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A Comparative Review of the Inflation-Targeting Framework Post the Crisis of 2008

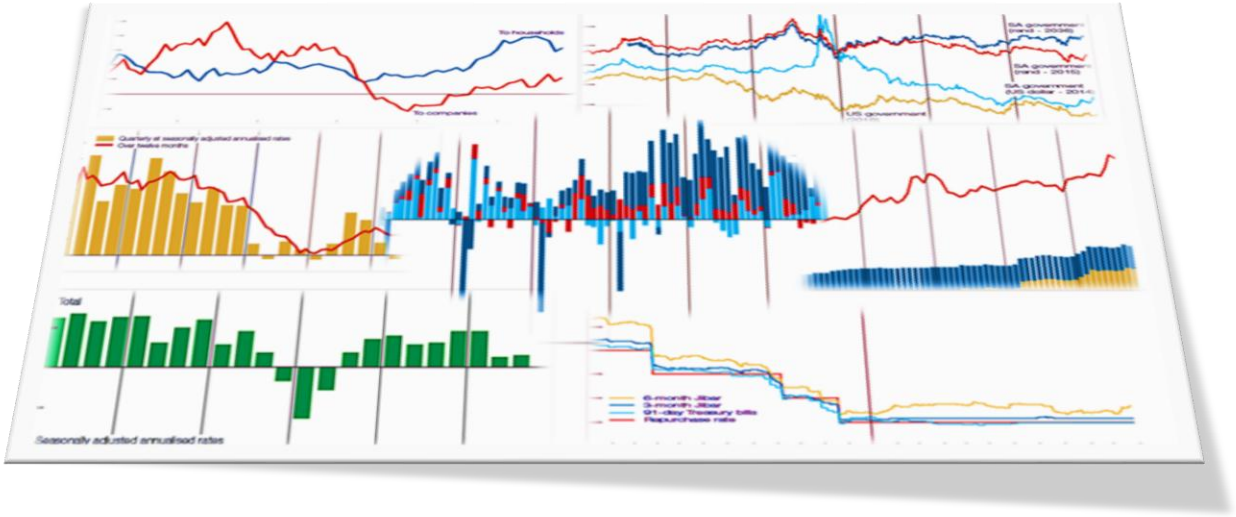
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Abstract

The global financial crisis has shaken not only the foundations of the financial system but also elements of macroeconomic stability, particularly monetary policy as it relates to the central bank institution and its fundamental operations. This paper is centred on examining the aspects of the inflation-targeting framework both theoretically and practically, as the fulcrum around which modern central banking functions, in the context of the crisis and the economic conditions thereafter. This discussion is based on the idea that there exist spaces for broadening and extending the mandate of the central bank beyond inflation targeting and that crisis conditions have gone to show that.



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A Tale of two Central Banks: Monetary Maladies, Passé Targets, and the Illusion of Macroeconomic Stability

> "***It was the best of times, it was the worst of times, it was the age of wisdom, it was the age of foolishness, it was the epoch of belief, it was the epoch of incredulity, it was the season of Light, it was the season of Darkness, it was the spring of hope, it was the winter of despair, we had everything before us, we were all going direct to Heaven, we were all going direct the other way- in short, the period was so far like the present period, that some of its nosiest authorities insisted on it being received for good or evil, in the superlative degree of comparison only."- Charles Dickens, A Tale of Two Cities, Book 1, Chapter1***

We have been accustomed to implicitly accede to the structural doubles that characterise modern capitalism. Indeed there has been some commotion on the fringes of economic theory and policy over how modern capitalism has evolved and the ways in which it has changed the nature and shape of social, political and economic relations, by and large reinforced over the last 30 years by neoclassical theory and neoliberal policy. But it appears that much of the ruckus has created few ripples, nothing substantial enough to have sent waves of change to the economic discipline and its policy prescriptions as a whole. And yet even if one subscribes to the belief that the more things change the more they stay the same, the frequency by which crises has hit the modern capitalist system has been the Achilles heel of a neoliberal agenda that continues to press for open capital and financial markets. The increased rate of occurrence of crises has also raised the level of agitation, particularly among those that constantly engage with the real economy. It has meant stronger calls for economic reform, specifically from government institutions, that should in principle and constitutionally insulate their citizens from the precariousness of private activity that takes place in global commodity markets.

The economic and financial crisis of 2008 has thrust economists, politicians and policymakers at sea once again to rethink the amount of poverty that stands alongside prosperity, the ratio of employed people to unemployed people, and their tolerance of income inequality in the face of political democracy. Indeed the sub-prime mortgage crisis that began in the United States has rattled the global social and economic pyramid, leaving an uncertain amount of space for change and perhaps prompted a rise in conversations that are more

pluralistic in nature (Ocampo, 2002). An important development in the move towards more liberal financial markets has been the amount of financial market risk extended to the realm of consumer lending (Cecchetti, 2008). House mortgages, credit card debt, automobile, student loans and so forth, were pooled together, issued as assets and backed by investor groups only for them to unravel in August of 2007 as it became apparent that the quality of mortgage loans issued had been too low (Cecchetti, 2008). The process of securitization encouraged the increase in housing debt that saw home prices rise to levels that were much higher than price increases warranted by fundamentals (Cecchetti, 2008). The U.S stock market lost an extraordinary $1.2 trillion of market value in a single day in late September of 2008 (measured by Wilshire 5000), and by the end of the year the overall industrial average of the Dow Jones had been at its worst level since 1931 (Turn, 2008; Blaire, 2008 cited by Whalen, 2009).

For the most part central banks have emerged as the champions among policy institutions, having steered the financial system away from near collapse via instantaneous changes in the interest rate, and providing liquidity support to the most bankrupt of financial institutions (Borio, 2011). But the crisis has in distinctive ways unsettled the seemingly compact and precise central bank framework and its concept of monetary policy (Goodhart, 2011; Borio, 2011). The standard mandate for a central bank that had acquired institutional independence was straight forward: maintain a certain level of inflation through the singular use of the short-term interest rate, more broadly stated or assigned by a democratically elected government (Goodhart, 2011; Borio, 2011). Post-crisis there is less certainty on the focus on an inflation targeting framework as the crux of monetary policy, particularly its advocacy to other developing countries as a prerequisite for macroeconomic stability (Borio, 2011). The achievement of price stability has proven insufficient without financial and macroeconomic stability (Goodhart, 2011). In the United States the Federal Reserve has cut interest rates to zero and with no further room to make use of expansionary monetary policy it has made use of unconventional policy measures to escape the limitations of the zero lower bound (Gerlach, 2010). For example the Federal Reserve's balance sheet has ballooned from about $10 billion to over $1 trillion by the beginning of September 2008. Furthermore, the Fed has had to extend its credit facilities to include non-depository institutions, purchasing $350 billion dollars of mortgage-backed securities backed by Fannie Mac, Freddie Mac and Ginnie Mae, while extending $200 billion to a special delegated vehicle created to purchase

commercial paper (Goodfriend, 2010:3). In total the Fed's balance sheet grew from $900 billion in mid-2007 to more than $2 trillion as of April 2009 (Goodfriend, 2010).

The Federal Reserve Bank and other central banks across the world have undergone what Goodfriend (2010) has described as a "stress test" that is still very much on-going. As we continue to observe how the central bank readjusts its powers and instruments to suit the current global climate, we also implicitly observe the rethinking of central banking and the debates that arise thereof (Goodfriend, 2010). The crisis and its after effects will undoubtedly prove to be one of those pivotal defining moments in the history of the central bank institution, particularly as policymakers are able to draw less and less from the strengths of the "Great Moderation" – a period of high economic growth and low and stable inflation, that allowed the notion that price stability lies at the centre of macroeconomic stability, to thrive mostly among industrialized countries (Borio, 2011). In addition to this, the subsequent global events have also brought to light the chasm between monetary policy theory and practice and questioned the key pillars of modern central banking such as transparency credibility, and central bank independence. The financial crisis has thus brought to the fore the limitations of monetary policy as we know it and the existing policy belief in inflation targeting (Blanchard et al, 2010).

In a heavily integrated world, developing countries have not managed to escape the knock-on effects of a crisis that is by and large owned by the developed world. The crisis experience in Africa has been one of falling trade flows, large decreases in commodity prices and a reduction in the availability of private international finance (Heintz & Ndikumana, 2011). When the crisis struck the economies of Africa, an immediate response from national governments was to try and maintain domestic demand and sustain industrial production (Heintz & Ndikumana, 2011). A main feature among the various policy responses has been a decrease in the policy interest rate in line with expansionary monetary policy, additional liquidity provided to domestic financial systems and the use of foreign reserves in an attempt to reign in on floating, volatile exchange rates (Heintz & Ndikumana, 2011). Previous studies on the South African economy have highlighted that the adoption of formal inflation targeting framework may have diminished the ability for growth and employment to reach higher targets than what would have been opportune if interest rates had been lowered (Heintz & Ndikumana, 2011). The cost of subordinating real economy variables to the presumed benefits of focusing on inflation seemed minute for the South African Reserve

Bank (SARB) prior to the end of 2007 when the crisis hit. At the end of 2007 increases in global and food prices contributed largely to the high level of inflation. Rather than adhere to the standards and rules of inflation-targeting, that is to try and get the inflation rate within the mandated inflation band of 3-6 %, efforts were directed by the Reserve Bank and the Treasury towards safeguarding incomes and jobs by supporting industrial activity and other domestic sectors in general (Heintz & Ndikumana, 2011). Indeed, pragmatism prevailed as the SARB showed flexibility in the use of its policy instruments as the secondary effects of the crisis hit South African shores (Kaskende et al, 2010). Since December 2008 the SARB had pushed forward with an easy monetary policy even as inflation passed the 6% upper bound of the inflation band, in an attempt to restrain the decrease in output as the country entered into a recession for the first time in decades (Heintz and Ndikumana, 2011: 68-69). The global financial crisis has revealed some of the difficulties and risks that arise with inflation targeting that perhaps have not been obvious while the world economy seemed to be booming. It has in a sense highlighted how necessary it is for policymakers to be offered enough leeway and discretion to introduce policy action that relates to other economic factors if and when the situation requires such (Heintz & Ndikumana, 2011; Rossouw & Padayachee, 2011). Can an inflation-targeting framework be flexible enough to include targets such as equitable and rising living standards and poverty reduction that lie at the heart of an economic development agenda for most if not all of the countries situated in Sub-Saharan Africa? (Heintz & Ndikumana, 2011).

Of particular importance globally are the stubborn high levels of unemployment. Chairman of the Federal Reserve, Ben S. Bernanke maintains that the central bank has worked hard to maintain its credibility over the last 30 years and that the cost of setting this credibility aside outweighs the use of monetary instruments to tackle the unemployment problem. Simply put increasing the Fed's 2% inflation goal would erode inflation expectations and the central bank's most notable victory over the last 30 years- stable prices (Stiglitz, 2011). The United States has been beset with high unemployment where it is believed that one out of six workers looking for a full-time job would be unable to get one, despite the idea that the U. S has one of the most flexible labour markets, with the lowest levels of unionisation amongst all advanced countries (Stiglitz, 2011). Likewise, South Africa fairs badly in comparison to other countries across the globe in terms of unemployment which stood at 24.4% in 2008 (using the narrow definition of unemployment), higher than the unemployment level that the country had in 1993 (13.7%) (Comert & Epstein, 2011). One has to agree with Borio (2011)

that the main obstacles ahead are not purely technical or analytical; they are distinctly political economy challenges. Policy debates that reduce the dynamic evolution of the central bank to a purely technical feat should be avoided. Macroeconomic stability must be enjoyed by all that contribute to sustain the prosperity of the global economy. This is a democratic principle that is often reiterated in political circles but repeatedly side-stepped in economic terms. As Papadatos (2009) has put it: "Central Banking is often referred to as an art, but should certainly not be an art for the benefit of the few" (2009:19).

This paper will review the inflation targeting framework in the face of the global financial and economic crisis of 2008 in how it has affected the central bank activity of The Federal Reserve Bank and the U. S economy and one of its southern counterparts- The South African Reserve Bank and the South African economy in which it resides. The aim is to draw upon historical and institutional variants of economic thinking, emphasising the inter-relationship between macroeconomic variables, in an assessment of the role of the central bank in the current economic climate where there have been several calls for the broadening of its mandate and a more flexible approach to its policy goals in tune with the domestic economic environment which it primarily serves. Section A will provide an engagement with diverse theoretical fronts on the inflation targeting framework as the core of monetary policy and central bank behaviour, and the crisis conditions that have increased its review among developed and developing countries. Section B will provide a comparative analysis of the balance sheet trends and policy responses of the Fed and the SARB during the time of the crisis, in an effort to get to grips with what it has meant for the American and South African economy respectively, as they both continue to face different macroeconomic challenges that require specific remedies. Section C will provide some policy implications and concluding perspectives that have arisen from the challenges posed to the central bank institution and the inflation targeting approach given the economic slowdown.

