Monetary policy and disintermediation in South Africa

1970 - 2010

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"For with Thee is the fountain of life: in Thy light shall we see light." – Psalm 36:9 (KJV)

~ In U lig ~

Abstract

This study examines the development of monetary theory and various policy frameworks as implemented at the time of writing. The aim of the study was to determine the effect of monetary policy on disintermediation and re-intermediation throughout the periods of the various monetary policy frameworks in South Africa, specifically between 1970 and 2010.

In order to achieve the research objective given above, a review was firstly conducted of the literature on monetary theory and policy. This literature review gave attention to the various methods of evaluating the extent of disintermediation, elaborating on the various factors that influence the disintermediation process. The literature suggests that the occurrence of disintermediation can be determined by comparing income velocity data to real interest rate data. The second step in achieving the research objective was to examine the South African income velocity data in comparison to the South African real interest rate data over the period 1970 to 2010.

The study found that disintermediation arises from the application of semi-direct or direct monetary controls, which in turn creates abnormal interest rate gaps. Despite the different monetary frameworks adopted in South Africa from 1970 to 2010, a uniform response can be noted. It is observed that whenever real interest rates trough, income velocity in turn peaks, indicating disintermediation. The opposite is true for a high real interest rate environment; income velocity declines, indicating re-intermediation, as returns are sought for in the banking sector.

It is also observed that monetary policy implementation proves difficult owing to its forward-looking nature. Complications arise out of the elasticity of transmission mechanisms, the lag effect thereof and models that are backward looking based on historical data. In short, the study found that care should be taken by monetary authorities not to over-act in either direction, whether monetary tightening or easing.

Keywords

Monetary policy • Financial intermediation • Disintermediation • Re-intermediation • Income velocity • Money supply • Inflation targeting • Interest rates

Opsomming

Die studie ondersoek die ontwikkeling van monetêre beleid en die verskeie beleidsraamwerke soos geïmplementeer tydens die tyd van skrywe. Die doel van die studie was om die effek van monetêre beleid op disintermediasie en reintermediasie te bepaal gedurende die verskeie monetêre beleidsraamwerke toegepas in Suid-Afrika, spesifiek tussen 1970 en 2010.

Ten einde die bogenoemde navorsingsdoelwit te bereik, was ’n literatuurstudie op monetêre teorie en -beleid onderneem. Hierdie literatuurstudie het aandag gegee aan die verskeie metodes om die mate van disintermediasie te evalueer, en het uitgebrei op die verskeie faktore wat die proses van disintermediasie beïnvloed. Dit bleik uit die literatuur dat die aanwesigheid van disintermediasie bepaal kan word deur die omloopsnelheid van geld data met reële rentekoers data te vergelyk. Die tweede stap wat gevolg was ten einde die navorsingsdoelwit te bereik, was om die Suid Afrikaanse omloopsnelheid van geld data te vergelyk met die Suid-Afrikaanse reële rentekoers data oor die periode 1970 tot 2010.

Die studie het bevind dat disintermediasie onstaan as gevolg van die toepassing van semidirekte of direkte monetêre beheer, wat lei tot abnormale rentekoers gapings. Ten spyte van die verskillende monetêre beleidsraamwerke wat in Suid-Afrika toegepas is tussen 1970 en 2010, was daar ’n eenvormige reaksie waargeneem. Dit bleik dat die omloopsnelheid van geld ’n hoogtepunt bereik wanneer die reële rentekoers ’n trog bereik, wat disintermediasie aandui. Die teenoorgestelde is van toepassing in ’n hoë reële rentekoers omgewing; die omloopsnelheid van geld neem af, ’n aanduiding van reintermediasie, omrede opbrengste in die banksektor nagejaag word.

Dit is duidelik dat die vooruitskouende natuur van monetêre beleid implementering bemoeilik. Komplikasies onstaan uit die elastisiteit van die transmissie meganismes, die sloer-effek daarvan en modelle wat terugskouend is, gebaseer op historiese data. In kort, die studie het bevind dat monetêre owerheid versigtig moet wees en nie moet oorreageer in enige rigting nie, hetsy monetêre inkrimping of uitbreiding.

