

**ASSET PRICES AND INFLATION-TARGETING: IMPLICATIONS FOR
SOUTH AFRICA**

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ABSTRACT

An analysis of the current monetary policy framework in South Africa, which followed the example of a number of developed countries by implementing an inflation-targeting regime in 2000, is presented. The primary goal of the framework is to establish price stability, with financial stability a secondary objective. However, as has been evident in other countries, price stability does not guarantee financial stability. Movements in asset prices and the development of asset price bubbles have resulted in a number of episodes of financial instability, which negatively impacted on the growth and development of the countries involved. In addition, the majority of these episodes have occurred in periods of low and stable inflation.

The dissertation analyses whether monetary policy would be more efficient if asset price movements were incorporated within the inflation-targeting regime. International experience indicates that early intervention of monetary policy can dampen the negative effects that result when an asset price bubble “bursts”. However, if the monetary authorities act too early the effects on the economy can be just as disruptive. The literature is scrutinized to establish what the most effective form of monetary policy should be. The results are then transposed within the South African context to establish how the South African Reserve Bank can best ensure both price and financial stability.

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CHAPTER 1

INTRODUCTION

1.1 BACKGROUND AND RATIONALE FOR RESEARCH

Since the early 1990s an increasing number of countries have adopted inflation-targeting as their monetary policy framework (Carare and Stone, 2003: 2). The primary aim of inflation targeting is to achieve price stability. To date this policy has been credited as having reduced inflation levels and variability. The increasing utilisation of an inflation-targeting framework by countries has led to a growing body of literature attempting to determine the optimal inflation-targeting regime (Woodford, 2004: 15). Some countries have implemented explicit inflation targets in which the inflation target or band is stated and the central bank's only objective is to ensure that the target variable remains within the levels set. Other countries, such as the United States, employ an implicit inflation target in which the variable, i.e. consumer price index (CPI), is not the only targeted variable; other factors such as growth are also taken into consideration when the monetary authorities decide on their monetary policy stance.

An inflation-targeting regime aims to maintain inflation at a certain level. However, there are a number of factors that are not explicitly incorporated within the regime that can have a significant impact on inflation levels. Movements in asset prices are one such variable. Increasing asset prices generally stimulate demand through the wealth transmission mechanism. As individual's assets increase in value, they perceive themselves as being more wealthy; hence they spend more, creating price pressures in the economy. In some instances asset prices can increase rapidly, deviating from their long-term mean values for substantial periods of time resulting in an asset price bubble. When such an asset price bubble collapses, there can be severe implications for both inflation and growth levels within the economy.

Asset prices generally reflect economic agents' expectations of future economic developments. Under the assumption of rationality, if economic agents expect asset prices to increase this will be reflected by the higher asset prices (Stock and Watson, 2001: 1). Therefore, asset prices can provide information on future inflationary pressures that are developing within the economy. The implications of this have raised the question as to whether monetary policy should take into account asset price movements, particularly when asset price bubbles form (Goodhart and Hofmann, 1998: 130).

The inclusion of asset prices within an inflation-targeting framework has become an important issue for central bankers, sparking debate in international circles (Bernanke, and Gertler, 2001: 254). Should central bankers respond to the asset price changes in order to stabilise inflation and output or should they treat asset price movements as exogenous to the framework? While some economists advocate the need for asset prices to be acknowledged in the monetary policy decision making process, others emphasise the negative impact that pre-emptive monetary policy decisions have had on real output.

Checchetti *et al.* (2000) advocate the need for monetary authorities to incorporate an asset price component within their inflation-targeting framework. In their view asset prices are a core predictor of inflation and they therefore suggest that the informational content of asset prices will enhance the forecasting ability of the central bank, enabling it to make more informed decisions as to future inflation levels. In contrast, Bernanke and Gertler (1999) outline the disadvantages associated with incorporating asset prices within an inflation-targeting framework, emphasising that monetary authorities should only react to asset prices if they provide a clear signal of inflation. In their view, monetary authorities should be reactive, as opposed to proactive when considering asset price movements.

There have been a number of historical episodes in which asset price movements or bubbles have had negative implications for economic growth and inflation. Two recent examples include the "bubble economy" asset price boom in Japan and the recent equity price boom in the United States. Both of these episodes occurred during periods of low and stable inflation. Considering that low and stable inflation is the primary aim of an

inflation-targeting framework, this has prompted concern. In essence, monetary authorities need to take cognisance of not only inflation rates but also other variables to ensure both price stability and financial stability. In both the episodes outlined above, monetary policy was slow to react to the rise in asset prices. Economists have cited this as the main reason behind the subsequent recessions in both countries. They suggest that if monetary authorities had tightened monetary policy earlier, the effects of the asset price booms would have been muted (Bordo and Jeanne, 2002b: 1).

South Africa implemented an explicit inflation-targeting regime in 2000. To date the South African Reserve Bank has managed to reduce inflation to within the target band and interest rates are at all-time lows. However, under the current framework, no reference is made to changes in asset prices and the impacts thereof on inflation and economic growth. Taking into consideration recent international experiences in low inflationary environments, it is evident that periods of financial instability can still occur. This dissertation analyses whether the South African monetary policy could benefit by taking cognisance of asset price moves.

1.2 GOALS OF THE RESEARCH

The research sets out to provide greater insight into the monetary policy decision-making process with particular emphasis on inflation-targeting as a monetary policy framework.

Analysis is conducted to establish whether the current monetary policy framework, i.e. that of inflation-targeting, is the most effective policy framework for South Africa. Within the inflation-targeting framework there are a number of variations that can be applied to enhance its effectiveness. One such variation is the way in which asset price movements are incorporated into the monetary policy decision-making process. This dissertation analyses the impact of asset price movements on the levels of inflation and, in this regard, discusses whether an inflation-targeting framework that takes cognisance of asset price movements is more effective. From this analysis recommendations are

made as to how monetary authorities should react in order to most effectively stimulate economic growth.

1.3 METHODOLOGY

Current literature, outlining the different theories surrounding monetary policy and asset price movements is reviewed. Presently, there is dissention as to whether asset prices should be incorporated within an inflation-targeting regime and, if so, the extent to which the monetary authorities should react when movements in asset prices occur. The different viewpoints are analysed to determine the most relevant and efficient method of conducting monetary policy.

Secondary data from sources such as Bloomberg, I-Net Bridge and the South African Reserve Bank's electronic database are also utilised. This data is used to plot the relationship between different variables and inflation levels in order to determine whether an inflation-targeting regime is effective in reducing inflation levels. Two historic asset price bubbles, namely those in Japan and the US, are analysed to determine if the monetary authorities response at the time was the most efficient and, secondly, if the subsequent periods of low economic growth and disinflation could have been avoided.

Other sources of information that are utilised include monetary policy reviews and financial reports, which provide insight into how monetary policy is conducted.

1.4 STRUCTURE OF THE DISSERTATION

This dissertation comprises six sections.

Chapter 1 gives a brief overview of the topic, identifying the goals and methodology of the research and describing the structure of the dissertation.

Chapter 2 provides an overview of an inflation-targeting framework, looking at international experiences of countries that have implemented the framework. The main aim of inflation-targeting is price stability; financial stability remains a secondary concern. The general assumption is that, under an inflation-targeting regime, monetary policy should be adjusted to pre-emptively offset incipient inflationary or deflationary pressures (Bernanke and Gertler, 1999: 3). However, different types of inflation targeting frameworks exist. These include implicit and explicit frameworks (Bernanke, and Gertler 1999: 3), each with different assumptions under which decisions are made.

Chapter 3 analyses the role that asset price movements play within the economy. The theory behind asset price movements is discussed with particular emphasis on the inflationary implications. As Siegel (2003: 12) discusses, asset price bubbles in particular have serious consequences for inflation and economic output. Rapid increases in asset prices usually serve to raise inflation via the transmission mechanism (Kettel, 2002: 93). This mechanism will be analysed and discussed.

In addition, the development of asset price bubbles is analysed. Such bubbles imply that asset prices have risen considerably and therefore no longer reflect the underlying fundamental value of the asset. The rapid increase in asset prices is not sustainable for long periods of time; hence, when the bubble bursts, asset prices fall rapidly, often to lower levels than those recorded before the bubble occurred. This can have serious implications for economic growth and inflation levels.

Chapter 4 analyses whether asset prices should be incorporated into monetary policy. Cognisance is taken of the impact that asset prices have on inflation and how rapid changes in asset prices can have serious implications for growth, in some cases leading to recession. However, the overall impact of an asset price bubble depends on how the bubble forms (fundamentally or non-fundamentally) and therefore analysis is conducted into how to determine the origin of the bubble (Cecchetti *et al.*, 2002: 1). There are also a number of different suggestions as to what the most efficient policy tool should be. Some

economists suggest that financial imbalances can build up in a low inflationary environment and that it is appropriate to target asset prices (Borio and Lowe, 2002: 1), while others indicate that the impact of utilising monetary policy to undermine an asset price boom is counter-efficient (Bordo and Jeanne, 2002a: 140). Palley (2003: 55) concurs that asset prices should not be targeted directly in the monetary policy framework but that cognisance should be taken of any changes that do take place and the implications thereof for inflation. The different views are analysed to determine the most effective mechanism for taking asset price misalignments into account.

Chapter 5 refers to international experience. The two episodes discussed are the US stock market crash of 1996 and the bursting of the Japanese bubble in 1990 (Bordo and Jeanne, 2002b: 1). Bean (2004: 15) discusses the impact that monetary policy could have had on preventing the crashes. Factors leading up to the crash combined with the monetary policy reaction are discussed to determine whether an alternative monetary policy would have been more effective and whether in each episode asset prices should have been targeted.

Chapter 6 outlines the current monetary policy framework employed by South Africa. The implications of the analysis outlined above are used in this chapter to determine whether South Africa would benefit from adjusting its inflation-targeting framework to take into account rapid changes in asset prices. Currently, there is substantial debate in the media as to the implication of the rapid rise in house prices: if a rise in house prices is inflationary, should it be targeted within the current monetary framework?

Chapter 7 provides a conclusion to the research and outlines the recommendations from the study.

CHAPTER 2

INFLATION-TARGETING AS A MONETARY POLICY REGIME

2.1 INTRODUCTION

This chapter outlines the fundamentals associated with an inflation-targeting framework. While there is a large body of literature describing the intricacies of the framework, only a brief outline will be provided. The aim of this chapter is to provide the basis for the subsequent debate with respect to the inclusion of asset prices within the inflation-targeting framework.

2.2 EXPERIENCE OF INFLATION-TARGETING

Inflation is recognised by central banks as a socially and costly variable, which needs to be controlled if the objectives of output growth and employment are to be attained (Duman, 2002: 2). For a number of years central banks targeted variables such as monetary aggregates and exchange rates in their pursuit of financial stability. However, as Duman (2002: 2) indicates, these policies resulted in a number of shortcomings that eventually led to exchange rate crises and money demand instability. Consequently, both developed and developing countries have shifted towards an inflation-targeting framework as their primary monetary policy regime.

The first country to introduce an inflation-targeting framework was New Zealand in 1990. Countries such as the United Kingdom, Canada, Australia, Brazil and South Africa (to name a few) have now also adopted inflation-targeting as their primary framework for conducting monetary policy (Svensson, 2001: 1). To date inflation-targeting has been successful, with the majority of countries that have employed the framework enjoying

low levels of inflation and reduced volatility in their inflation levels. Table 1 illustrates the reduction in the average inflation levels in a selection of countries that have employed an inflation-targeting framework over the past ten years.

TABLE 1: IMPACT OF INFLATION-TARGETING ON AVERAGE INFLATION RATES				
Country	Date of inception	Target	Average inflation before targeting	Average inflation since targeting
Australia	1993	2 - 3%	1.28%	2.54%
Mexico	2001	4.5%	20.21%	5.22%
Poland	1999	5.4 - 6.8%	24.39%	4.41%
South Africa	2000	3 - 6%	10.23%	6.18%
United Kingdom	1992	2.5%	7.70%	2.58%
Source: Bloomberg, 2004.				

2.3 WHY TARGET INFLATION?

Inflation is defined by Dornbusch *et al.* (1998: 33) as the rate of change in prices, while the current price level is defined as the accumulation of past inflations. It has generally been agreed amongst economists that obtaining and maintaining low inflation is a prerequisite for sustainable growth. This has arisen as a result of the costs to the economy associated with high levels of inflation. These costs are outlined by Mboweni (2000: 7) as follows:

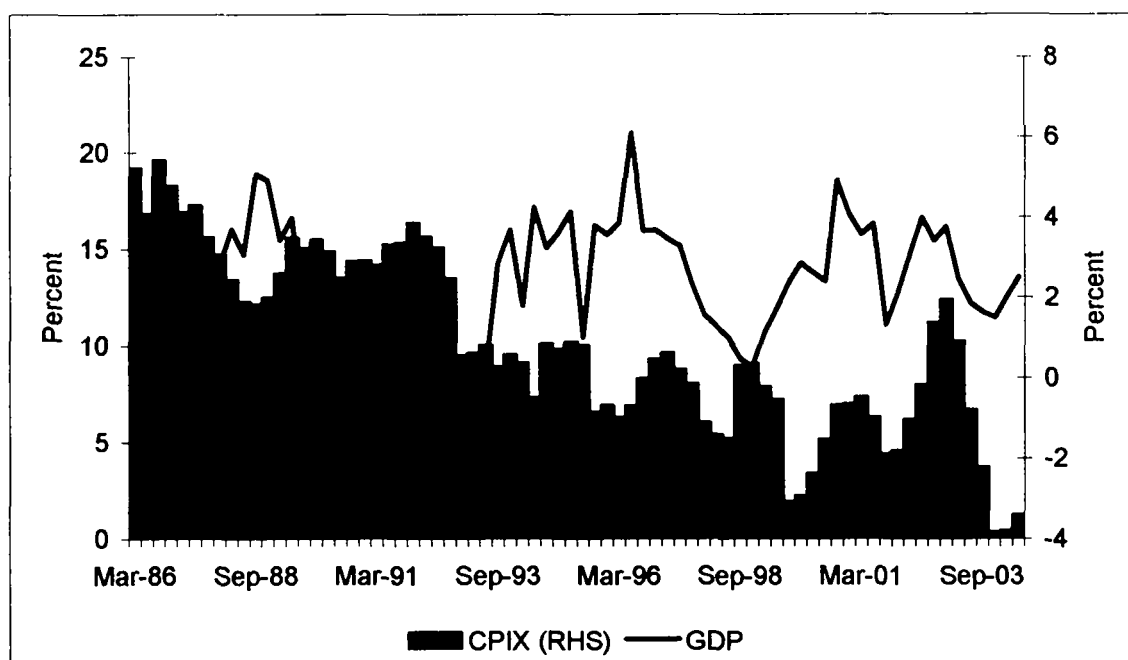
1. High inflation discourages savings and prejudices salaried and low income workers and pensioners;
2. High inflation leads to a depreciation of the domestic currency and results in lower output levels;

3. High inflation reduces a country's competitiveness in international trade; and
4. High inflation distorts the efficient allocation of resources and results in an unequal distribution of income and wealth.

