philadelphia. 9 January. [Online].
<http://www.federalreserve.gov/boarddocs/speeches/2005/20050109/default.htm>
[Accessed on 6 June 2005].

Konijn, P., Moch, D. and Dalén, J. 2002. *Searching for the European hedonic function for PCs*. Paper presented at the IAOS conference on official statistics and the new economy. London. 27 to 29 August.

Kose, A. M., Prasad, E. S., and Terrones, E. 2003. Financial integration and macroeconomic volatility. *IMF Staff Papers*. Vol 50. International Monetary Fund: Washington.

Kosters, M. H. 1977. Controls and inflation: an overview. In Popkin, J. (ed). *An analysis of inflation*. Ballinger Publishing Company: Cambridge, Mass.

Kydland, F. E. and Prescott, E. C. 1977. Rules rather than discretion: The time inconsistency of optimal plans. *Journal of Political Economy*. Vol 85: 3. June.

Lacker, J. M. 2005. *Inflation Targeting and the Conduct of Monetary Policy*. Remarks by the President of the Federal Reserve Bank of Richmond. Virginia. [Online].
<http://www.rich.frb.org/media/speeches/index.cfm/id=70>
[Accessed on 7 March 2005].

Laidler, D. and Parkin, M. 1975. Inflation: a survey. *The Economic Journal*. Vol 85: 340. December.

Leijonhufvud, A. 1992. Keynesian economics: Past confusions, future prospects. In Vercelli, A. and Dimitri, N. (eds). *Macroeconomics: A Survey of Research Strategies*. Oxford University Press: Oxford.

Levi, M. 1994. *Economics and the modern world*. D. C. Heath and Co: Toronto.

Lindenmann, W. K. 2001. *Research does not have to put you in the poorhouse*. [Online]. people.ku.edu/~dguth/Lindenmann.pdf - Supplemental Result [Accessed on 7 March 2007].

Linnemann, L. and Schabert, S. 2003. Fiscal Policy in the New Neoclassical Synthesis. *Journal of Money, Credit and Banking*. Vol. 35: 6. December

Linz, S. and Behrmann, T. 2005. *Experiences in German price statistics with the application of hedonic methods*. Paper presented at the OECD Seminar on Inflation Measures: Too High - Too Low – Internationally Comparable? Paris. 21 and 22 June.

Lybek, T. and Morris, J. 2004. Central Bank Governance: A Survey of Boards and Management. *IMF Working Paper WP/04/226*. Washington: International Monetary Fund.

Magaliesbergse Graanko-op Bpk, Pretoria. [S.a.]. *Telefoniese navraag*. 8 Julie 2006.

Malas Tyres, Pretoria. [S.a.]. *Telephonic enquiry*. 28 June 2006.

Manuel, T. A. 2001. *Medium-term Budget Policy Statement*. 30 October.

Manuel, T. A. 2002. *Medium-term Budget Policy Statement*. 29 October.

Manuel, T. A. 2003a. *Budget Speech*. 26 February.

Manuel, T. A. 2003b. *Medium-term Budget Policy Statement*. 12 November.

Marber, P. 2003. *Money changes everything – how global prosperity is reshaping our needs, values and lifestyle*. FT Prentice Hall: New Jersey.

Markinor. [S.a.]. *Webpage*. [Online].

<http://www.markinor.co.za/index.html>

[Accessed on 22 August 2006].

Markinor, 2006. *Project Inflation Credibility: Results Presentation*. December.

Masson, P. R. and Pattillo, C. 2005. *The monetary geography of Africa*. Brookings Institution Press: Washington, D C.

Masson, P. R., Savastano, M. A. and Sharma, S. 1998. Can inflation targeting be a framework for monetary policy in developing countries? *Finance and Development*. Vol 35: 1. March.

Mastertreads Strand. [S.a.]. *Telephonic discussion*. 30 June 2006.

Maxwell, S. 1997. *Gatekeepers of growth – the international political economy of central banking in developing countries*. Princeton University Press: Princeton.

Mayer, T. 1997. The Rhetoric of Friedman's Quantity Theory Manifesto. *Working Paper Series No. 97-01, January*. Department of Economics, University of California. Santa Barbara.

Mboweni, T. T. 1999. *Opening statement by the Governor at the inaugural meeting of the Monetary Policy Committee*. SA Reserve Bank. 13 October. [Online].

<http://www.reservebank.co.za/>

[Accessed on 8 June 2005].

Mboweni, T. T. 2000a. *A new monetary policy framework*. Statement issued by the Governor of the South African Reserve Bank. 6 April.

Mboweni, T. T. 2000b. *Address at the Pretoria Council for Businesswomen*. Pretoria. 14 March.

Mboweni, T. T. 2001. *Governor's Address*. Address at the eighty-first ordinary general meeting of shareholders. 28 August.

Mboweni, T. T. 2002. *Monetary policy and inflation*. Address at the annual conference of the Bureau for Economic Research. [Online].

<http://www.reservebank.co.za/>

[Accessed on 8 June 2005].

Mboweni, T. T. 2003. *African Economic Integration – Keynote address at the 5th Annual African Development Finance Conference*. 9 October. [Online].

<http://www.resbank.co.za>

[Accessed on 12 April 2005].

Mboweni, T. T. 2005a. *Governor's Address*. Address at the eighty-fifth ordinary general meeting of shareholders. 24 August.

Mboweni, T. T. 2005b. *Media briefing on SADC by the Chairperson of the Committee of Central Bank Governors*. Presentation after a meeting of the CCBG of SADC and the European Central Bank. 28 February. Cape Town. Internal document of the SA Reserve Bank.

Mboweni, T. T. 2005c. *Statement of the Monetary Policy Committee*. SA Reserve Bank. 10 February. [Online].

<http://www.reservebank.co.za/>

[Accessed on 28 February 2005].

McAleese, D. 2004. *Economics for business: Competition, macro-stability and globalisation*. 3rd edition. FT Prentice Hall: Essex.

Meiring, J. G. 1994. *Biographical sketches of directors*. SA Reserve Bank: Pretoria.

Meiring, J. G. 1996. *The Quarterly Bulletin of the South African Reserve Bank – a short historical review*. SA Reserve Bank: Pretoria.

Meisieskool Oranje. [S.a.]. *Telefoniese navraag*. 30 Junie.

Meltzer, A. H. [S.a.]. Keynesian Economics. *The Concise Encyclopedia of Economics*. [Online].

<http://www.econlib.org/library/Enc/KeynesianEconomics.html>

[Accessed on 9 January 2007].

Merrett, A. J. and Monk, D. A. G. 1967. *Inflation, taxation and executive remuneration*. Hallam Press Limited: London.

Metzger, M. 2004. *The Common Monetary Area in Southern Africa: A Typical South-South Coordination Effort?* Paper read at the workshop on New Issues in Regional Monetary Coordination: Understanding North-South and South-South Arrangements, at the Institute for Ibero-American Studies. Hamburg. 7 to 9 July. [Online].

<http://www.duei.de/iik/de/content/forschung/pdf/commonmonetaryarea.pdf>

[Accessed on 14 April 2005].

Michie, J. 2006. Macroeconomic reforms and employment: what possibilities for South Africa. In Padayachee, V. (ed). *The development decade? South Africa, 1994-2004*. HSRC: Cape Town.

Midas Rietfontein. [S.a.]. *Telephonic enquiry*. 30 June 2006.

Mishkin, F. S. 2001. *Inflation Targeting*. Graduate School of Business, Columbia University. Columbia.

Mishkin, F. S. 2004. *The Economics of Money, Banking and Financial Markets*. 7th edition. Addison-Wesley Publishing Company, Inc: United States of America.

Mitchell, A. 2007. Advertisers turn to science to get inside consumers' heads. *Financial Times*. 5 January.

Mlambo, K. and Oshikoya, T. W. 2001. Macroeconomic factors in investment in Africa. *Journal of African Economics*. Vol 10: Suppl 2. September.

Moggridge, D. E. 1980. *Keynes*. 2nd edition. Macmillan Press Ltd: London.

Mohr, P. and Fourie, L. (eds). 2004. *Economics for South African students*. 3rd edition. Van Schaik Publishers: Pretoria.

Mohr, P. J., van der Merwe, C., Botha, Z. C. en Inggs, J. 1988. *Die praktiese gids tot Suid-Afrikaanse ekonomiese aanwysers*. Lexicon uitgewers: Johannesburg.

Mokoena, T. M., Rangasamy, L., Swanepoel, J. A. and Visser, F. J. 2004. South African consumer price inflation in a historical and global context. *SA Reserve Bank Working Paper WP/04/11*. July.

Moloto, P. R. 2005. *Growth trends in the South African manufactured export industry*. Unpublished MA dissertation, University of Pretoria. Pretoria.

Momentum. 2005. *The household inflation experience – Does a regular household experience inflation below 5%? Probably not.* Press release prepared by the Single Premium Investment House Marketing Team. 12 October.

Moore, B. J. 1988. The endogenous money supply. *Journal of Post Keynesian Economics*. Vol 10: 3. Spring.

Moskow, M. H. 2003. *Formulating and Communicating U.S. Monetary Policy*. Remarks at the 9th International Financial and Economic Forum. Vienna. 13 November. [Online].
http://www.chicagofed.org/news_and_conferences/speeches/2003_11_13.cfm
[Accessed 6 June 2005].

Motorbeeld. 2006. Nuwe voertuigpryse. 29 Junie.

Motta, M. 2004. *Competition policy: theory and practice*. Cambridge University Press: UK.

Mr Price, Silverton. [S.a.]. *Personal visit*. 4 December 2006.

Multiserv Centre, Silverton. [S.a.]. *Personal visit*. 23 June 2006.

Murali, D. 2004. Inflation is all gas. *Business Line*. 13 August. [Online].
<http://www.blonnet.com/2004/08/13/stories/2004081300111100.htm>
[Accessed on 18 July 2005].

National Bank of Romania. 2006. *Inflation Report*. Year II, No 4. May.

National Gambling Board. 2005. *Socio-economic impact of legalised gambling in South Africa*. National Gambling Board: Pretoria.

Nel, H. 1993. *Die monetêre beheermeganisme in Suid-Afrika*. Ongepubliseerde D Comm proefskrif. Universiteit van Port Elizabeth.

New Palgrave: A dictionary of Economics. 1987. Vol 2. The Macmillan Press Limited: London and Bastingstoke.

Newman, D. 2003. *We are all liberals now*. 8 May. [Online].

<http://www.strike-the-root.com/3/newman/newman5.html>

[Accessed on 12 January 2006].

NG Kerk Noordelike Sinode. 2006. *Omsendbrief admin 1/2006 aan leraars en kerkrade: riglyne vir die aanpassing van vergoeding vir leraars 2006/2007*. Pretoria.

NG Gemeente Suid-oos Pretoria. 2006. *Telefoniese navraag*. 29 Junie.

Niggle, C. J. 2004. A short course in macroeconomics or whatever happened to monetarism? *Paper presented at the Basil Moore Festschrift*. University of Stellenbosch. Stellenbosch. January.

Niggle, C. J. 2006. Institutional-Post Keynesian economics and the post monetarist consensus. In Setterfield, M. (ed). *Complexity, endogenous money and macroeconomic theory: Essays in honour of Basil J Moore*. Edward Elgar Publishing: UK and USA.

Nissanke, M. and Aryeetey, E. 2003. Comparative institutional analysis: Sub-Saharan Africa and East Asia. In Nissanke, M. and Aryeetey, E. (eds). *Comparative development experiences of Sub-Saharan Africa and East Asia*. Ashgate Publishing Limited: Aldershot.

Nordhaus, W. D. 1975. The Political Business Cycle. *Review of Economic Studies*. Vol XLII: 2. April.

Noordwes Universiteit (Potchefstroom Kampus). [S.a.]. *Telefoniese navraag*. 30 Junie.

Odekon, M. (ed). 2006. *Encyclopedia of World Poverty*. SAGE publications. [Online].
<http://www.sagepub.com/refbooksProdTOC.nav?prodId=Book226860>
 [Accessed on 31 January 2007].

OECD. [S.a.]. *Organisation for Economic Co-operation and Development (OECD): A Detailed Overview of the OECD*. [Online].
http://www.oecd.org/document/18/0,2340,en_2649_201185_2068050_1_1_1_1,00.html#what
 [Accessed on 5 December 2005].

OECD. 2002. *Main economic indicators - comparative methodological analysis: consumer and producer price indices*. Supplement 2. Organisation for Economic Co-operation and Development: Paris.

OECD. 2003. *Glossary of statistical terms*. [Online].
<http://stats.oecd.org/glossary/detail.asp?ID=5708>
 [Accessed on 6 December 2005].

Padayachee, V. 2000. Independence in an era of globalisation: central banking in developing countries. *International Review of Applied Economics*. Vol 14: 4. October.

Padayachee, V. 2001. Central bank transformation in a globalized world: the Reserve Bank in post-apartheid South Africa. *Journal of Institutional Development*. Vol 13: 6. August.

Page, J. 2006. Strategies for pro-poor growth: pro-poor, pro-growth or both? *Journal of African Economies*. Vol 14: 4. December.

Palmqvist, S. and Stromberg, L. 2004. Households' inflation opinions – a tale of two surveys. *Economic Review* 4. [Online]

http://www.riksbank.com/upload/Dokument_riksbank/Kat_publicerat/Artiklar_PV/ER04_2.pdf

[Accessed on 19 July 2005].

Parkin, M. 1999. *Economics*. 5th edition. Addison-Wesley Publishing Company, Inc: United States of America.