SECTION A: From Great Moderation to Great Recession- The upside and downside of Inflation-Targeting

Throughout history, the events leading up to a recession have proven to be different, arising from various factors and comprising of diverse characteristics (Borio, 2011). A key lesson learnt after the financial system collapse from 1929-1933 in the U.S was the apparent danger

of allowing banks to take on high levels of risk as they searched for higher profits (Goodhart, 2011). As a result many of the reforms put in place in the 1930's were centred around limiting competition, reducing the rates of return on deposits and investments and restraining how much banks could diversify their business activity outside of their traditional institutional role in the economy (Goodhart,2011). What began as a heavily constrained and regulated financial system was brought down at the end of World War II. A heavy amount of market pressure coupled by information technology advancements, lead to more international competition. This initially took place in the euro-dollar market, fostered in the late 1960's. It was a reflection of the first stages of market-facilitated international capital flows that undermined the Bretton Woods system of exchange and its moderate exchange controls (Goodhart, 2011). The Bretton Woods system eventually collapsed in 1972/1973, triggered initially by Nixon's policy move to end gold-dollar convertibility in 1971 and later bowled over by the effects of the oil shock of 1973 (Goodhart, 2011).

Monetarists and Keynesians fought over intellectual and policy-making space as the world economy struggled with high and variable inflation. At the same time there had been no overarching framework on how and by which means a stable macro economy should be obtained, that added to the insecurity of the times (Goodhart, 2011). The pursuit of some kind of anchor for monetary policy particularly as it related to attaining price stability from the inflation crisis, resulted in the implicit consensus among countries globally to follow after Volcker's adoption of a reserved based (non-borrowed) system at the end of 1979 (Goodhart, 2011). Thereafter the search for a decisive anchor for policy culminated in its coincidental discovery in 1988 in New Zealand- what has been more explicitly termed today as inflation-targeting (Goodhart, 2011). The period to follow was characterised by stable prices, rising output and low interest rate volatility- the Great Moderation, which policymakers at the time had attributed to monetary policy centred on maintaining price stability (Bernanke, 2004 cited by Papadatos, 2009).

Decades later what had appeared to be a compact monetary policy framework, built to perfection, was strongly challenged by recession conditions that had arisen after September 2008 (Goodhart, 2011). Indeed the seeds of the global financial crisis appear to have been sowed during the Great Moderation as credit terms and legislation were relaxed, allowing for leverage to increase both openly and discretely in the banking system, affirmed by aggressive risk-taking (Borio, 2011). Financial systems that had been liberalised appeared to be

intrinsically "procyclical". That is, a boom in the economy did not merely precede but, also seemed to provide the causes for a bust, as market optimism in asset markets later became irrational exuberance (Borio, 2011; White, 2009). Recessions beginning in 1825, 1873, 1929 as well as the Japanese and South East Asian crises all have similar denominators in the occurrence of financial crises, particularly as they encompass what has been identified as "boom-bust"cycles (White, 2009). It has proven to be much easier to look back in time and observe the build-up to crises and the subsequent recessions. But it is almost a necessity to bring to full view the underlying intellectual perspectives, theoretical frameworks and policy appraisals that play a fundamental, dynamic role in the structure and shape of the world economy.

Chapter 1: A Monetary Spring in all its Macroeconomic Grandeur: The Theory behind Inflation-targeting

There exist two main intellectual roots to Inflation Targeting (IT). The first intellectual root had arisen during the 1960's when Milton Friedman (1968) and Edmund Phelps (1968) put forth the idea monetary policy has short-run effects on the real economy whilst having a neutral effect on long-run real variables such as GDP and Output which would most likely be affected by factors such as tastes and technology (Freedman et al, 2009). As a result it is highly unlikely that in the long-run a trade-off between output and inflation exists to be exploited (Freedman et al, 2009). The second intellectual root that grounded IT had been based on the time-inconsistency problem posited by Kydland and Prescott (1977 cited by Freedman et al, 2009), and later mainstreamed by Barro and Gordon (1983,a &b) cited by Freedman et al, 2009). It is essentially based on the belief that nominal rigidities and distortions that prevail in the economy create incentives for policymakers to exploit the short-run Phillips curve in an attempt to inflate output levels, causing output to rise above its potential level temporarily (Freedman et al, 2009). This may prove to be detrimental to the rational expectations of private agents who then adjust their expectations to anticipate higher inflation in the future. The result is that the economy's equilibrium output level would have an inflation-bias and no real long-run increase in output (Freedman et al, 2009).

It is still debateable the extent to which this hypothesis describes the conditions of the 1960's and the 1970's when the inflation crisis prevailed in the United States and other industrialised

countries. Nevertheless great emphasis has been placed on ensuring the independence of the central bank coupled by stringent rules on transparency and accountability that the public institution must adhere to as a result of the historical economic conditions of the 1970's and 1980's (Freedman et al, 2009).

Mishkin (2004, 2011) has worked extensively to highlight and particularise the key tenets of IT. In the piece entitled "Why the Federal Reserve Should Adopt Inflation Targeting" he argues that monetary policy must be forward-looking and pre-emptive, specifically because of the time lags between when monetary policy is implemented and the period in which aggregate variables respond. Monetary policy must therefore in all instances attempt to act prior to the appearance of inflationary or deflationary movements in the real economy (Mishkin, 2004). This means that even if inflation is low in the current period, if policy makers believe that it may rise over the next two periods, they must tighten monetary policy today to avoid the inflationary rise that may occur in the future (Mishkin, 2004). This approach is based on eight neoclassical principles that form the theoretical foundation of monetary policy.

Firstly in line with Monetarist claims, is the tenet that "Inflation is always and everywhere a monetary phenomenon" (Friedman, 1963:17 cited by Mishkin, 2011). It is based on Friedman's predictions that expansionary monetary policy of the 1960's would eventually result in high inflation and high interest rates and in particular that economists would in general agree that a growth in money supply would be harmful to real economic activity, specifically inflation (Mishkin, 2004). An important implication of this line of reasoning was that central bankers became aware of the need to keep inflation under control as part of their institutional responsibility. Secondly, part of the effect of the rise of inflation in the 1960's and 1970's led to several discussions between the public, economists and politicians directed at weighing the costs of rising and high inflation (Mishkin, 2011). It was believed that inflation created uncertainty in relative prices and future movements in the price level, making it difficult for firms and companies to plan for future operational changes, leading to a decrease in efficiency (Lucas, 1972; Briault, 1995 cited by Mishkin, 2011). Thirdly, there is the point that there is no long-run trade-off between unemployment and inflation. In a paper published by Samuelson and Solow (1960), an argument started by A.W Phillips (1958) was put forth the idea that would ultimately characterise what is known in economics as the Phillips curve- a long-run trade-off between unemployment and inflation where policymakers

must make a choice between two conflicting goals, that is how much inflation an economy can tolerate alongside unemployment and vice versa (Mishkin, 2011). The Monetarists, under the leading influence of work done by Friedman (1968), refuted this hypothesised economic relationship, seeing the economy as rather tending towards a natural rate of unemployment where it is no longer influenced by changes in the inflation rate. Graphically, this would imply that the Phillips curve would no longer be downward-sloping but vertical (Mishkin, 2011).

A fourth grounding principle of inflation targeting is reflected in the rational expectations theory, developed in the early 1970's, most notably characterised by a series of papers by Robert Lucas (1972, 1973 & 1976 cited by Mishkin, 2011). It was based on the idea that private agents are rational-optimising individuals and therefore attach a probability to a certain event occurring in the future that allows them to forecast the movement in future variables based on their expectations (Mishkin, 2011). Because the long-run is considered to be a relatively short period of time in the rational expectations theory, it has meant that any attempt to influence the natural rate of unemployment via the introduction of particular policy may shift the economy from its long-run equilibrium to an equilibrium associated with a faster accelerating rate of inflation. The central point of rational expectations theory as it relates to monetary policy is thus how pivotal a role monetary policy plays in shaping expectations and inevitably economic activity. A fifth principle is more technical rather than theoretical. It relates to the centrality of the Taylor principle (Taylor, 1993 cited by Mishkin, 2011), in determining price stability. It is defined as the rate at which the overnight bank rate is set as a response to the deviation in the inflation rate away from its target level and the resulting deviation of output from its natural level. The Taylor principle essentially states that monetary policy can only be stabilizing when nominal interest rates rise faster than inflation, implying that prices are stable when the real interest rates rises (Mishkin, 2011).

A further point to what constitutes the neoclassical science of monetary policy is the time inconsistency problem. It is associated with the attempt by the policymaker to exploit the short run Phillips curve trade-off between inflation and unemployment but rational-optimizing agents that follow after rational expectations theory, aware of this possibility may adjust their expectations to expect an expansionary monetary policy in the future, resulting in higher inflation now accompanied by a short-run decrease in unemployment (Mishkin, 2011). The belief in the presence of the time-inconsistency problem has grounded some of the key

aspects of central banking and its guiding philosophy, particularly as it relates to its institutional arrangement and its reputation as a whole (Mishkin, 2011). This is linked to the principle that central bank independence is fundamental to maintaining low inflation. From a neoclassical point of view this aspect is important to protect the central bank's instrument, the policy rate, from short-run misuse of the trade-off between inflation and unemployment in a downward-sloping Phillips curve and the policy difficulties with dealing with time lags (Mishkin, 2011).

Lastly what has resoundingly come out as the core of central bank theory, and the role of the institution in particular, has been a stated commitment to providing price stability to an economy through the use of a nominal anchor. It is to declare explicitly the role of the central bank, particularly its outlook on monetary policy that should be directed towards long-run goals and by all means detaching itself from the pursuit of temporary expansionary policies that are in conflict with the nominal anchor's objective to counter the effects of the time-inconsistency problem (Mishkin, 2011). A central bank's credible commitment to a nominal anchor means that inflation expectations are stabilised and the possibility that inflation rates may increase out of control are mostly reduced. The overall effect would be to stabilise the real economy through primarily stabilising prices that protects economic activity from exogenous shocks to demand (Mishkin, 2011). In practice few central banks adhered to these strict principles and rather took on a flexible and pragmatic approach to central banking. Most had a modified inflation-targeting approach which meant being less stringent on the degree of urgency a central bank placed on getting an inflation rate that fell outside its target back to its mandated level. Several central bankers have paid attention to changes in asset prices, exchange rates and external risk levels. In many instances however little policy space was dedicated to pressing against overly risky financial market behaviour in the way that policy response was focussed on maintaining price stability (Blanchard et al, 2010).

Many economists and policymakers were aware of the limitations of an inflation-targeting framework particularly as it appeared to directly affect price stability and only indirectly speak to other economic variables that define an economy. Questions further arose over the rigidity of its principles, and the possibility that the framework would be inflexible to amendments or policy revision as an economy engages in different parts of the economic business cycle that force policymakers to make intertemporal decisions quickly. The sort of credibility and transparency that is presumably supposed to coincide with an independent

inflation-targeting central bank has left the institution inept in engaging in the fundamental question of how to stabilise output fluctuations (Mishkin, 2004). Indeed it has left a great divide between the central banker and the politician. While central bankers look forward to maintaining long-run equilibrium politicians push for a reduction in output fluctuations. Both parties have conflicting goals but ironically seek after the same end which is to stabilise the macro economy (Mishkin, 2004).

The neoclassical science of monetary policy has been optimistic and in retrospect perhaps overly ambitious in the belief that an inflation-targeting framework has the ability to provide long-run economic stability at all times. Financial capitalism and the nature of financial market problems has changed since the 1960's and 1970's (Papadatos, 2009). When the economy has few shocks, low inflation targets or bands seemed to be sufficient to encompass the whole of monetary policy. Stable inflation may be necessary but not a sufficient condition for macroeconomic stability (Blanchard et al, 2010). The events leading up to and including the global financial crisis highlight to a certain extent the negligence to theorise aspects of macroeconomic risk undertaken by investors, the likelihood that asset prices could deviate from fundamentals and produce asset bubbles, and the risks associated with bloated bank balance sheets. Little attention was paid to the dynamic activity of the rest of the global financial system (Blanchard et al, 2010). The real test of policy malleability has been in how inflation-targeting as the centre of central banking has coped in the downturn as well as in its aftermath.

Chapter 2: A Monetary Winter in all its Macroeconomic Adversity: A Review of the Inflation-targeting framework

The degree of financial disturbance that had occurred from 2007-2009 had caused the global economy to come to a halt, the worst economic standstill since the Great Depression, taking with it the confidence in the central bank's ability to effectively manage the economy (Mishkin, 2011). Monetary policy makers had allowed asset markets to produce bubbles and the shock was partly due to the fact that Standard Models had stated that they could not occur. Indeed the Standard Models have emphasised the correlation between low inflation and high growth and output, leaving out the possibility of multiple distortions in the financial market that may produce economic losses as financial crises arise (Stiglitz, 2010). It was

believed that monetary policy only needed one target, the inflation rate and one instrument, the short-term interest rate. More crucially, and in retrospect detrimentally, it was believed that financial regulation was outside the macroeconomic policy framework (Blanchard et al, 2010). What is apparent is that the movements in the inflation rate are much more complex than predicted, particularly in the use of heavily stylised models that are often grounded by several assumptions which inevitably map a poor relation between real economic activity and inflation (Blanchard et al, 2010). The theory of efficient and effective monetary policy was based on the premise that the macro economy in all its complexity can be described by linear dynamic equations (Mishkin, 2011). When central banks that adopted an inflation targeting framework were confronted with the question of how to deal with exchange rate volatility, they responded only as it related to their main objective- stable and low inflation. But large fluctuations in the exchange rate had contributed significantly to the large movements in capital as observed in the crisis of 2008 that can severely disrupt the economy (Blanchard et al, 2010). From this point of view the difference between rhetoric and reality obscures the definitive character of monetary policy that is to reinforce the transparent and credible reputation of an inflation-targeting central bank (Blanchard et al, 2010). The crisis has in distinct ways meant a re-examination of pre-crisis macroeconomic policy and its existing architecture, specifically the sort of textbook economic fundamentals to which policy recommendations *de facto* are based upon (Blanchard et al, 2010).