If inflation is perfectly anticipated then the cost to the economy is limited. This is because variables such as wages are able to realign to the higher expected price level before it occurs, reducing pressure on demand. On the other hand, unexpected shocks to inflation, such as a spike in the oil price, will not have been accounted for within the central bank's forecasts and can therefore result in a significant redistribution of wealth and income. Consequently, some level of inflation is acceptable. However, a central bank attempts to limit the costs of inflation by protecting the economy against unexpected economic shocks, since these can have significant implications for sustainable growth, a prerequisite for a country attempting to compete in the global market (Dos Santos and Schaling, 2000: 1).

The trade-off between inflation (CPIX) and output (GDP) is outlined in Figure 1. Clearly there is a roughly inverse correlation between the two variables: low inflation levels generally being associated with higher GDP growth and vice versa.

Figure 1: Comparison between CPIX and GDP



Source: I-Net Bridge, 2004.

2.4 THEORETICAL BACKGROUND: WHAT LEVEL OF INFLATION IS DESIRABLE?

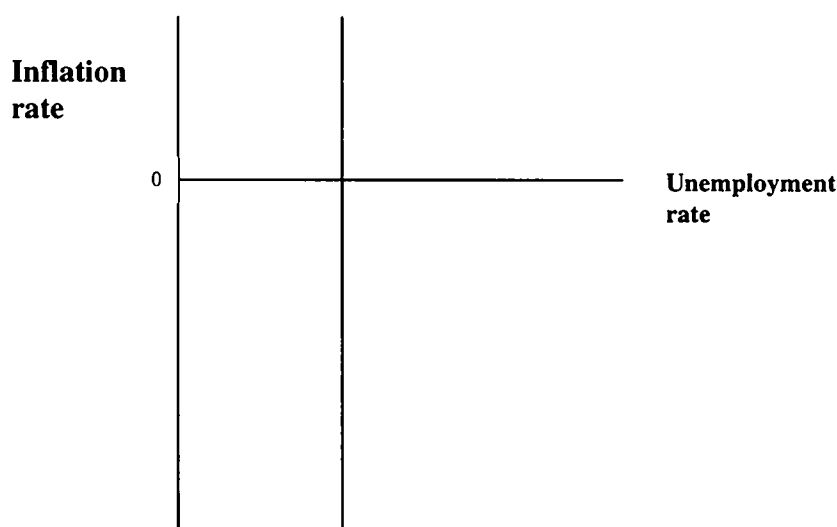
The theory which underlies the debate regarding the most efficient level of inflation makes reference to the Phillips Curve, which establishes the relationship between unemployment and money wages. According to this theory high unemployment is associated with low money wages and vice versa. The Phillips curve brought to the attention of policy makers an alternative manner through which monetary policy could be conducted (Kettel, 2002: 95): if low unemployment is desired, the trade-off is higher inflation and vice versa. Thus, to achieve both low inflation and low unemployment was deemed impossible.

It has now been accepted that the job of policy makers is to steer either real GDP or unemployment to its natural rate (Akerlof *et al.*, 1996: 60). The concept of the natural rate of unemployment forms the foundation of the theory of the non-accelerating inflation

rate of unemployment (NAIRU), which is an extension of the original Phillips Curve. NAIRU refers to the natural rate of unemployment that can be sustained without an increase in inflation (Kettel, 2002: 90). The existence of unemployment in an economy at any time is largely the result of the existence of labour market imperfections. Because of these imperfections it is unlikely that unemployment can be completely eradicated. However, when the actual rate of unemployment is below the natural rate, wage and price pressures will result in increasing demand and cause inflation to rise. Over the longer-term, the impact on unemployment will always be negated as market forces will push unemployment back to its natural level. Under an expansionary monetary policy regime, demand and employment will initially be stimulated, however, unemployment will eventually increase back to the natural level. Therefore, as Palley (1998: 8) argues, under such circumstances the overall effect of expansionary economic policy will simply be inflationary.

Under the above scenario the inflation level does not impact on output and unemployment levels, which oscillate around their natural levels. Consequently inflation cannot be manipulated to effect unemployment. Therefore, this theory implies that any level of inflation is desirable. In such a circumstance the Phillips Curve would merely be a vertical line as shown in Figure 2.

Figure 2: The NAIRU Phillips Curve



Source: Palley, 1998: 9.

However, Akerlof *et al.* (1996: 60) dispute this idea, arguing that price rigidities would reduce money neutrality. This builds on Samuelson and Solow's (1960) research (in Akerlof *et al.* 1996: 40), which indicated that, given the downward rigidities in wages and efficient employment levels, monetary policies that attempted to control the upward bias in prices would have to be so restrictive that they ultimately would produce a considerable drop in production and in turn a rise in unemployment levels. If inflation were reduced to zero this would result in a deceleration in GDP creating a permanent increase in unemployment. This theory advocates that there is no longer an effective trade-off between lower inflation and temporary low output. Instead the low level of output becomes permanent.

Therefore, Akerlof *et al.* (1996: 2) argue that zero inflation is not the most desirable monetary policy objective. Instead a moderately steady rate of inflation should be the aim of monetary policy since this maximises employment and output levels within an economy. Under the above assumptions, central banks should carefully consider the level of inflation that is targeted. Although price stability (implying no change in the price

level) is seen as desirable objective, it is not generally pursued. Instead the majority of the countries that have implemented inflation-targeting have set out positive inflation targets or bands. In these countries, it is the annual rise in prices that is maintained at a low level.

2.5 MONETARY POLICY REGIMES

Monetary policy is defined by Gidlow (1998: 1) as the set of arrangements that the relevant authorities formulate in order to achieve specific goals within an economy. Examples of such goals can include strong growth and development. Therefore it can be concluded that the main purpose of monetary policy is to improve social welfare through attaining high and stable growth over the long run (Carare and Stone, 2003: 4). This definition is further enhanced by Meyer (1999: 1), who sets out the primary objectives of monetary policy in the following terms:

1. Monetary policy attempts to maintain relative stability of the general price level;
2. Monetary policy establishes a high and stable level of employment of the labour force;
3. Monetary policy attempts to create and maintain a satisfactory high rate of expansion of total output, which should not be prejudicial to the economy's future real growth prospects; and
4. A good monetary policy results in satisfactory balance-of-payments, foreign reserves and exchange-rate positions.

Given the negative implications of inflation, in recent times the main objective of monetary policy has become the maintenance of price stability, i.e. low inflation. There are three main monetary policy frameworks that can be employed to limit inflation: the

targeting of monetary aggregates, the targeting of exchange rates and inflation-targeting. In all regimes a nominal anchor is defined and then targeted in an attempt to control rising prices.

Monetary targeting involves the use of a monetary aggregate such as M3 as an intermediate target. The main advantage of such a regime is the ability of the monetary authorities to immediately send a signal to the public with respect to the current stance of monetary policy. However, the targeting of monetary aggregates is only effective when demand for the aggregates is stable. As Mishkin (2000: 15) indicates, it is highly unlikely that developing countries will have complete control over their monetary aggregates and, in such circumstances, the use of this regime may be rendered ineffective.

The second alternative is exchange rate targeting. Exchange rate movements can have serious implications for inflation levels, especially when the economy is small and open. The effect of exchange rate movements on the economy is illustrated by the following example: the appreciation of a currency will offset the prices of commodities such as oil. This will reduce transport costs as well as production costs in the domestic economy. The reduction in costs will filter through to consumer produce thereby reducing inflation (Mishkin, 2000: 15).

However, exchange rates are often perceived as a political tool and increasing pressure is placed on central banks to react to overvalued or undervalued exchange rates, despite the prevailing inflationary environment. This can result in the exchange rate being altered for reasons differing from controlling inflation. Further, under a fixed exchange rate regime, the monetary authority could fix the exchange rate to that of a large low-inflation country or adopt a crawling target, which would allow the currency to depreciate at a steady pace.

Despite the importance of the exchange rate, there are a number of shortcomings associated with targeting an exchange rate. According to Mishkin (2000: 18), the primary disadvantage of a fixed exchange rate regime reduces the monetary authorities' ability to react to external shocks, which are directly transmitted to the targeting country through

the interest rates of the anchor country. Consequently, the overall ability of the central bank to effectively manipulate monetary policy, and hence output, is reduced.

We now turn to inflation-targeting. It is afforded a separate section because it is one of the main themes of this dissertation.

2.6 INFLATION-TARGETING AS A MONETARY POLICY REGIME

As a result of the disadvantages of targeting monetary variables and exchange rates, countries have instead adopted inflation-targeting as their monetary policy framework (Carare and Stone, 2003: 3). Duman (2002: 3) describes an inflation-targeting regime as a monetary policy framework based on the announcement of a numerical target for inflation and an institutional commitment to reach the announced target. Svensson (2002: 2) concurs with this view, defining an inflation-targeting framework as consisting of the following three characteristics:

1. There is a numerical target, either a point or a range, which refers to a specific price index. There are no other nominal anchors - the inflation target remains the primary objective of the monetary policy.
2. The decision making process is described as “forecast inflation-targeting”. This results from the central bank’s inflation forecast playing a prominent role, with the instrument being set in such a way that the inflation forecast condition in the instrument setting is consistent with the target.
3. There is a high degree of transparency and accountability from the central bank. This includes transparent and explicit monetary policy reports, which explain and motivate the central bank’s policy.

The above framework incorporates price stability as the primary target of the central bank. However, the definition of price stability is often blurred, with constant debate as to whether price stability refers to low and stable inflation or to the maintenance of a constant price level.

Svensson (2001: 1) distinguishes between low inflation and price-level inflation. He defines low (and stable) inflation as a base drift in the price level, while price-level stability implies that there is no movement in the price level. In general, most inflation-targeting regimes attempt to instil low and stable inflation. This has resulted because of the increased short-term volatility of both inflation and output associated with attempting to maintain price stability. As Svensson (2001: 4) discusses, in order to achieve price-level stability, higher than average inflation must be followed by lower than average inflation, thus increasing the variability in inflation over the short-term. The lack of current price-level inflation-targeting regimes is indicative of the reluctance of countries to expose themselves to this variability.

Further, different countries target inflation to varying degrees. It is generally assumed by academics that inflation-targeting in practice is “flexible inflation-targeting.” This regime involves stabilising inflation around the inflation target, but also stabilising other target variables such as the output gap being the difference between the actual and the potential output (Svensson, 2001: 3). Consequently, a positive weight is attached to a variable other than inflation (Duman, 2002:5). The process of inflation-targeting under such a framework involves a gradualist approach when inflation moves out of the target band. This approach allows targeted inflation and actual inflation to converge gradually, causing the least disruption to the real economy.

In turn, strict inflation-targeting refers to the central bank simply focusing on one variable, namely inflation, and disregarding alternative variables. Under a strict policy a movement away from the target would involve the central bank acting in such a manner as to bring inflation under control in the shortest possible time. Duman’s (2002: 10) research indicates that the central bank is unable to effectively control inflation one

period ahead, which is already predetermined. Therefore, under this regime inflation can only usually be brought back to target within two periods. The negative aspect of such a quick adjustment is the resultant variability in the output-gap. This variability is exaggerated in open economies which are also exposed to shocks from financial and commodity markets. In such situations the central banks will need to be aware of the source of the shock if they are to limit the pass-through effect to inflation and bring it back within the target range in as short a period as possible.

2.7 ADVANTAGES OF INFLATION-TARGETING

A successful inflation-targeting regime has a number of advantages over the alternative monetary policy regimes outlined above. Firstly the setting of the inflation target is generally a joint effort between the government and the central bank. This allows for effective co-ordination between the different bodies and ensures that the economic policies of the country are aligned (Mboweni, 2000: 2).

Further, inflation-targeting involves clearly setting out the targets, resulting in greater transparency and accountability. This provides economic agents with an anchor for inflation, wage and price setting as well as with improved clarity on the future course of monetary policy.

If the framework is successful it will serve to reduce inflation expectations. This can have positive implications particularly for capital investment. Businesses, aware that inflation is likely to remain low, will not demand as high an increase in the nominal rates of return on their investments thus inducing higher levels of capital expenditure.

2.8 DISADVANTAGES OF INFLATION-TARGETING

Despite the advantages of inflation-targeting, in comparison to the alternative monetary policy regimes there are several disadvantages. The forward-looking nature of the regime has been highly criticised by economists. Often there are long and variable lags between the time of the policy decision/change and the impact on inflation levels (Carare and Stone, 2003: 8). In this regard the regime has to rely heavily on the accuracy of the forecasts of the target variable to ensure that the correct monetary action is taken. Significant deviations or incorrect forecasts can result in undue volatility in the inflation level, leading to a loss of credibility for the central bank. In addition, since forecasts are often made for 12 to 24 months ahead, central banks could place too much emphasis on the longer-term objectives, resulting in the short-term objectives becoming overlooked.

There is also a substantial debate as to the appropriate choice of target. In some instances a point is chosen, while in others a target band. When considering a target, the central bank should ensure that the goal is achievable; if not, the credibility of the framework will be questioned. In addition, some countries have chosen to exclude certain parameters from the targeted variable, in order to reduce volatility within the index. Careful consideration needs to be taken to ensure that the variable chosen is representative of price pressures in the economy and that items that are significant are not excluded.

Supply-side shocks, such as oil price spikes, are hard to predict and can in turn result in significant variability in output. Given the open nature of economies today, it becomes extremely difficult to effectively predict and react to such external shocks. In some instances the monetary authority has no control over controlling the shock, and reacting to the rise in prices could be counter-productive.