Parkin, M. 2003. *Economics*. 6th edition. Addison-Wesley Publishing Company, Inc: United States of America.

Pep Stores, Silverton. [S.a.]. *Personal visit*. 4 December 2006.

Pianalto, S. 2005. *A perspective on monetary policy*. Remarks by the President and Chief Executive Officer of the Federal Reserve Bank of Cleveland to the Association for Corporate Growth. Pittsburgh. 18 January. [Online].

<http://www.clevelandfed.org/NewsEvents/Speech05/sp011805.cfm>

[Accessed on 4 November 2005].

Popper, M. 2002. Inflation's gone. That's a good thing. Right? *Business Week*. 4 March.

Prasad, E., Rogoff, K., Wei, S.-J. and Kose, M. A. 2003. *Effects of globalization on developing countries: Some empirical evidence*. International Monetary Fund: Washington.

Quiggin, J. 1997. The welfare effects of alternative choices of instruments and targets for macroeconomic stabilisation policy. In Lowe, P. (ed). *Monetary Policy and Inflation Targeting*. Reserve Bank of Australia: Canberra.

Reeves, A. [S.a.]. *The Sharpeville massacre – a watershed in South Africa*. [Online].
<http://www.anc.org.za/ancdocs/history/misc/shareve.html>
 [Accessed on 11 October 2005].

Republic of South Africa, [S.a.]. *Remuneration structures in the civil service*. Unpublished remuneration information. National Treasury: Pretoria.

Republic of South Africa. 1964. *Report on the Technical Committee on Banking and Building Society Legislation*. RP 50/1964. Government Printer: Pretoria.

Republic of South Africa. 1985. *The Commission of inquiry into the monetary system and monetary policy of South Africa* (De Kock Commission). First interim report: RP 112/1978, Second interim report: RP 93/1982, and Final report: RP 70/1984. Pretoria.

Republic of South Africa. 1991. *Central Statistical Office – News release P0142*. 25 August.

Republic of South Africa. 2005. *National Treasury: Estimates of national expenditure*. Pretoria.

Republiek van Suid-Afrika. 1985. *Die Kommissie van ondersoek na die monetêre stelsel en monetêre beleid in Suid-Afrika* (De Kock-kommissie). Eerste tussentydse verslag: RP 112/1978, Tweede tussentydse verslag: RP 93/1982, en Finale verslag: RP 70/1984. Pretoria.

Reserve Bank of Australia. 1998. Modifications to the Reserve Bank of Australia's Commodity Price Index. *Reserve Bank of Australia Bulletin*. September. [Online].
http://www.rba.gov.au/PublicationsAndResearch/Bulletin/bu_sep98/bu_0998_1.pdf
 [Accessed on 8 December 2005].

Reserve Bank of New Zealand. 2004. *What is the Policy Targets Agreement?* [Online].
<http://www.rbnz.govt.nz>
 [Accessed on 3 August 2004].

Reserve Bank of New Zealand. 2005. *J5 Marketscope Survey - Expectations of inflation*. [Online].

<http://www.rbnz.govt.nz>

[Accessed on 8 June 2005].

Rezessy, A. 2006. E-mail received from Mr A Rezessy of the Magyar Nemzeti Bank (central bank of Hungary) at Rezessya@mnb.hu on 29 August.

Ribe, M. 2005. *Superlative Swedish CPI implementation and comparability*. Paper presented at the OECD Seminar on Inflation Measures: Too High - Too Low – Internationally Comparable? Paris. 21 and 22 June.

Ribe, M. 2006. E-mail received from Mr Martin Ribe, Senior Statistician, Swedish Riksbank at martin.ribe@scb.se on 9 February.

Richards, C. S. 1967. Conference Issue. *South African Journal of Economics*. Vol 35: 4. December.

Rietveld, M. 2006. The difficult choice of an inflation target. *Central Banking*. Vol 16: 4. May. Central Banking Publications Ltd: London.

Roach, S. 2006a. Have central banks sown the seeds of the next bust? *Morgan Stanley's Global Economic Forum*, reprinted by *MoneyWeek*. [Online].

<http://www.moneyweek.com/file/26264/the-dangers-of-economic-complacency.html>

[Accessed on 1 June 2007].

Roach, S. 2006b. Time for a monetary policy rethink. *Central Banking*. Vol 17: 1. August. Central Banking Publications Ltd: London.

Robinson, J. 1978. Keynes and Richardo. Reprinted in Robinson, J. 1979. *Collected Economic Papers*. Vol 5. Basil Blackwell: Oxford.

Roger, S. 2006. E-mail received from Mr S Roger of the International Monetary Fund at SROGER@imf.org on 28 August.

Roger, S. and Stone, M. 2005. On Target? The International Experience with Achieving Inflation Targets. *IMF Working Paper WP/05/163*. International Monetary Fund. August.

Romer, D. 2001. *Advanced Macroeconomics*. 2nd edition. McGraw Hill Irwin: United States of America.

Rossouw, J. 2002. Establishing the credibility of inflation targets. *Central Banking*. Vol 13: 1. August. Central Banking Publications Ltd: London.

Rossouw, J. 2003a. Further problems of inflation targets. *Central Banking*. Vol 13: 3. February. Central Banking Publications Ltd: London.

Rossouw, J. 2003b. Building inflation credibility. *Central Banking*. Vol 13: 4. May. Central Banking Publications Ltd: London.

Rossouw, J. 2004. A brief note on Nel and Lekalake: Monetary transparency in South Africa. *South African Journal of Economics*. Vol 72: 5. December.

Rossouw, J. 2005. Monetêre beleid in Suid-Afrika sedert 1965: die vordering vanaf direkte beheer tot inflasietekens. *Tydskrif vir Geesteswetenskappe*. Jaargang 45: 2. Junie.

Rossouw, J. 2006a. An analysis of macroeconomic convergence in SADC. *South African Journal of Economics*. Vol 74: 3. September.

Rossouw, J. 2006b. Kan makro-ekonomiese konvergensie in SADC tot die suksesvolle vestiging van 'n monetêre unie en 'n sentrale bank lei? *Tydskrif vir Geesteswetenskappe*. Jaargang 46: 2. Junie.

Rossouw, J. 2006c. The exchange control and related tax amnesty process. *BankIndaba*. Staff magazine of the SA Reserve Bank. Issue 163. April.

Rossouw, J. 2007a. *Communication supporting an inflation-targeting monetary policy regime: the case of the South African Reserve Bank*. Paper presented at the 18th International Conference of SPACE. Nicosia. 21 to 24 March 2007.

Rossouw, J. 2007b. 'n Kritiese beskouing van die Accra-verklaring. *Tydskrif vir Geesteswetenskappe*. Vol 47: 2. Junie.

Rossouw, J. and Joubert, F. 2005a. A perspective on inflation credibility. *South African Journal of Economic and Management Science*. Vol 8: 4. December.

Rossouw, J. and Joubert, F. 2005b. Supporting an inflation-targeting policy with the measurement of inflation credibility. *South African Journal of Economics*. Vol 73: 2. June.

Rossouw, J. and Padayachee, V. 2006. Testing inflation credibility: South African inflation and price changes since 1921. *SA Reserve Bank Discussion Paper DP/09/06*. SA Reserve Bank: Pretoria.

Rossouw, J. and Padayachee, V. 2007. A study on inflation credibility among students at the University of Pretoria. *South African Journal of Economic and Management Sciences*. Vol 10: 1. March.

Rossouw, J. and Powers, C. 2005. Communication in support of an inflation targeting policy: A note on the South African Reserve Bank. *SA Reserve Bank Discussion Paper DP/05/12*. SA Reserve Bank: Pretoria.

Rossouw, J. J. 1983. *Die faktore wat werknemersvergoeding beïnvloed*. Ongepubliseerde MBA-skripsie, Universiteit van Pretoria.

Rupert, A. 1974a. *Inflasie: hoe tem ons openbare vyand nommer een*. Private publikasie met kopiereg. ISBN 0 620 01443 1.

Rupert, A. 1974b. Inflasie – hoe tem ons openbare vyand nommer een? In Marx, S. (red). 1986. *Dr Anton Rupert: Pro munere grates*. ‘n Bundel van lesings as ere-professor in die Departement Bedryfseconomie, Universiteit van Pretoria. 1e uitgawe, 1986. Universiteit van Pretoria: Pretoria.

SA Akademie. 2005. Jou taal het koopkrag – ’n klein groepie met ’n reuse impak! *Nuusbrief*. Jaargang 43: 3 en 4. Desember.

SA Institute of Race Relations. 2006. *South Africa Survey, 2004/2005*. SA Institute of Race Relations: Johannesburg.

SADC. 2003. *Finance and Investment Protocol*. Desember.

Sahn, D. E. and Younger, S. D. 2004. Growth and poverty reduction in Sub-Saharan Africa: Macroeconomic adjustment and beyond. *Journal of African Economics*. Vol 13: Suppl 1. July.

Sakebeeld. 2006. JSE pryse. 29 Junie.

Samuels, L. H. 1967. Control of inflation. *South African Journal of Economics*. Vol 35: 4. Desember.

Samuelson, P. A. and Nordhaus, W. D. 1985. *Economics*. 12th edition. McGraw-Hill: United States of America.

Samuelson, P. A. and Nordhaus, W. D. 2001. *Economics*. 17th edition. McGraw-Hill: United States of America.

SANSO. 2006. *Binso2ap - Universiteit van Pretoria: inskrywings volgens OE-struktuur*. Tabel A – 13.0. 24 Mei.

Santomero, A. M. 2005. *Lessons Learned from the Recent Business Cycle*. Address by the President of the Federal Reserve Bank of Philadelphia at the American Academy. Berlin. 1 March. [Online].

http://www.phil.frb.org/publicaffairs/speeches/2005_santomero2.html

[Accessed on 7 March 2005].

SA Reserve Bank Act. 1944. No 29 of 1944, as amended, and the regulations framed in terms of Section 23 of the Act.

SA Reserve Bank Act. 1989. No 90 of 1989, as amended, and the regulations framed in terms of Section 36 of the Act.

SA Reserve Bank. [S.a.]. Factors leading to the establishment of the South African Reserve Bank. *Fact sheet No 6*. SA Reserve Bank: Pretoria.

SA Reserve Bank. *Quarterly Bulletin*. Various issues. Pretoria.

SA Reserve Bank. *Website*. [Online].

<http://www.reservebank.co.za>

[Accessed on various dates].

SA Reserve Bank. 1971. *A short historical review issued in commemoration of the Bank's fiftieth anniversary*. SA Reserve Bank: Pretoria.

SA Reserve Bank. 1985. *Quarterly Bulletin*. December. Pretoria.

SA Reserve Bank. 1986. *Quarterly Bulletin*. March. Pretoria.

SA Reserve Bank. 1991. *Quarterly Bulletin*. September.

SA Reserve Bank. 1999. *Statement released after deliberations at the first meeting of the Monetary Policy Committee*. [Online].

<http://www.reservebank.co.za/>

[Accessed on 8 June 2005].

SA Reserve Bank. 2000. *Statement issued by the Reserve Bank after the first Monetary Policy Forum*. [Online].

<http://www.reservebank.co.za/>

[Accessed on 8 June 2005].

SA Reserve Bank. 2001a. *Modification of the refinancing system of the South African Reserve Bank*. Notice to all Chief Executive Officers of all banks and mutual banks in South Africa. SA Reserve Bank: Pretoria.

SA Reserve Bank. 2001b. *Monetary Policy Review*. March.

SA Reserve Bank. 2002. *Annual Economic Report*.

SA Reserve Bank. 2003. *Annual Report and Financial Statements*.

SA Reserve Bank. 2005a. *Exchange Control Manual*. [Online].
<http://www.reservebank.co.za/internet/publication.nsf>
 [Accessed on 16 Februarie 2005].

SA Reserve Bank. 2005b. *Monetary Policy Review*. May.

SA Reserve Bank. 2006. *Annual Economic Report*. August.

SA Reserwebank. 1985. *Jaarlikse Ekonomiese Verslag*. Augustus.

SA Revenue Service. [S.a.]. *Website*. [Online].
www.sars.gov.za
 [Accessed on various dates].

Saunders, S. 2003. The experience of inflation targeting in Australia: Lessons for South Africa. *South African Journal of Economics*. Vol 71: 2. June.

Saville, A., Bader, M. and Spindler, Z. 2005. Alternative monetary systems and the quest for stability: can free banking deliver in South Africa? *South African Journal of Economics*. Vol 73: 4. December.

Scholtes, C. 2002. On market based measures of inflation expectations. Bank of England. *Quarterly Bulletin*. Spring.

Schreyer, P. 2005. *Country priorities*. Findings of an OECD questionnaire presented at the OECD Seminar on Inflation Measures: Too High - Too Low – Internationally Comparable? Paris. 21 and 22 June. [Online].
<http://www.oecd.org/dataoecd/39/41/35019828.pdf>
 [Accessed on 22 November 2005].

Sen, A. K. 1999. Democracy as a Universal Value. *Journal of Democracy*. Vol 10: 3. July.

Servén, L. 1998. Macroeconomic uncertainty and private investment in developing countries: An empirical investigation. *Policy Research Working Paper 2035*. The World Bank: Washington.

Shahzad, A. [S.a.]. *The North-South conflict*. [Online].

<http://www.newagebd.com/2005/jun/13/oped.html>

[Accessed on 31 January 2007].

Sharing Benefits. 2005. *Relevant benefits*. [Online].

<http://sharingpensions.co.uk/glossary27.htm>

[Accessed on 8 December 2005].