A central aspect of an appraisal of the neoclassical belief in price stability as the core of monetary policy is reliant on an examination of how inflation is stylistically understood versus the way the real economy experiences it (Weeks, 2011). Models by definition are not intended to depict all features of reality. It is expected that some simplification and idealisation should occur, so it is not a criticism to state that parts of reality have been left out of models (Stiglitz, 2010). It is however a criticism when parts of reality that are essential to the dynamic changes that occur to an economy are omitted, that then become a disservice to how we understand economic activity and the policy responses that arise thereof (Stiglitz, 2010). Indeed a scrutiny of what really underlies Milton Friedman's statement that inflation is always a monetary phenomenon brings to light that this notion referred to a one commodity economy that had no technical change, cancelled out the likelihood of price movements and also eliminated the presence of income distribution effects as well as quality changes (Weeks, 2011). For neoclassical theory inflation is a full employment phenomenon (Weeks, 2011:6). Analytically then, if we believe the assumption that markets adjust automatically to their

maximum output and full employment holds, then when an economy has a less than full employment level an increase in the quantity of money should leave the inflation level unchanged. It is unfortunately frustrating for the model when in reality inflation appears at different levels of unemployment even within a single country (Weeks, 2011). Friedman further hypothesised that it was because public policy served to temporarily reduce the unemployment rate in an attempt to exploit the short run trade-off between inflation and unemployment and that overall it was an unfavourable policy intervention as it kept unemployment below its "natural" level. Indeed Friedman's hypothesis showed strong disdain for expansionary fiscal policy in a global market that was self-correcting (Weeks, 2011). When an economy has the ability to readjust itself automatically to equilibrium there is no function for public policy. Here lies the divergence between theory and practise. Public policy seeks to put in place steps to push the economy towards full employment while the Friedman hypothesis presupposes that the economy is always there or at least that market forces are always tending towards it with no need for policy intervention (Weeks, 2011).

Another setback for the neoclassical framework is the idea that in the long-run the Phillips Curve is vertical *only in the instance that money is neutral in the long run*. If money is not neutral then an increase in the money supply at full employment would lead to a monetary increase that would change the equilibrium interest rate (Weeks, 2011). Empirically there also remains to be seen whether a natural rate of unemployment exists that characterises any single economy. It exists as an idealised concept that only prevails when several assumptions hold. Overall the Monetarist belief *a la* Friedman that an increase in the money supply causes a proportional increase in prices and hence inflation, results in a policy approach that views all changes in aggregate prices as being caused by too much money in circulation (Weeks, 2011). This has ultimately meant that the central bank uses the interest rate as a sort of sledge hammer and every rise in inflation as a nail, simplifying both the factors that change aggregate prices and a solution that only involves the short-term interest rate (Weeks, 2011:21).

The allure of Dynamic Stochastic General Equilibrium (DSGE) models has been their ability to provide quantitative direction to policy makers that have to make quantitative decisions. For instance an important monetary policy question is by how many basis points should the interest rate be increased or decreased? (Stiglitz, 2010). The weightier question nevertheless is how much confidence do we put in the numbers computed by these models?

Macroeconomic models used for forecasting and determining policy direction such as DSGE models and other traditional models like FRBUS used by the Federal Reserve, had not accounted for any financial disruptions and their effect on economic activity (Mishkin, 2011). Central bankers have always kept an eye on how private agents respond to the swings in the economy and the aggregate response of the real economy more so than they have paid attention to the numbers that forecast the behaviour of rational-utility maximising consumers (Stiglitz, 2010). It is almost with certainty that the causes of the recent financial crisis were not a consequence of the large movements in preferences for leisure or technology. In fact the history of financial crises has never highlighted these factors as being the cause for major downturns and substantial decreases in employment and output. Instead the culprit has more than often been too large changes in asset prices that create fluctuations in financial markets (Stiglitz, 2010). Mishkin (2011) has since added this key tenet to the principles of inflation targeting- financial frictions and their effect on business cycles. When financial frictions increase the financial system can no longer direct funds towards productive business, thus increasing the fragility of the financial market and raising the chances of the economy experiencing a downturn (Mishkin, 1997 cited by Mishkin, 2011). The history of episodes of financial crises has time and again shown this.

In this respect a central bank cannot avoid being concerned about the stability of the financial system in general. Standard monetary policy of the central bank is built on there being an existing cohesiveness between payments and the banking system. If there is information outside of this overall supervision of individual banks then the system cannot work smoothly. A breakdown in the presumed relationship between the central bank, the banking system and credit formation may create high levels of uncertainty in the financial market that reduce the banking system to shambles and prone to crises (Goodhart, 2005). It has been claimed in several instances that the central banks' focus on inflation has left financial distortions to cause imbalances that are not addressed directly by the public institution. Mainly because it has proven difficult to aggregate the movement of asset prices, since there are so many different classes of assets (Issing, 2003; Goodhart, 2005). Changes in asset prices are clearly the result of bullish and bearish behaviour by investors as they buy and sell stock at a given time. For a central bank to increase or decrease the interest rate without having the ability to forecast movements in the inflation rate, specifically with no apparent compass or technique as to how to credibly predict the movement of asset prices makes policy-making complex and

difficult. Indeed the central bank has not been the purveyor of calling the upswings or downswings in the asset market (Goodhart, 2005). Some have come down heavily on the central bank for this limitation. Cecchetti et al (2003:440 cited by Issing, 2003) stated resolutely that "If you cannot estimate asset price misalignments, you cannot forecast inflation either..." The point is that central banks can make the choice to continue to push forward on their primary objective inflation-targeting, but their reputation is on the line. If a central bank is perceived as not understating the impact of financial fragility and the factors that cause it, it could lose its credibility. The answers are not simple but neither are the policy responses or the changes that should occur (Issing, 2003).

A belief in the self-correcting nature of the market has meant that limitations were placed on the variety of policy instruments at the central bank's disposal. Indeed central bankers were not given the role of regulators as the market was seen as being capable of producing efficient outcomes (Stiglitz, 2010). Even as the financial market and its participants have been blamed for their zealous pursuit of self-interest in a gluttonous sort of way that proved disastrous for bankers, workers, taxpayers, households and the real economy in general, part of the blame must rest with the intellectual framework on which economic relationships and policy responses are dependent on (Stiglitz, 2010). There are some, like Ben Bernanke (2010 cited by Stiglitz, 2010), that dispute this claim, arguing that economic science did not fair all that badly in the aftermath of the financial crisis. The blame, he argued should in actual fact be placed on economic management and not with economic science even though the standard macroeconomic models failed to account for the presence of financial imbalances, neither seeking to admit to the presence of perverse incentive structures nor to explain them. These faults are specific flaws on the part of economic science and not of economic management (Stiglitz, 2010). Both Blanchard et al (2010) and Mishkin (2011) insist that "None of the lessons from the financial crisis in any way undermines the basic principles of the science of monetary policy developed before the crisis" (Mishkin, 2011:31). There still prevails analytical evidence for a central bank to maintain a low stable rate of inflation in the long run, via an inflation objective that involves stating an explicit inflation target or band that also include the pursuit of stable output in the short run, with the aim of constantly tending towards its natural rate (Mishkin, 2011). Blanchard reiterates this point, stating that the bulk of the conclusions reached in pre-crisis macroeconomic theory still hold, including the idea that the natural rate is a good estimate of the long-run goals of macroeconomic policy. Consequently policymakers should not re-evaluate the core of monetary policy as it relates to

neoclassical inflationary theory. It is maintained that there is no long-run trade-off between inflation and unemployment (Blanchard et al, 2010).

Of course there are an array of perspectives within economics and even more so within macroeconomic theory. There are indeed a few that have theorised the circumstances under which financial crises occur and the deleterious effects it may have on the economy. Economists such as Minsky (1992 cited by Stiglitz, 2010), who in his Financial Instability Hypothesis warned of the endogeneity of credit cycles that ultimately lead to crisis, as well as Kindleberger (1978 cited by Stiglitz, 2010) who mapped out the historical prevalence of economic manias, panics and crashes, have dedicated much of their academic writing to the incidence of financial system breakdowns. These macroeconomic theories have predominantly been situated at the bottom of the hierarchy in their influence on macroeconomic discussions and policy appraisals, however they have moved up the rankings in recent times to become a series of popular alternatives at a time when the global economy is facing both uncertain and dynamic times (Stiglitz, 2010). For instance the front page of the Wall Street Journal on the 18th of August emphasised the key arguments of Minsky's work as the world economy continued to spiral downwards- describing it as a "Minsky moment"- when investors become overly indebted and are forced to liquidate their assets in order to pay back their loans (Whalen, 2009). According to Minsky capitalist financial systems inherently move from a stable economic period called hedge financing, to a riskier period referred to as speculative financing, and then to a highly unstable period called Ponzi financing. This trend in economic activity produces a number of booms and busts that, depending on the severity of the bust, inevitably requires a series of stabilisation policies and government interventions as seen in the global financial crisis of 2008 (Minsky, 1982; 1992a cited by Whalen, 2009). In other words the financial system of the economy moves from a period of prosperity to become more and more fragile that eventually results in a "Minsky Moment" (Lahart, 2007:1 cited by Whalen, 2009), when an over extension of credit to particular borrowers leads them to sell their assets to meet their payments (Whalen, 2009). The Minskyian interpretation of The Great Recession is grounded in work done by Keynes and Schumpeter (Whalen, 2009). From a Minskyian point of view then an investigation of the macro economy fundamentally includes cyclical and structural dimensions and a policy approach that brings to the fore both recovery and reform (Galbraith, 2009).

Others such as Galbraith (2009) have given diverse comments on the issue. Indeed the crisis has brought to light the need for distinct reforms, not just in the way economic policy is drafted but also how we measure the outcomes it produces. The financial system has the same break and accelerator in so far as it relates to the single instrument that the central bank has had at its disposal, used to both propel growth and constrain adverse changes that may hinder the economy. In terms of inflation and unemployment it sounds unrealistic to wait a couple of years based on the belief that the unemployment problem will cure itself. It will require more than market forces to increase employment and thus economic activity (Galbraith, 2009). There continues to be much ambiguity surrounding the role of the central bank in this new and precarious global environment. As a (partly) state institution the objectives of the central bank have been different throughout contemporary economic history, mostly because of the changing face of the financial system and the shifts in political, economic and social relations that have shifted the hierarchy of power throughout various periods. The surge in neoliberal policies from the end of the 1970's to the beginning of the 1980's had narrowed the goals of the central bank towards price stability, explicitly stated as inflation-targeting (Papadatos, 2009). Even though the inflation-targeting framework has thrived, allowing the world economy to boom for more than three decades it has had its deficiencies. The emergence of financial bubbles during the 1990's had weakened the framework, indicating perhaps the limitations of modern central banking.

The phenomenon of asset price inflation (Papadatos, 2009:13) has made it difficult for the central bank to create monetary conditions that build expectations of the direction and shape of economic activity for private agents, leaving large room for policy error as asset prices move unpredictably. The main point therefore is that price stability does not ensure financial stability (McGee, 2000; Bean, 2003: 787-807 cited by Papadatos, 2009). The mayhem that had begun over 3 years ago has certainly been met with skilful and crafty policy responses from central banks across the globe. After the crisis was overcome through the use of unconventional policies central banks were criticised for operating outside their stated mandate (White, 2009; Shirakawa, 2010). The swiftness and flexibility of central bankers has painted them both as heroes and villains. No institution had the financial capacity to bailout the financial sector; reduce exchange rate volatility in some cases, and keep the financial system partly operational as the banking system unravelled in a short period of time. In hindsight the semi-state institution has lost some credibility as the social costs borne by

workers and households have been high, and the insatiable desire for short-term gains left private

investors calling the shots in the financial system, to its detriment. The policy performance of the central bank has thus placed it under the spotlight (Shirakawa, 2010).

SECTION B: Using more Tools in the Central Bank Box: Requiring more than the Short-term Interest Rate

This section will provide a comparative analysis of the balance sheet movements and the changes in the liquidity positions of the Fed and the SARB, both during the peak of the crisis and after as a continuation of a discussion on the inflation-targeting framework as it remains a guiding ethos for modern central banking. The aim of this approach is to provide a quantitative and descriptive perspective of central banking behaviour, while overarching this comparison with economic perspectives on the theory of central banking and monetary policy in a historical, evolutionary and institutional manner.