An adherence to a strict inflation-targeting regime can result in little emphasis being placed on growth and employment. Consequently the economy can end up operating below its long-term potential. This can result in increased unemployment leading to further economic and social costs.

However, despite these disadvantages, the majority of countries have opted for an inflation-targeting framework. Many of the disadvantages outlined above, with the exception of supply-side shocks, can be eliminated if the target is accurately designed and implemented

2.9 MAINTAINING PRICE STABILITY

The cornerstone of the inflation-targeting framework is the accuracy of the forecasts. If the monetary policy regime is to remain successful, central banks need to ensure that the forecasts utilised are as accurate as possible. This will ensure that the actions (i.e. the changes in the interest rates) taken by the central banks are effective and not counter-productive.

Svensson (2001: 10) discusses different methods of ensuring that price stability is maintained. From his research he dismisses simple instrument rules and monetary targeting as ineffective, but indicates instead that forecast targeting is the most effective way of maintaining price stability. The idea of forecast inflation is premised on the expectation that monetary policy can only impact the future levels of inflation and the output gap, with significant lags that can spread over several quarters. King (2002: 1) concurs with this view commenting:

“the immediate target is the expected level of inflation at some future date chosen to allow for the lag between changes in interest rates and the resulting inflation.”

Therefore, in the construction of their forecasts, central banks need to be forward-looking.

In order to maintain price stability, conditional forecasts of inflation are made using all available and relevant information about the current and future state of the economy. According to these forecasts an interest rate decision is undertaken that will limit the variation between the actual inflation and the forecast inflation levels. If it is determined that the inflation rate in comparison to the forecasts is too high (or too low), the interest rates need to be adjusted accordingly. This cycle is repeated in regular decision cycles to ensure that inflation does not deviate from its intended path.

2.10 CONCLUSION

The success of inflation-targeting as a regime to reduce inflation cannot be denied (refer to Table 1). A large number of countries, recognising the benefits, have adopted the framework. In this regard, countries have varied in their approach to adopting the inflation-targeting framework. The Federal Reserve Bank (Fed) has implicitly adopted the framework, allowing themselves leverage to continue targeting alternative variables such as growth. In turn the majority of countries have moved beyond simply embracing the framework and explicitly adopted price stability as their principal goal of monetary policy.

However, despite the success in achieving price stability, periods of financial instability still occur. The importance of maintaining both muted inflation and financial stability has been evident in the number of countries that have suffered financial instability, which has ultimately resulted in severe recessions. In this regard, a number of questions have been raised as to whether this has been an accidental occurrence or if there is a causal relationship between monetary and financial instability. Borio and Lowe (2002:3) show that one of the main routes to financial instability outlined above is that of asset price swings. Within an inflation-targeting framework, movements in asset prices are generally assumed to be an external shock and are therefore not directly targeted. Instead, the secondary implications are targeted. This has sparked debate as to whether the inclusion

of asset prices within the inflation-targeting framework would result in a more effective monetary policy framework.

Chapter 2 considers the importance of asset prices within an economy. Research is conducted on the information with respect to inflation that is contained in the price of the asset. In some instances if asset prices contain information on future inflation levels, then cognisance should be taken of asset price moves.

CHAPTER 3

ASSET PRICES AND ASSET PRICE BUBBLES

3.1 INTRODUCTION

This chapter outlines the importance of asset prices and the implications of asset price movements for price stability and financial stability. Under certain conditions asset prices rise above their long-run mean values. If prolonged, this rise in prices can result in an asset price boom. Instability arises when the boom collapses. Monetary policy attempts to establish price and financial stability; therefore cognisance needs to be taken of the factors driving asset price booms and the impact thereof on the economy.

3.2 DEFINING ASSET PRICES AND ASSET PRICE BUBBLES

An asset price is the inherent value of an asset (Basile and Joyce, 2001: 1738), where examples of assets include equities, bonds, house prices and foreign exchange. Within this dissertation, the analysis focuses primarily on movements in house prices and the equity market, while reference is made to the bond market.

An asset price bubble refers to a high and growing asset price that is unjustified (Kindelberger, 2000). During an asset price bubble the asset price continues to rise despite the asset being overvalued. This is attributable to investor “momentum”. Investors, although aware that the asset is overvalued, will continue to buy the asset in expectation of a higher future price, in turn driving the price even higher.

3.3 MONETARY STABILITY AND FINANCIAL STABILITY

As outlined in chapter 2, price stability is the main objective of monetary policy. However, financial stability is also seen as a prerequisite for efficient growth and development within the economy (Gjedrem, 2003: 1). While price stability promotes financial stability, periods of financial instability can still develop. Financial instability is characterised by wide fluctuations in prices in the property market, securities market and financial markets. As Borio and Lowe (2002: 1) indicate, financial distress arises from the unwinding of build-up financial imbalances. Often these imbalances are disguised by the current economic conditions and are therefore not taken into account within monetary policy decisions. Fluctuations in markets can disturb the flow of capital and credit supply, placing pressure on inflation and output. Booms or busts in asset prices are the symptoms of financial instability.

While asset prices are thought to provide information on future developments in output and inflation, they can also be the instigators of financial instability as rapid changes in asset prices create distortions in investment and consumption levels (Checchetti *et al.*, 2002: 3). As Gjedrem (2003: 1) discuss, episodes have occurred when there have been sharp increases in asset prices during periods of low inflation. This has resulted in over-stimulation of demand and, hence, spending. Consequently, when the bubble bursts, there is a downturn in economic growth. In some instances, such as in Japan in the period 1990 to 2000, the reduction in demand resulted in disinflation.

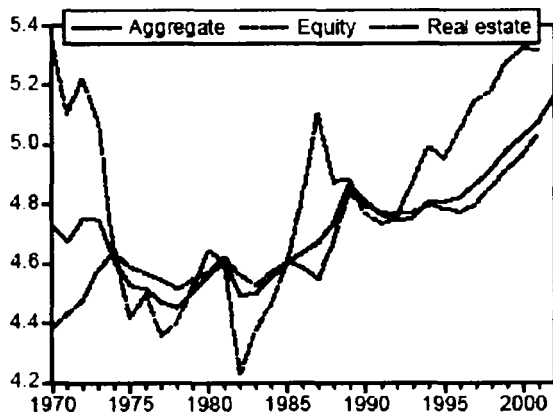
Therefore, asset price movements, including equity, bond, house and credit markets, can have significant implications for inflation and in turn monetary policy. As such, central bankers should pay significant attention to the information that can be garnered from asset prices.

3.4 EMPIRICAL EVIDENCE

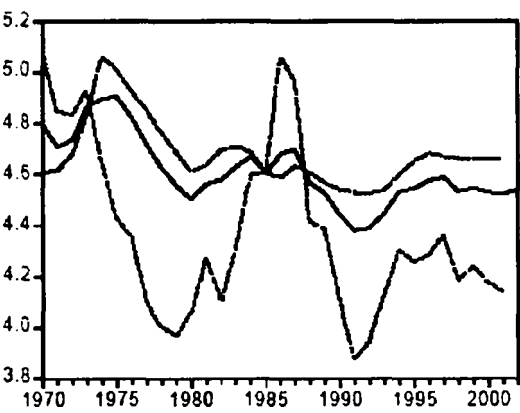
Borio and Lowe (2002: 3) investigated the volatility of asset prices and showed that, in general, asset price movements followed cycles. To date, two major cycles have been completed with evidence that a third cycle is underway. The periods of the cycles include the mid 1970s, the mid 1980s to the early 1990s and the second half of the 1990s to the present. Furthermore, the duration of the cycles appears to be increasing.

Figure 3: Historical evidence of asset price volatility

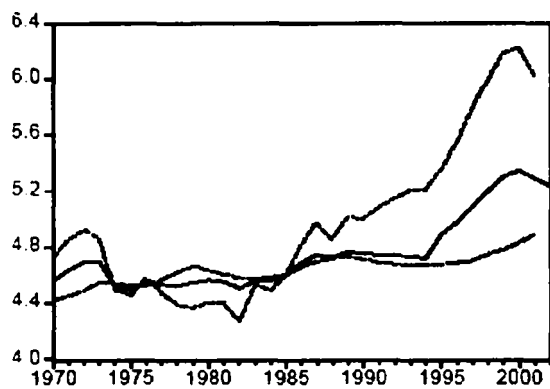
Australia



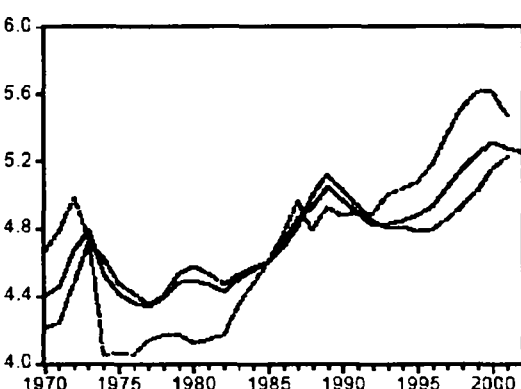
New Zealand



United States



United Kingdom



Source: Detken and Smets, 2003: 31

The above graphs show that equity prices are the most volatile of the different asset classes. However, an increase in equity prices often leads to a rise in housing prices. Considering that equity and housing prices account for a substantial share of household wealth, changes in the values of these assets have significant implications for perceived wealth. It is therefore of no surprise that large swings in asset prices often result in periods of financial distress. Examples include the banking crisis in the UK in 1970 and the recession in the US in the early 1990's.

3.5 ASSET PRICE BUBBLES

The price of an asset is calculated by discounting all future expected cash flows to the present value. In the case of equity, the price of the asset is determined by the value of all future dividend streams that it will yield over time, as well as the resale value. A house price is the discounted value of the rent stream and the resale value, while the price of a bond is determined by the present value of all future coupon payments and the face value of the bond that is to be paid back at maturity (Basile and Joyce, 2001: 1738). In all the assets outlined, the cash flows depict the expected economic conditions, not only in the next few years, but also, as Siegel (2003: 12) indicates, possibly over the next few decades. However, the asset's price may not always depict its fundamental value. Periods can arise during which the value of the asset may rise above this fundamental value and if this lasts for a prolonged period, an asset price bubble results. Kindelberger (2000) defines an asset price bubble as:

“A sharp rise in the price of an asset or a range of assets in a continuous process, with the initial rise generating expectations of further rises and attracting new buyers – generally speculators interested in profits from trading the asset rather than its use or earnings capacity.”

Under the above definition the rising price of the asset is unjustified and is fuelled by investors' expectations as well as investor momentum or speculation. This definition varies slightly from the general definition of asset price bubbles by incorporating the role of speculators. The initial definition of a bubble simply referred to an asset price bubble as a price movement that is unexplained by the economic fundamentals underlying the asset, where economic fundamentals refer to factors such as cashflow and discount rates. Bean (2004: 1) concurs with Siegel (2003) that asset prices can vary from their long-term fundamental value for reasons other than a change in fundamentals. Equity prices, for instance, can fall as a result of an increase in the lending rate, a change in the equity risk premium or a reduction in the expectations of future earnings, which, as Siegel (2003: 2) argues, could come about as a result of an increase in corporate taxes. Under all the above scenarios the implications for growth and output will differ. However, if the asset price does rise above its fundamental value over the long term, it should eventually revert to its fundamental value. Therefore, a positive asset bubble will increase until it becomes overextended and implodes (Kettel, 2002: 297).

3.6 THE ROLE OF EXPECTATIONS IN DEVELOPING ASSET PRICE BUBBLES

Under the assumptions of the capital asset pricing model, economic agents act in a rational manner, utilising all the information available to them. Thus, in an efficient market, the price of an asset should reflect all known information. However, asset price bubbles can occur despite the assumptions that economic agents always act in a rational manner. Individuals may believe that the asset is priced above its intrinsic value, yet they persist in holding the asset in the belief that the price will continue to rise. Expectations of higher prices also induce new buyers into the market, despite the price being above its fundamental value (Kettel, 2003: 197). This action is largely based on future expectations of the asset's price. Garber (2000) in Hendershott, *et al.* (2003: 995) refers to two often-cited historical examples of asset price bubbles, namely the Dutch Tulip mania of 1634 and the South Sea Bubble as examples of this behaviour. In both instances there was a

sharp run up in the prices of the asset, which resulted in increased market optimism. Investors expected the price to continue rising and, despite the asset being priced above its fundamental value, they continued to purchase the asset, driving its price up further.

Investors' expectations of future asset prices can be formed in a multitude of ways. Some theories suggest that expectations are exogenous whereby expectations, formed separately to the analysis, simply serve as an input into the analysis. How the expectation is formed or changed is of no consequence to the final outcome. This simplistic theory is unrealistic as expectations continually change as new information is received. Therefore the theory has been extended to incorporate extrapolative and rational expectations. In both these cases, the development of the expectation is endogenous to the analysis for as Kettel (2002: 298) describes, expectations are developed through the process of forecasting the future value of the asset. Further, given the assumption of rationality, when forecasting the variable, economic agents will continue to improve and modify their expectations when and where new information becomes available.

However, economic agents may not always adjust their expectations in line with fundamentals. This makes it extremely difficult to correctly anticipate the end of a boom and to completely modify expectations so as to always correctly predict the asset price. In such instances investor demand will ensure that asset prices continue on their upward trajectory for an extended period. This is likely to entice speculators into the market, driving up the asset price even further before the bubble eventually bursts.

3.7 RISKS ASSOCIATED WITH ASSET PRICE BUBBLES

The development of asset price bubbles can be detrimental to the growth and output levels within the economy. Giammarino (1998: 5) outlines three main risks to the economy associated with changes in asset prices and the development of asset price bubbles.

The first risk is that higher asset prices can negatively impact on inflation levels. The impact of a change in asset prices is generally reflected in the wealth position of the economic agents (households and companies). An increase in wealth leads to a greater propensity to spend, spurring inflation, while a fall in asset prices reduces spending and hence inflation and output. Asset price movements can also have significant impacts on the balance sheet of financial intermediaries. Changes in the value of their balance sheet will impact on their ability to provide credit and hence the ability of economic agents to spend within the economy (Gantnerova, 2004: 2). In situations in which the banking sector is already weak, the bursting of the bubble could result in the failure of the whole sector, magnifying the effects of the bubble.