Sleutelterme

Monetêre beleid • Finansiële intermediasie • Disintermediasie • Reintermediasie • Omloopsnelheid van geld • Aanbod van geld • inflasiemikpuntstelling • Rentekoerse

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Chapter 1

Introduction

1.1 Introduction

Monetary policy can be defined as all deliberate actions taken by the monetary authorities to influence variables such as monetary aggregates, the availability of credit, interest rates and exchange rates with the aim of pursuing particular goals, for example, low and stable inflation. Frameworks of monetary policy are largely based on the development of various schools of economic thought. Even still, the implementation of monetary policy is continually evolving and these changes could be attributed to challenges arising either from the existing monetary framework implemented or external factors such as changing global economic environment or crisis.

The affects of monetary policy are primarily observed in the monetary variables targeted. However, owing to numerous transition mechanisms, monetary actions are widespread. Furthermore, the extent of these changes varies from country to country owing to the unique characteristics of each economy, each monetary authority's framework, and elasticity of demand and supply.

This study will focus on the link between the instruments of monetary policy and their possible effects on the demand and supply of money in general. Specific attention will be given to the disintermediation and re-intermediation process in the South African economy over the period 1970 to 2010. By definition, disintermediation occurs when a depositor withdraws funds that were previously deposited with a financial intermediary and seeks a more direct means of investment with a borrower. Specifically, the study will focus on the effect monetary policy decisions have on financial intermediation.

1.2 Problem statement

Monetary policy has been a controversial topic with regard to its effectiveness and its effect on other co-existing policies, for example, its affect on fiscal policy objectives. It is evident that there are varying views regarding these. For this reason, this study focuses on monetary policy and its effectiveness in achieving the underlying objective of the South African Reserve Bank (SARB), namely, stability in monetary variables.

Four distinct phases of exchange rate regimes and monetary arrangements can be distinguished in South Africa following the termination of the Bretton Woods System. The first phase was characterised by direct monetary controls and the desire to maintain some stability in the exchange rate of the rand during the 1970s. The second phase saw the transition to more market-oriented measures and the adoption of money supply targets in the 1980s. This was followed by the third phase, a period of informal inflation targeting and managed floating of the rand during the 1990s. During the fourth phase (since 2000), South Africa adopted a formal inflation-targeting monetary policy framework and a floating exchange rate regime (Van der Merwe, 2003:1).

Prior to this, there were disturbances in the domestic political and international economic environment that influenced the South African economy: Most notably, there were political challenges regarding sanctions imposed on the country, which gave rise to wide disinvestment and in turn the installation of various measures to curtail disinvestment; for example blocked rand accounts. There was a slowdown in the growth of the world economy between 1948 and 1973. After 1973, the overall market for South African exports slowed down, which had a negative effect on the domestic export market growth rate. South Africa also had to contend with the structural changes in international trade, these being the decreasing demand for base metals, protectionism and the challenge of “newly industrialized countries” (Krugell, 2004:4).

1.3 Research question

Based on the problem statement presented above, the research question of this study is:
What was the effect of monetary policy on disintermediation and re-intermediation throughout the periods of the various monetary policy frameworks in South Africa, specifically between 1970 and 2010?

1.4 Research objective

The aim of this study is therefore to determine monetary policy’s effect on disintermediation and re-intermediation in South Africa for the period 1970 to 2010.

1.5 Research methodology

In order to achieve the research objective given above, a review of the literature on monetary theory and monetary policy was conducted. This review gave attention to the various methods of evaluating the extent of disintermediation, elaborating on the various factors that influence the disintermediation process.

1.6 The study's contribution

The outcomes of this study are hoped to offer greater insight into the sensitivity of surplus and deficit units to changes in monetary variables, specifically interest rates and income velocity. The broad objective is to gain a better understanding of the overall functioning of the monetary system.

1.7 Chapter outline

Chapter 2 will commence by examining the development of monetary theory. It will outline the distinguishing elements of four core schools of economic thought, namely, the Mercantilist era, Classical era, Keynesian era and the Monetarist era. Subsequently, the evolution of some of these schools of thought, the New Classical, New Keynesian and New Monetarist eras, will briefly be discussed. Economic theory under ex-US Federal Reserve Bank Chairman, Alan Greenspan, will also be highlighted, as well as the manner in which the schools of thought affect the role of monetary policy as we know it today.