Chapter 3: Extraordinary Times calls for Unusual measures: The Fed's response to the crisis

Over the years the Federal Reserve has discovered and implemented multiple policy positions to suit the economic environment of the United States. This includes utilising price indices, observing changes in the gold price, movements in future prices, studies of expected inflation and various Taylor rules to fulfil policy objectives (Bell-Kelton, 2006). Some approaches have been more successful than others in assisting the Fed in achieving its dual mandate: the maintenance of price stability and high employment. Nevertheless the changes in the U.S economy have not been the only driving forces to the changing orientation of the Federal Reserve, particularly its approach to central banking. Indeed key neoclassical principles on how to confront monetary policy have been the dominating intellectual perspective among the central bankers that govern the Fed. From the 1990's the Fed's philosophy has been distinctly monetarist (Greenspan in FOMC February 1999a:78 cited by Bell-Kelton, 2006)

with the idea that the right amount of tightening of the Federal Funds Rate (FFR) would result in price stability, perceived as fundamental to macroeconomic stability. When the crisis had begun in late 2008 and aggregate demand stagnated, several central banks quickly reduced their policy rates to zero. As a consequence there has been a heavy reliance on fiscal policy to incur higher budget deficits than would have been needed had there been no binding zero interest rate restriction (Blanchard et al, 2010). The Fed began using atypical policy instruments at the end of 2007 when the flow of credit in the global economy came to a sudden halt. The Fed's use of the federal funds rate was stunted by large credit abnormalities, illiquidity and high risk spreads (www.federalreserve.org). By the end of 2008 the recession had worsened, leaving the Federal Reserve to use its balance sheet policies in order to decrease the cost of credit while attempting to increase the availability of credit to households and firms (www.federalreserve.org). One important part of this procedure involved the purchasing of long-term securities in the open market. It was based on the idea that even though the short-term interest rates had approached the zero lower bound, the Fed could still decrease long-term interest rates. If interest rates had been higher and hence inflation at a higher level than average, there would have been more room to cut interest rates as opposed to compromising domestic fiscal positions (Blanchard et al, 2010). As a result the Federal Reserve's balance sheet has expanded from about $10 billion in 2008 to more than $1 trillion by the end of 2009 owing to the use of these unconventional measures.

While the financial system does appear to have stabilised it is clear that there have been some costs to using unconventional monetary policies (Blanchard et al, 2010; Goodfriend, 2010). The most evident problem has been that by taking steps to purchase private securities the Fed may well have entered the policy arena in which politicians operate, merging monetary policy with some form of fiscal policy that leaves a substantial amount of uncertainty surrounding its credibility and independence (Mishkin, 2011). Unfortunately the zero-lower bound has proven problematic as traditional short-term interest rates turned out to be ineffective in the prevailing crisis. By lending cash and securities to debt-ridden banking institutions the Fed has tried to bring some liquidity back to the financial market. In doing so it has committed a massive amount to keeping the global financial sector afloat (Mishkin, 2011; Cecchetti, 2008).

A detailed examination of the steps taken by the central bankers of the Federal Reserve, paint a picture of the policy interventions embarked on at the height of the global financial crisis.

The table entitled "Major Federal Reserve Policy actions 9 August 2007 to 18 March 2008" from a paper by Ceccheti (2008) does just this. The key elements of the policy responses made by the Fed include: five cuts in the target federal funds rate, altogether amounting to 225 basis points; a fall in the premium on discount lending by 50 basis points and then another 25 basis points above the target federal funds rate; an allotted $24 billion in credit to the European Central bank and the Swiss National Bank, later increased to $36 billion; the transformation of the existing securities program to the "Terms Securities Lending Facility"; the extension of credit to dealers via the newly established "Primary Dealer Credit Facility"; and the approved lending provision to JP Morgan and Bear Stearns (Cecchetti, 2008:18).

To comprehend how these changes work it is necessary to take a look at the Fed's balance sheet in the table below showing the changes in the Federal Reserve's assets from the 7 July 2007 to 26 March 2008. Taking a look at the asset movements (where much of the change has occurred versus looking at the changes in liabilities) of the Fed, if interest rates had been higher and hence inflation at a higher level than average, there would have been more room to cut interest rates as opposed to compromising domestic fiscal positions (Blanchard et al, 2010). The changes in the composition of Federal Reserve assets demonstrates that the cuts in discount borrowing, the rise in the terms of loans declared on the 17th of August followed by consecutive cuts in the federal rate beginning mid-September should have the increased liquidity levels in the financial system. Also providing discount loans for up to 30 days at an interest rate which is only 50 basis points above that of the banks' should have created enough access to liquidity that would all banks to resume normal banking operations. All these policy interventions should have granted banks short-term funding and lowered interest rates, reduced the need to acquire interbank loans and overall helped U.S banking institutions to get back to business as usual (Cecchetti, 2008).

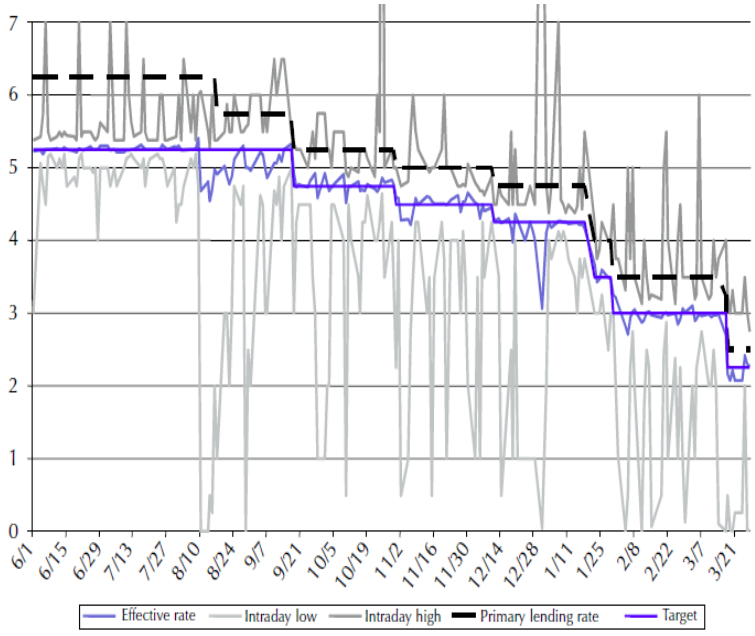
Table 1: Major Federal Reserve Policy Actions: 9 August 2007- 18 March 2008

August 9	Increase in the level of temporary open market operations
August 10	FOMC statement
August 17	Cut in primary lending rate from 100 to 50 basis points above the federal funds rate target; an increase in the term of discount lending from overnight to a maximum of 30 days; and release of FOMC policy announcement
September 18	50 basis point cut in target federal funds rate at regular FOMC meeting
October 31	25 basis point cut in target federal funds rate at regular FOMC meeting
December 11	25 basis point cut in target federal funds rate at regular FOMC meeting
December 12	Announced creation of the Term Auction Facility (TAF) and the swap lines with the European Central Bank and the Swiss National Bank of $20 billion and $4 billion, respectively.
December 17	First TAF auction: $20 billion, 98 bidders
January 21	75 basis point cut in target federal funds rate at an unscheduled meeting, and cut in the discount rate
January 30	50 basis point cut in target federal funds rate at regular FOMC meeting, and cut in the discount rate
March 2	Announced intention to conduct 28-day repos cumulating to $100 billion
March 7	Announced an increase in the size of the TAF from $60 billion to $100 billion outstanding at any given time.
March 11	Announced creation of Term Securities Lending Facility and the intention to lend $200 billion worth of Treasury Securities to Primary Dealers. Increase in the swap lines with the European Central Bank and the Swiss National Bank to $30 billion and $6 billion, respectively.
March 14	Announced approval of loan to Bear Stearns through JPMorgan Chase
March 16	Announced creation of Primary Dealer Credit Facility (PDCF)25 basis point cut in the discount rate to 3¼ percent; an increase in the maximum term of discount lending from 30 to 90 days; announced approval of $30 billion loan to JPMorgan Chase for the purposes of purchasing Bear Stearns.
March 18	75 basis point cut in target federal funds rate at regular FOMC meeting, and cut in the discount rate

Table 2: Federal Reserve Assets on Various Dates (in billions of dollars)

	4 July 07	2 Jan 08	19 March 08	26 March 08
Securities				
Held Outright	$790.6	$740.6	$660.5	$612.3
Repurchase Agreements	$30.3	$56.3	$62.0	$106.8
Loans				
Primary Credit	$0.19	$4.9	$0.12	$0.58
Term Auction Credit		$40.0	$80.0	$80.0
Primary Dealer Credit			$28.8	$37.6
Other credit extensions			$0.0	$0.0
Foreign Exchange				
Reserves	$20.8	$27.3	$27.3	$27.3
Gold	$11.0	$11.0	$11.0	$11.0
Other assets	$27.5	$45.6	$21.0	$20.2
Total Assets	**$880.4**	**$925.7**	**$890.7**	**$895.8**

Figure 1: Federal Funds Rate: Target, Effective, Range and Primary Lending Rate



Source :Cecchetti, S. 2008: "Monetary Policy and the Financial Crisis of 2007-2008". From Left: Federal Reserve Interventions; Top Right: Balance Sheet Movements; Bottom Right: Federal Funds Rate developments 1/06/07 to 1/03/08

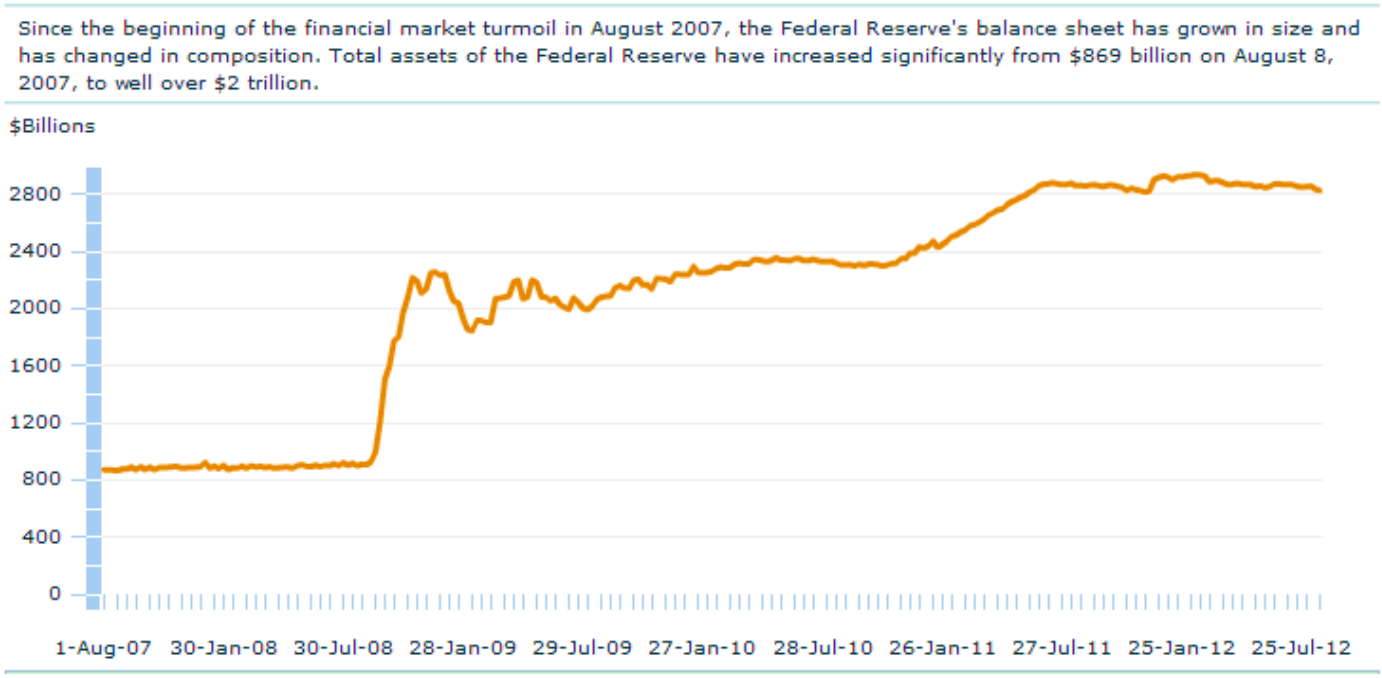
While most of these policy responses did alleviate some of the effects of the sudden halt in liquidity flows in the market, there were still some deep cracks in the global financial system that were difficult to cover with the policy moves made by the Federal Reserve. To understand this problem more would require taking a look at the federal funds rate graph and its dynamics (Figure 1). The figure plots the daily movement in the federal funds rate and the trading rate of the federal funds rate as reported by trade dealers to the Federal Reserve of New York. There are some dynamics worth noting. In the past the open market trading desk in New York has done well in staying closely aligned with the market-determined federal funds rate (Cecchetti, 2008: 20). Typical movements are what we observe on the left side of the Federal Fund Rate graph. Unexpectedly starting from the 9th of August 2007, the effective rate is much more volatile than before, where it floated around the target rate. The daily low is far below the target, while the daily high is frequently higher than the primary lending rate. If anything it appears as if the anxiety over borrowing seems to have increased even after central bank intervention (Cecchetti, 2008). U.S central bankers became aware of something that had not been a problem before. While there may exist a policy instrument to inject liquidity into the financial system there is no surety that it would go to banks that desperately need it. In the U.S instance the fact that traditional Open Market Operations has the ability to place reserves in the hand of 19 primary dealers does not mean these reserves will trickle down to the rest of the financial system (Cecchetti, 2008).