Secondly, a misallocation of resources could take place within the economy. This is particularly prevalent if the rapid increase or decrease in the asset price does not reflect the underlying economic fundamentals. Examples include excessively high equity prices resulting in “irrational exuberance”, overextension of credit and overinvestment in capacity.

The last risk refers to the negative implications that occur within the economy when an asset price bubble bursts. This risk is simply a combination of the two preceding risks, but occurs when the momentum is in the opposite direction (i.e. a fall in the asset price). This is referred to by Giammarino (1998: 5) as a reverse-wealth effect. Under such circumstances the drop in equity prices leads to economic agents “feeling” poorer. Consequently, they reduce their spending levels and demand dissipates. The overall effect is generally a reduction in output levels within the economy. In some instances, under the above circumstances, output has fallen as low as zero.

3.8 ASSET PRICES AND THE TRANSMISSION CHANNELS

The first risk outlined above indicates that rising asset prices could result in accelerating inflation. There is a large body of literature which argues that asset prices are in fact

leading indicators of future inflation (Bryan *et al.* 2000: 3). This, as discussed above, assumes that asset prices are to a large extent formulated by changes in investor's expectations (either rational or speculative). Therefore, events that are expected to take place in the future such as increased productivity levels, input prices, or tax rates, will affect long-term expectations and hence prices (Gantnerova, 2004: 1). Expectations of higher inflation in the medium to long term would therefore drive up the present value of the asset.

When expectations and, in turn, asset prices are modified, the effect is transferred throughout the economy through the transmission mechanism. This is the same mechanism that ensures that monetary policy within an economy remains effective. The basis of this mechanism is that an increase in the asset price/s increases demand, which leads to inflation. There are four main theories explaining the impact of a change in asset prices arising from an expansionary monetary policy on demand and output. These include:

1. *Tobin's theory of investment*: This theory discusses how growth in asset prices influences investment. Higher equity prices will fuel expectations of heightened future growth and a preference for securities as opposed to banking sector deposits. Hence, the market value of the firm rises relative to its acquisition costs (measured by the Tobin coefficient $-q$). This stimulates companies to increase their issuance levels to garner more capital for expansion and the purchasing of capital goods. Therefore, the overall outcome of the expansionary monetary policy is an increase of output.
2. *Modigliani's life-cycle theory*: Modigliani has based his theory on the assumption that an increase in equity prices influences the level of wealth (or perceived wealth) and in turn consumption demand (Kettel, 2002: 31). In this regard, it is assumed that an individual's long-term income consists primarily of human capital, real capital and financial wealth. A change in the value of financial assets (e.g. shares of the company) will affect the level of wealth and hence

consumption. During an expansionary monetary policy regime a decrease in interest rates will stimulate equity prices leading to an increase in wealth. A rise in wealth stimulates consumption, which in turn will drive economic output. The impact on consumer prices is also evident within this theory since increasing demand brought about by increased wealth, will place upward pressure on the price level.

3. *Liquidity effect in the transmission mechanism:* This theory takes cognisance of the consumers' preference for spending on certain goods and for certain time periods, depending on their long-term expectations of development within the economy. During periods of extended growth in the equity market, the possibility of financial distress is reduced. This induces increased spending on long-term goods (durable goods), which will stimulate output in the economy. During a tightening monetary cycle, the opposite is evident with the higher interest rates resulting in a reallocation of funds towards more liquid assets. An important outcome to this theory is that asset prices represent consumers' underlying expectations of future economic development (Kettel, 2002: 12).
4. *Capital channel:* The last transmission channel refers to the impact of asset price changes with respect to their collateral value in the provision of loans by the banking sector (also referred to as the financial accelerator). The value of balance sheet assets impact on the value of financial intermediaries and hence on the ability of banks to provide loans. A loss in value of the asset leads to a reduction in the provision of credit. This in turn reduces the ability of economic agents to spend on credit, ultimately reducing demand, output and inflationary pressure within the economy.

In all the models outlined above, the change in asset prices impacts on demand and, in turn, on inflation levels within the economy. The debate with respect to the usefulness of utilising asset prices to forecast inflation remains a controversial topic. According to research conducted by Stock and Watson (2001: 3) the relationship between asset prices,

output and inflation is relatively unstable. In some instances asset prices can accurately be utilised as a predictor of either inflation or output; however, it is unlikely that they can accurately predict both.

Conversely, there is a large body of literature that supports the view that asset prices do contain incremental information about future inflation and output, thereby disputing Stock and Watson's (2001) views. Goodhart and Hofmann (2001: 5) and Mayes and Viren (2001: 10) both disagree with Stock and Watson (2001: 3), arguing that research conducted on in-sample asset prices indicate that asset prices, particularly house and stock prices, do have forecasting power.

3.9 CONCLUSION

The above analysis indicates that asset prices can have a destabilising effect on the economy, particularly with respect to inflationary pressures and output levels. However, asset prices are important given their ability to provide insight as to whether or not inflation will rise or fall in the near term.

Considering the move by central banks toward an inflation-targeting regime, it can be concluded that central banks should acknowledge that asset prices can provide insights into future underlying inflationary pressures, which could result in their inflation targets being breached.

However, as discussed above, asset price moves and in particular asset price bubbles often result from non-fundamental factors. The upward move in asset prices may therefore distort the central bank's decision-making process. Should central banks incorporate asset prices into their decision making process? This question is discussed in chapter 4.

CHAPTER 4

ASSET PRICES AND MONETARY POLICY

4.1 INTRODUCTION

Inflation-targeting dictates that central banks should adjust their monetary policy actively and pre-emptively to offset insipient inflationary or deflationary pressures (Bernanke, and Gertler, 1999: 78). To date inflation-targeting, in the countries that have adopted it, has been fairly successful in reducing inflation levels, but large swings in asset prices have given rise to a new source of potential instability – financial instability. Considering the negative implications that asset price movements can have on inflation levels, an important issue for central banks is how and when monetary authorities should respond to changes in asset prices in order to stabilise inflation and output. While monetary policy alone is not a sufficient tool to contain all the potentially damaging effects of booms and busts of asset prices, it can help to contain some of the effects.

This chapter reviews the large body of literature surrounding the appropriate actions that should be undertaken by monetary authorities to maximise stability in the economy. The appropriateness of including asset prices within a monetary policy framework is analysed to determine the most effective monetary policy regime.

4.2 THEORETICAL BACKGROUND

The Bank for International Settlements (BIS, 2003: 75) outlines three reasons why asset price movements are important in an economy:

1. Asset price misalignments endanger the sustainability of the financial system;

2. Asset prices play an important role in the financial system; and
3. Asset prices contain information about financial market expectations on future policy and macroeconomic conditions.

Filando's (2001: 1) research suggests that in countries that experienced broad swings in asset prices, the increase in asset prices was correlated with stable or declining consumer price inflation. However, when an asset price bubble collapsed, a rapid increase in inflation was recorded. Considering that rising asset prices initially led to lower consumer inflation, Filando (2001: 2) suggested it would be unlikely that the monetary authority would want to 'prick' the bubble by raising interest rates. Such an action would be counterproductive and could ultimately result in deflation or even market crashes. This has been evident in a number of market crashes that have originated from asset price misalignments. However, as Bernanke and Gertler (1999) indicate, the effects of the bubble collapsing have only been sustained in situations where monetary policy was unresponsive or actively reinforced the deflationary pressures.

Central banks are therefore starting to take cognisance of asset price moves in their decision making process. A number of central banks have now adopted a monetary conditions index (MCI), which allows them to incorporate the exchange rate into their policy framework (BIS, 1997). One such bank is the Bank of Canada, which has already formalised its inflation-targeting framework to include the exchange rate. A combination of a short-term interest rate and an exchange rate component in the MCI (an operating variable) was motivated by research conducted by Duguay (1994) and Longworth and Poloz (1995). The findings indicated that inflationary pressures were largely determined by the output gap and that monetary policy affected the output gap through the short-term effects of the exchange rate and the short-term interest rate on aggregate demand. Therefore, instead of monitoring only the short-term interest rate, the exchange rate was also included. Smets (1997: 10) argued that by increasing the number of assets included within the MCI, monetary policy became more effectual.

However, although the above operating target takes asset prices into consideration, the framework has not prevented all instances of price instability or financial instability. Asset price movements are often responsible for periods of financial instability. This has sparked the debate as to whether asset prices should be explicitly targeted by monetary authorities. While there is a large body of research on the topic, no universally accepted theory has been developed. Instead economists remain divided as to the inclusion of asset prices in a monetary policy framework.

4.3 MONETARY POLICY AND ASSET PRICES

4.3.1 Introduction

While most economists accept that asset prices influence inflation levels, many remain divided as to the degree that asset prices should be included in an inflation-targeting framework. Currently there are two broad schools of thought, which differ with regard to the aggressiveness of the central bank's reaction to changes in asset prices. The proactive approach suggests that if an asset price bubble is building, the central bank should actively attempt to prevent the bubble from developing further. Bernanke (2002:3) refers to such a policy as a "lean against the wind" strategy. In contrast the reactive approach advocates that the central bank should take into account and respond to changes in asset price bubbles only if they will ultimately impact on the macroeconomic goals of the central bank.

4.3.2 Proactive monetary policy

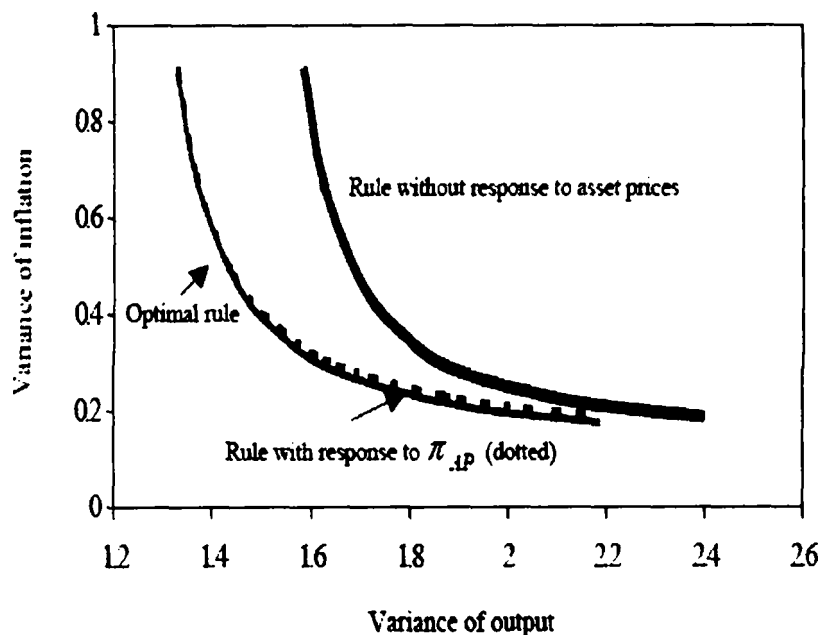
The primary reason for central banks to act in a proactive manner is that the booms and busts associated with asset price bubbles can lead to financial instability. Cecchetti *et al.* (2002: 1) suggest that central banks could improve their macroeconomic performance by reacting to asset price misalignments as and when they develop. By reacting to such

misalignments, Cecchetti *et al.* (2002: 2) argue that the central banks will be able to achieve a smooth path in which inflation remains within the specified target band. However, Cecchetti *et al.* (2002:2) do not suggest that asset prices become the primary target within the monetary policy framework. Instead, their principal claim is that central banks can improve their overall performance if they systematically react to asset price misalignments. Therefore, they suggest that monetary authorities should determine their inflation targets with an eye towards asset price movements and limit the distortions on investment and consumption created by asset price bubbles, by raising interest rates when prices are above the warranted level. Cecchetti *et al.* (2002: 3) suggest that this will offset some of the negative implications of asset price bubbles and in turn promote macroeconomic stability.

A similar view is advocated by Filardo (2001: 1), who suggests monetary authorities should take cognisance of any variables that provide information on the economy. In his view, asset prices contain information with respect to future inflation and output levels. Therefore, central banks should take cognisance of any movement in them and use the information as an input into their forecasts.

Filardo (2001: 10) also shows, that apart from utilising only the informational content incorporated in asset price movements to improve a monetary policy framework, a central bank can also improve economic outcomes by proactively responding to asset price movements. To determine the importance of utilising asset prices within a policy framework, Filardo (2001: 12) performed a number of simulations using a monetary policy rule. In some simulations the monetary policy rule incorporated an asset price component and in others it was excluded. In all instances in which an asset price component was incorporated in the monetary policy rule, a lower variance of output and inflation was recorded. His results are represented in his policy frontier illustrated in Figure 4 below. From these results, Filardo (2001: 12) argues that an optimal monetary policy rule is one that incorporates an asset price component.

Figure 4: Filardo's policy frontiers



Source: Filardo 2001: 14.

This outcome also finds support from Kent and Lowe (1997: 10), who designed a model explicitly incorporating the notion of asset price misalignments on the level of demand. Within this model, an increase in an asset price, for example a rise in the equity price, will increase an individual's perceived level of wealth. This in turn will stimulate demand, placing upward pressure on inflation. If, when demand rises, the central bank, does not adjust its monetary policy instruments in line with the increasing asset price, demand will continue to be stimulated. This will result in even higher inflationary pressures building in the medium term. While these pressures may not in all circumstances be strong enough to drive inflation above the target band, it is probable that they will result in increased variability in output levels. However, if the central bank is aware of the rising equity price and adjusts its monetary policy tools accordingly, it would then have increased interest rates, constraining demand. The overall effect would be lower and less volatile inflation levels, while output volatility would also be reduced.

4.3.3 Problems associated with a proactive approach

While the research discussed above suggests that proactively targeting asset prices is likely to improve price stability and reduce financial instability, there are a number of drawbacks associated with such a policy.

Firstly, if a central bank is to proactively react to asset price bubbles, it needs to effectively identify the bubble. Bernanke (2002: 4) indicates that, while it is relatively easy to identify an upward bias in an asset price, the corresponding fundamentals are generally not easily observable. Therefore, the monetary authority can only estimate the fundamental value of the asset. This will have to be done in a manner that results in the central bank's estimate being more realistic than that constructed by market professionals, whose collective information is already reflected in the asset's market price. In Bernanke's (2002: 4) view this is an unrealistic task. Under the assumptions of the efficient market hypothesis, the asset's price should convey all information that is available. It is unlikely that the central bank will have access to information that is unavailable in the market, and hence, it is unlikely that the central bank will be able to forecast asset prices in a more accurate manner than financial market professionals. Further, he suggests, that if such a regime was introduced, it would result in the market reacting to rumours, as market participants attempted to pre-empt the central bank's actions. The overall effect would be increased instability.