Shimizu, M. 2005. *Recent methodological developments of the CPI in Japan*. Paper presented at the OECD Seminar on Inflation Measures: Too High - Too Low – Internationally Comparable? Paris. 21 and 22 June.

Shoprite, Silverton. [S.a.]. *Personal visits*. 24 June 2006 and 4 December 2006.

Shubik, M. 1955. The uses of game theory in management science. In Mansfield, E. (ed). 1975. *Microeconomics: selected readings*. 2nd edition. W. W. Norton and Company, Inc: United States of America.

Silver, M. and Heravi, S. 2003. *Why price index number formulas differ: economic theory and evidence on price dispersion*. [Online].

http://www.caer.unsw.edu.au/EMG_workshop_files/SilverdispIndexRev3.doc

[Accessed on 5 December 2005].

Simetric, [S.a.]. [Online].

http://www.simetric.co.uk/feet_to_metres.php

[Accessed on 31 August 2006].

Sloman, J. 1994. *Economics*. 2nd edition. Harvester Wheatsheaf: Herfordshire.

Smant, K. 2006. Is the Republican Party the party of Watergate as Rick Perlstein claims?

History News Network. George Mason University. Fairfax. [Online].

<http://hnn.us/roundup/entries/20208.html>

[Accessed on 12 January 2006].

Smithin, J. 2002. The rate of interest, economic growth, and inflation: An alternative theoretical perspective. *Working Paper No 23*. Wirtschaftsuniversität Wien. April.

Snowdon, B. and Vane, H. R. (eds). 2005. *Modern macroeconomics: Its origins, development and current state*. Edward Elgar: Cheltenham, UK and Northampton, US.

Soanes, C. and Stevenson, A. (eds). 2004. *Concise Oxford English Dictionary*. 11th edition. Oxford University Press: Oxford.

Solly Kramers, Hazelwood. [S.a.]. *Personal visit*. 23 June 2006.

South Africa. 2000. *Budget Speech by the Minister of Finance*. 23 February.

Southern African Development Community. 2002. *Memorandum of Understanding concluded between Southern African Development Community member states on macroeconomic convergence*. August.

Stals, C. L. 1989. *Governor's Address*. Address at the sixty-ninth ordinary general meeting of shareholders. 29 August.

Stals, C. L. 1996. *Seventy-five years of central banking in South Africa*. Address by the Governor of the South African Reserve Bank at the 75th anniversary banquet of the South African Reserve Bank. Pretoria. [Online].

<http://www.resbank.co.za>

[Accessed on 11 October 2005].

Statistics Bureau. 1996. *Conflicts between innovation and continuity: Japan's case*. Paper prepared for the United Nation's seminar on official statistics. Lisbon. 25 to 27 September.

Statistics New Zealand. [S.a.]. *Information about the Consumer Price Index (CPI)*. [Online].

<http://www2.stats.govt.nz/domino/external/omni/omni.nsf/outputs/Consumers+Price+Index+CPI>

[Accessed on 8 December 2005].

Statistics SA. [S.a.]. *Stats Online*. [Online]

<http://www.statssa.gov.za/MoreIndicators/CPI/CPIHistory.pdf>

[Accessed on 29 April 2005].

Statistics SA. 2001. *Consumer price index – detailed weights: historical metropolitan and other urban areas*. P0141.5

Statistics SA. 2002. *Consumer price index – detailed weights: historical metropolitan and other urban areas*. P0141.5. 28 February.

Statistics SA. 2003. *Consumer price index – detailed weights: historical metropolitan and other urban areas*. P0141.5. 30 May.

Stiglitz, J. E. 1997. *Economics*. 2nd edition. W. W. Norton and Co: New York.

Struwig, F. W. and Stead, G. B. 2001. *Planning, designing and reporting research*. Pearson Education South Africa: Cape Town.

Sveriges Riksbank. [S.a.]. *Inflation expectations*. [Online]
<http://www.riksbank.com/templates/Page.aspx?id=10551>
 [Accessed on 1 July 2005].

Tambo, O. R. 1985. *Response to P. W. Botha's Rubicon speech*. ANC press statement. 16 August. Lusaka.

Tanaiste, A. and Harney, M. 2004. *Address to the National Forum on Europe on provisions in the draft Constitution relating to the common commercial policy*. 4 March. [Online].
<http://www.entemp.ie/press/2004/20040304.htm>
 [Accessed on 30 January 2007].

The history of economic thought website. [S.a.]. [Online].

The Austrian School

<http://cepa.newschool.edu/het/>

[Accessed on 10 January 2007].

Cambridge cash-balance approach.

<http://cepa.newschool.edu/het/essays/money/cambcash.htm>

[Accessed on 5 December 2005].

Milton Friedman and the Chicago School.

<http://cepa.newschool.edu/het/essays/monetarism/friedmanchicago.htm>

[Accessed on 13 December 2006].

Tomkins, R. 2006. Let's bring back rationing. *Financial Times*. 1 and 2 July.

Trade Centre. 2006. *Promotion 16/06*. Supplement to *Record*, 6 June.

TV licences. [S.a.]. [Online].

<http://www.tvlic.co.za/portal/site/tvlicence/menuitem.f5545350fe4a55f5e16a84b45401aeb9/>

[Accessed on 30 June 2006].

Union of South Africa. 1923. *Official Yearbook of the Union of South Africa and of Basutoland, Bechuanaland Protectorate and Swaziland – No 5, 1922*. The Government Printing and Stationery Office: Pretoria.

United Nations. 2004. *Statistical Division*. [Online].

<http://unstats.un.org/unsd/sna1993/glossform.asp?getitem=310>

[Accessed on 8 December 2005].

United Nations Development Programme. 2005. *Human Development Report*. United Nations: Washington, D C .

United States of America. 1996. *Final report to the Senate Finance Committee from the Advisory Commission to study the Consumer Price Index*. (Boskin Commission Report). December. [Online]

<http://www.ssa.gov/history/reports/boskinrpt.html#cpi1>

[Accessed on 2 November 2005].

Universiteit van Stellenbosch (US). 2006. *Telefoniese en skriftelike navraag*. 29 Junie.

Van der Horst, S. 1967. First discussant of a paper by W. F. J. Steenkamp: Productivity and inflation in South Africa. *South African Journal of Economics*. Vol 35: 4. December.

Van der Merwe, E. J. 1997. *Discussion paper on monetary policy operating procedures*. October. SA Reserve Bank: Pretoria.

Van der Merwe, E. J. 1999. Monetary policy operating procedures in emerging-market economies. *BIS Policy Papers No 5*. March. Bank for International Settlements: Switzerland.

Van der Merwe, E. J. 2004. Inflation targeting in South Africa. *Occasional Paper No 19*. July. SA Reserve Bank: Pretoria.

Van der Walt, B. E. 1985. Notes on the measurement of inflation. *Quarterly Bulletin*. No 156. June. SA Reserve Bank: Pretoria.

Van der Watt, P. 1997. *Die verhaal van 'n stadsgemeente – Suidoos-Pretoria 1947 – 1997*. NG Gemeente Suid-oos Pretoria: Pretoria.

Van Mulligen, P. H. and Oei, M. H. 2004. *The use of scanner data in the CPI: a curse in disguise?* Statistics Netherlands. May. [Online]

<http://www.ipeer.ca/papers/Mulligen&Oei,June13,2004,vancouver-pmun-v2.pdf>

[Accessed on 9 January 2006].

Van Rensburg, C. 2003. *The South African coin and banknote collection*. Randburg Coin: South Africa.

Végh, C. 2002. Monetary policy, interest rate rules, and inflation targeting: Some basic equivalences. In Lefort, F. and Schmidt-Hebbel, K. (eds). *Indexation, inflation, and monetary policy*. Banco Central de Chile: Santiago.

Vernengo, M. 2006. From capital controls to dollarization: American hegemony and the US dollar. In Vernengo, M. (ed). *Monetary Integration and Dollarization: No Panacea*. Edward Elgar Publishing: US and UK.

Volksie Logic CC. [S.a.]. *Telephonic discussion*. 30 June 2006.

- Walker, D. L. [S.a.]. Austrian Economics. *The Concise Encyclopedia of Economics*. [Online]. <http://www.econlib.org/library/enc/AustrianEconomics.html> [Accessed on 15 December 2006].
- Walsh, C. E. 2003. *Modern Central Banking: an Academic's Perspective*. Paper read at the Anniversary Celebration of the Central Bank of the Republic of Armenia. Yerevan. 23 November.
- Weber, A. A. 2006. *The independence of the central bank and inflation: the Bundesbank example*. Paper presented at the Narodowy Bank Polski (National Bank of Poland). Warsaw. 26 October.
- Wegner, T. 1993. *Applied business statistics: Methods and application*. Juta and Co Ltd: Cape Town.
- Weideman, P. 2006. *The measurement of housing services in the consumer price index with specific reference to home mortgage interest cost: an international perspective*. Presentation to the strategic planning session of the Monetary Policy Committee. 29 September. Pretoria. Internal document of the SA Reserve Bank.
- Wessels, A. 1996. South Africa and the war against Japan 1941 – 1945. *Military History Journal*. Vol 10: 3. June.
- Wessels, G. M. 2002. Comparing the revolving independence of the European Central Bank and the South African Reserve Bank. *South African Journal of Economics*. Vol 70: 6. September.
- Wessels, G. M. 2004. The suitability of dollarisation as an exchange rate regime for South Africa. *South African Journal of Economics*. Vol 72: 2. June.

Woglom, G. 2003. How has inflation targeting affected monetary policy in South Africa? *South African Journal of Economics*. Vol 71: 2. June.

Woolford, K. 2005. *The Boskin Report and price measurement in Australia*. Paper presented at the OECD Seminar on Inflation Measures: Too High - Too Low – Internationally Comparable? Paris. 21 and 22 June.

Woolford, M. 2006. *How important is money in the conduct of monetary policy?* Paper delivered at the 4th ECB Central Banking Conference. Frankfurt. 9 and 10 November.

Wordorigins Archive. [S.a.]. [Online]

<http://p098.ezboard.com/fwordoriginsorgfrm6.showMessage?topicID=478.topic>

[Accessed on 7 October 2005].

World Trade Organization. [S.a.]. *Website*. [Online].

http://www.wto.org/english/tratop_e/devel_e/d1who_e.htm

[Accessed on 29 January 2007].

World Wide Web Online. [S.a.]. *Dictionary and thesaurus*. [Online].

<http://www.wordweonline.com/en/DEVELOPINGCOUNTRY>

[Accessed on 29 January 2007].

Wykoff, F. C. [S.a.]. *Comment on Armknecht, Lane and Stewart: New Products and the US Consumer Price Index*. [Online].

<http://www.economics.pomona.edu/wykoff/CommentsonArmknecht.html>

[Accessed on 6 December 2005].

Wykoff, F. C. 1976. *Macroeconomics: Theory, evidence and policy*. Prentice-Hall Inc: New Jersey.

APPENDICES

APPENDIX A

1921	-9,5	1944	3,5	1967	3,5	1990	14,4
1922	-16,6	1945	2,7	1968	1,8	1991	15,3
1923	-3,0	1946	1,5	1969	2,9	1992	13,9
1924	1,4	1947	4,0	1970	4,1	1993	9,7
1925	-0,4	1948	5,6	1971	5,7	1994	9,0
1926	-1,5	1949	3,7	1972	6,1	1995	8,7
1927	0,6	1950	4,0	1973	9,4	1996	7,4
1928	0,0	1951	7,4	1974	11,6	1997	8,6
1929	-0,3	1952	8,7	1975	12,5	1998	6,9
1930	-2,3	1953	3,4	1976	11,2	1999	5,2
1931	-3,8	1954	1,6	1977	11,2	2000	5,4
1932	-4,5	1955	3,2	1978	11,0	2001	5,7
1933	-2,7	1956	1,9	1979	13,2	2002	9,2
1934	1,2	1957	3,0	1980	13,8	2003	5,8
1935	-0,6	1958	3,5	1981	15,2	2004	1,4
1936	0,3	1959	1,1	1982	14,7	2005	3,4
1937	2,4	1960	1,2	1983	12,4	2006	4,7
1938	3,6	1961	2,2	1984	11,5		
1939	0,0	1962	1,3	1985	16,3		
1940	3,3	1963	1,4	1986	18,6		
1941	4,6	1964	2,6	1987	16,1		
1942	8,4	1965	3,9	1988	12,9		
1943	6,0	1966	3,6	1989	14,7		

Sources: Statistics SA, [S.a.]

APPENDIX B

Table B1 South African CPI, 2000 = 100

1921	1,7	1943	1,7	1965	3,4	1987	28,7
1922	1,5	1944	1,7	1966	3,5	1988	32,4
1923	1,4	1945	1,8	1967	3,6	1989	37,1
1924	1,5	1946	1,8	1968	3,7	1990	42,4
1925	1,4	1947	1,9	1969	3,8	1991	49,0
1926	1,4	1948	2,0	1970	4,0	1992	55,7
1927	1,4	1949	2,1	1971	4,2	1993	61,2
1928	1,4	1950	2,1	1972	4,5	1994	66,6
1929	1,4	1951	2,3	1973	4,9	1995	72,4
1930	1,4	1952	2,5	1974	5,4	1996	77,7
1931	1,3	1953	2,6	1975	6,1	1997	84,4
1932	1,3	1954	2,6	1976	6,8	1998	90,2
1933	1,2	1955	2,7	1977	7,6	1999	94,9
1934	1,3	1956	2,8	1978	8,4	2000	100,0
1935	1,3	1957	2,8	1979	9,5	2001	105,7
1936	1,3	1958	2,9	1980	10,8	2002	115,4
1937	1,3	1959	3,0	1981	12,5	2003	122,1
1938	1,3	1960	3,0	1982	14,3	2004	123,8
1939	1,3	1961	3,1	1983	16,1	2005	128,0
1940	1,4	1962	3,1	1984	17,9	2006	134,0
1941	1,5	1963	3,2	1985	20,8		
1942	1,6	1964	3,2	1986	24,7		

Sources: Statistics SA, [S.a.]