To comprehend the extensive impact of the Fed's interventions on its own balance sheet would require observing the enormous rise in its accumulation of assets (Table 2). The figure shows the evolution of the assets of the Fed over nine months from July 2007 to March 2008. Prior to the crisis the Fed held $800 billion dollars in securities. Over the nine month period this had been run down to just over $600 billion. Repurchase agreements used to sit at around $30 billion. Over the same period of time it has gone beyond $100 billion. By lending out cash and securities the Federal Reserve has attempted to bring back some order to a crippled financial market (Ceccehtti, 2008). It has put an enormous amount of its balance sheet on the line. By March 2008 the Fed had dedicated over $1 trillion to the recovery of bank liquidity, $100 billion to the Term Auction Facility, $100 billion to 28-day repo of mortgage-backed securities, $200 billion to the Term Securities Lending Facility, $36 billion to foreign exchange swaps, $29 billion to a loan to support the sale of Bear Stearns, and $30 billion so far to the Primary Dealer Credit Facility (Cecchetti, 2008:26). The two graphs below emphasise this point. The first graph illustrates Total Federal Reserve Assets beginning in

August 2007 to July 2012. The Fed's balance sheet has since March 2008 ballooned to over $2 trillion. The second graph depicts how the Federal Reserve has run down nearly all of its liquidity facilities also from August 2007 to July 2012, in an attempt to restart financial flows in the market, the Term Auction Facility, the Commercial Paper Funding Facility and the central bank liquidity swap lines providing the most reserve balances to banks. In general the Federal Reserve's balance sheet activity has left the banking system highly liquid with U.S banks now holding over two trillion in reserves with Federal Banks (Testimony, Feb, 10, 2010 'The Federal Reserve's Exit Strategy').

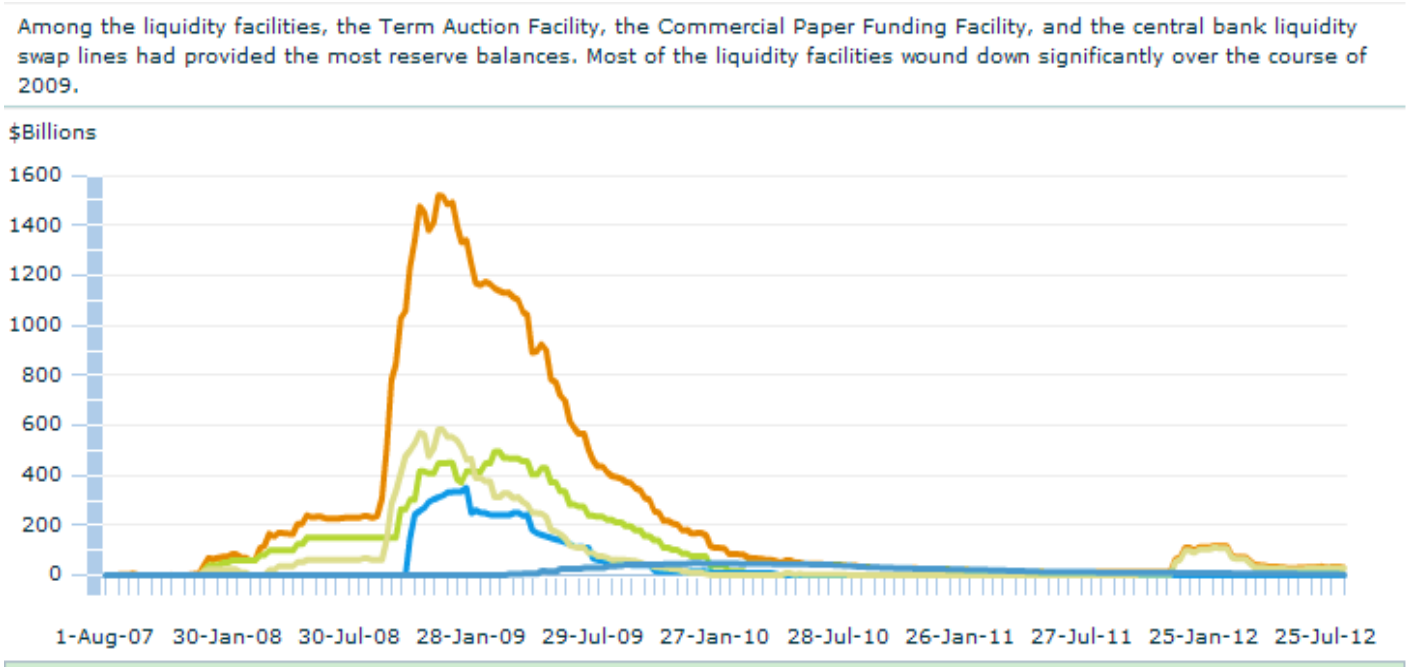
The Federal Reserve Balance Sheet several years after the initial effects of the Financial Crisis

Figure 2: Total Assets of the Federal Reserve 1/08/07 to 25/07/12



Source: federalreserve.org

Figure 3: Credit Extended through Federal Reserve Liquidity Facilities 1/08/07 to 25/07/12



Source: federalreserve.org

It is reasonable to want to deliberate over whether the Fed should have pursued quantitative easing as part of the tools used to counter the effects of a downturn (Cecchetti, 2008). Indeed it is the only official institution that has the ability to act swiftly enough to attempt to steer the economy from difficult macroeconomic circumstances as politicians do not have the policy instruments to make such a difference (Borio, 2011). The unemployment rate spiked to 10% in the U.S and rose substantially in other developed countries, and remained stubbornly high even whilst the global economy seemed to recover (Mishkin, 2011). At this point in time it is difficult to heavily critique the Federal Reserve for its unique responses to the crisis, but there is something that can be said about the outlook that the central bankers that govern the bank should have had prior to the events surrounding the financial and the economic perils that are faced now (Cecchetti, 2008). Ideologically the Fed must do more to balance its perception of how it views economic reality versus the economic theory and intellectual perspectives that ground it. This also implicitly addresses its focus on an inflation-targeting framework in a scenario where there lies a continuum of multiple policy goals, with differing degrees of importance that have appeared out of a global slowdown and that require an elasticity of approach to return the world and national economies to macro stability (Bell-Kelton, 2006). That is to say hindsight has given policymakers and economists alike an opportunity to

review and reassess central banking, particularly as it relates to policy goal-setting and issues surrounding their implementation.

Chapter 4: The Ripple Effects of the Crisis at South Africa's doorstep: Unorthodox Counter Measures embarked on by the SARB

The questions surrounding inflation targeting as the core of monetary policy have increased in relevance among African countries after the global crisis of 2008, as central banks worked to alleviate the effects of the events that had begun to unfold in advanced countries' markets. As soon as the indirect effects of the crisis hit African economies, governments pursued policies that were directed at sustaining domestic demand, and maintaining levels of industrial activity (Heintz & Ndikumana, 2011). Primary responses include monetary easing via a reduction of short-term interest rates, injections of liquidity into the banking system and a much more explicit intervention into foreign exchange markets in an effort to relieve floating domestic currency from the volatility of the market (Heintz & Ndikumana, 2011). Sure enough the crisis has demonstrated the usefulness of both counter-cyclical policy and flexible monetary policy in the face of exogenous market shocks. It has also slowed down global monetary shifts to inflation-targeting, where central banks are hesitant to embrace an approach that keeps commodity inflation low but also has the ability to compromise financial stability, economic growth and employment when applied too rigorously (Comert & Epstein, 2011).

South Africa's historical narrative of triumph over 40 years of racial political oppression has led to the successful transition to a democratic government that included all races in the country's political processes (Epstein, 2008). However the tale of South Africa's economic transition has not been so encouraging. Income and national wealth still remains unequally distributed among the citizens of the country, mainly along racial lines with white nationals still commanding the largest share of the country's economic assets while the black majority squabble over what is left (Epstein, 2008). Most of the troublesome economic issues that still prevail have been inherited by a highly divisive economic, political and social system architected by the Apartheid government, that to a certain extent have been perpetuated by a distinctly neoliberal economic ideology and its influence on the drafting of macroeconomic policy (Epstein, 2008). Soon after the introduction of a democratic government in 1994, the newly elected government decided that price stability would be the core focus of monetary

policy. In 1998 the South African Reserve Bank (SARB) put in place the first pillars of an inflation-targeting framework with an informal target range of 1-5% (Epstein, 2008). Thereafter, in February 2002 the Reserve Bank set up a formal inflation targeting approach. The Ministry of Finance set the target band of the inflation rate at 3-6% of an increase in the consumer price index less interest costs on mortgage rates with the repurchase (repo) rate as its sole policy instrument (Epstein, 2008). Since the establishment of an inflation targeting regime, the South African economy has experienced high real interest rates, alongside mediocre growth rates and short-term hikes in employment levels, predominantly the result of the commodity boom of 2002. A microscopic look at the nature of the South African economy continues to show the deeply-rooted structural inter-sectoral issues that have negatively affected the rate at which the growing economy produces jobs, causing the unemployment and underemployment of many South Africans that challenges the macroeconomic stability of the country as a whole (Epstein, 2008).

South Africa is regarded as a full-fledged inflation targeter, one of the few countries that have central bank independence guaranteed by the Constitution of the country. In section 224 of the Constitution and section 3 of the Reserve Bank Act, it is declared that the main objective of the SARB is to guard the currency against fluctuations that compromise sustainable economic growth (van der Merwe, 2004). The institutional grounds on which the Bank has been established has allowed the SARB and its executive management a large degree of autonomy in the way it operates. Thus even though the role of the Reserve Bank is established by legislation it still has the freedom to use policy instruments as it pleases to achieve its targets (van der Merwe, 2004). It is important to note that the determination of the external rate of the South African Rand is guided by the supply and demand movements of the foreign exchange market (van der Merwe, 2004). The adoption of a floating exchange rate regime has meant that the fluctuations in the nominal exchange rate are unavoidable. The nominal effective exchange rate of the Rand fell by 13% in 2000, then by 34.5% in 2001, but then rose by 24% in 2002 and 16% in 2003 (van der Merwe, 2004). More significantly, since the application of inflation-targeting in South Africa excessive changes in asset prices have not been accounted for in the determination of interest rate levels, even though asset prices remain an integral component to the transmission mechanisms that characterise the monetary process (van der Merwe, 2004).

The SARB has monopolistic authority over money-market liquidity through its interactions with local banks. The repo rate is the main instrument of the SARB as it tackles monetary challenges, but even this has its own consequences and effects, suggested by the changes that occur on its balance sheet (Brink & Kock, 2009). The SARB is also the exclusive creator and destroyer of central bank liquidity in the domestic financial system. The Bank generates (destroys) central bank liquidity via an increase (decrease) of its assets or increasing (decreasing) its liabilities to maintain a deficit position on the balance sheet (liabilities exceeding assets). The SARB has a variety of instruments available to achieve an excess of liabilities on its balance sheet (Brink & Kock, 2009). This includes the issuance of SARB debentures, the management of longer-term reverse repo transactions, participating in foreign exchange swaps and the removal of government funds from commercial banks that are placed on deposit at the SARB (Brink & Kock, 2009:6). In summary then we understand that the SARB has the ability to change liquidity conditions through either an increase or decrease in assets or liabilities.

Table 3: Structural Changes in the SARB's balance sheet from 1998-2009

	March 1998		March 2009	
	R billions	% of assets	R billions	% of assets
Total assets	**45.6**	**100**	**345.6**	**100**
Foreign assets	32.8	72.0	323.6	93.6
Net foreign assets	*23.6*	*51.8*	*317.4*	*91.8*
Domestic assets	12.8	17.8	22.0	6.4
Liquidity provided (Money-market shortage)	*4.5*	*9.9*	*10.3*	*3.0*
Total capital and liabilities	**45.6**	**100**	**345.6**	**100**
Foreign liabilities	9.2	20.2	6.2	1.2
Monetary base	30.2	66.2	116.5	33.7
Notes and coin in circulation	*23.0*	*50.4*	*69.0*	*20.0*
Cash reserves held at the SARB	*7.2*	*15.8*	*47.5*	*13.7*
Public sector deposits	1.9	4.2	66.3	19.2
Money market operations	0	0	35.6	10.3
SARB Debentures	*0*	*0*	*28.1*	*8.1*
Longer-term reverse repo's	*0*	*0*	*7.5*	*2.2*
Capital and other liabilities[10]	4.3		121.0	
Memorandum items:				
Monetary liabilities	30.2	66.2	116.5	33.7
Non-monetary liabilities	15.4	33.8	229.1	66.3
Non-autonomous funding	0	0	35.6	10.3
Semi-autonomous funding	11.1	24.0	72.5	21.0
Autonomous funding	30.2	66.2	116.5	33.7

Source: Brink, N. M, Kock. 2009. "Central balance sheet policy in South Africa and its implications for money-market liquidity