Secondly, the effectiveness of the monetary policy action is largely dependant on the underlying source of the change in asset prices. The asset shock could originate from a fundamental source or non-fundamental source. If a fundamental variable is driving the asset price movement, it is likely that the source will also have an impact on other sectors of the economy. In such a situation, monetary policy would have to be conducted according to the impact it would have on the overall economy and not just on the asset. Further, it is often the case that asset price bubbles only affect one sector of the economy, for example, information technology stocks. However, monetary policy has an impact on

all areas of the economy, not only the sector in which the asset price bubble occurs. Therefore, considering that monetary policy cannot be fine-tuned, the negative effects of the change in the policy could outweigh the effects of reducing the asset price bubble.

Therefore, economists agree that monetary authorities should only target asset price bubbles when the underlying driver is of a non-fundamental nature. Non-fundamental shocks include poor regulatory practices, imperfect rationality of investors and “herd behaviour” (Bernanke and Gertler, 1999: 19). Historical evidence suggests that it was factors such as access to credit and financial reforms that ultimately resulted in the asset price boom in Japan in the 1990s.

However, in an economy where a number of shocks are present, it is often difficult to determine the underlying nature of each of the shocks. For instance: when asset prices have increased but the government cannot determine if the rise is attributable to increasing productivity or to a financial bubble. Cecchetti *et al.* (2002: 15) argue that monetary authorities should only react when the asset price is significantly misaligned from its fundamental value rather than reacting to all price increases. Their research concludes that monetary policy cannot always react in the same way to all asset price shocks. Judgment needs to be exercised in determining what the reaction to the fluctuations should be. Stock and Watson (2001: 5) agree, indicating that monetary policy should only react in situations justified by the underlying fundamentals.

Batini and Nelson (2000) constructed a model which evaluates whether or not the monetary authority should react to the exchange rate movements (a proxy for asset price movements). The underlying assumption in their model is that the central bank will always set interest rates in such a manner that they will minimise induced fluctuations in output and inflation around a specified target band. Batini and Nelson (2000) conclude that, when the economy is subject to a shock to aggregate demand, aggregate supply, and interest parity there is no additional benefit gained by the monetary authority in reacting to the exchange rate. However, when a bubble process was included into their model (in addition to the current shocks), it was determined that, if the central bank “leaned against

the wind”, it would be able to stabilise output. The downside was that in all the simulations, inflation remained volatile. One simulation involving the removal of the interest rate parity condition, produced a significant relationship between the exchange rate and the inflation level. For this scenario Batini and Nelson (2000) concluded that central banks could achieve a positive outcome by responding to changes in the exchange rate. However, even by incorporating an asset price variable in their model they were unable to remove all volatility. In some instances volatility actually increased when the asset price variable was added to the model.

Thirdly, an authority would also have to determine the role of asset prices in the economy at a certain point in time (Filardo, 2001: 17). In some instances the relevance of asset prices within the economy is high, while at other stages the relevance is low. For a central bank to react to an asset price bubble when the relevance of asset price movements is low would be counter-productive as the expected cost to the economy of reacting to an asset price change would outweigh the benefits. In Table 2 below, Filardo (2001: 19) presents the expected net benefits of responding to asset prices when the relevance (as illustrated by the probabilities) varies. He suggests that the probability threshold is 60 percent. Below this level it is too costly for a central bank to react to a change in asset prices. Taking these results into consideration, before a central bank reacts to a change in an asset price, they would have to be fairly confident of the structure of the economy and how asset prices would react. However, as discussed by Bernanke (2002: 4), determining an asset price bubble is difficult and, therefore, effectively determining the role played by asset prices within the economy would be an even harder task.

TABLE 2: NET BENEFIT OF THE CENTRAL BANK RESPONDING TO ASSET PRICE MOVEMENTS			
Probability that prices matter	Expected benefit if central bank responds to asset price	Expected cost if central bank responds to asset price	Net benefits
0	0.00	0.35	-0.35
10	0.02	0.32	-0.29
20	0.05	0.28	-0.23
30	0.07	0.25	-0.18
40	0.09	0.21	-0.12
50	0.12	0.18	-0.06
60	0.14	0.14	0.00
70	0.16	0.11	0.06
80	0.18	0.07	0.11
90	0.21	0.04	0.17
100	0.23	0.00	0.23
Source: Filardo, 2001: 19.			

Fourthly, Bernanke (2002: 3) argues that the proactive approach is ineffective since monetary policy is too blunt an instrument to effectively counteract the negative implications that arise from asset price bubbles. If monetary policy is to be effective, then the response of the incipient bubble must be more or less proportional to the change in monetary policy. However, there is little empirical evidence to support such a response. In theory, a rapid increase in prices should be moderated by an increase in the lending rate (through the transmission mechanism), but in practice, if prices are growing at a rapid rate as is expected under bubble conditions, it is unlikely that that a small increase in the lending rate will do little more than slow down the economy. Under such circumstances the price of the asset will probably continue to increase.

The final criticism levied against proactively responding to asset price bubbles is that the policy response to rising asset prices may be too hard to justify to the public. If the monetary authority were to take cognisance of the rise in the asset price and hike interest rates accordingly, the rise in the interest rate (which would take place in the absence of high inflation) would, in Borio and Lowe's view (2002: 25), be perceived as undermining the wealth of the country.

4.3.4 Reactive approach to asset price movements

Given the above shortcomings to the proactive approach, a large number of central banks currently favour a reactive approach. Within this school of thought the monetary authority waits to see if the asset bubble will actually collapse. If it does, only then does the monetary authority respond by adjusting interest rates accordingly (Bordo and Jeanne, 2002a: 12). This school of thought is consistent with the standard monetary policy rules such as the Taylor rule, which implies an accommodating response after the event has taken place. Only when the inflation forecast (usually on a two year horizon) breaches the target band/point as specified within the inflation-targeting framework, does the central bank react. This view is highlighted by Bernanke and Gertler (1999: 78) who state:

"The inflation-targeting approach dictates that central banks should adjust their monetary policy actively and pre-emptively to offset the incipient inflationary and deflationary pressures. Importantly, for present purposes, it also implies that policy should not respond to changes in asset prices, except so far as they signal changes in expected inflation."

Economists subscribing to this school consider that more harm can be done to the economy by directly targeting asset prices. However, given the informational content of asset prices, they agree that monetary policy should react to any changes once they have occurred.

Asset prices should not be directly targeted because different assets can convey differing information. For instance house prices may be rising, suggesting that there are potential inflationary pressures developing in the economy, while at the same time the exchange rate appreciating offsetting incipient inflationary pressures. Some economists argue that this noise created by conflicting information, could result in monetary policy that incorporates asset prices being counter-productive. According to this school of thought, it is better to wait for the different asset prices to adjust in order to determine which asset has the dominant role in the economy at that time.

Furthermore, small open economies are often affected by events that take place outside the country's borders. These events could result in rapidly rising asset prices. However, considering that the events have occurred abroad, reacting to the changes in prices may be ineffectual, and, instead could result in instability.

Bernanke and Gertler (1999: 26) are the main critics to economists advocating the inclusion of asset prices within a monetary policy framework. In their research they formulated a closed-economy dynamic model, through which they simulated the response of the economy to an asset price bubble under differing monetary policy regimes. Firstly, they tested the response of the economy when an inflation accommodating policy was utilised, while their second model involved a more aggressive inflation-targeting policy. Within this model equity prices were used as a proxy for asset price moves.

Under the first scenario, the asset price bubble resulted in an increase in aggregate demand and sharp increases in inflation and output. The rise in stock prices, through the transmission mechanism (discussed in chapter 2), increased perceived wealth and stimulated spending; however, the bubble eventually burst and the corresponding levels of net wealth fell, ultimately resulting in a reduction in output. The fall in output after the expansion was larger than the increase in output initially experienced. Once the initial shock had filtered through the economy output stabilised; however, it did so at a lower level than initially experienced.

Their second scenario using a more aggressive inflation targeting monetary policy framework, reduced the negative effects of the asset price bubble, despite the asset price not being a targeted variable. This occurred as a result of the explicit nature of the inflation-targeting regime, within which the targets were regularly published, thus influencing expectations. If inflationary pressures develop, the expectation that interest rates will be hiked increases, which in turn has a dampening influence on output levels. Thus interest rates do not have to be increased to the same degree as under the accommodating monetary policy in order to offset the price pressures.

The final simulation conducted by Bernanke and Gertler (1999: 28) involved the central bank directly targeting the change in asset prices as well as the level of inflation. Their results indicate that the overall impact of the policy is dependant on the underlying inflation-targeting framework. Under an accommodating policy the economy is worse off after targeting the asset price than before, while under an aggressive policy little change from the first simulation was evident.

From this research, it can be concluded that any policy linked to changes in asset prices needs to be applied with care since there is the potential for the economy to be worse off than it was before the asset price bubble developed. However, considering that the majority of countries that are currently targeting inflation follow an aggressive approach, it is unlikely that the outcome will be perverse, but there could be little benefit.

4.4 CONCLUSION

While the main objective of monetary policy is to stabilise the economy, the output gap and inflation around an attainable target it must be noted that price stability and financial stability are intertwined. Movements in asset prices can result in inflation deviating from the prescribed target, thereby negatively impacting on inflation and ultimately the credibility of the monetary authority. Furthermore, booms and busts in asset prices can result in the collapse of the financial system.

The inclusion of asset prices within the monetary policy framework has been debated substantially amongst economists. The common conclusion is that asset prices should be taken into account in so far as they will affect the inflation forecasts over the fixed-time horizon outlined within the inflation-targeting framework. Currently, as a result of the long-term nature of the information incorporated in asset prices, they are only given a low weighting if they are included within an inflation-targeting framework.

To create a more robust policy, central banks should try to determine the underlying source of the shock since different sources result in the asset prices conveying different information. If the source is not accurately identified, monetary policy could be counterproductive. Although, identifying the source is fairly difficult, asset prices can still be effectual to a degree. This is illustrated by the comment by the Bank of International Settlements (BIS, 2001: 141):

“...these difficulties need not rule out the very occasional use of monetary policy in this way.”

To make monetary policy more effective, any and all informative variables should be included in the optimal monetary policy reaction function. That done, no matter how noisy the variables are, the decision-maker will generally benefit from using the information. In addition, Filardo (2001: 12) concludes, that although an authority cannot accurately separate the fundamental and bubble components, it may still be optimal to respond to asset prices. The costs of allowing the bubble to unravel on its own could be more damaging.

In practice, when there has been a large fall in asset prices, central banks have tended to ease monetary policy to reduce the risk of a recession. When asset prices were rising they tended to wait and determine the effect of rising asset prices on inflation before taking action. However, this policy reaction is asymmetrical and has resulted in imbalances. Chapter 5 will analyse how countries experiencing asset price booms have responded to monetary policy and whether they were effective in curtailing inflation.

CHAPTER 5

EMPIRICAL EVIDENCE: JAPAN AND THE US

5.1 INTRODUCTION

Historical evidence indicates that there have been a number of instances in which large swings in asset prices have played a role in precipitating severe recessions. This has brought attention to the link between asset prices and monetary policy. Although the latter has been cited as a cause of the asset price booms, at the same time it has been used to diffuse the booms.

This chapter analyses two asset price booms that resulted in economic instability, the Japanese “bubble economy” and the recent stock market bubble in the US economy. In both instances the role that monetary policy played in the development of the bubble and the reaction of the monetary authorities to the collapse of the bubble are discussed with a view as to whether monetary authorities should proactively or reactively target asset prices within their monetary policy frameworks.

5.2 JAPAN (1985-1990)

5.2.1 Introduction

Since the end of the Second World War, Japan has experienced a number of asset price bubbles. However, the tripling of asset prices between 1985 and 1990 and the subsequent pace of the decline in prices was exceptional. Stock and land prices have fluctuated since the collapse of the bubble but have never fully regained the highs achieved at the peak of the bubble. Some economists have attributed the current slowdown in the Japanese

economy to the collapse of the asset prices experienced during the collapse of the bubble (Basle and Joyce, 2001: 1737).

5.2.2 Development of the bubble

During the 1980s, asset prices, namely house and equity prices, in Japan rose rapidly, only to decrease as quickly in the 1990s. A large body of research has pointed to the underlying factors that resulted in the rapid increase in land and equity prices. Ito and Iwaisako (1995: 16) argue that the initial rise of house and equity prices could have been a result of fundamental factors such as increased demand for Tokyo commercial property and productivity increases in Japanese industries. However, from 1985 to 1986, when growth prospects in the Japanese economy were weakened, asset prices continued to rise. In addition, from 1986 to 1987, the movement of interest rates and growth levels were inconsistent with rising asset prices. Ito and Iwaisako (1995: 17) suggest that after 1989, there was no fundamental justification for asset prices to continue rising. They therefore argue that the rise in asset prices was a result of non-fundamental factors. Hence, the deviation of the asset prices from their long-term fundamental mean values indicates that there were “bubbles” in the asset markets at the time (Basle and Joyce, 2001: 1737).

The 1980s saw the Japanese economy in a transitional phase in which manufacturing companies were reducing their demand for loans as a result of slower economic growth and increased activity in the capital markets. During the same period the Ministry of Finance and the Bank of Japan had been deregulating the financial markets, providing banks with the opportunity to attract customers other than the manufacturing companies, which up to then had been the main borrowers from the Japanese banks. This led to an increase in demand for credit from both individuals and financial market participants (Alexander, 1997: 2).

In late 1985 the yen started appreciating, motivating the monetary authorities to loosen monetary policy in order to stimulate the economy. This led to a rapid increase in money supply combined with lower interest rates. It was this expansionary monetary policy that

is cited by economists as the instigating shock to the Japanese economy, which eventually resulted in the asset price bubble.

During this period the Bank of Japan also allowed credit to expand. This increase in credit heightened demand for fixed investment and land, driving the asset prices higher. As Ito and Iwaisako (1995:19) indicate, as a result of the multiplier effect, the higher stock prices meant that it was easier to raise funds through direct financing. This induced additional borrowing and allowed even more wealth to be invested, thus increasing demand for stock. The higher land prices increased firms' collateral, allowing them to increase their borrowings. This process of gearing up to take advantage of the high asset prices continued for a number of periods, eventually attracting speculative activity.