APPENDIX C

Table C1	South African CPI, 1922 = 100						
1921	110,5	1944	117,1	1967	244,5	1990	2876,4
1922	100,0	1945	120,1	1968	249,4	1991	3317,5
1923	97,0	1946	121,9	1969	257,5	1992	3777,8
1924	98,4	1947	126,9	1970	268,0	1993	4144,9
1925	98,0	1948	134,2	1971	283,2	1994	4515,4
1926	96,5	1949	139,2	1972	301,6	1995	4907,4
1927	97,0	1950	144,7	1973	330,5	1996	5268,3
1928	97,2	1951	155,4	1974	368,8	1997	5721,2
1929	96,8	1952	168,9	1975	415,1	1998	6114,9
1930	94,6	1953	174,8	1976	460,9	1999	6431,7
1931	91,1	1954	178,0	1977	512,3	2000	6775,1
1932	87,0	1955	183,6	1978	569,3	2001	7161,4
1933	84,7	1956	187,1	1979	645,0	2002	7817,7
1934	85,9	1957	192,7	1980	733,1	2003	8275,7
1935	85,4	1958	199,4	1981	844,9	2004	8390,4
1936	85,6	1959	201,7	1982	968,6	2005	8675,7
1937	87,7	1960	204,1	1983	1087,8	2006	9083,5
1938	90,9	1961	208,5	1984	1213,1		
1939	90,8	1962	211,2	1985	1410,8		
1940	94,0	1963	213,9	1986	1674,0		
1941	98,3	1964	219,4	1987	1944,5		
1942	106,5	1965	228,1	1988	2193,0		
1943	113,0	1966	236,3	1989	2516,1		

Sources: Statistics SA, [S.a.]

APPENDIX D

Table D1 Real interest rates, 1980 to 2006

Year	Calculated using CPI inflation		Calculated using CPIX inflation	
	Real Bank/ repurchase rate	Real prime overdraft rate	Real Bank/ repurchase rate	Real prime overdraft rate
1980	-7,42	-3,64	-8,05	-4,30
1981	-4,08	-1,09	-3,81	-0,82
1982	1,17	4,08	1,27	4,18
1983	1,67	3,87	1,51	3,71
1984	7,02	9,71	7,11	9,8
1985	1,40	4,53	1,16	4,28
1986	-6,52	-3,64	-7,55	-4,71
1987	-5,75	-3,17	-6,18	-3,61
1988	-0,85	2,25	1,20	4,37
1989	1,81	4,47	3,99	6,70
1990	3,21	5,84	2,55	5,15
1991	1,61	4,34	0,12	2,81
1992	1,30	4,30	-1,02	1,91
1993	2,84	5,88	-0,06	2,89
1994	3,13	6,11	1,55	4,48
1995	5,34	8,47	6,58	9,74
1996	8,00	11,36	8,36	11,74
1997	7,49	10,48	8,73	11,76
1998	11,13	13,97	10,92	13,77
1999	8,83	12,12	7,10	10,34
2000	6,18	8,73	3,80	6,30
2001	4,91	7,62	4,03	6,71
2002	2,89	6,10	2,70	5,91
2003	5,25	8,55	4,33	7,61
2004	6,33	9,78	3,32	6,67
2005	3,61	6,99	3,06	6,43
2006	2,89	6,24	2,94	6,29

Source: SA Reserve Bank, *Quarterly Bulletin*

APPENDIX E

Table E1 Overview of schools of thought in macroeconomics

	Source of economic instability	Expectations	Price/wage adjustment	Market adjustment	Notion of equilibrium	Dominant time frame	Policy rules or discretion
Othodox Keynesian	Fluctuations in autonomous expenditure	Adaptive	Emphasis on nominal wage rigidity	Weak	State of rest probably below full employment	Short	Discretion
Othodox monetarist	Monetary disturbances	Adaptive	Flexible	Strong	Market clearing at natural rate	Short and long	Rules
New classical	Monetary disturbances	Rational	Perfectly flexible	Very strong	Market clearing at natural rate	Long = short	Rules
Real business cycle	Supply shocks	Rational	Perfectly flexible	Very strong	Market clearing at moving natural rate	Long = short	Rules
New Keynesian	Demand and supply shocks	Rational	Emphasis on price rigidities	Slow	Consistent with involuntary unemployment	Predominantly short	Constrained discretion
Austrian	Monetary disturbances	Reasonable	Flexible	Strong	Tendency towards equilibrium	Short and long	Rules
Post-Keynesian	Fluctuations in autonomous expenditure	Reasonable	Sticky	Very weak	State of rest probably below full employment	Short	Discretion

Source: Snowdon and Vane, 2005: 702

APPENDIX F

Table F1 Issues in respect of the composition of CPI identified by OECD countries

Country	Institution	Which are the priority areas for development in your country's CPI?	Which are the areas where additional international work on the CPI is needed most?
Australia	NSO*	Financial services; better measure for telecommunications services; hedonic quality adjustment for motor vehicles	Bundled goods and services such as telecommunications, utilities, etc.
Belgium	NSO*	Quality changes; quality control of the data bank; sample of shops	Treatment of quality changes; owner-occupied housing
Finland	NSO*	Implement annual chain-linking	Owner-occupied housing; quality adjustment for cars; financial and health services
Greece	NSO*	CPI revision with a new base year 2005=100; significant new goods; substitution of items; seasonality of items; calculation of the sub-indices for services; application of quality adjustment techniques	Quality adjustment techniques (hedonics); owner-occupied housing; CPI computation systems.
Hungary	NSO*	Development of regional indices; improvement of data processing	Core inflation measures; quality adjustment techniques; telecommunication tariffs; seasonal products
Japan	NSO*	Arranging indices based on user's request in the 2005 revision; capturing prices of many items and specifications and advancing quality adjustment methodologies; collecting rents and related information from supply sides; real estate owners; releasing a preliminary CPI for the whole country	Quality adjustment in services (especially housing, medical and education); adequate demarcations as basic components of CPI between data gained through surveys by governments and data accumulated in private sectors
Korea	NSO*	Quality adjustment and sampling method; review of application of hedonic method; work on the best sample design and probability sample; best size and the available data in sampling the outlets and towns	Accurate collection of prices of services; availability and application of scanner data; the adjustment of the quality on items; the survey and application of e-commerce transactions.
Mexico	NSO*	Sampling collection system; seasonal items; quality changes (durable goods and services); owner-occupied housing; weights and expenditure surveys.	Use of scanner data and other new information sources, international references for dealing with new goods; new insights for dealing with substitution; aggregation across households and heterogeneity of consumers; the use of CPI as the official measure of price movements in the context of an inflation targeting economic policy
Spain	NSO*	Quality adjustment and quality control of the collection; edition and validation used in the HICP compilation	Quality adjustment; estimation methods when prices are not available; specific treatments of seasonal items; owner-occupied dwellings
	CB**	Quality adjustment and quality adjusted house price index	Homogenous classification
Canada	NSO*	Owner-occupied housing costs; quality change for treatment and/or rapidly changing products; overall quality of CPI including improving measuring of potential bias	Owner-occupied housing; quality changes for complex products; measurement of quality and potential bias; using scanner data for basket weights or pricing
UK	CB**	Owner-occupied housing costs; coverage for new goods and services; CPI excluding taxes and duties; use of explicit quality adjustment techniques	Owner-occupied housing; harmonisation of quality adjustment techniques; harmonisation of other methodology such as sampling and updating of expenditure weights

* NSO denotes National Statistical Office

** CB denotes Central Bank

Source: Schreyer, 2005: 3

APPENDIX G

Table G1 Total annual spending of households in cash and in kind and composition of CPI, 2000

Main spending group	R'000	Percentage of total spending	Weight in CPI	Percentage of adjusted total spending*
Total spending	559 858 073	100	N/A	N/A
Adjusted total spending (R'000)	N/A	N/A	N/A	455 767 933#
Food	106 476 769	19,0	23,02	23,36
Clothing, footwear and accessories	21 504 682	3,8	3,64	4,72
Housing and household operations	123 517 565	22,1	20,80***; ****; *****; *****	29,57
Fuel and power	3 246 690	0,6	3,84	0,71
Transport	50 313 077	9,0	13,72	13,53
Medical care	24 623 373	4,4	6,90	5,40
Education	10 527 710	1,9	3,38	2,30
Insurance	22 663 225	4,0	**	**
Entertainment, sport and recreation	3 643 056	0,7	3,04	0,8
Furniture and household equipment	20 366 992	3,6	2,82	4,47
Alcoholic beverages	13 017 954	2,3	1,52	2,86
Cigarettes, cigars and tobacco	10 768 395	1,9	1,21	2,36
Washing and cleaning material	5 571 591	1,0	0,93*****	1,22
Laundry and washing	1 143 170	0,2	0,05****	0,25
Personal care	13 388 999	2,4	3,58*****	2,93
Communication	11 862 746	2,1	2,86	2,60
Reading matter	2 521 447	0,5	0,36	0,55
Domestic servants	9 826 901	1,8	3,22***	2,16
Support of family members	2 565 265	0,5	N/A	N/A
Holidays (excluding transport)	6 355 182	1,1	0,72*****	1,39
Income tax	72 703 900	13,0	N/A	N/A
General items	10 679 623	1,9	N/A	N/A
Savings	12 104 739	2,1	N/A	N/A
Unspecified items	465 020	0,1	N/A	N/A

* Total spending adjusted to take account only of spending items corresponding with identifiable similar items in the CPI, as is explained in further notes to this table.

** Insurance expenditure (excluding life insurance premiums) in CPI included in household operation and transport expenditure, with a total weight of 0,26 per cent in each instance. This expenditure is therefore split equally between these two items for comparative purposes, although this might be an overadjustment in as much as this expenditure might also include life insurance expenditure, which is not included in the CPI.

*** Domestic servants reported separately, whereas the CPI includes such expenditure (with a weight of 3,22 per cent) as part of household operational expenditure. CPI figures were adjusted accordingly for comparative purposes.

**** Laundry and dry-cleaning services reported separately, whereas the CPI includes such expenditure (with a weight of 0,5 per cent) as part of household operational expenditure. CPI figures were adjusted accordingly for comparative purposes.

***** Holidays reported separately, whereas the CPI includes such expenditure (with a weight of 0,72 per cent) as part of household operational expenditure. CPI figures were adjusted accordingly for comparative purposes.

***** Of the total weight of 0,93 of CPI allocated to this section, 0,59 is reported under household expenditure (soap, washing powder, detergents and bleaches) and 0,34 is reported under personal care (toilet soap). CPI figures were adjusted accordingly for comparative purposes.

Adjusted for assumed total expenditure.

Sources: Bureau of Market Research, 2000; SA Akademie, 2005; Statistics SA, [S.a.]; author's calculations

APPENDIX H

Table H1 Weighted average retail prices in nine cities, 1921, adjusted in accordance with change in CPI, 1921 to 2006, and for metrification

Item	Imperial measurement	Metric equivalent	Historic price in 1921	Rand equivalent	CPI in 1921	Projected price, CPI June 2006 = 133,6	Adjusted volume/weight*	Adjusted projected price, 2006 i.t.o. adjusted volume/weight
Bread	1 lb	454g	5,03d	4c	1,7	R3,14	800g	R5,53
White flour	25 lb	11,35kg	9 s 9,3d	98c	1,7	R77,02	2,5kg	R16,96
Oatmeal	1 lb	454g	7,4d	6c	1,7	R4,71	2kg	R20,75
Rice	1 lb	454g	5,2d	4c	1,7	R3,14	1kg	R6,92
Tea	1 lb	454g	2 s 5,6d	24c	1,7	R18,86	500g	R20,77
Coffee (ground)	1 lb	454g	1 s 9,2d	18c	1,7	R14,14	500g	R15,57
Condensed milk	14 oz	397g	1 s 5,3d	14c	1,7	R11,02	397g	R11,02
Sugar	1 lb	454g	6,32d	5c	1,7	R3,93	1kg	R8,66
Golden syrup	1 lb	454g	10,6d	9c	1,7	R7,07	500g	R7,79
Jam	1 lb	454g	10,2d	9c	1,7	R7,07	450g	R7,01
Candles	1 lb	454g	1 s 1,4d	11c	1,7	R8,63	450g	R8,55
Potatoes	12 lb	5,45kg	1 s 11,6d	19c	1,7	R14,92	7kg	R19,16
Paraffin	1 gal	4,55l	3 s 2d	32c	1,7	R25,15	1l	R5,53
Coal	100 lb	45,5kg	1 s 11,4d	19c	1,7	R14,92	70kg	R22,95
Butter	1 lb	454g	2 s 4,9d	24c	1,7	R18,86	500g	R20,77
Cheese	1 lb	454g	1 s 8,6d	17c	1,7	R13,36	500g	R14,71
Bacon	1 lb	454g	2 s 5,5d	15c	1,7	R11,79	500g	R12,98
Eggs	1 doz	N/A	2 s 9,6d	18c	1,7	R14,14	1doz	R14,14
Fresh milk	1 pt	0,57l	4,6d	4c	1,7	R3,14	1l	R5,51
Beef	1 lb	454g	9,3d	8c	1,7	R6,29	1kg	R13,85
Mutton	1 lb	454g	10,9d	9c	1,7	R7,07	1kg	R15,57