Figure 4:Composition of SARB assets

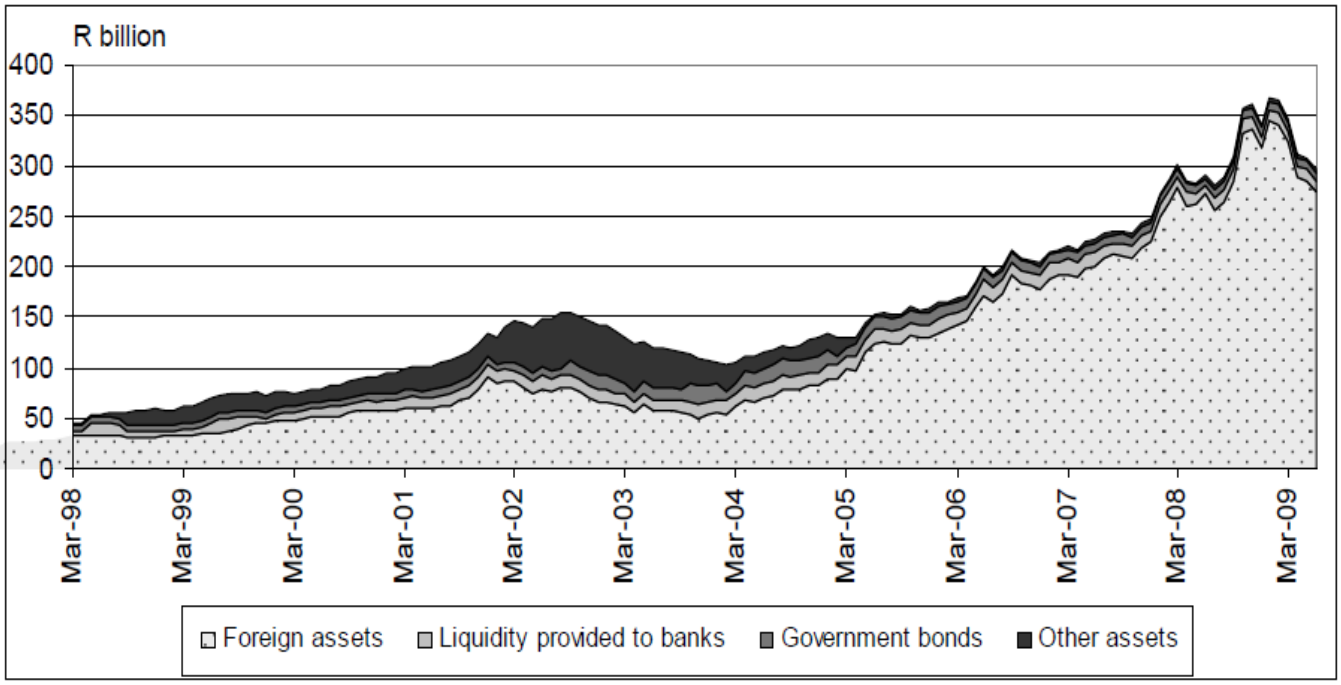
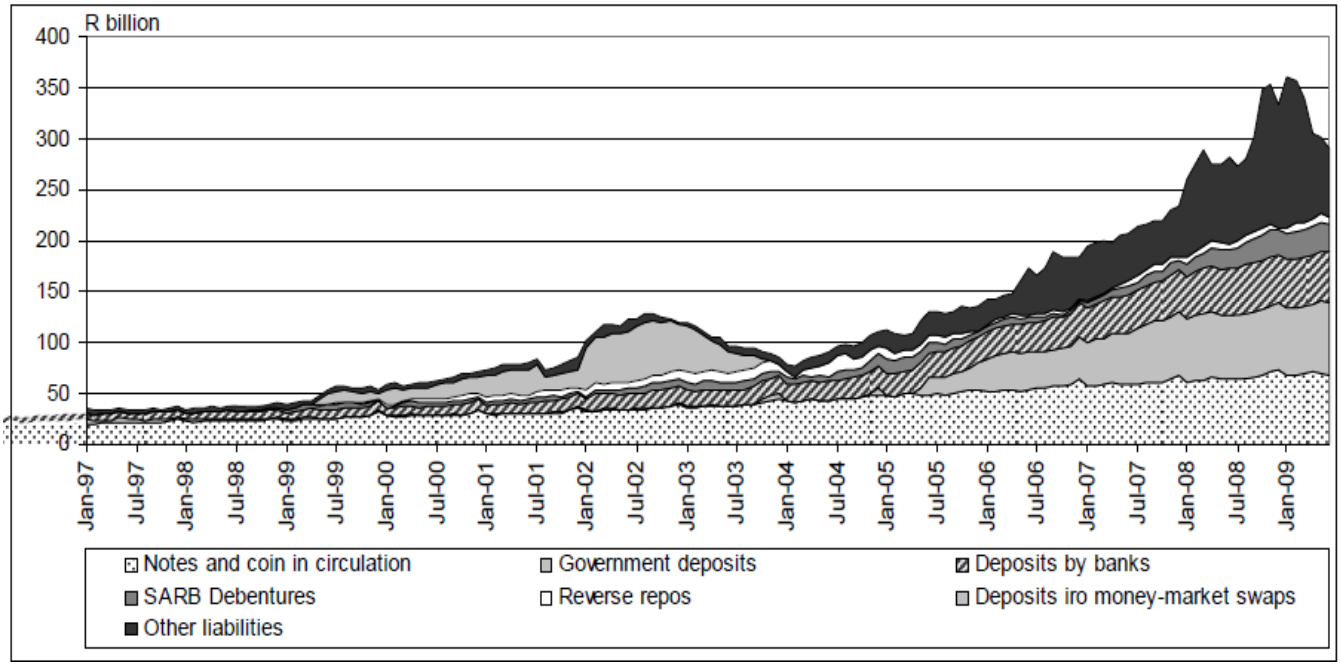
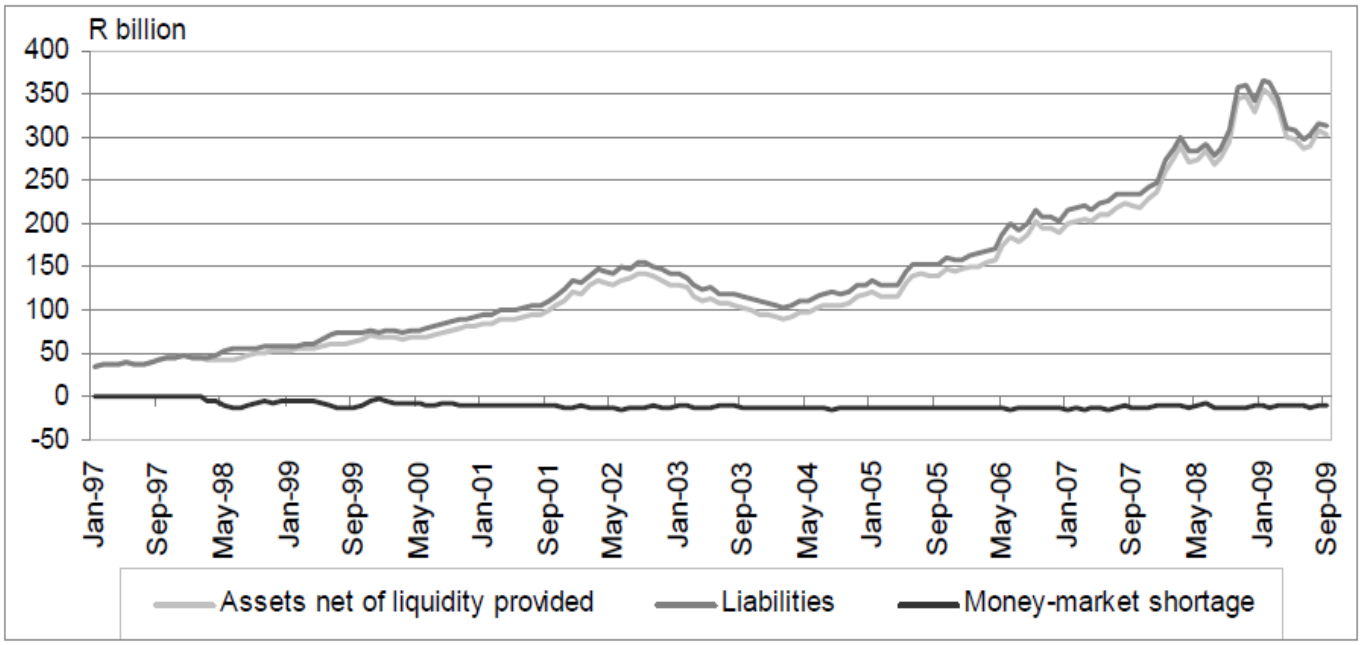


Figure 5: Composition of SARB liabilities



Source: Brink, N. M, Kock. 2009. "Central balance sheet policy in South Africa and its implications for money-market liquidity"

Figure 6: Assets, Liabilities and the money market shortage



Source: Brink, N. M, Kock. 2009. "Central balance sheet policy in South Africa and its implications for money-market liquidity"

The SARB's assets grew 8 times from March 1998, with the highest growth experienced from 2004 up until March of 2008, indicated by the rise in the value of SARB assets from R45.6 billion to R345.6 billion and depicted graphically in Figure 4 (Brink & Kock, 2009). The significant balance sheet movements can be linked to the introduction of the repurchase-based refinancing system in March 2008, but more specifically since the end of 2004. The main cause for this growth can be attributed to an increase in net foreign assets that have risen by 327% between December 2004 and June 2009 (Brink & Kock, 2009). This highlights the ability of the SARB's actions to directly affect the composition of assets and liabilities and the evolution of the balance sheet thereof that can either drain or inject liquidity into the money market that is exhibited in the size of the money market shortage shown in the changes that have taken place in Figure 4 and 5. In Figure 6 we observe the interaction of assets and liabilities that have increased or decreased the size of the money-market shortage. The SARB's balance sheet had grown quite consistently with total liabilities continuously remaining slightly above total assets (Brink & Kock, 2009).

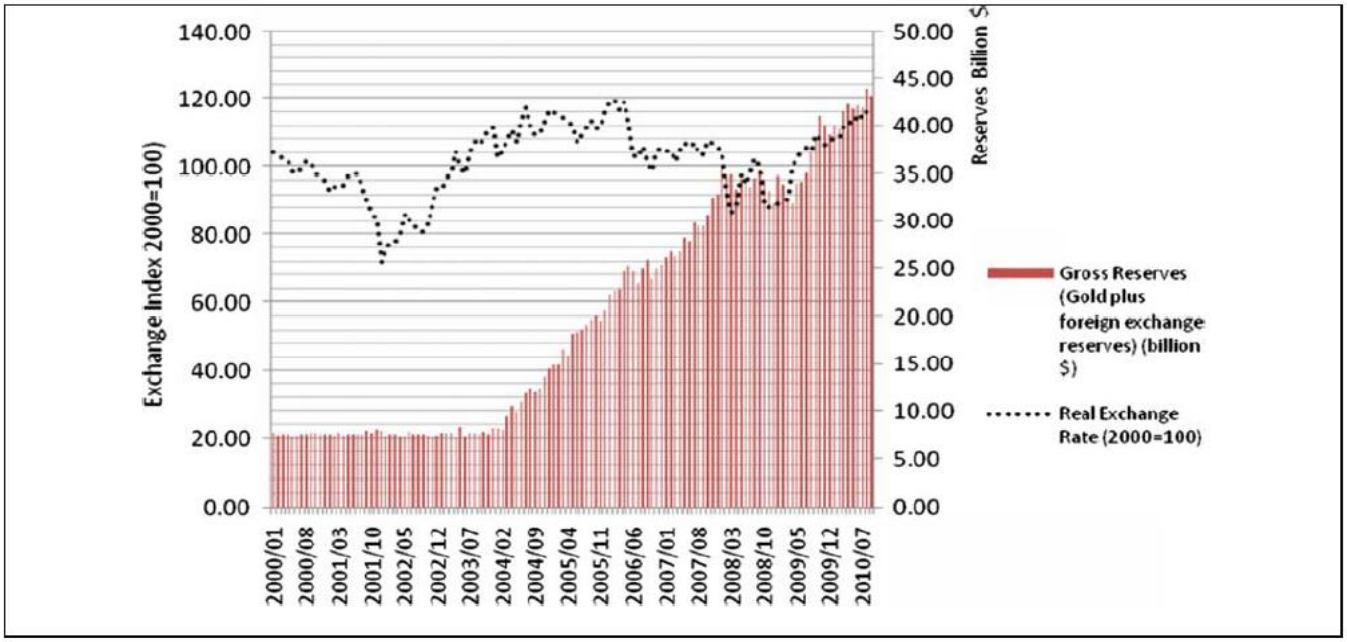
While the liquidity requirement or the money market shortage has continued to be quite consistent in nominal terms, it has reduced in size since 2002 in real terms and also in

comparison to the size of the balance sheet of commercial banks. Commercial bank balance sheets have increased by 422% from R579 billion in March 1998 to R3022 billion in June 2009. As a consequence the liquidity requirement has experienced a significant reduction in its ratio to private bank balance sheets. It has worked to decrease the banks' dependence on central bank funding that has left the SARB with less influence on the banking system through traditional refinancing processes. The SARB still however has an indirect impact on the refinancing system through the repo rate in the fundamental role it has in ultimately determining the money market yield curve (Brink & Kock, 2009). The period between 2004 and 2008 has been a period of rapid growth in bank balance sheets, posing the question as to extent to which the SARB may have contributed or at least enabled the enlargement in private bank balance sheets (Brink & Kock, 2009). Whether deliberately or as a side effect of other policies, changes in a central bank's balance sheet has particular consequences on the nature and shape of economic activity, by means of its impact on the structure of commercial bank balance sheets that affect the growth of money in an economy via the creation of loans (Borio, 2009 cited by Brink & Kock, 2009). Thus it is important that a central bank does not overlook the effect its balance sheet policy has on commercial balance sheets, specifically because it inherently shapes the circulation of money in the real economy. This also throws into the discussion the argument that central bank policy should effectively be counter-cyclical, that is policies that diminish the size of bank's balance sheets if they grow too large, specifically during optimistic periods where they may be unwarranted growth in investments given the existing interest rate policy (Brink & Kock, 2009).