By 1989 the fear that asset prices may spill over into wages and price inflation (which to date had remained relatively muted) prompted the Bank of Japan to curtail the easy money policy by increasing the official discount rate. This halted the rapid increase in asset prices but also precipitated the collapse of the stock and land markets (Alexander, 1997: 2). During the same period, it became evident that the banks not only had not conducted sufficient credit analysis on the borrowers but also had weak internal controls. This resulted in a rapid increase in the number of bad loans, which ultimately led to the collapse of the banking sector.

5.2.3 Impact of the bubble on financial markets and the economy

The bubble resulted in bad loans, a weak banking sector and overinvestment in plant and equipment. In addition, even today stock and land prices remain volatile. During 1986, the first year of the bubble, stock prices rose 40%, a marked acceleration when compared to the 14% average growth that had been recorded over the preceding 4 years. By 1989 stock prices had tripled (Alexander, 1997:4). The peak of the bubble occurred on the last trading day of 1989, when the Nikkei index posted 38 916. Then a rapid decrease in stock (asset) prices followed. Within 12 months stock prices had decreased by approximately

40% and they continued to decline for a further two years, eventually stabilising at 60% below the high achieved at the peak of the bubble.

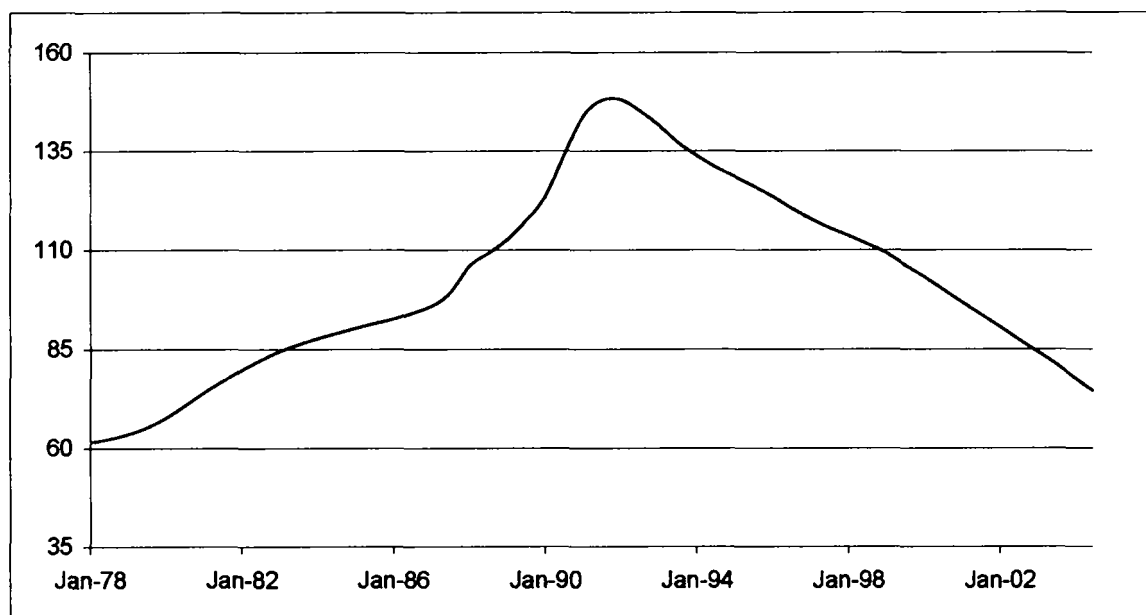
Figure 5: Movement in the Nikkei



Source: I-NET Bridge, 2004.

The impact on the housing market was similar, but as Alexander (1997: 5) indicates, the increase in land prices took longer to develop. The most crippling effects of the higher land prices were evident in the six largest cities where land prices tripled. However, not all types of land prices experienced the same upward momentum. During the period 1985 to 1991, commercial property prices rose by four times their initial value, whereas residential and industrial properties increased by two and a half times of their earlier values (Alexander, 1997: 5).

Figure 6: Movement in land prices



Source: I-Net Bridge, 2004.

As is evident from the above analysis, the losses originating from the bubble were substantial. The impact on economic growth has been particularly devastating with some economists estimating that aggregate growth in the economy over the past decade is 20-25% slower than it would have been if the economy had simply grown at 3% per annum (Thompson, 2002: 2).

5.2.4 Monetary policy actions

It is generally assumed that the instigating factor behind the development of the bubble was the lax action of the monetary authorities over the period. Miyao (2002: 386) suggests, that during the period under review, changes in monetary policy were having a considerable effect on the economy. Therefore, if the monetary authorities had adjusted the policy they could have halted the development of the asset price bubble. Junushi *et al.* (2000) argue that, if monetary policy had been adjusted earlier, the authorities would have been able to prevent the speculative activity that occurred towards the end of the asset price boom. Ito (2003) concurs, suggesting that if the Bank of Japan had raised its

discount rate in August 1998 when both the Federal Reserve Bank and the Bundesbank raised rates, the tightening would have muted the negative effects that arose as a result of the bubble.

Ito (2003) suggests that at the time of the development of the bubble asset prices were a driving force in the economy. As a result, asset prices were more sensitive to the change in monetary conditions in the economy during the 1980s than they had been a decade earlier. However, the economy was undergoing a structural change and the impact of the monetary tools on the economy was changing, leaving the Bank of Japan uncertain as to which instruments to employ.

Another limiting factor to the use of tighter monetary policy to “prick” the bubble was the political environment at the time (Saxonhouse and Stern, 2003: 269). During that period many economists were praising the Bank of Japan for their ability to constrain inflation while maintaining low interest rates. If the bank had raised interest rates early this would have been an admission that they were not as much in control as they had originally envisaged.

5.3 THE UNITED STATES (1994-2000)

5.3.1 Introduction

Although the United States has seen a number of asset price booms, two stand out as the most severe. As Bordo and Wheelock (2004: 24) indicate, both these episodes were characterised by rapidly accelerating asset prices over an extended period. The two episodes include the boom from 1923 to 1929 (the crash of which resulted in the Great Depression), and the most recent boom which spanned the period 1994 to 2000. The following analysis considers the latter boom.

5.3.2 Development of the bubble

During the late 1990s the United States experienced one of its biggest booms ever as equity prices soared. At the centre of this stock market boom were computer, telecommunications and internet stocks. However, the demand for these stocks soon filtered through to a wide range of other companies, increasing the broader market price averages. Over this period the S&P 500 and the Wilshire 5000 increased rapidly, while the fastest acceleration in prices was recorded by the NASDAQ which quintupled during the boom (Bordo and Wheelock, 2004: 22).

The macroeconomic environment before the 1994-2000 boom was characterised by above average growth in real output and industrial production, combined with low and stable inflation and low unemployment levels. In addition a relatively accommodating monetary policy was recorded over the period. This was illustrated by the reduction of the Fed funds rate by 75 basis points in 1998, despite an escalation of M2 and M3 growth rates.

Schwartz (2002: 19) points out that it was largely the increase in corporate efficiency and profitability resulting from the takeover movement in the early 1990s that accounted for the initial demand for stocks. However, in Schwartz's (2002) view, the rise in profitability cannot account for the whole upward momentum in equity prices; instead "irrational exuberance" and herd behaviour also helped to push asset prices above their fundamental values.

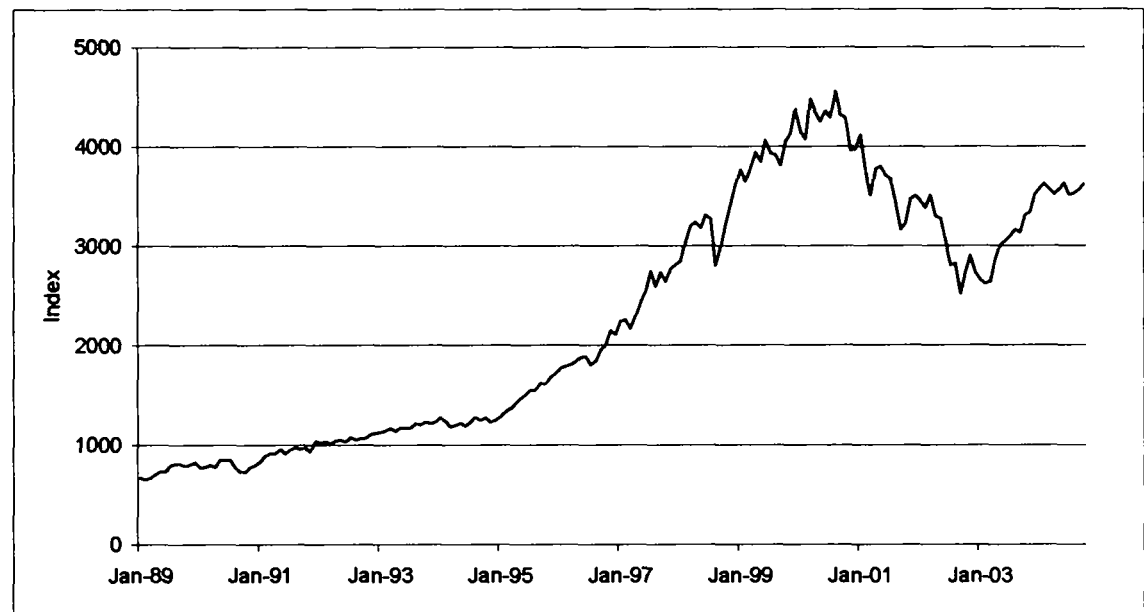
5.3.3 Impact of the bubble on financial markets and the economy

The Dow Jones rose from 3834 at the end of 1994 to 11145 in 1999 (Schwartz, 2002: 19). Comparable figures for the S&P index show a rise, from 460 at the end of 1994 to 1327 in December 1999, while the NASDAQ increased from 752 in 1994 to 4069 in December 1999. When the market crashed, equity prices retreated substantially. By July



2002 the Dow Jones, S&P index and the NASDAQ were all trading at levels below those recorded in October 1998. The movement in the S&P 500 index is illustrated in Figure 7.

Figure 7: Movement in stock prices: S&P 500 index



Source: I-Net Bridge, 2004

The collapse of the bubble filtered into other sectors and resulted in a slowdown in the United States economy. GDP data for 2001 shows that the economy started contracting immediately after the asset price bubble burst.

5.3.4 Monetary policy actions

The question remains as to whether the Fed held any responsibility for the development of the bubble and the consequential fall in asset prices. At the time of the asset bubble, prices were highly reactive to monetary policy. This is evident by the Dow Jones falling 2.3% on the same day as Greenspan described stock market investor activity as “irrational exuberance”.

During the boom the Federal Reserve Bank paid a great deal of attention to developments in the stock markets. Transcripts from Federal Reserve Bank meetings indicate that it was particularly concerned as to the consequences of a sharp decline of stock prices on the economy. The fear was that lower stock prices, through the wealth effect, would reduce consumption. The difficulty the Fed had in deciding how to react to the bubble was evident in the following statement from Greenspan (FOMC transcript, 1996: 30-31):

“We have great difficulty in monetary policy when we confront stock market bubbles. That is because, to the extent that we are successful in keeping product price inflation down, history tells us that price-earnings ratios under those conditions go through the roof. What is really needed to keep stock market bubbles from occurring is a lot of product price inflation, which historically has tended to undercut stock markets everywhere. There is a clear trade-off. If monetary policy succeeds in one, it fails in the other. Now unless we have the capability of playing in between and managing to know exactly when to push a little here and pull a little there, it is not obvious to me that there is a simple set of monetary policy solutions that deflate the bubble.”

Schwartz (2002: 21) indicates, that if monetary policy had been quicker to react and slightly more restrictive, the market's rise and consequent fall would have been muted. However, the overall impact on the American economy was not as severe as that experienced in the Japanese economy. Mishkin and White (2002: 30) attribute this relative stability to the state of development of the banking sector: the weak banks in the US had already been eliminated by failure, mergers and new regulations, while a long period of growth had made intermediaries stronger and less likely to collapse.

5.4 CONCLUSION

The two episodes described above indicate that the collapse of an asset price bubble can have severe implications for growth within an economy. In both instances, the asset price bubbles developed in periods, which were characterised by low and stable inflation

levels. This is of concern for central banks, whose mandate under an inflation-targeting framework is to achieve low and stable levels of inflation.

In both of the episodes outlined, monetary policy was slow to react. It appears, that in both Japan and the United States, the monetary authorities had knowledge that a possible bubble was brewing before the asset prices escalated. In both the above examples the speed of the decline in asset prices and the duration of the asset price bubble resulted in financial instability. Analysis indicated that, if the monetary authorities had reacted sooner to the asset price bubble, the outcome, although not preventable, would have been relatively muted.

Thus monetary policy does play a role in tempering asset price bubbles. In both the crashes, it is unlikely that the bubble would have developed to such an extent if the monetary authorities had intervened at an earlier stage. Hence it may be concluded that asset prices should be taken into consideration within the monetary policy framework.

A number of lessons can be learnt from such international experiences. Chapter 6 looks at the effectiveness of the South African monetary policy framework and analyses whether the South African Reserve Bank should adjust their monetary policy framework to take into consideration asset price bubbles.

CHAPTER 6

SOUTH AFRICA: MONETARY POLICY AND ASSET PRICES

6.1 INTRODUCTION

Following a period of high inflation and volatility, South Africa introduced an inflation-targeting regime, which to date has been successful in reducing inflation and interest rates. However, the framework does not take cognisance of movements in asset prices. Economic theory suggests that asset prices can provide information on future inflation levels. In addition, as previously argued, movements in asset prices can result in asset price booms, which, when they collapse, have significant implications for economic growth and development.

This chapter describes South Africa's monetary policy framework and analyses the current spike in housing prices in order to determine whether the monetary authorities should incorporate asset prices in their monetary policy framework.

6.2 RATIONALE FOR ADOPTING INFLATION-TARGETING

In the mid 1980s South Africa introduced monetary targeting as its main monetary policy framework, M3 money supply being the targeted variable. As dos Santos and Schaling (2000: 2) indicate, this policy was relatively successful in reducing inflation from levels of 12% to 20% year-on-year (y/y) to levels below 10% y/y by 1994. However, although this policy initially combated price pressures, inflation started rising again after 1996, outpacing world inflation. It was clear that the use of M3 money supply as an anchor for

monetary policy was losing its effectiveness. This was evident by the persistently high monetary growth, which now occurred in tandem with low inflation levels.