* Adjusted to closest equivalent rounded metric weight or to current standard weight

Sources: Union of South Africa, 1923: 328 – 329; Statistics SA; author's calculations

APPENDIX I

Table II Historic prices adjusted in accordance with change in CPI, 1938 to 2006

Item	Historic price in 1938	CPI in relevant year	Projected price, CPI June 2006 = 133,6
12 bottles of brandy (26 fl oz each)	R6,90	1,3	R709,10
Volkkas share	R0,40	1,3	R41,10
Meisieskool Oranje	R21,00	1,3	R2 158,15
Bloemhof Meisieskool	R18,00	1,3	R1 849,85
Hoër Jongenskool Wellington (currently Huguenot Secondary School)	R18,00	1,3	R1 849,85
Potchefstroom University hostel (currently University of North West)	R100,00	1,3	R10 276,92
Grootwoordeboek	R2,00	1,3	R205,54
Verklarende woordeboek	R0,90	1,3	R92,50
Kango caves admission adults	R0,50	1,3	R51,38
Kango caves admission children	R0,125	1,3	R12,85
Aspro (60 tables)	R0,35	1,3	R35,97

Sources: *Die Huisgenoot*, 1938: various pages; Statistics SA, [S.a.]; author's calculations

APPENDIX J

Table J1 Historic prices adjusted in accordance with relevant changes in CPI, relevant period to 2006

Item	Year and historic price	CPI in relevant year	Projected price, CPI June 2006 = 133,6	Item	Year and historic price	CPI in relevant year	Projected price, CPI June 2006 = 133,6
Car battery charger	1977 = R14,50	7,6	R254,89	Bottle of brandy (750ml)	1981 = R5,50	12,5	R58,79
Fan belt, VW Beetle 1300	1977 = R1,00	7,6	R17,57	Bottle of whisky (1l)	1983 = R9,00	16,1	R74,68
Retread tyre, VW Beetle 1300	1977 = R12,27	7,6	R215,70	Tyre (155 x 13)	1983 = R80,79	16,1	R670,41
<i>Beeld</i> newspaper, three months subscription	1977 = R8,53	7,6	R149,95	Bottle of brandy (1l)	1983 = R7,80	16,1	R64,72
International driver's permit	1977 = R2,00	7,6	R35,16	Bag of cement (50kg)	1984 = R9,00	17,9	R67,17
TV licence	1977 = R36,00	7,6	R632,84	<i>Beeld</i>	1984 = R0,40	17,9	R2,99
12 Castle beer tins (340ml each)	1978 = R3,00	8,4	R47,71	Cigarettes (20)	1984 = R0,76	17,9	R5,67
Annual licence, VW Beetle 1300	1978 = R30,00	8,4	R477,13	Application fee: passport	1986 = R10,00	24,7	R54,09
Kitchen iron	1978 = R13,80	8,4	R219,04	Standard globe (60w)	1988 = R0,56	32,4	R2,31
Spark plug	1979 = R1,00	9,5	R14,06	Toll fees: Huguenot tunnel (car)	1988 = R4,00	32,4	R16,49
Dry cleaning: male suit	1979 = R2,85	9,5	R40,08	Milk (1l)	1997 = R1,98	84,4	R3,13
Bottle of whisky (750ml)	1979 = R6,00	9,5	R84,38	PVA paint (5l)	2002 = R41,00	115,4	R47,46
12 bottles of sherry (750ml each)	1979 = R19,00	9,5	R267,20				

Sources: Cillie, [S.a.]: various pages; Statistics SA, [S.a.]; author's calculations

APPENDIX K

Table K1 Average prices at three stores in Pretoria, March 2004, adjusted with changes in CPI to projected prices in 2006

Table K1a Average prices of food items

Item	Average historic price in 2004	CPI in March 2004	Projected price, CPI June 2006 = 133,6	Item	Average historic price in 2004	CPI in March 2004	Projected price, CPI June 2006 = 133,6
Pumpkin (1kg)	R5,42	123,3	R5,88	Tomato pilchards (425g)	R6,99	123,3	R7,57
Carrots (1kg)	R4,42	123,3	R4,78	Eggs (1 doz large)	R8,58	123,3	R9,30
Potatoes (7kg)	R33,33	123,3	R36,11	Peanut butter (410g)	R9,16	123,3	R9,93
Tomatoes (1kg)	R7,99	123,3	R8,66	Mealie meal (12,5g)	R31,66	123,3	R34,30
Cabbage (1kg)	R3,09	123,3	R3,35	Mealie rice (2,5kg)	R8,29	123,3	R8,99
Beetroot (1kg)	R4,96	123,3	R5,38	Bread flower (2,5kg)	R12,12	123,3	R13,13
Onions (1kg)	R6,99	123,3	R7,57	Sugar (2,5kg)	R11,99	123,3	R12,99
Bananas (1kg)	R4,62	123,3	R5,00	Jam (900g)	R10,99	123,3	R11,91
Stewing meat (1kg)	R25,29	123,3	R27,40	Vegetable protein (200g)	R6,39	123,3	R6,92
Chicken (1kg)	R19,29	123,3	R20,90	Dried beans (500g)	R5,59	123,3	R6,06
Baked beans (410g)	R4,29	123,3	R4,64	Ground coffee (500g)	R12,99	123,3	R14,07
Cooking oil (750ml)	R6,99	123,3	R7,57	Salt (1kg)	R2,59	123,3	R2,81
Brown bread (800g)	R4,29	123,3	R4,64	Cheddar cheese (1kg)	R32,23	123,3	R34,92
Instant coffee (250g)	R12,16	123,3	R13,18				

Table K1b Average prices of household consumables

Item	Average historic price in 2004	CPI in March 2004	Projected price, CPI June 2006 = 133,6	Item	Average historic price in 2004	CPI in March 2004	Projected price, CPI June 2006 = 133,6
Sunlight soap (500g)	R5,49	123,3	R5,95	Face cream (100ml)	R15,99	123,3	R17,32
Soap powder (500g)	R10,59	123,3	R11,47	Matches (1 pack of 10 boxes)	R2,69	123,3	R2,91
Lifebouy soap (125g)	R1,99	123,3	R2,16	Tobacco (100g)	R19,99	123,3	R21,66
Lux toilet soap (125g)	R2,89	123,3	R3,13	Magazine (<i>Drum</i>)	R6,95	123,3	R7,53
Shoe polish (50ml)	R4,79	123,3	R5,19	Hairspray (300ml)	R12,66	123,3	R13,72
Toilet paper (1roll)	R1,76	123,3	R1,91	Methylated spirits (750ml)	R10,66	123,3	R11,55
Floor polish (400ml)	R9,89	123,3	R10,71	Candles (6 pack)	R4,59	123,3	R4,97
Toothbrush	R17,32	123,3	R18,67	Blades (5 pack)	R11,16	123,3	R12,10
Toothpaste (50ml)	R5,72	123,3	R6,20				

The total cost of the basket ranged between R431,32 and R465,79 (lowest and highest) at the three stores covered by these data.

Sources: Bureau of Market Research, 2004; Statistics SA, [S.a.]; author's calculations

APPENDIX L

Table L1 Comparison of projected prices of selected goods and services with actual prices, June 2006

Table L1a Projected and actual prices based on 1921 price data

Item	Price projected ito CPI	Actual price	Difference + = larger actual - = smaller actual	Item	Price projected ito CPI	Actual price	Difference + = larger actual - = smaller actual
Bread (800g)	R5,53	R4,99 (b)	- R0,54	Potatoes (7kg)	R19,16	R16,99 (b)	- R2,17
White flour (2,5kg)	R16,96	R10,99 (b)	- R5,97	Paraffin (1l)	R5,53	R6,94 (c)	+ R1,41
Oatmeal (2kg)	R20,75	R19,99 (b)	- R0,76	Coal (70kg)	R22,95	R105,30* (c)	+ R82,35
Rice (1kg)	R6,92	R3,99 (b)	- R2,93	Butter (500g)	R20,77	R14,99 (b)	- R5,78
Tea (500g)	R20,77	R16,99 (b)	- R3,78	Cheese (500g)	R14,71	R18,99 (b)	+ R4,28
Coffee (ground) (500g)	R15,57	R14,99 (b)	- R0,58	Bacon (500g)	R12,98	R17,49 (b)	+ R4,51
Condensed milk (397g)	R11,02	R6,79 (b)	- R4,23	Eggs (1doz)	R14,14	R10,78 (b)	- R3,36
Sugar (1kg)	R8,66	R5,99 (b)	- R2,67	Fresh milk (1l)	R5,51	R4,99 (b)	- R0,52
Golden syrup (500g)	R7,79	R9,99 (b)	+ R2,20	Beef (1kg)	R13,85	R27,89 (b)	+ R14,04
Jam (450g)	R7,01	R5,99 (b)	- R1,02	Mutton (500g)	R15,57	R25,99 (b)	+ R10,42
Candles (450g)	R8,55	R5,59 (b)	- R2,96	-	-	-	-

Table L1b Projected and actual prices based on 1938 price data

Item	Price projected ito CPI	Actual price	Difference + = larger actual - = smaller actual	Item	Price projected ito CPI	Actual price	Difference + = larger actual - = smaller actual
12 bottles of brandy (26 fl oz each)	R709,10	R473,88 (d)	- R235,22	Grootwoordeboek	R205,54	R354,00** (j)	+ R148,46
Volkskas share	R41,10	R225,00 (e)	+ R183,90	Verklarende woordeboek	R92,50	R349,00*** (j)	+ R256,50
Meisieskool Oranje	R2 158,15	R2 480,00 (f)	+ R321,85	Kango caves admission adults	R51,38	R44,00 (k)	- R7,38
Bloemhof Meisieskool	R1 849,85	R2 437,50 (g)	+ R587,65	Kango caves admission children	R12,85	R27,00 (k)	+ R14,15
Huguenot Secondary School	R1 849,85	R2 150,00 (h)	+ R300,15	Aspro (60 tables)	R35,97	R31,25**** (b)	- R4,72
University of North West hostel	R10 276,92	R8 420,00 (i)	- R1 856,92	-	-	-	-

Table L1c Projected and actual prices based on price data for various years, 1977 to 2002

Item	Price projected ito CPI	Actual price	Difference + = larger actual - = smaller actual	Item	Price projected ito CPI	Actual price	Difference + = larger actual - = smaller actual
Car battery charger	R254,89	R149,00 (l)	- R105,89	Bottle of brandy (750ml)	R58,79	R39,49 (d)	- R19,30
Fan belt, VW Beetle 1300	R17,57	R45,00 (m)	+ R27,43	Bottle of whisky (1l)	R74,68	R58,79 (d)	- R15,89
Retread tyre, VW Beetle 1300	R215,70	R160,00 (n)	- R55,70	Bottle of brandy (1l)	R64,72	R44,95 (d)	- R19,77
<i>Beeld</i> newspaper, 3 months subscription	R149,95	R266,18 (o)	+ R116,23	Tyre (155 x 13)	R670,41	R195,00 (u)	- R475,41
International driver's permit	R35,16	R90,00 (p)	+ R54,84	Bag of cement (50kg)	R67,17	R45,70 (v)	- R21,47
TV license	R632,84	R225,00 (q)	- R407,84	<i>Beeld</i>	R2,99	R3,75 (b)	+ R0,76
2 Castle beer tins (340ml each)	R47,71	R46,85 (d)	- R0,86	Cigarettes (20)	R5,67	R10,00 (b)	+ R4,33
Annual license, VW Beetle 1300	R475,71	R156,00 (r)	- R319,71	Application fee: passport	R54,09	R145,00 (w)	+ R90,91
Kitchen iron	R219,04	R99,99 (s)	- R119,05	Standard globe (60w)	R2,31	R3,99 (b)	+ R1,68
Spark plug	R14,06	R22,00 (l)	+ R7,94	Toll fees: Huguenot tunnel (car)	R16,49	R18,00 (p)	+ R1,51
Dry cleaning: male suit	R40,08	R30,00 (t)	- R10,08	Milk (1l)	R3,13	R4,99 (b)	+ R1,86
Bottle of whisky (750ml)	R84,38	R44,09 (d)	- R40,29	PVA paint (5l)	R47,46	R69,00 (v)	+ R21,54
12 Bottles of sherry (750ml each)	R267,20	R191,88 (d)	- R75,32	Application fee: passport	R54,09	R145,00 (w)	+ R90,91

Table L1d Projected and actual prices based on 1988 price data

Item	Price projected ito CPI	Actual price	Difference + = larger actual - = smaller actual	Item	Price projected ito CPI	Actual price	Difference + = larger actual - = smaller actual
Nissan 1400	R70 099,00	R70 740,00 (x)	+ R641,00	VW Citigolf	R75 088,00	R67 780,00 (x)	- R7 308,00