This will be followed by an overview on the theory of monetary policy, highlighting targets and various policy instruments of monetary policy. At this point, the focus will turn to monetary authorities and their role in the monetary system. Aspects such as the time inconsistency of monetary policy and inflation bias will be covered, as well as the ultimate policy objectives and strategies of monetary authorities. This will lead to a discussion on the main causes of inflation, addressing factors such as expectations, cyclical factors and shocks, and offering views on inflation and inflation-targeting frameworks. The chapter will then present an historical perspective on monetary policy in South Africa, specifically with regard to the eras of pre-inflation targeting and formal inflation targeting, and two defined time-periods, namely, pre-1979 and post-1979.

Chapter 2 will thus examine the origins and development of monetary theory, highlighting the role and function of the monetary authority, in this case the central bank. However, as the monetary hierarchy broadens, other participants are encountered, namely, governments, financial intermediaries and ultimately households. These all operate within a monetary environment referred to as the *financial system*.

Chapter 3 will examine the financial system and the routes of monetary flow in order to understand the causes and consequences of disintermediation for an economy. The chapter will commence by defining and describing the financial system. Thereafter, the important role of financial intermediaries in the financial system will be discussed. Having outlined the financial system and financial intermediaries, the concepts of *disintermediation*, *re-intermediation* and *non-intermediated credit extension* will be discussed with special attention given to identifying the different ways in which intermediation and disintermediation occurs. At this point, possible structural elements within

an economy that are conducive to disintermediation will be discussed. The chapter will then discuss ways in which to identify disintermediation taking place, and lastly will introduce the financial crisis of 2008 and its characteristics with relation to disintermediation.

Chapter 4 will present an overview of studies regarding disintermediation that analyse its occurrence within a specific country, geographical location or broader theoretical viewpoint. Thereafter, the most relevant literature will be discussed, with the intention of analysing disintermediation in the South African market over four decades, from 1970 to 2010. These trends will in turn be compared to developments within the monetary sector of South Africa.

Chapter 5 provides a summary of findings, conclusions and implications and future research opportunities.

Chapter 2

Monetary theory and policy

With reference to South Africa

2.1 Introduction

Chapter 2 commences by examining the development of monetary theory. In Section 2.2, the distinguishing elements of four core schools of economic thought are outlined, namely, the Mercantilist era, Classical era, Keynesian era and the Monetarist era. Subsequently, the evolution of the New Classical, New Keynesian and New Monetarist schools of thought, are briefly discussed. Economic theory under ex-US Federal Reserve Bank Chairman, Alan Greenspan, is also highlighted, as well as the manner in which the schools of thought affect the role of current monetary policy.

This is followed by an overview on the theory of monetary policy in Section 2.3, highlighting targets and various policy instruments of monetary policy. In Section 2.4, the focus turns to monetary authorities and their role in the monetary system. Aspects such as the time inconsistency of monetary policy, inflation bias, as well as the policy objectives and strategies of monetary authorities are covered. This leads to a discussion on the main causes of inflation in Section 2.5 specifically with regard to expectations, cyclical factors and shocks. Criticism of inflation targeting is also considered. Here, views on inflation and inflation-targeting frameworks are examined.

The chapter concludes with a historical perspective on monetary policy in South Africa in Section 2.6, specifically with regard to the eras of pre-inflation targeting and formal inflation targeting. This is then discussed further under two defined time-periods, namely, pre-1979 and post-1979.

2.2 The development of monetary theory

In order to gain a thorough understanding of monetary policy, it is necessary to examine the primary economic theory underlying policy, as well as the development thereof. This will facilitate a proper understanding of monetary policy today (through the evolution of monetary policy), providing knowledge of the monetary policy-steering mechanisms available and the utilisation thereof.