Dos Santos and Schaling (2000: 3) cited factors such as liberalisation of financial markets and increased international participation leading to larger capital flows as factors that reduced the effectiveness of the monetary aggregates. This structural change took place at the end of apartheid when South Africa was suddenly operating in a vastly different environment. Continued liberalisation of the capital markets increased capital flows in and out of the country. The capital flows that were attracted to the country, while necessary for economic growth and development, were also a hindrance since they disrupted the trends in the monetary aggregates. In a similar vein, Casteleijn (1999: 63) argues that the structural changes that took place in the South African economy in the late 1990s altered the transmission mechanism and, in turn, the relationship between the monetary variables and bank credit extension, as well as the relationship with regard to spending on goods and services.

Consequently, the monetary authorities decided to follow the lead of a number of developed countries and adjust the monetary policy framework towards targeting a more direct variable, namely inflation. Finance Minister Trevor Manuel announced the new policy framework in 1999, stating that an inflation-targeting regime would become operational in the first quarter of 2000. The primary objective of monetary policy as outlined by Reserve Bank Governor Mboweni in his address in 1999 was:

“... to establish and maintain financial stability, i.e. stability of prices, financial institutions and financial markets.”

The advantages of moving towards an inflation-targeting framework are outlined by van der Merwe (2004b: 1):

1. The regime of targeting monetary aggregates often resulted in uncertainties from the public as to the monetary authorities' stance as the measures taken were often difficult for the public to understand;
2. Inflation-targeting would enhance the co-ordination between monetary policies and other economic policies as a formalised approach defining the effort needed to contain inflation is explicitly stated;
3. Inflation-targeting would discipline monetary policy and increase the central bank's accountability; and
4. Inflation-targeting would serve to anchor inflationary expectations, which in turn would serve to drive down inflation.

6.3 INFLATION-TARGETING IN SOUTH AFRICA

Van der Merwe (2004b) outlines the main components of South Africa's inflation-targeting framework. While the target is determined and set by the government, it is the South African Reserve Bank's primary objective to achieve this target. This approach enhances the co-ordination between government and the central bank, thus ensuring that the economic policies are effectively integrated.

The target variable is specified in terms of the consumer price index (CPI). In all inflation-targeting countries CPI or some variable of the index is targeted. In South Africa, the measure of the consumer price index that is targeted is CPIX, which is calculated by excluding mortgage costs from the headline CPI. The decision to exclude mortgage costs resulted from the volatility associated with mortgage costs, which react immediately to changes in the repo rate. Therefore, when there is an adjustment to the repo rate, an immediate (as opposed to gradual) change in the headline inflation index

follows. This increases the volatility of the index, which could result in incorrect monetary policy decisions being taken if CPI is targeted.

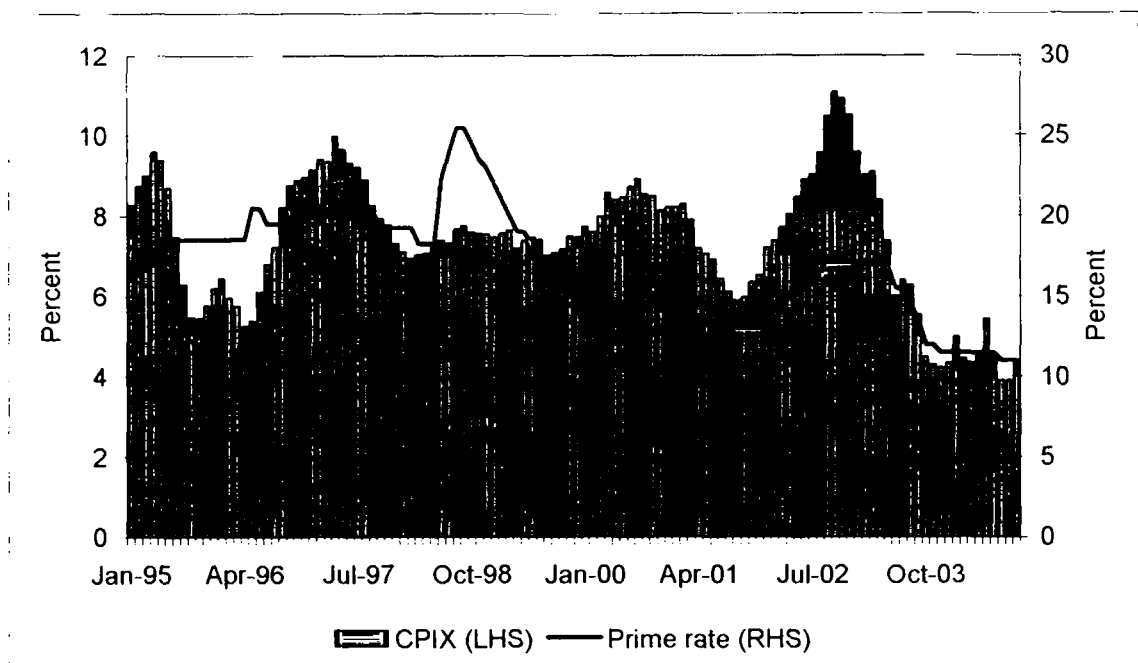
The government has specified a target band of 3-6%, as opposed to a target point. This allows for a degree of variability. Furthermore, instead of the target having to be achieved on an annual basis, the government requires its target to be achieved on a monthly basis. The aim was to increase the credibility and accountability of the Reserve Bank in this respect.

To obtain and improve credibility further, the Reserve Bank explicitly states the inflation target. Transparency is also enhanced through regular monetary policy statements. After each monetary policy meeting, held every two months, the Governor of the Reserve Bank releases a statement discussing the economic factors that were taken into consideration in the decision-making process. Twice a year the Reserve Bank's forecasts are also released, initially in the Budget Review and, later, revised forecasts are released in the Monetary Policy Review.

6.4 THE SUCCESS OF INFLATION-TARGETING IN SOUTH AFRICA

The implementation of an inflation-targeting framework as the monetary policy regime has been highly successful in South Africa in meeting the objective of price stability. With the exception of a period in 2002 and 2003 when exogenous factors placed upward pressure on inflation-levels, the policy framework has managed to restrict and lower inflation to within generally accepted levels. This positive inflation performance has allowed the Reserve Bank to lower interest rates to 16-year lows. The downward trend in inflation and interest rates is illustrated in Figure 8.

Figure 8: Inflation and interest rate movement



Source: I-Net Bridge, 2004.

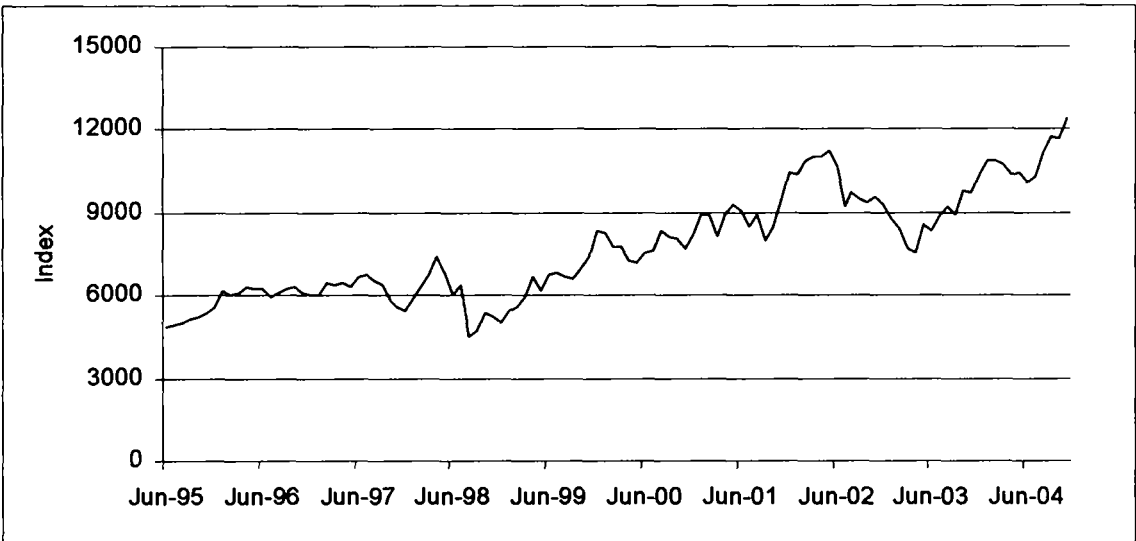
The policy has generally been accepted as credible, with strong buy-in from economic agents. This has been portrayed by the downward trend in inflation expectations, which are evident in the BER Inflation Expectation's Survey (BER, 2004: 1) released quarterly by the Bureau for Economic Research. The third quarter survey for 2004 indicated that both businesses and analysts had revised their expectations downwards, within the inflation-target band. This was the first month since the introduction of the regime that both these bodies' forecasts fell within the 3-6% level (BER, 2004: 1). In addition, their forecasts indicated that inflation should remain within the target band.

6.5 INFLATION-TARGETING AND ASSET PRICES

Within the South African inflation-targeting framework, asset prices are not systematically targeted. However, there has been little need for the monetary authorities

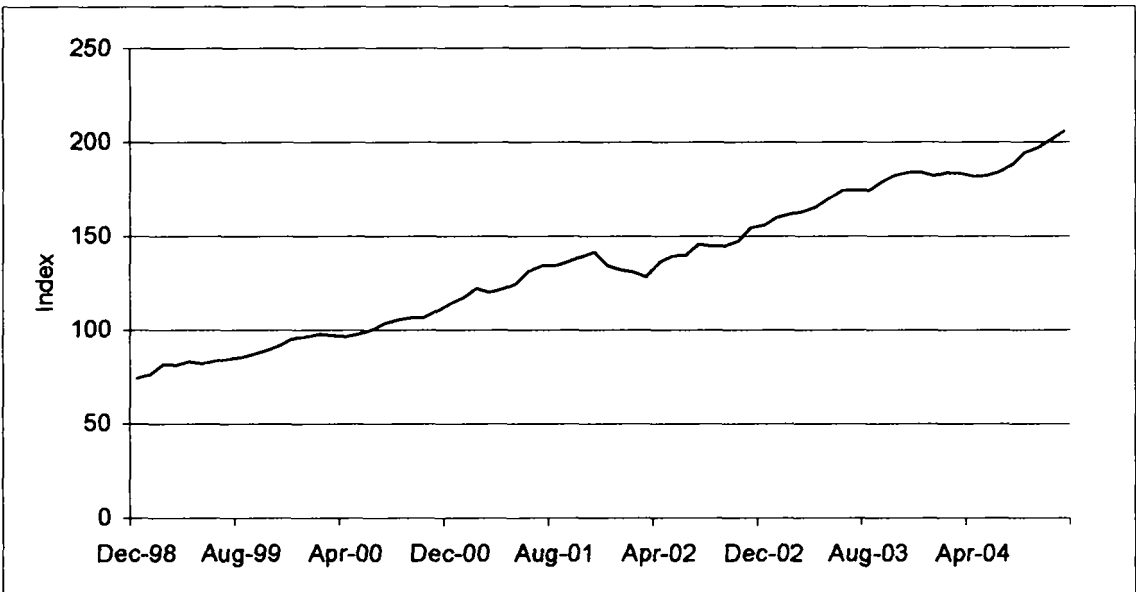
to be concerned about asset price movements. Since the implementation of its inflation-targeting framework, South Africa has not been subject to excessive increases or decreases in asset prices. This is evident in Figures 9 and 10 below, which depict the movement in the bond and equity indices.

Figure 9: Movement in the All Share Index



Source: I-Net Bridge, 2004.

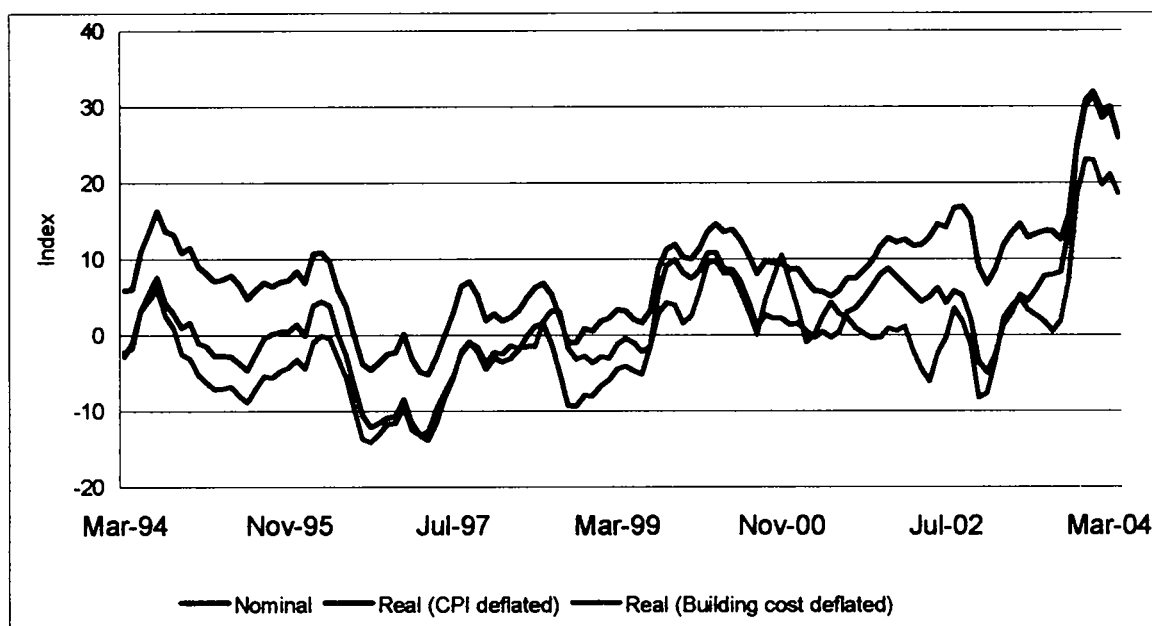
Figure 10: Movement in the All Bond Index



Source: I-Net Bridge, 2004.