Table L1e Projected and actual prices based on 2004 price data

Item	Price projected ito CPI	Actual price	Difference + = larger actual - = smaller actual	Item	Price projected ito CPI	Actual price	Difference + = larger actual - = smaller actual
Pumpkin (1kg)	R5,88	R3,99 (b)	- R1,89	Mealie meal (12,5 kg)	R34,30	R29,99 (b)	- R4,31
Carrots (1kg)	R4,78	R5,99 (b)	+ R1,21	Mealie rice (2,5 kg)	R8,99	R8,49 (b)	- R0,50
Potatoes (7kg)	R36,11	R16,99 (b)	- R19,12	Bread flower (2,5 kg)	R13,13	R10,99 (b)	- R2,14
Tomatoes (1kg)	R8,66	R8,99 (b)	+ R0,33	Sugar (2,5 kg)	R12,99	R13,99 (b)	+ R1,00
Cabbage (1kg)	R3,35	R2,99 (b)	- R0,36	Jam (900 g)	R11,91	R9,99 (b)	- R1,92
Beetroot (1kg)	R5,38	R1,99 (b)	- R3,39	Sunlight soap (500 g)	R5,95	R5,79 (b)	- R0,16
Onions (1kg)	R7,57	R4,99 (b)	- R2,58	Soap powder (500 g)	R11,47	R9,99 (b)	- R1,48
Bananas (1kg)	R5,00	R4,99 (b)	-R0,01	Lifebouy soap (125 g)	R2,16	R1,99***** (b)	- R0,17
Stewing beef (mince) (1kg)	R27,40	R27,89 (b)	+ R0,49	Lux toilet soap (125 g)	R3,13	R2,66 (b)	- R0,47
Chicken (1kg)	R20,90	R16,99 (b)	- R3,91	Shoe polish (50 ml)	R5,19	R5,19 (b)	-
Baked beans (410g)	R4,64	R2,49 (b)	- R2,15	Toilet paper (1 roll)	R1,91	R1,59 (b)	- R0,32
Cooking oil (750ml)	R7,57	R4,79 (b)	- R2,78	Floor polish (400 ml)	R10,71	R7,99 (b)	- R2,72
Brown bread (800g)	R4,64	R4,99 (b)	+ R0,35	Toothbrush	R18,67*****	R3,99 (b)	- R14,68
Instant coffee (250g)	R13,18	R11,99 (b)	- R1,19	Toothpaste (50 ml)	R6,20	R3,49 (b)	- R2,71
Coffee (ground) (500g)	R14,07	R14,99 (b)	- R0,92	Blades (5 pack)	R12,10	R5,99 (b)	- R6,11
Salt (1kg)	R2,81	R2,29 (b)	- R0,52	Face cream (100 ml)	R17,32	R16,79 (b)	- R0,53
Cheddar cheese (1kg)	R34,92	R37,99 (b)	+ R3,07	Hairspray (300 ml)	R13,72	R14,99 (b)	+ R1,27
Vegetable protein (200g)	R6,92	R5,99 (b)	- R0,93	Methylated spirits (750 ml)	R11,55	R8,99 (b)	- R2,56
Dried beans (500g)	R6,06	R4,89 (b)	- R1,17	Candles (6 pack)	R4,97	R5,59 (b)	+ R0,62
Tomato pilchards (425g)	R7,57	R5,99 (b)	- R1,58	Matches (1 pack of 10 boxes)	R2,91	R2,89 (b)	- R0,02
Eggs (1 doz large)	R9,30	R10,78 (b)	+ R1,48	Tobacco (100 g)	R21,66	R22,99 (b)	+ R1,33
Peanut butter (410g)	R9,93	R9,99 (b)	+ R0,06	Magazine (<i>Drum</i>)	R7,53	R7,35 (b)	- R0,18
-	-	-	-	Total cost of average basket	R485,23	R414,68*****	- R70,55

* Price of anthracite, as coal for home use is hardly available any longer

** Price of *Verklarende Woordboek vir die Afrikaanse taal*, by Odendal, F. F. and Gouws, R. H. 5th edition, 2005. First edition in 1965

*** Price of *Verklarende Afrikaanse woordeboek*, by Labuchagne, F. C. and Eksteen, L. C. 8th edition, 1993. First edition in 1936

**** Price of 48 Disprins adjusted to the equivalent of 60 tables, as Aspro is no longer available

***** Price of cheapest bath soap, as Lifebouy soap is no longer available

***** Compared to the current price of a toothbrush, this adjusted historic price seems to indicate a data error in the original figures

***** It is remarkable that the total cost of this basket is not only lower than the projected total cost, but also lower than the original cost in March 2004. This can ascribed to the deliberate search for the cheapest example of each item

Sources: (a) Author's calculations; (b) Shoprite, Silverton. Wherever available, prices of the Shoprite house brand product range (*Ritebrand*) were used; (c) Magaliesbergse Graanko-op Bpk, Pretoria; (d) Solly Kramers, Hazelwood; (e) *Sakebeeld*, 2006: 7 (2,4 ABSA shares); (f) Meisieskool Oranje, Bloemfontein; (g) Bloemhof Meisieskool, Stellenbosch; (h) Huguenot Secondary School, Wellington; (i) University of North West (Potchefstroom campus); (j) Exclusive Books, Brooklyn; (k) Kango caves; (l) Midas Rietfontein; (m) Volksie Logic CC; (n) Mastertreads Strand; (o) *Beeld*; (p) AA of SA; (q) TV Licences; (r) City of Tshwane Metropolitan Municipality; (s) Trade Centre; (t) Multiserv Centre, Silverton; (u) Malas Tyres; (v) Chamberlains Waterkloof Glen; (w) Department of Home Affairs; (x) *Motorbeeld*, 2006: 38 and 39

APPENDIX M

Table M1 Comparison of actual and projected prices of selected goods, 1974 to 2006 (all prices in R)

	Adjusted unit	Actual price	Actual prices*				Prices compared to CPI (a)			
			Oct 1974	1984	1994	2004	2006	1984	1994	2004
CPI (1974 = 100)		100.0					331.5	1233.3	2292.6	2537.2
Food										
Brown bread	800g	0.09	0.32	1.55	3.59	3.69	0.30	1.11	2.06	2.28
Cheese	1kg	0.98	5.49	16.99	32.90	31.99	3.25	12.09	22.47	24.86
Coffee/tea	1kg (50/50)	0.98	4.06	18.68	31.15	32.98	3.25	12.09	22.47	24.86
Cooking oil	750 ml	0.46	1.86	2.98	5.99	6.99	1.52	5.67	10.55	11.67
Dry legumes	500g	0.31	<i>0.86</i>	<i>2.14</i>	<i>4.29</i>	<i>4.39</i>	1.03	3.82	7.11	7.87
Eggs	1doz	0.40	<i>1.06</i>	<i>3.09</i>	<i>8.98</i>	<i>8.04</i>	1.33	4.93	9.17	10.15
Maize meal	12.5kg	1.34	5.79	17.24	29.99	31.99	4.44	16.53	30.72	34.00
Margarine	250g	0.15	<i>0.41</i>	<i>1.10</i>	<i>1.85</i>	<i>2.89</i>	0.50	1.85	3.44	3.81
Salt	1kg	0.13	<i>0.42</i>	<i>1.59</i>	<i>1.99</i>	<i>2.99</i>	0.43	1.60	2.98	3.30
Skimmed milk	500g	0.61	<i>1.89</i>	<i>7.20</i>	23.25	21.99	2.02	7.52	13.98	15.48
Sugar	2.5kg	0.41	2.02	6.58	11.99	11.29	1.36	5.06	9.40	10.40
Sub-total		5.86	24.18	79.14	155.97	159.23	19.43	72.27	134.35	148.68
Male clothing										
Pullover (c)	1	4.69	<i>6.60</i>	<i>42.99</i>	<i>89.99</i>	<i>49.99</i>	15.55	57.84	107.52	118.99
Pyjamas (b)	Long pair	4.99	<i>10.55</i>	<i>11.39</i>	<i>19.99</i>	<i>69.95</i>	16.54	61.54	114.40	126.61
Shirts	long sleeve	3.50	<i>8.24</i>	<i>21.74</i>	<i>37.49</i>	<i>39.99</i>	11.60	43.17	80.24	88.80
Shoes	1 pair	4.50	<i>9.90</i>	<i>39.99</i>	<i>69.99</i>	<i>59.99</i>	14.92	55.50	103.17	114.17
Socks	1 pair	0.65	<i>1.20</i>	<i>5.66</i>	<i>6.99</i>	<i>4.99</i>	2.15	8.02	14.90	16.49
Trousers	1 pair	8.99	<i>15.39</i>	<i>37.49</i>	<i>69.99</i>	<i>59.99</i>	29.80	110.87	206.10	228.09
Underpants	1 pair	0.99	<i>1.81</i>	<i>8.49</i>	<i>7.77</i>	<i>6.49</i>	3.28	12.21	22.70	25.12
Vest	1	0.99	<i>2.74</i>	<i>10.99</i>	<i>9.00</i>	<i>17.99</i>	3.28	12.21	22.70	25.12
Sub-total		24.60	62.69	207.49	392.41	309.38	97.13	361.36	671.73	748.39
Female clothing										
Blouse	1	3.99	<i>7.69</i>	<i>24.99</i>	<i>29.99</i>	<i>22.99</i>	13.23	49.21	91.47	101.23
Bra	1	1.19	<i>2.25</i>	<i>12.49</i>	<i>26.99</i>	<i>9.99</i>	3.94	14.68	27.28	30.19
Cotton dress (b)	1	5.66	<i>9.16</i>	<i>29.99</i>	<i>49.99</i>	<i>69.95</i>	18.76	69.80	129.76	143.61
Head scarf	1	0.48	<i>1.97</i>	11.99	16.99	16.99	1.59	5.92	11.00	12.18
Jersey (b)	1	5.99	<i>8.79</i>	<i>35.19</i>	<i>49.99</i>	<i>79.00</i>	19.86	73.87	137.33	151.98
Night dress	Summer	3.59	<i>8.79</i>	<i>19.99</i>	<i>49.99</i>	<i>29.00</i>	11.90	44.28	82.30	91.09
Overcoat	1	18.00	<i>54.99</i>	<i>32.97</i>	<i>62.97</i>	<i>39.95</i>	59.67	221.99	412.67	456.70
Panties	1 pair	0.49	<i>1.15</i>	<i>5.89</i>	<i>9.99</i>	<i>4.99</i>	1.62	6.04	11.23	12.43
Petticoat	1	1.99	<i>4.39</i>	26.99	<i>29.99</i>	<i>16.99</i>	6.60	24.54	45.62	50.49
Shoes	1 pair	4.29	<i>8.79</i>	<i>32.99</i>	<i>69.99</i>	<i>29.99</i>	14.22	52.91	98.35	108.85
Skirt	1	3.99	<i>7.69</i>	<i>25.99</i>	<i>49.99</i>	<i>29.99</i>	13.23	49.21	91.47	101.23
Stockings	1 pair	0.33	<i>0.80</i>	<i>3.66</i>	<i>6.32</i>	<i>4.99</i>	1.09	4.07	7.57	8.37
Vest	1	0.99	<i>1.86</i>	<i>9.99</i>	<i>19.99</i>	<i>12.99</i>	3.28	12.21	22.70	25.12
Sub-total			118.32	273.12	473.18	367.81	169.00	628.74	1168.77	1293.47
Household consumables										
Bleach	750ml	0.16	<i>0.44</i>	<i>1.80</i>	4.00	5.29	0.53	1.97	3.67	4.06
Floor polish	400ml	0.19	0.98	3.79	7.89	9.59	0.63	2.34	4.36	4.82
Scouring powder	550g	0.15	0.54	2.79	5.99	7.69	0.50	1.85	3.44	3.81
Shoe polish	50ml	0.13	0.45	1.68	4.29	5.19	0.43	1.60	2.98	3.30
Soap powder	1kg	0.59	<i>1.52</i>	<i>4.59</i>	<i>10.99</i>	<i>12.99</i>	1.96	7.28	13.53	14.97
Sunlight soap	500g	0.27	<i>0.72</i>	<i>2.15</i>	<i>5.49</i>	<i>5.99</i>	0.90	3.33	6.19	6.85
Sub-total		1.49	4.65	16.80	38.65	46.74	4.94	18.38	34.16	37.81

* Italics denote actual prices lower than projected CPI prices; bold denotes actual prices higher than projected CPI prices

Table M2 Comparison of actual and projected prices of selected goods, 1984 to 2006 (all prices in R)

Table M2a Average prices of food items

	Adjusted unit	Actual price Sept 1984	Actual prices*			Prices compared to CPI (a)		
			1994	2004	2006	1994	2004	2006
CPI (1984 = 100)		100.0				372.0	691.5	765.4
Brown bread	800g	0.32	1.55	3.59	3.69	1.19	2.21	2.45
Cheese	1kg	5.49	<i>16.99</i>	<i>32.90</i>	<i>31.99</i>	20.42	37.96	42.02
Coffee/tea	1kg (50/50)	4.06	18.68	31.15	32.98	15.10	28.07	31.08
Cooking oil	750ml	1.86	<i>2.98</i>	<i>5.99</i>	<i>6.99</i>	6.92	12.86	14.24
Dry legumes	500g	0.86	<i>2.14</i>	<i>4.29</i>	<i>4.39</i>	3.20	5.95	6.59
Eggs	1doz	1.06	<i>3.09</i>	8.98	<i>8.04</i>	3.94	7.33	8.11
Maize meal	12.5kg	5.79	<i>17.24</i>	29.99	<i>31.99</i>	21.54	40.04	44.31
Margarine	250g	0.41	<i>1.10</i>	<i>1.85</i>	<i>2.89</i>	1.53	2.84	3.14
Salt	1kg	0.42	1.59	<i>1.99</i>	<i>2.99</i>	1.56	2.90	3.22
Skimmed milk	500g	1.89	7.20	23.25	21.99	7.03	13.07	14.46
Sugar	2.5kg	2.02	<i>6.58</i>	<i>11.99</i>	<i>11.29</i>	7.51	13.97	15.46
Sub-total		24.18	79.14	155.97	159.23	89.95	167.20	185.08
Items with prices available from 1984 to 2006								
Jam	900g	1.20	4.15	10.69	9.99	4.46	8.30	9.19
Red meat	1kg	2.78	13.62	20.97	28.99	10.34	19.22	21.27