The low interest rates in the United States and the large volumes of international flows propelled by investors on the look for short-term returns have increased the work of the SARB as liberalised financial markets fuel the volatility of the domestic real exchange rate (Comert & Epstein, 2011). South Africa has not been able to avoid the knock-on effects of the crisis, although it has evaded its full effects that have been experienced in some countries. The domestic financial market has been affected by the down-size in lending activities and the fall in business profitability (Mnyande, 2010b cited by Comert & Epstein, 2011), while precarious inflows and outflows of capital have placed substantial pressure on the exchange rate, increasing the instability of the financial system. Lower international demand for exported goods coupled by exchange rate volatility has led to sluggish growth and higher unemployment rates (Comert & Epstein, 2011). In the wake of the crisis the SARB has had to adopt novel ways in approaching monetary policy by using instruments that are to a large

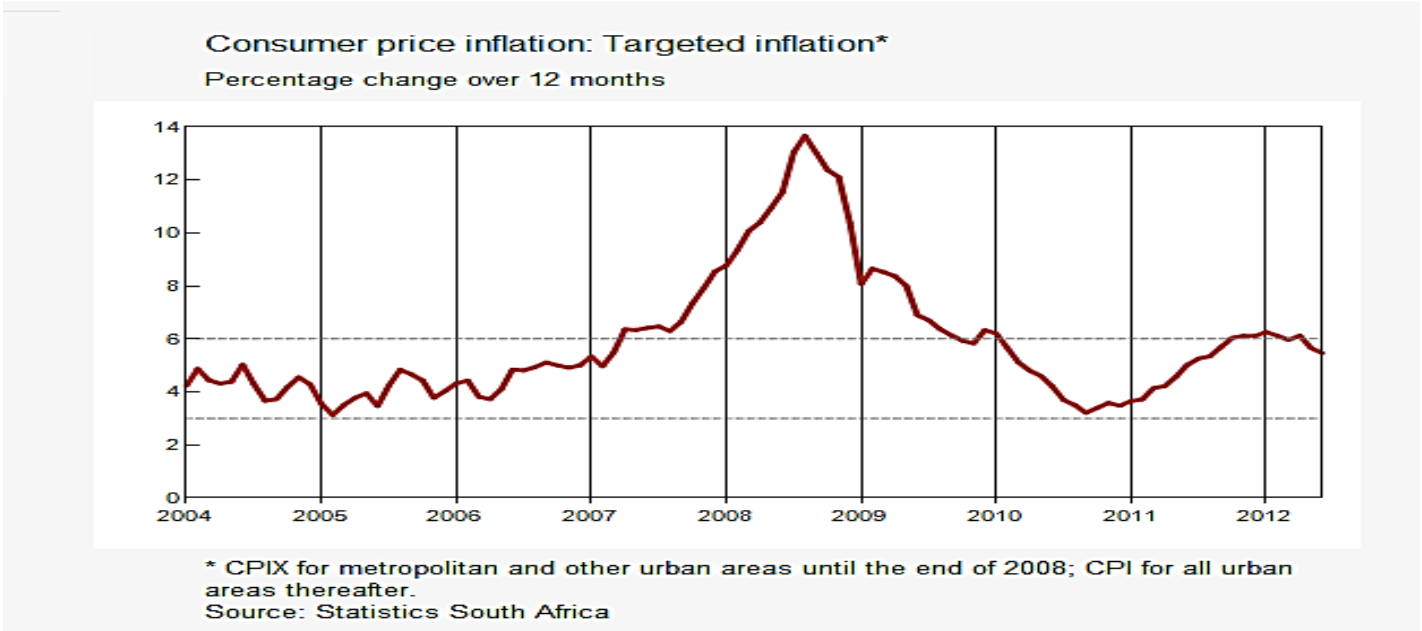
extent unorthodox to the inflation-targeting framework. Given recession conditions, emphasis has been placed on macroeconomic goals such as economic growth and financial stability, setting aside at least for a moment an inflation-targeted mandate (Comert & Epstein, 2011)

Figure 7: Foreign reserves and movements in exchange rates in South Africa



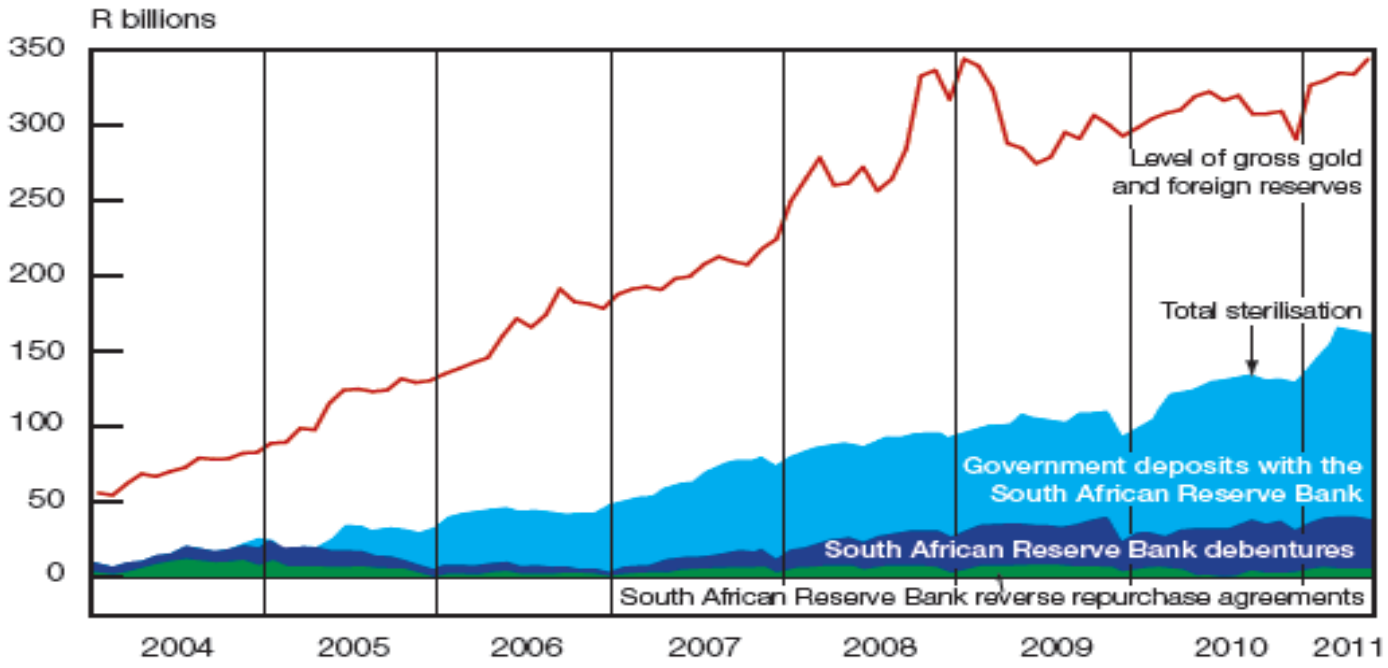
Source: Comert, H. Epstein, G. 2011. "Inflation Targeting in South Africa: Friend or Foe of Development?

Figure 8: Movements in Consumer price inflation 2004- 2012



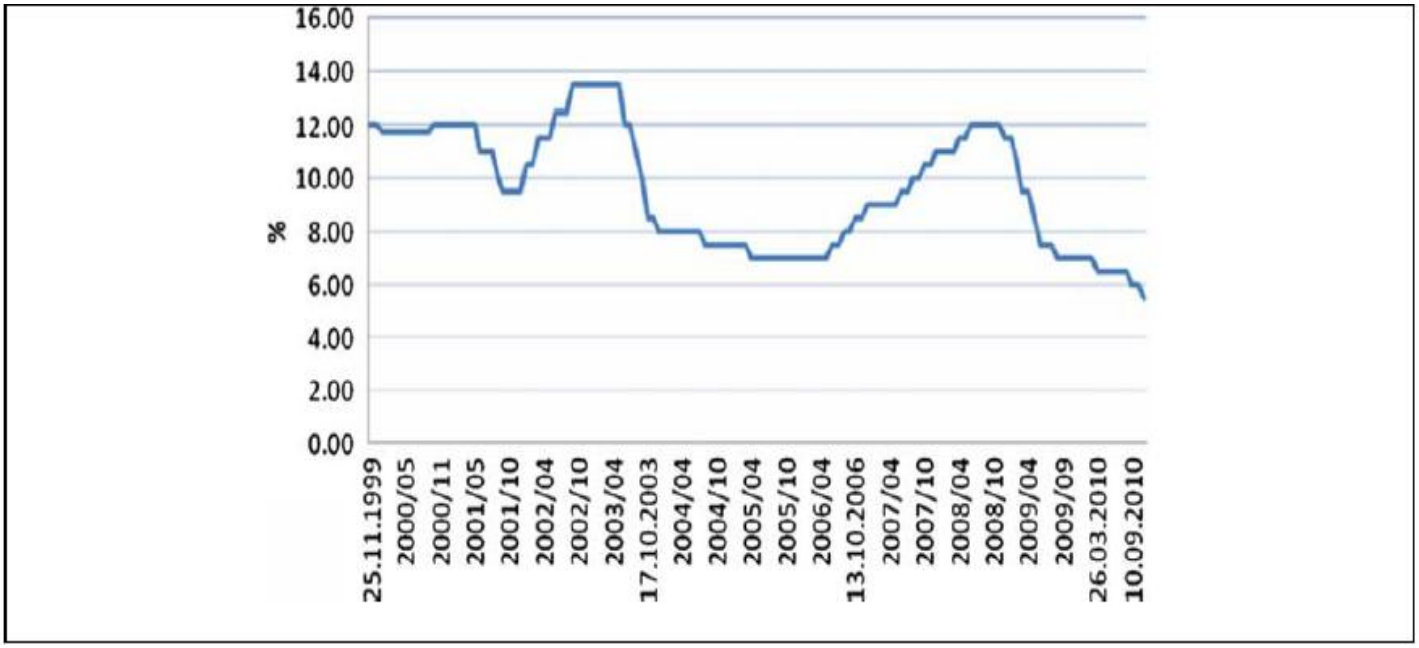
Source: southafricanreserve.org

Figure 9: Level of gross reserves and sterilisation balances



Source: SARB Annual Report 2010/2011 southafricanreserve.org

Figure 10: The Policy rate in South Africa (repurchase rate)



Source: Comert, H. Epstein, G. 2011. "Inflation Targeting in South Africa: Friend or Foe of Development?

In general the SARB has displayed an ample amount of flexibility and pragmatism in an attempt to offset the indirect effects of the global crisis (Heintz & Ndikumana, 2010; Kasekende, Brixiova & Ndikumana, 2010 cited by Comert & Epstein, 2011). Heintz & Ndikumana (2010, 2b cited by Comert and Epstein, 2011) stated that a stringent approach to the rules of an inflation-targeting regime has had to come second to the pressing issues that the Reserve Bank and the Treasury have had to deal with, including the protection of employment and incomes through industry and domestic activity support. Since December 2008 the policy rate has steadily decreased from 12 % to 5.5% in January 2011 (see Figure 10). This is the lowest level the policy rate has been in 30 years. In particular, the SARB has had to dedicate much of its attention to reducing the volatility and level of the exchange rate. Indeed the advisor to the governor and chief economist of the Reserve Bank Monde Mnyande (2010a;8 cited by Comert & Epstein, 2011) has reasoned the SARB's policy response to the global crisis by arguing that: "The Bank is very aware of the impact of both the current level and volatility of the rand on the economy, particularly the manufacturing, export and import-competing sectors...Discussions with the National Treasury about the various options available to address these issues, as well as the availability of resources to do so are ongoing". In this light the Bank seems to be more open, given the prevailing economic circumstances, to the idea of using foreign reserves to insulate the exchange rate from external market pressures (see Figure 7 & 9). This observation is affirmed by what the Governor of the South African Reserve Bank, Gill Marcus had to say on the Bank's position: "we will act to alleviate some of the pressure on the exchange rate by purchasing FDI inflows either through direct transactions or from the market. . . . Apart from possibly contributing to moderating current appreciation pressures on the exchange rate of the rand, such purchases are in keeping with our stated policy of building reserves" (Marcus 2010:5 cited by Comert & Epstein, 2011). This is to emphasise Mnyande's point that there is a need to be conscious of the changes that occur in the financial market in particular the movements in asset prices as part of the *modus operandi* of the Reserve Bank. In quite a fundamental departure from inflation-targeting the SARB attempted to manage asset price movements, something that had been considered outside of the capabilities of the Bank as it pursued more than price stability in the economy. This is in line with the international move, Mnyande states (2010c:9 cited by Comert & Epstein, 2011) to supervise disproportionate rises in assets prices away from fundamentals that could result in asset bubbles, extending the scope of its functions and its policy instruments that demonstrates the Bank is cognisant of the fact that a macro-prudential

framework must contribute to the well-being of a broader set of policy goals in order to deal with market imbalances (2011:S103).