Van Heerden (1995:1) identifies four demand-side eras in the development of monetary theory, namely, the Mercantilist era, the Classical era, the Keynesian era and the Monetarist era. These eras are subsequently discussed. Monetary theory and policy are also examined under past political administrations of both United States (US) President Ronald Reagan and United Kingdom (UK) Prime Minister Margaret Thatcher. Furthermore, as Classical, Keynesian and Monetarist theories were tested, queried and scrutinised by academia, more refined schools of thought within the respective schools developed, resulting in the New Classical, New Keynesian and New Monetarist eras, which are also studied here. Monetary theory and policy are also discussed during ex-US Federal Reserve Bank Chairman Alan Greenspan's term in office. The section concludes with the role of monetary policy under these various schools of thought.

2.2.1 Mercantilist era

Mercantilism directed economic thought and activity from the sixteenth into the eighteenth century in England, France and northern Europe. Mercantilists believed that a country's prosperity was equivalent to the quantity of precious metals it held. In accordance with these beliefs, a country would strive to attain as great an amount of precious metals as possible in order to build up its wealth. In terms of international trade, foreign trade was regulated in order to obtain a trade surplus, stimulating exports and retaining import activity.

Nevertheless, the perspective of maximum quantity of precious metals was connected to the direct and indirect benefit assumed to be associated with precious metals (Van Heerden, 1995:2). The direct benefit is that the increase of precious metals results in an increase in money circulation in the economy, and in turn gives rise to higher expenditure and productivity. Higher productivity then leads to an increase in employment opportunities (Van Heerden, 1995:2). The effect can be summarised as follows: the higher the effectual demand is, the faster economic growth will be. The indirect benefit is that the increase in monetary volume will result in lower interest rates. The lower interest rates will in turn encourage market participants to borrow money, giving them an advantage over their competitors abroad (Van Heerden, 1995:2).

Although there are benefits to holding vast quantities of precious metals, it became evident that the increase of a country's precious metal inventory resulted in an increase in prices, causing an excessive rise in the quantity of money and ultimately inflation. By the end of the mercantilist era, it was clear that a sizeable net influx of precious metals was not beneficial to any economy (Van Heerden, 1995:8). After the failure of the mercantilist system, the economists of the time developed a different theory for understanding economic growth, namely, the Classical economics theory, which is subsequently discussed (Van Heerden, 1995:8).

2.2.2 Classical era

Adam Smith criticised Mercantilism for favouring the producer at the expense of the consumer, in his view resulting in an inefficient economic system. Smith proposed the “Laissez-faire” economy – free functioning of the market mechanism, with the underlying concept of the “invisible hand”. Consequently, Smith was opposed to government intervention in the economy, implying that the activities in which the state engages are best held to a minimum.

Specifically, Classical economic theory regarded money as being neutral within the economic process and viewed money merely as the lubricant of the economic machine that contributed towards higher social welfare (Keynes, 1923:75; Pigou, 1962:18). Without money, direct bartering would have continued, thus not allowing for higher social welfare.

2.2.2.1 Irving Fisher’s exchange equation (1867–1947)

Although Fisher emphasises the general acceptability of money as a means of payment, he does not regard cheques as money (Fisher, 1926:17). This is due to his belief that compared with coins cheques do not hold the same general acceptability. According to Fisher (1926:17), the velocity of money can be described as the monetary value of a year’s transactions in a country divided by the average amount of money in circulation in that country during that year.

In order to derive the exchange equation, it is assumed that the amount spent will always equal the amount received – the amount received being the amount of money paid for the goods. Assuming that the amount of money is M and it exchanges hands V times during the process of purchasing, it can be said that the total amount spent will be MV. If it is assumed that P is prices, and that Q is quantity, then MV can be expressed as (Fisher, 1926):

$$MV = PQ \tag{2.1}$$

However, the assumption includes the selling of both goods and services. When taking this into consideration, it is better to study the values of the number of transactions (T) during a period, which is a more true depiction of total revenue over that period. Given this change in the calculation of total revenue, average price (P) will be used as a measure of transactions made during the period, while total expenditure is MV, transforming the exchange equation to (Fisher, 1926):

$$MV \equiv PT \tag{2.2}$$

Where:

- M is the amount of money in circulation during the period, or the supply of money during the particular period;
- V is the average velocity rate of M during the period;
- P is the average price per transaction; and
- T is the number of transactions during the particular period.