Table M2b Average prices of clothing

	Adjusted unit	Actual price September 1984	Actual prices*			Prices compared to CPI (a)		
			1994	2004	2006	1994	2004	2006
CPI (1984 = 100)		100.0				372.0	691.5	765.4
Male clothing								
Pullover (c)	1	6.60	42.99	89.99	<i>49.99</i>	24.55	45.64	50.55
Pyjamas (b)	Long pair	10.55	<i>11.39</i>	<i>19.99</i>	<i>69.95</i>	39.25	72.95	80.75
Shirts	long sleeve	8.24	<i>21.74</i>	<i>37.49</i>	<i>39.99</i>	30.65	56.98	63.07
Shoes	1 pair	9.90	39.99	69.99	<i>59.99</i>	36.83	68.46	75.78
Socks	1 pair	1.20	5.66	<i>6.99</i>	<i>4.99</i>	4.46	8.30	9.19
Trousers	1 pair	15.39	<i>37.49</i>	<i>69.99</i>	<i>59.99</i>	57.25	106.42	117.80
Underpants	1 pair	1.81	8.49	<i>7.77</i>	<i>6.49</i>	6.73	12.52	13.85
Vest	1	2.74	10.99	<i>9.00</i>	<i>17.99</i>	10.19	18.95	20.97
Sub-total		56.43	178.74	311.21	309.38	209.92	390.21	431.96
Female clothing								
Blouse	1	7.69	<i>24.99</i>	<i>29.99</i>	<i>22.99</i>	28.61	53.18	58.86
Bra	1	2.25	12.49	26.99	<i>9.99</i>	8.37	15.56	17.22
Cotton dress (b)	1	9.16	<i>29.99</i>	<i>49.99</i>	<i>69.95</i>	34.08	63.34	70.12
Head scarf	1	1.97	11.99	16.99	16.99	7.33	13.62	15.08
Jersey (b)	1	8.79	35.19	<i>49.99</i>	79.00	32.70	60.78	67.28
Night dress	Summer	8.79	<i>19.99</i>	<i>49.99</i>	<i>29.00</i>	32.70	60.78	67.28
Overcoat	1	54.99	<i>32.97</i>	<i>62.97</i>	<i>39.95</i>	204.56	380.26	420.89
Panties	1 pair	1.15	5.89	9.99	<i>4.99</i>	4.28	7.95	8.80
Petticoat	1	4.39	26.99	<i>29.99</i>	<i>16.99</i>	16.33	30.36	33.60
Shoes	1 pair	8.79	32.99	69.99	<i>29.99</i>	32.70	60.78	67.28
Skirt	1	7.69	<i>25.99</i>	<i>49.99</i>	<i>29.99</i>	28.61	53.18	58.86
Stockings	1 pair	0.80	3.66	6.32	<i>4.99</i>	2.98	5.53	6.12
Vest	1	1.86	9.99	19.99	<i>12.99</i>	6.92	12.86	14.24
Sub-total		118.32	273.12	473.18	367.81	440.15	818.18	905.65

* Italics denote actual prices lower than projected CPI prices; bold denotes actual prices higher than projected CPI prices

Table M2c Average prices of household consumables (c)

	Adjusted unit	Actual price September 1984	Actual prices*			Prices compared to CPI (a)		
			1994	2004	2006	1994	2004	2006
CPI (1984 = 100)		100.0				372.0	691.5	765.4
Bleach	750ml	0.44	1.80	4.00	5.29	1.64	3.04	3.37
Floor polish	400ml	0.98	3.79	7.89	9.59	3.65	6.78	7.50
Scouring powder	550g	0.54	2.79	5.99	7.69	2.01	3.73	4.13
Shoe polish	50ml	0.45	1.68	4.29	5.19	1.67	3.11	3.44
Soap powder	1kg	1.52	4.59	10.99	12.99	5.65	10.51	11.63
Sunlight soap	500g	0.72	<i>2.15</i>	5.49	5.99	2.68	4.98	5.51
Sub-total		4.65	16.80	38.65	46.74	17.30	32.15	35.59

* Italics denote actual prices lower than projected CPI prices; bold denotes actual prices higher than projected CPI prices

Table M3 Comparison of actual and projected prices of selected goods, 1994 to 2006 (all prices in R)

Table M3a Average prices of food items

	Adjusted unit	Actual price	Actual prices*		Prices compared to CPI (a)	
		September 1994	2004	2006	2004	2006
CPI (1994 = 100)		100.0			185.9	205.7
Brown bread	800g	1.55	3.59	3.69	2.88	3.19
Cheese	1kg	16.99	32.90	<i>31.99</i>	31.58	34.95
Coffee/tea	1kg (50/50)	18.68	<i>31.15</i>	<i>32.98</i>	34.73	38.42
Cooking oil	750 ml	2.98	5.99	6.99	5.54	6.13
Dry legumes	500g	2.14	4.29	<i>4.39</i>	3.98	4.40
Eggs	1 doz	3.09	8.98	8.04	5.74	6.35
Maize meal	12.5kg	17.24	<i>29.99</i>	<i>31.99</i>	32.05	35.47
Margarine	250g	1.10	<i>1.85</i>	2.89	2.04	2.26
Salt	1kg	1.59	<i>1.99</i>	<i>2.99</i>	2.96	3.27
Skimmed milk	500g	7.20	23.25	21.99	13.38	14.81
Sugar	2.5kg	6.58	<i>11.99</i>	<i>11.29</i>	12.23	13.54
Sub-total		79.14	155.97	159.23	147.12	162.79

Table M3b Average prices of clothing

	Adjusted unit	Actual price	Actual prices*		Prices compared to CPI (a)	
		September 1994	2004	2006	2004	2006
Male clothing						
Pullover (c)	1	42.99	89.99	<i>49.99</i>	79.92	88.43
Pyjamas (b)	Long pair	11.39	19.99	69.95	21.17	23.43
Shirts	long sleeve	21.74	<i>37.49</i>	<i>39.99</i>	40.41	44.72
Shoes	1 pair	39.99	<i>69.99</i>	<i>59.99</i>	74.34	82.26
Socks	1 pair	5.66	<i>6.99</i>	<i>4.99</i>	10.52	11.64
Trousers	1 pair	37.49	69.99	<i>59.99</i>	69.69	77.11
Underpants	1 pair	8.49	<i>7.77</i>	<i>6.49</i>	15.78	17.46
Vest	1	10.99	<i>9.00</i>	<i>17.99</i>	20.43	22.61
Sub-total		178.74	311.21	309.38	332.28	367.66
Female clothing						
Blouse	1	24.99	<i>29.99</i>	<i>22.99</i>	46.46	51.40
Bra	1	12.49	26.99	<i>9.99</i>	23.22	25.69
Cotton dress (b)	1	29.99	<i>49.99</i>	69.95	55.75	61.69
Head scarf (b)	1	11.99	<i>16.99</i>	<i>16.99</i>	22.29	24.66
Jersey	1	35.19	<i>49.99</i>	79.00	65.42	72.39
Night dress	Summer	19.99	49.99	<i>29.00</i>	37.16	41.12
Overcoat	1	32.97	62.97	<i>39.95</i>	61.29	67.82
Panties	1 pair	5.89	<i>9.99</i>	<i>4.99</i>	10.95	12.12
Petticoat	1	26.99	<i>29.99</i>	<i>16.99</i>	50.17	55.52
Shoes	1 pair	32.99	69.99	<i>29.99</i>	61.33	67.86
Skirt	1	25.99	49.99	<i>29.99</i>	48.32	53.46
Stockings	1 pair	3.66	<i>6.32</i>	<i>4.99</i>	6.80	7.53
Vest	1	9.99	19.99	<i>12.99</i>	18.57	20.55
Sub-total		273.12	473.18	367.81	507.73	561.83

* Italics denote actual prices lower than projected CPI prices; bold denotes actual prices higher than projected CPI prices

Table M3c Average prices of household consumables (all prices in R) (c)

	Adjusted unit	Actual price	Actual prices*		Prices compared to CPI	
			September 1994	2004	2006	(a)
			2004	2006	2004	2006
Bleach	750ml	1.80	4.00	5.29	3.35	3.70
Floor polish	400ml	3.79	7.89	9.59	7.05	7.79
Scouring powder	550g	2.79	5.99	7.69	5.19	5.74
Shoe polish	50ml	1.68	4.29	5.19	3.12	3.46
Soap powder	1kg	4.59	10.99	12.99	8.53	9.44
Sunlight soap	500g	2.15	5.49	5.99	4.00	4.42
Sub-total		16.80	38.65	46.74	31.23	34.55

Table M3d Items with prices available from 1994 to 2006

	Adjusted unit	Actual price	Actual prices*		Prices compared to CPI	
			September 1994	2004	2006	(a)
			2004	2006	2004	2006
Jam	900g	4.49	10.69	9.99	8.35	9.23
Peanut butter	410g	3.25	7.88	9.99	6.04	6.69
Pilchards	425g	2.89	5.99	7.49	5.37	5.95
Potatoes	1kg	2.39	5.49	<i>1.69</i>	4.44	4.91
Red meat	1kg	13.62	<i>19.49</i>	28.99	25.32	28.02
Samp	2.5kg	4.15	7.79	8.69	7.71	8.53
Sunlight liquid	750ml	4.69	10.99	17.49	8.72	9.65

* Italics denote actual prices lower than projected CPI prices; bold denotes actual prices higher than projected CPI prices

Table M4 Comparison of actual and projected prices of selected goods, 2004 to 2006 (all prices in R)

Table M4a Average prices of food items

	Adjusted unit	Actual price	Actual price*	Prices compared to CPI (a)
		August 2004	2006	2006
CPI (2004 = 100)		100.0		110.7
Brown bread	800g	3.59	<i>3.69</i>	3.97
Cheese	1kg	32.9	<i>31.99</i>	36.42
Coffee/tea	1kg (50/50)	31.15	<i>32.98</i>	34.48
Cooking oil	750 ml	5.99	6.99	6.63
Dry legumes	500g	4.29	<i>4.39</i>	4.75
Eggs	1doz	8.98	<i>8.04</i>	9.94
Maize meal	12.5kg	29.99	<i>31.99</i>	33.20
Margarine	250g	1.85	2.89	2.05
Salt	1kg	1.99	2.99	2.20
Skimmed milk	500g	23.25	<i>21.99</i>	25.74
Sugar	2.5kg	11.99	<i>11.29</i>	13.27
Sub-total		155.97	159.23	172.65

Table M4b Average prices of clothing

	Adjusted unit	Actual price	Actual price*	Prices compared to CPI (a)
		August 2004	2006	2006
Male clothing				
Pullover (c)	1	89.99	<i>49.99</i>	99.62
Pyjamas (b)	Long pair	19.99	69.95	22.13
Shirts	long sleeve	37.49	<i>39.99</i>	41.50
Shoes	1 pair	69.99	<i>59.99</i>	77.48
Socks	1 pair	6.99	<i>4.99</i>	7.74
Trousers	1 pair	69.99	<i>59.99</i>	77.48
Underpants	1 pair	7.77	<i>6.49</i>	8.60
Vest	1	9.00	17.99	9.96
Sub-total		474.17	309.38	344.51
Female clothing				
Blouse	1	29.99	<i>22.99</i>	33.20
Bra	1	26.99	<i>9.99</i>	29.88
Cotton dress (b)	1	49.99	69.95	55.34
Head scarf	1	16.99	<i>16.99</i>	18.81
Jersey (b)	1	49.99	79.00	55.34
Night dress	Summer	49.99	<i>29.00</i>	55.34
Overcoat	1	62.97	<i>39.95</i>	69.71
Panties	1 pair	9.99	<i>4.99</i>	11.06
Petticoat	1	29.99	<i>16.99</i>	33.20
Shoes	1 pair	69.99	<i>29.99</i>	77.48
Skirt	1	49.99	<i>29.99</i>	55.34
Stockings	1 pair	6.32	<i>4.99</i>	7.00
Vest	1	19.99	<i>12.99</i>	22.13
Sub-total		473.18	367.81	523.84

* Italics denote actual prices lower than projected CPI prices; bold denotes actual prices higher than projected CPI prices

Table M4c Household consumables

	Adjusted unit	Actual price	Actual price*	Prices compared to
		August 2004	2006	CPI (a) 2006
Bleach	750ml	4.00	5.29	4.43
Floor polish	400ml	7.89	9.59	8.73
Scouring powder	550g	5.99	7.69	6.63
Shoe polish	50ml	4.29	5.19	4.75
Soap powder	1kg	10.99	12.99	12.17
Sunlight soap	500g	5.49	<i>5.99</i>	6.07
Sub-total		38.65	46.74	42.78

Table M4d Items with prices available from 2004 to 2006

	Adjusted unit	Actual Price	Actual Price*	Prices compared to
		August 2004	2006	CPI (a) 2006
Jam	900g	10.69	<i>9.99</i>	11.83
Peanut butter	410g	7.88	9.99	8.72
Pilchards	425g	5.99	7.49	6.63
Plant protein	200g	4.99	<i>3.99</i>	5.52
Potatoes	1kg	5.49	<i>1.70</i>	6.07
Red meat	1kg	19.49	28.99	21.57
Samp	2.5kg	7.79	<i>8.69</i>	8.62
Sunlight liquid	750ml	10.99	17.49	12.17
Toilet paper	1 roll	1.59	2.49	1.76

* Italics denote actual prices lower than projected CPI prices; bold denotes actual prices higher than projected CPI prices

Sources: (a) Author's calculations; prices for 1974, 1894, 1994 and 2004 from the Institute for Planning Research. All 2006 prices for food are from Shoprite, Silverton. Wherever available, prices of the Shoprite house brand product range (*Ritebrand*) were used. All prices for clothing and footwear are from Pep Stores, Silverton, except where indicated as (b) Ackermans, Silverton; or (c) Mr Price, Silverton.