Surprisingly, in spite of the global economic slowdown the SARB has for the most part remained true to inflation-targeting practises and its legislated mandate, even with South Africa's poor performing macroeconomic indicators (Comert & Epstein, 2011). Post-Apartheid output growth has been disappointingly low while unemployment and inequality continue to be stubbornly high. In a developing country context where a number of macroeconomic indicators are far below levels that portray a comprehensive picture of macroeconomic stability, it is important to ask whether the inflation-targeting framework serves the economic conditions of South Africa and whether it is indeed the appropriate framework for the Reserve Bank to centralise its operations around (Comert & Epstein, 2011). The main point therefore is to probe considerably into whether the Reserve Bank can contribute definitively to the well-being of the real economy, namely issues concerning economic growth, employment and a more equal distribution of income, outside of crises conditions (Comert & Epstein, 2011).

With an open trade and capital account the SARB has been put under pressure to raise its accumulation of foreign reserves to cushion the nominal currency from fragile financial conditions (see Figure 7). This has occurred since mid-2009. Inflation-targeting has certainly taken a back seat to issues related to the exchange rate and this is reflected in the sharp rise in the inflation rate from the end of 2007, peaking at around 14% in mid-2008 and only drawing closer to the inflation band of 3-6% by the end of 2009 (see Figure 8). To a certain extent inflation-targeting sits alongside exchange rate targeting, creating its own tensions in policy goals as efforts to maintain an inflation target involve policy interventions that come at their own cost. More specifically, ensuring low and single digit inflation rates requires that other prices in the economy change too, for example higher real interest rates and an appreciating real exchange rate (Heintz & Ndikumana, 2011). If this relationship exists, and counter measures are not being taken to alleviate the friction between these macroeconomic goals then there are some obvious ways in which inflation-targeting compromises the growth of the real economy (Heintz & Ndikumana, 2011).

It is important to keep in mind that monetary policy is not a magic bullet for the economic problems that South Africa faces, although it cannot be understated what a well-designed monetary policy can do when it is aligned with other macroeconomic policy goals as part of the country's overall development (Comert & Epstein, 2011). This is not to say that price stability now becomes irrelevant, but it is to point out acute problems such as unemployment and income inequality that compromise the nation's macroeconomic stability (Comert & Epstein, 2011). To maintain stringent ties to the inflation-targeting perspective based on intellectual and ideological perspectives would be erroneous. Pragmatism must prevail, as it has in the current economic slowdown. It is essential that the SARB and its central bankers adopt an open-mind to central bank reforms that dynamically respond to the various economic hurdles South Africa must conquer (Comert & Epstein, 2011). It is also to concede to the idea that no policy framework is absolute and thus established rules can be changed.

SECTION C: Policy Implications and Conclusions

Like a golden thread globalisation has integrated the world in a complex and intricate fashion. Indeed, countries that have opened themselves to the competitive forces that operate to increase global wealth have worked to the favour of some more than others. However even as these global links shine in the glory of the overall increase in the prosperity of nations, it has been marred in recent times by the shame of the stagnation, and in some instances the collapse of some of the most advanced economies. Dark economic times have spread from western markets into emerging markets, bringing with it its own winds of change. It is these strong ties, particularly in the nature and shape of policy that bring the North to the South even as contexts remain different.

A review of the inflation targeting framework in the face of the global financial and economic crisis of 2008 and how it had changed central bank activity for the Federal Reserve Bank and the South African Reserve Bank, has shed light on both the high notes and the low notes of an inflation targeting country, working mostly to investigate how such a monetary policy approach is able to withstand the stress tests that come with various cycles in economic activity. It has served primarily to highlight spots in which an inflation targeting framework has been unimpressive in an economic environment where monetary policy has had to be strong and pliable.

As it stands, the current intellectual model of inflation-targeting is difficult to digest in sub-Saharan countries that are faced with a variety of structural conditions and institutional arrangements. Institutional and structural realities have not been taken into consideration when formulating monetary policy and that has proven to be problematic. To treat central banking and hence monetary policy as independent from other domestic institutional arrangements has the ability to contradict structural policies linked to economic and social development (Heintz & Ndikumana, 2011).

Debating the costs and benefits of an inflation-targeting framework, particularly after facing one of the worst global downturns in 30 years should not be limited to an intellectual feat. There are merits for central banking reform that warrant the return to policy elements that are connected to real outcomes and long-run development. Both the Federal Reserve and the SARB have made a concerted effort to affect more than the inflation rate in current economic conditions, they have also shown how through deliberate policy actions monetary policy can do more, when the central bank utilises the array of policy instruments available to it (Heintz & Ndikumana, 2011). Yet even as central bankers openly acknowledge their part in creating the circumstances under which an economic recession would even be possible, it hasn't gone as far as to acknowledge the notion that too low a rate of inflation may compromise the rate at which output grows. On this point the Federal Reserve and the SARB remain conservative, even after the financial crisis (Heintz & Ndikumana, 2011).

In developing economies disillusionment over standardised reforms aimed at macroeconomic stability have increased, however the political response has been scattered and unsystematic, making the course forward unclear. Recent economic events and the general discontent over its dilapidating effects on real economy participants have catapulted a debate that has the prospect of deepening the development agenda (Ocampo, 2002). The concept of macroeconomic stability has overtime become focussed on reducing the fiscal deficit and price stability, leaving real economic activity as a residual of these macroeconomic goals. But there are two issues that must be kept in mind (Ocampo, 2002). Firstly real economic instability has proven costly thus it is important to bear in mind that price stability can be harmful if its effects are underestimated. Secondly, private sector debt accumulation can be just as detrimental to the functioning of an economy as public deficits. That is, in liberalised economies increases in risky private balance sheets without a comprehensive regulatory and

supervisory institution in place raises the probability of capital account shocks (Ocampo, 2002). The global crisis has revealed the risks associated with an inflation-targeting framework and stresses the importance of allowing enough policy discretion for policymakers to operate in different economic conditions (Heintz & Ndikumana, 2011).

The main point therefore is that there can be no uniform approach to resolving questions pertaining to monetary policy, as Rossouw and Padayechee (2011) have argued, approaches to monetary policy should be discontinued and replaced by more relevant policy appraisals when circumstances require such. It is outside of the scope of inflation to respond to policy issues that have economic and political ends. This is an important point for central bankers in developing economies, constrained by imperfect markets and bureaucratic weaknesses that often seek simplicity of monetary policy, making them susceptible to oversimplifying an inflation-targeting framework and how it molds to the dynamics of a specific country. A lesson from the crisis in this respect is that monetary policy must and can do more than ensure price stability when formulated to achieve a broader set of macroeconomic goals (Rossouw & Padayachee, 2011).

Beyond this there are concerns raised over what continues to characterise the central banking institution, what remains as functional, what is dysfunctional and the room for amendment. The contrasting yet intertwined Tale of Two Central Banks, drawn together by a global liberalised market and a crisis thereafter, has brought to the fore an array of voices and opinions, all with the intention of leaving a mark on how the central banks views itself and its operations. Some speak of the demise of an inflation-targeting framework; others speak of the inclusion of additional element(s) to the already existing mandate. Some point to the optimism related to a possibly changed face of the institution while others are sceptical that much needs to be changed at all. In the end one has to accept that central bankers are imperfect human beings, with the capacity to do both right and wrong, to commit to both great actions and terribly erroneous ones and yet still remain fundamental to the functioning of the macro economy.

Because of the importance of the central bank to the functioning of the domestic macro economy I believe that the above discussion has been substantial to the on-going transformations that are occurring globally and locally as we seek to dispute and confirm the status of central banking after the recent economic slump. Given the extensiveness of the

macroeconomic problem there have been many blind spots to tackle, of which this research paper has hoped to cover one.

References

- Bell- Kelton, S. (2006). "Behind Closed Doors: The Political Economy of Central Banking in United States". International Journal of Political Economy. Vo. 35, No. Contemporary Central Banking Internationally, New Perspectives, pp. 5-23.

- Blanchard, O. Dell'Ariccia, G. Mauro, P. (2010). "Rethinking Macroeconomic Policy". Journal of Money, Credit and Banking, 42: sup, No. 6.
- Borio, C. (2011). "Central Banking post-crisis: What compass for unchartered waters?" Monetary and Economic Development. Bank for International Settlements Working Papers No. 353.
- Brink, N. Kock, M. (2009). "Central Bank Balance Sheet Policy in South Africa and its implications for money-market liquidity". South African Reserve Bank Working Paper 10/01.

- Cecchetti, S. G. (2008). "Monetary Policy and the Financial Crisis of 2007-2008". *This essay was written while the author was the Barbara and Richard M. Rosenberg Professor of Global Finance, Brandeis International Business School; and a Research Associate, National Bureau of Economic Research. Note that as this draft was written, events were continuing to unfold.*

- Comert, H. Epstein, G. (2011). "Inflation Targeting in South Africa: Friend or Foe of Development?" Economic History of Developing Regions, 26: sup1, S94- S113.
- Epstein, G. (2008). "An employment-targeting framework for Central Bank Policy in South Africa". International Review of Applied Economics, 22:2, pp. 243-258.
- FRBSF Economic Letter. (2009). "The Fed's Monetary Response to the Current Crisis". Number 2009-17. May, 22, 2009.

- Freedman, C. Laxton, D. Otker-Robe, I. (2009). "Why Low Inflation and Why Inflation Targeting?" Inflation Targeting: Saying What You do and Doing What You Say. Chapter 1. www.inflationtargetiong.org
- Friedman, B. (2011). "The use and the meaning of words in Central Banking: Inflation-Targeting, Credibility and Transparency." National Bureau of Economic Research (NBER). Working Paper No. 8972. http://www.nber.org/papers/w8972.

- Gerlach,S. (2010). “Are the Golden Years of Central Banking Over? Monetary Policy after Crisis”. Institute for Monetary and Financial Stability. University of Frankfurt. Conference Draft, May, 5, 2010.
- Goodfriend, M. (2010). “Central Banking in the credit turmoil: An assessment of Federal Reserve Practice”. Journal of Monetary Economics, 58, pp. 1-12.
- Goodhart, C.A.E. (2011). “The Changing Role of Central Banks.”. Financial History Review. Vol. 18, Issue 2, pp. 135-154.
- Heintz, J. Ndikumana, L. (2011). “Is There a Case for Formal Inflation-Targeting in South Africa?” Journal of African Economies, Vol. 20, AERC Supplement 2, pp. 67-103.
- Issing, O. (2003). “Monetary and Financial Stability: Is there a Trade-off?” Bank for International Settlements. Conference on Monetary Stability, Financial Stability and Business Cycles March 28- 29 2003.
- Mishkin, F.S. (2004). “Why the Fed Should Adopt Inflation Targeting”. International Finance. 7:1, pp. 117-127.
- Mishkin, F.S. (2011).” Monetary Policy Strategy: Lessons from the crisis”. Working Paper 16755. NBER Working Paper Series.
- Ocampo, J. A. (2002). “Rethinking the Development Agenda”. Cambridge Journal of Economics. Vol. 26, pp. 393-407
- Papadatos, D. (2009). “Central Banking in Contemporary Capitalism: Inflation-Targeting and Financial Crisis”. Research of Money and Finance. Discussion Paper No. Department of Economics. School of Oriental and African Studies.
- Rossouw, J. Padayachee, V. (2011) “Reflecting on Ninety years of Intermittent Success: The Experience of the South African Reserve Bank with Inflation since 1921”. Economic History of the Developing Region, 26:sup1, pp. 53-72.
- Shirakawa, M. (2010). “Future of Central Banks and Central Banking”. Institute for Monetary and Economic Studies, Bank of Japan. Opening Speech at 2010 International Conference.
- Stiglitz, J. E. (2011). “Rethinking Macroeconomics: What Failed and How to Repair It”. Journal of the European Economic Association. 9(4), pp. 591-645.
- Van der Merwe, E, J. (2004). “Inflation-Targeting in South Africa”. Occasional Paper No. 19. South African Reserve Bank.

- Weeks, J. (2011). "Neoclassical Theory: No Inflation There". Research on Money and Finance. Discussion Paper No. 33.
- Whalen, C. J. (2009). "A Minsky Perspective on the Global Recession of 2009". Research on Money and Finance. Discussion Paper No. 12.
- White, W. R. (2009). "Should Monetary Policy 'Lean or Clean?'". Globalization and Monetary Policy Institute. Federal Reserve Bank of Dallas. Working Paper No. 34. http://www.dallasfed.org/institute/wpapers/2009/0034.pdf
- www.federalreserve.org
- www.southafricanreservebank.org

Plagiarism Declaration

I, Fatsani Banda certify that this research report is my own unaided work. It is submitted for the degree of Master of Commerce at the University of the Witwatersrand, Johannesburg. It has not been submitted before any other degree or examination of any other university.

Date: 23 May 2013

Signed: _____