However, the recent phase of expansionary monetary policy witnessed renewed interest in the housing market. The increased demand is portrayed by higher housing prices over the past year. ABSA's house price index indicates that housing prices rose 35.4% y/y in October 2004, much in line with September's growth of 35.6% y/y, and analysis of the numbers indicates that since June 2000 housing prices have doubled (I-Net Bridge, 2004).

Figure 11: Movement in housing prices



Source: Standard Bank Group, 2004.

6.6 IS THE HOUSING MARKET IN A “BUBBLE” PHASE?

De Vynck (2003: 9) discusses the correlation between the business cycle and the property market cycle. Historically, the average duration of a property market cycle in South Africa has been 17 years. Although this is longer than the average business cycle, the peaks and troughs of the property cycle tend to correspond with the peaks and troughs of the business cycle, but with a lag of between one and two years. The South African Reserve Bank (SARB, 2004: 153) indicates that the South African economy is currently

in an upward phase of the business cycle and has been since 1999. Therefore, the upward cycle in the housing market is expected to continue in the near-term.

The rapid and sustained rise in housing prices in South Africa has raised concern that a speculative bubble is forming in the economy. To determine the existence of a bubble requires identifying whether the current high levels of house prices are justified and fully explained by their fundamentals. Some economists advocate that the rapid rise in house prices simply reflects the recent decline in interest rates, combined with an increase in income growth. Others have argued that the high prices no longer reflect their underlying fundamental value and therefore the housing market is entering a bubble phase.

To date the buoyant residential market has been supported by healthy economic fundamentals. These include:

1. Low levels of inflation have allowed the South African Reserve Bank to cut interest rates by 600 bps since 2003;
2. Disposable income has increased as a result of tax cuts and increased wage settlements;
3. Growth as recorded by GDP has been increasing, with the South African economy experiencing 16 quarters of economic expansion; and
4. Continued expansion is forecast by the South African Reserve Bank into 2005 (Mboweni, 2004: 1).

These factors combined should continue to stimulate interest in the housing market over the medium term, driving house prices higher. Concern that house prices could rise further thus enticing speculators into the market is fuelling the current debate on the development of a bubble in the housing market. Van der Merwe (2004a: 1) outlines evidence in the South African market that indicates that the current overvaluation of

housing prices is 11%. While, this is minimal in comparison to international countries, van der Merwe (2004a: 2) indicates the South African economy currently displays the five conditions necessary for the development of a bubble, namely:

1. *Ample liquidity:* An increase in the demand for mortgage advances has been evident over the past year, with money supply data indicating that mortgage advances accelerated by 21.2% y/y in October (SARB, 2004: 155). Unsurprisingly the increase corresponds with the reduction of interest rates by 600 basis points. Considering that the current economic backdrop favours the possibility for further interest rate cuts, a slowdown in the growth of mortgage advances is not anticipated.
2. *Increased leverage:* Household debt as a proportion of household income is slowly increasing. During the fourth quarter of 2002, household debt as a percentage of household income was 50.7% y/y. It has since increased to 54.8% y/y in the second quarter of 2004 (SARB, 2004: 156). At current levels this ratio is still relatively low – during 1996 it reached 60.6% y/y - but a continued increase in debt levels could drive this ratio back to those historical highs.

In addition, the national affordability index has deteriorated since late 2003. This index is calculated as the instalment to income ratio and provides an indication as to whether residential property is affordable. The recent decline indicates that people are spending an increasing proportion of their disposable income on housing. While at current levels individuals are able to afford the houses, continued increases in house prices not combined with an increase in disposable income could reduce the ability of individuals to purchase houses, which could induce higher debt levels.

3. *Increased turnover:* Saville (2004) indicates that buying activity in the local housing market has increased substantially. His calculations indicate that on average between 1967 and 2003 property transactions grew at 19.7%. The

average calculated from 2000 to the second quarter of 2004 indicates that the number of transactions has increased by 28.4%.

4. *Democratisation:* This variable relates to market psychology and is relatively hard to quantify. It takes into account the willingness of individuals to invest in the market. The development of the black middle class as a new buying power has increased demand, while the buy-to-let market has also grown. The positive fundamentals and higher house prices have resulted in renewed interest in the market. This has been exacerbated by positive press announcements on the rapid increase in house prices, which has enticed speculators into the market.
5. *New supply:* Analysis of statistics on new building plans passed indicates that the supply of houses has been increasing and therefore remains plentiful. New building plans passed rose 54% y/y in September (STATSSA, 2004: 5).

If inflationary pressures remain subdued, interest rates fall and the economy continues to expand, housing prices are expected to continue rising. Currently, housing prices are increasing as a result of fundamental factors, but if prices continue to rise, speculators are likely to enter the market and drive prices substantially above their fundamental values. To a certain extent this has already happened with the expansion in the buy-to-rent market. Therefore, the possibility remains for prices to spiral out of control as occurred in the Japanese “bubble economy”.

6.7 IMPLICATIONS FOR MONETARY POLICY

As was discussed in respect of the Japanese “bubble economy”, a rapid decline in asset prices can have severe implications for economic growth. Considering that housing is the main asset on individuals’ balance sheets, while mortgage debt is the largest liability, rapid increases in house prices can have severe negative implications for the economy. Higher house prices result in an increase in perceived wealth, which in turn stimulates

demand and inflation. Of concern is the impact on the economy when a price reversal occurs in the housing market.

Monetary authorities therefore need to take into consideration whether house prices are susceptible to a rapid decline, which could ultimately impact on the broader economy. At current levels individuals are still able to afford houses and honour their debt repayments. However, if a spike such as a rapid depreciation in the currency was to occur and interest rates were hiked to contain the inflationary pressures, this could result in individuals defaulting on their obligations. As was evident in the housing price bubble in Japan, this can have serious implications for the banking sector and even lead to financial instability.

In the Japanese economy monetary authorities were hesitant to raise interest rates early into the formation of the bubble. This policy resulted in prices rising to levels which could have been avoided. As a result, the impact of the subsequent crash was larger than it would have been had the monetary authorities intervened early. To reduce the possibility of the South African economy falling prey to a similar situation, the monetary authorities should raise interest rates before housing prices spiral out of control. If done at current levels, the negative effect on the economy from a price reversal could be dampened.

6.8 CONCLUSION

The implementation of an inflation-targeting framework in South Africa has been successful in reducing levels of inflation and bringing interest rates to lows last seen in the early 1980s. However, the framework does not incorporate asset price movements. While it is difficult to determine ahead of time whether a rise in asset prices will develop into an asset price bubble, the above analysis indicates that there is a high probability that the recent spike in housing prices could develop into a bubble. Should this be the case, if and when the bubble crashes, the negative impact on the economy could be substantial.

If the monetary authorities included asset prices in their monetary policy framework, then the high housing prices would signal the need to raise interest rates. However, since this is not yet the case, the monetary authorities need to take into consideration the political ramifications of raising interest rates to offset what appears to be a housing price bubble. Should they intervene with inflation at current low levels, this would be in contradiction to their current inflation-targeting regime and could result in their credibility being questioned.

Considering the importance of asset price movements, if South Africa were to incorporate such movements into their decision making process, the inflation-targeting regime could be more successful.

CHAPTER 7

CONCLUSION AND RECOMMENDATIONS

7.1 CONCLUSION

Over the last twenty years a number of countries have implemented inflation-targeting as their primary monetary policy framework. The main aim of inflation-targeting is price stability. This approach dictates that central banks should act proactively to offset inflationary pressures. (Bernanke and Gertler, 1999: 5). The types of inflation-targeting policies that have been implemented vary from strict inflation-targeting, where the goal is to only target inflation and bring it to low levels as fast as possible, and flexible inflation-targeting, in which inflation is targeted, but movement in other variables is taken into consideration. Furthermore, the aim is to reduce inflation not in the shortest period possible but rather at a moderate rate so as not to disturb other economic variables such as growth. Regardless of the inflation-targeting approach, the framework has generally been successful in reducing inflation levels and volatility. South Africa implemented the framework in 2000. It too has been successful in reducing both inflation and interest rates.

However, on an international basis the framework has not been successful in achieving financial stability, a prerequisite for growth and development in the economy. Surprisingly, asset price bubbles, which often lead to financial instability, tend to develop in periods of low and sustained inflation – the aim of the inflation-targeting framework. The link between monetary policy and asset prices has therefore been of considerable interest to policy makers.

The majority of economists agree that movements in asset prices are an important input into any monetary policy decision in so far as they contain an informational component that, if analysed, can provide information on future inflationary pressures. Therefore, any

movement in asset prices could indicate if inflation will rise (or fall) above (or below) the target band over the near term. However, confusion can arise when different assets in the economy provide contradictory information. In such a situation the monetary authority would have to determine which asset plays the larger and more important role within the economy at that specific time. While difficult, it is not impossible to determine which asset has the most prevalent impact on the economy, and it is that asset's price movements, which the central bank needs to consider in its monetary policy stance. If monetary authorities incorporated at least the informational content of asset prices into their decision framework, the path of inflation would be smoother and the inflation-targeting regime would be enhanced.

Of greater concern is the development of asset price bubbles resulting from asset price misalignments. A positive asset price bubble is usually followed by a sharp correction, which generally leads to a significant contraction in aggregate demand and real economic activity. In the absence of a policy response from the monetary authorities, the impact on the economy from the correction can be severe. Two documented examples include the Japanese "bubble economy" and the recent stock market crash in the United States. The impact of asset price bubbles and the subsequent response of the monetary authorities have led to the debate as to whether asset prices should be incorporated into the monetary policy framework.

The debate centres on how monetary authorities should react to the development of asset price bubbles. The rapid increase in asset prices associated with an asset price bubble often results in irrational behaviour as economic agents continue to buy the asset despite the asset trading above its fundamental value. When prices rise substantially, it generally induces speculators into the market, driving the price even higher. Eventually the bubble bursts with negative economic implications. The devastating effects of a price reversal were evident in both Japan and the United States.

Both Japan and the United States did not target asset prices within their decision making frameworks and were therefore late to react to the rapid increase in the asset prices. In

these examples it was concluded, that if the monetary authorities had reacted earlier, the negative effects of the bubble would have been dampened.

The argument against the inclusion of asset prices in the monetary policy framework questions the ability of monetary authorities to detect the development of the bubble and its underlying drivers. It cannot be disputed that reacting to asset price movements that result from fundamental factors could be counter-intuitive. In turn, reacting to asset price misalignments that have originated from non-fundamental factors could be beneficial to the economy. However, it is argued that distinguishing between a fundamental and non-fundamental driver is difficult, but not impossible. In Japan the rapid rise in the Nikkei and housing prices provided early evidence that the asset prices were misaligned with their fundamentals and that speculative forces were driving the asset price bubble. If the monetary authorities had intervened when they were aware of the speculative activity, the consequential reversal would have been muted.

South Africa currently employs an explicit inflation-targeting framework. Within this approach the central bank does not take into account movements in asset prices. This creates some concern when the current rise in house prices is considered. Analysis indicates that the rise in house prices is largely a result of the current market fundamentals, such as low interest rates, low inflation and strong growth levels. However, the danger exists that increased speculative activity in the market could result in a significant misalignment in housing prices. If house prices do spiral higher, the corresponding fall could place substantial pressure on the local economy.

7.2 RECOMMENDATIONS

Central banks should view price stability and financial stability as complementary objectives. In doing so, asset prices would need to be considered within the monetary policy framework. The complexities associated with directly targeting asset prices, mean that including them as a targeted variable in the monetary policy framework could result

in increased volatility and, in some instances, incorrect monetary policy decisions. Therefore, while the central bank should consider asset price movements and their impact on inflation, it is not recommended that asset prices be included as a target variable.

Taking into account that the inflation-targeting regime requires a central bank to identify and react pre-emptively to rising inflation, and considering that the most damaging boom/bust cycles have occurred when monetary policy was slow to react to the changes in the asset price, cognisance needs to be taken of asset price misalignments. In this situation the monetary authority should determine what the risks of a reversal in the price trend are before they react. If the rise in asset prices no longer reflects the underlying fundamental factors, and the probability exists that the asset price could fall, the monetary authorities should react to slow the rise in prices. This will prevent further episodes such as those witnessed in the United States and Japan.

Furthermore, the credibility of the inflation-targeting regime lies in the transparency of the framework. Central banks should explicitly state that they do take the movement in asset prices into consideration and will react if misalignments occur. Such a statement would remove the political ramifications associated with raising interest rates to offset an asset price bubble in a relatively low inflationary environment.

Taking the above recommendations into account, the South African Reserve Bank could benefit from incorporating an asset price component within its inflation-targeting regime. However, this component should be utilised primarily for its informational content, rather than as a target variable. The Bank should also explicitly state that it does take cognisance of asset price moves and will react if an asset price misalignment develops. This will ensure that if an asset price bubble were to develop it would allow the authority to react without affecting its credibility. Such a statement would also make economic agents aware that the central bank is willing to hike rates to cool asset prices. This would likely feed into economic agents expectations, and cool the demand for the asset without strong intervention from the monetary authorities.

7.3 LIMITATIONS TO THE RESEARCH

There is a substantial body of literature focusing on inflation-targeting in developed countries. However, there is limited research on the effectiveness of inflation-targeting within a developing country context. Complexities with regard to implementing such a framework include the openness of the economy and the imperfect credibility of the central bank. While the South African Reserve Bank has achieved credibility, the economy is still relatively open, making it susceptible to external shocks which cannot be foreseen. These shocks can have detrimental implications for the achievement of the inflation target. Further research needs to be undertaken on the most effective way of conducting inflation-targeting within a developing country context.

Economic statistics on asset price movements, particularly in South Africa, are not easily and readily available. In some instances the indices such as the All Bond Index have been reconstructed and data is only available since 1998. This increases the difficulty in comparing current prices with historical averages. Indices therefore still need to be reconstructed to enable improved analysis.

One of the main factors that limit central banks from reacting to asset price changes is their inability to efficiently determine whether the asset price misalignment is driven by fundamental or non-fundamental factors until after the episode. Further research into the drivers of asset price bubbles needs to be undertaken if central banks are to make informed decisions.

However, despite the limitations associated with the research, this dissertation concludes that asset price movements should be incorporated into the monetary policy framework. While not directly targeted, if the monetary authority is able to detect the development of a bubble, they should react proactively as opposed to reactively in order to dampen the subsequent effects of a price reversal.

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Databases utilised:

Bloomberg

I-Net Bridge

Standard Bank house price database