2.2.2.2 The constant velocity of money

Fisher (1926:79–88) groups the factors that determine the velocity of money into three categories. The assumption is that the short-term velocity of money remains constant, while velocity changes in the longer term. The categories of factors that Fisher identified as possibly influencing the velocity of money are:

I. Habits and customs of the individual

   i. Saving and hoarding: The more a person hoards, the less he or she spends, resulting in a lower velocity of money.
   ii. The use of credit: If a person utilises a credit facility, it increases the velocity of money because he or she does not need to build up a cash amount for a transaction.
   iii. The use of a cheque: Owing to the deferred nature of payment, technically a cheque could be used as a credit facility, thus increasing the velocity of money (Fisher, 1926:79–88).

II. Payment structure within the community

i. Period of time between receipts of revenue: The shorter the period of time between receipts of revenue, the less cash is required for transactions, resulting in an increase in the velocity of money.
ii. Regularity of payments: The more regularly payments are made to employees the more secure the employees will be about a specific amount at a given time in the future. As a result, they will hold less cash, thereby increasing the velocity of money.
iii. Receipt and expenditure of income: With the receipt of income and the expenditure of income occurring simultaneously on a more regular basis, less cash needs to be held, which will increase the velocity of money (Fisher, 1926).

III. General factors

i. Population density: It has been empirically determined that the more the population density increases, the more the velocity of money increases.
ii. Transport facilities: If the transport facilities are improved and expanded, payment can occur faster, which too will increase the velocity of money (Fisher, 1926).

Fisher postulates that the velocity of money will always rise in the long term. He states that the world is continuously progressing and the above factors react to this, making the increase in money velocity inevitable. This increase in money velocity will cause prices to rise (assuming V and T remain constant).

With these ideas holding, events relating to the Great Depression of the 1930s raised concern regarding the Classical model. For example, the Gross National Product (GNP) in the US fell by nearly 30% between 1929 and 1933, the unemployment rate rose from 3% to 25%, the consumer price index fell by nearly 25%, whle the unemployment rate averaged 18.8% from 1931 to 1960. The worldwide impact of the Great Depression appeared hardly a scenario explained in terms of the Classical model, in which the economy is self-adjusting and achieves full employment in the long run.

Subsequent to the Great Depression, economists sought alternative explanations. Amongst these, Keynes argued that Classical economics had no well-developed theory to explain the persistent unemployment of the 1930s, nor for solving the problem (Calitz & Siebrits, 1999:71). This led to the general acceptance of Keynesian economics.

2.2.3 Keynesian era

In 1936, Keynes wrote "*The general theory of employment, interest rates and money*", in which he offered theoretical explanations and solutions for persistent unemployment. Ironically, the theoretical innovations introduced by Keynes were soon forgotten or perhaps not fully understood (Calitz & Siebrits, 1999:72). So instead of a true Keynesian revolution, a synthesis resulted in which Keynes' theoretical innovations were incorporated into the Classical framework, pursuing policy objectives set by Keynes (Calitz & Siebrits, 1999:72).

The Keynesian model differed from Classical theory in that Keynes regarded saving as a function of income, not only interest rates. He also stated that interest rates were determined by the demand and supply of money, and that money wages were regarded as rigid when having to adjust downwards. Unemployment in the Keynesian model could then be a result of inconsistency between savings and investment, the liquidity trap or rigid wages (Calitz & Siebrits, 1999:72).

By incorporating the Phillips curve (originally the relationship between the rate of unemployment and rate of change in money wages) into the IS-LM model (which determines employment, and consequently the unemployment rate), Keynesians obtained what appeared to be a credible theory for inflation (Calitz & Siebrits, 1999:73). However, the above relationship did not hold in the late 1960s and early 1970s, which meant that the Phillips curve of the Keynesians offered no plausible theory for the existence of inflation. This lack of explanation of inflation gave rise to the birth of Monetarism. Economists then accepted that the long-run Phillips curve was vertical and that the trade-off between inflation and unemployment was a short-term phenomenon (Calitz & Siebrits, 1999:75).