APPENDIX N

Table N1 Income tax on salaries and bonuses of married tax payers, 1985 tax year

Income (R)	Tax rate	Tax scale
0 - 8 000	12 per cent	--
8 001 - 9 000	14 per cent	+ 960
9 001 - 10 000	16 per cent	+ 1 100
10 001 - 11 000	18 per cent	+ 1 260
11 001 - 12 000	20 per cent	+ 1 440
12 001 - 13 000	22 per cent	+ 1 640
13 001 - 14 000	24 per cent	+ 1 860
14 001 - 15 000	26 per cent	+ 2 100
15 001 - 16 000	28 per cent	+ 2 360
16 001 - 18 000	30 per cent	+ 2 640
18 001 - 20 000	32 per cent	+ 3 240
20 001 - 22 000	34 per cent	+ 3 880
22 001 - 24 000	36 per cent	+ 4 560
24 001 - 26 000	38 per cent	+ 5 280
26 001 - 28 000	40 per cent	+ 6 040
28 001 - 30 000	42 per cent	+ 6 840
30 001 - 32 000	44 per cent	+ 7 680
32 001 - 34 000	46 per cent	+ 8 560
34 001 - 36 000	47 per cent	+ 9 480
36 001 - 38 000	48 per cent	+ 10 420
38 001 - 40 000	49 per cent	+ 11 380
40 001 +	50 per cent	+ 12 360

Married rebate: R460
 Children: R100 for the first five, R 50 for each additional child
 Medical aid: Employer's contribution fully deductible

Source: *Finance Week*, 1984

APPENDIX O

Table O1 Income tax on salaries, bonuses and fringe benefits of individual tax payers, 2006 tax year

Income (R)	Tax rate	Tax scale
0 - 80 000	18 per cent	-
80 001 - 130 000	25 per cent	+ 14 000
130 001 - 180 000	30 per cent	+ 26 900
180 001 - 230 000	35 per cent	+ 41 900
230 001 - 300 000	38 per cent	+ 59 400
300 001 +	40 per cent	+ 86 000

Primary rebate: R6 300 (under 65)

Source: SA Revenue Service, [S.a.]

APPENDIX P

QUESTIONNAIRE TO ESTABLISH THE CREDIBILITY OF PUBLISHED OFFICIAL
INFLATION FIGURES

Student group:

Name:

Student number:

Question 1:

South Africa's official rate of inflation for 2004 was 1,4 per cent. Is this a true reflection of average price increases?

YES

NO

If your answer is "YES" to question 1, please ignore the rest of this questionnaire. If your answer is "NO" to question 1, please consider the alternatives in question 2.

Question 2:

(a) Actual price increases were lower than the inflation rate.

OR

(b) Actual price increases were higher than the inflation rate, as is clear from (please select only one):

- (i) Increasing food prices
- (ii) Higher oil prices
- (iii) Increasing property prices
- (iv) Expensive food
- (v) High prices
- (vi) Too little money to spend

Thank you for your co-operation in the compilation of this questionnaire.

APPENDIX Q

**ADDITIONAL QUESTIONNAIRE TO ESTABLISH THE CREDIBILITY OF PUBLISHED
OFFICIAL INFLATION FIGURES USED FOR INFLATION-TARGETING PURPOSES**

Your co-operation in the compilation of this questionnaire will be appreciated

Student group:

Name:

Student number:

Question 1

South Africa's official rate of inflation for inflation-targeting purposes (CPIX) was 4,3 per cent in 2004. Is this a true reflection of average price increases?

YES

NO

APPENDIX R

ANALYSIS OF QUESTIONNAIRES TO ESTABLISH THE CREDIBILITY OF PUBLISHED
OFFICIAL INFLATION FIGURES COMPLETED BY MBA PREPARATORY STUDENTS

	FPS*	SPS**
Sample size:	20	20
Inflation for 2004 was measured accurately	1	9
Actual inflation for 2004 was lower than reported	2	1
Actual inflation for 2004 was higher than reported as is clear from:		
(i) Increasing food prices	5	2
(ii) Higher oil prices	3	1
(iii) Increasing property prices	5	1
(iv) Expensive food	-	1
(v) High prices	2	2
(vi) Too little money to spend	1	-
No clear indication	1	3

* First pilot study: before a lecture on inflation

** Second pilot study: after a lecture on inflation

APPENDIX S

ANALYSIS OF QUESTIONNAIRES TO ESTABLISH THE CREDIBILITY OF PUBLISHED
OFFICIAL INFLATION FIGURES COMPLETED BY EKN 213 STUDENTS

	FPS*	TPS**
Sample size:	11	16
Inflation for 2004 was measured accurately	2	13
Actual inflation for 2004 was lower than reported	1	n/a
Actual inflation for 2004 was higher than reported as is clear from:		
(i) Increasing food prices	2	n/a
(ii) Higher oil prices	2	n/a
(iii) Increasing property prices	1	n/a
(iv) Expensive food	-	n/a
(v) High prices	3	n/a
(vi) Too little money to spend	-	n/a

* First pilot study: first questionnaire

** Third pilot study: second questionnaire

APPENDIX T

ANALYSIS OF QUESTIONNAIRES TO ESTABLISH THE CREDIBILITY OF PUBLISHED
OFFICIAL INFLATION FIGURES COMPLETED BY EKN 215 STUDENTS

	FPS [*]	TPS ^{**}
Sample size:	90	62
Inflation for 2004 was measured accurately	12	39
Actual inflation for 2004 was lower than reported	5	n/a
Actual inflation for 2004 was higher than reported as is clear from:		
(i) Increasing food prices	10	n/a
(ii) Higher oil prices	22	n/a
(iii) Increasing property prices	24	n/a
(iv) Expensive food	2	n/a
(v) High prices	12	n/a
(vi) Too little money to spend	3	n/a

* First pilot study: first questionnaire

** Third pilot study: second questionnaire

APPENDIX U**QUESTIONNAIRE TO ESTABLISH THE CREDIBILITY OF PUBLISHED OFFICIAL
INFLATION FIGURES**

Your co-operation in the compilation of this questionnaire will be appreciated

Student group:

Name:

Student number:

Question

South Africa's official rate of inflation (CPI) was 3,0 per cent in March 2005. Is this a true reflection of average price increases?

YES

NO

APPENDIX V**QUESTIONNAIRE TO ESTABLISH THE CREDIBILITY OF PUBLISHED OFFICIAL
INFLATION FIGURES USED FOR INFLATION-TARGETING PURPOSES**

Your co-operation in the compilation of this questionnaire will be appreciated

Student group:

Name:

Student number:

Question

South Africa's official rate of inflation for inflation-targeting purposes (CPIX) was 3,6 per cent in March 2005. Is this a true reflection of average price increases?

YES

NO

APPENDIX W**QUESTIONNAIRE**

Department of Economics, University of Pretoria

Researcher: Jannie Rossouw

Tel number: (012) 315 5420

Participation in this questionnaire is voluntary and participants can withdraw at any time, in which case their data will be destroyed. Anonymity of participants is assured and information will be treated as confidential. Completion of the attached form will be considered to be your informed consent to participate in this project. The contents of this questionnaire must be kept absolutely anonymous. Do not write your name on this form.

THIS IS A RESEARCH PROJECT TO ESTABLISH THE CREDIBILITY OF PUBLISHED OFFICIAL INFLATION FIGURES

Please answer the questions by making a cross [x] in the block of your choice

Mark with a cross

1. Gender

[x]

Male	1	
Female	2	

2. Preferred population group

Asian	1	
Black	2	
Coloured	3	
White	4	

3. Faculty

Economic and Management Sciences	1	
Education	2	
Engineering, the Built Environment and Information Technology	3	
Health Sciences	4	
Humanities	5	
Law	6	
Natural and Agricultural Sciences	7	
Theology	8	
Veterinary Science	9	

4. South Africa's official rate of inflation (CPI) was 3,9 per cent in February 2006. Is this a true reflection of average price increases?

Yes	1	
No	2	

APPENDIX X**Tax Invoice: Markinor**

J ROSSOUW

4 BOGEY STREET
 WATERKLOOF X1
 PRETORIA
 0181

Attention: Jannie Rossouw

VAT Registration Number 4870116052

Invoice Number: 11884 [E2 / MT4]

Client Code: U2014

Programme Number: 20060440

Invoice Date: 31/08/2006

INFLATION CREDIBILITY

FULL AMOUNT NOW DUE		R 8 925.00
	VAT	R 1 249.50
	TOTAL	R10 174.50

Terms: Due Immediately

Cheques payable to: Markinor (Pty) Ltd
 Bankers: Standard Bank Limited
 Oak Avenue
 Randburg
 South Africa
 Code: 01-80-05
 Account number: 021641757

APPENDIX Y**QUESTIONNAIRE**

The interview where this question is covered, commences with the statement:

"Hello, I am ... [insert name of interviewer]... from Markinor, an independent market research company. We are carrying out a national study on various issues and products and would greatly appreciate your time. Your name has been selected at random as part of a representative sample of the South African public. I'd like to ask your views on a number of different subjects. Your input will be treated strictly confidentially and at no time will your name be connected to your responses".

SECTION H – PROJECT INFLATION CREDIBILITY
--

- ASK MALES AND FEMALES -

METRO/NON METRO

INTRODUCTION:

Now I would like to talk to you about your opinion regarding inflation in South Africa.

H1. South Africa's official rate of inflation (CPI) was 5,4 per cent in August 2006. Do you think this is a true reflection of average price increases?	1. Yes	-1
	2. No	-2
	3. Don't know	-3

APPENDIX Z

Table Z1 Responses about the accuracy of inflation figures according to gender and age in terms of Asians, Blacks, Coloureds and Whites

	Total	Gender		Age				Population group			
		Male	Female	16-24	25-34	35-49	50+	Black	White	Coloured	Asian
Yes %	18,5	22,4	14,6	18,3	20,7	19,0	16,0	14,8	30,7	24,6	19,6
n =	645	391	254	151	158	196	140	364	180	70	31
No %	28,6	31,0	26,2	25,5	28,2	29,7	30,5	22,7	48,0	32,6	41,1
n =	999	542	457	211	215	306	267	559	282	93	65
Don't know %	52,9	46,6	59,3	56,2	51,1	51,2	53,4	62,5	21,3	42,8	32,9
n =	1849	815	1034	465	390	527	467	1540	125	122	62

Source: Markinor, 2006

APPENDIX AA

Table AA1 Responses about the accuracy of inflation figures according to employment and education

	Total	Employed		Education			
		Yes	No	None	Up to/some high school	Matric	Tertiary/other
Yes %	18,5	23,5	15,1	2,9	14,9	24,6	30,1
n =	645	331	314	6	298	218	123
No %	28,6	32,8	25,9	15,2	24,0	35,6	42,6
n =	999	461	538	31	479	315	174
Don't know %	52,9	43,7	59,2	81,9	61,1	39,8	27,2
n =	1849	615	1234	167	1218	353	111

Source: Markinor, 2006

APPENDIX BB

Table BB1 Responses about the accuracy of inflation figures according to monthly household income

	Total	Household income						
		Up to R1 199	R1 200 to R2 499	R2 500 to R4 999	R5 000 to R7 999	R8 000 to R11 999	R12 000+	Refused
Yes %	18,5	8,4	14,9	20,3	23,0	26,7	34,6	18,4
n =	645	69	87	104	64	63	135	123
No %	28,6	18,6	23,4	28,8	40,3	36,9	44,1	28,5
n =	999	153	137	148	112	87	172	190
Don't know %	52,9	73,5	61,7	50,9	36,7	36,4	21,3	53,1
n =	1849	602	361	261	102	86	83	354

Source: Markinor, 2006

APPENDIX CC

Table CC1 Responses about the accuracy of inflation figures according to province

Total		Province								
		KwaZulu- Natal	Gauteng	Eastern Cape	Western Cape	Limpopo	North West	Free State	Mpumalanga	Northern Cape
Yes %	18,5	16,2	25,3	10,8	24,6	10,8	12,5	17,2	15,9	16,0
n =	645	113	254	54	103	30	23	34	26	8
No %	28,6	27,4	28,4	25,0	41,6	12,5	32,1	24,2	40,2	32,0
n =	999	191	285	125	174	35	59	48	66	16
Don't know %	52,9	56,4	46,2	64,2	33,7	76,7	55,4	58,6	43,9	52,0
n =	1849	394	463	321	141	214	102	116	72	26

Source: Markinor, 2006

APPENDIX DD

Table DD1 Responses about the accuracy of inflation figures according to community size and home language

	Total	Community size				Home language				
		Metro	City	Large/small towns	Village/rural	English	Afrikaans	Zulu	Xhosa	Other African language
Yes %	18,5	23,6	27,2	15,7	8,7	26,6	27,6	15,6	9,0	17,2
n =	645	471	31	51	92	140	142	120	51	192
No %	28,6	31,4	28,9	36,3	20,9	45,1	40,6	22,4	22,8	22,5
n =	999	628	33	118	220	237	209	173	129	251
Don't know %	52,9	45,1	43,9	48,0	70,4	28,6	31,7	62,0	68,2	60,3
n =	1849	901	50	156	742	149	164	478	386	672

Source: Markinor, 2006