2.2.4 Monetarist era

With the perceived failure of Keynesian economics and inflation becoming an increasing problem, monetarism rose to prominence with what appeared to be a credible explanation of inflation and the causes of a shifting Phillips curve (Calitz & Siebrits, 1999:73).

Friedman states that the control over the money supply should occur according to rules, not in a discretionary fashion (Friedman, 1969:74). Money, according to Friedman, is something more basic than a medium of transactions; it is something that enables people to separate the act of purchasing from the act of selling. From this point of view, the role of money is to serve as a temporary abode of purchasing power (Friedman, 1969:74).

He further postulates that the link between money supply and total expenditure (payment function of money) will be direct in the case of the Classical quantity economists. Friedman regards the

temporary value-bearing function of money as the bridge to the time gap that exists between the selling and purchasing action (Van Heerden, 1995:58). In contrast with Keynes' view, Friedman's theory is based on the notion of the value-bearing function of money being temporary (Van Heerden, 1995:58). Keynes, on the other hand, regards the value-bearing function of money as being much more permanent, viewing cash as a buffer for unforeseen future purchases.

2.2.4.1 Monetary and fiscal policy

The Monetarists state that the economy can be steered by controlling money supply. By exercising control over money supply, assurance is given that money supply itself is not a disturbance, and furthermore provides stability by influencing people's expectations regarding the prospects of prices becoming more stable (Phelps, 1990:38).

Monetarists, such as Friedman, postulate that fiscal policy is inefficient, as it does not operate via money supply, and in such a case it comes down to monetary policy to steer the economy. In a debate with Heller, Friedman advocated this point, stating that the state of the budget by itself has no significant effect on the course of nominal income, inflation, deflation or any other cyclical fluctuations (Friedman & Heller, 1969:51). In addition, Friedman hypothesises that monetary change has a powerful effect on prices and output in both the short term and long term, while fiscal policy only influences the economy in the short term (Van Heerden, 1995:66).

Nevertheless, in contrast with demand-side eras, during the late 1970s economic thought discounted the Monetarists' viewpoint of a monetary rule policy. They added that the supply side in a free-market economy may not be neglected, which brought a supply-side approach to the equilibrium equation of the economy (Van Heerden, 1995:67).

2.2.4.2 Reaganomics

With supply-side economics the trend, this school of thought was adopted during the first year of the Reagan administration in the US in 1981, often referred to as Reagonomics. According to this school of thought, the determinant of the national production growth rate was the effective allocation and application of labour and capital in the economy. The Reagan administration adopted this approach by lowering marginal tax on individuals, lowering business tax, reducing government expenditure on non-military projects, and placing a target growth rate on the money supply through the US Federal Reserve Bank (Van Heerden, 1995:72).

The most important of these was the President Reagan's determination to cut taxes, with the belief that government was too large and that government spending could be reduced by denying tax revenue to Congress. Supply-side economists argued that the tax cuts would increase economic

growth and decrease inflation. However, the events following the Reagan tax cuts did not support the supply-side theories. Inflation declined, but was largely attributed to tight monetary policy and not to contractionary fiscal policy. Instead of output increasing, it fell, which ultimately led to the departure of radical supply-siders from policy-making positions (Calitz & Siebrits, 1999:88).

Calitz and Siebrits (1999:77) however state that the policies implemented during the Reagan administration were not Monetarist. They argue that the policies adapted in the early 1980s were not utilised by the US Federal Reserve Bank in an attempt to fix the quantity of money or control its rate of growth in a steady or predictable manner. Therefore, with Monetarist theory argued to be an un-tested policy, other ways of fighting inflation were found, as in the UK under Margaret Thatcher (Calitz & Siebrits, 1999:77).

2.2.4.3 Economic theory under Margaret Thatcher

Thatcher came into power in 1979 at a time in which the UK economy faced numerous structural problems. Norpoth (1992:9) identifies this time frame as being weighed down by high inflation, approximately 27%, while powerful trade unions aggravated the situation through down-time ebbing on wage inflation. This all occurred against the backdrop of the high UK post-war unemployment and a dire UK fiscal position, steering government to borrow from the International Monetary Fund (IMF).

At the time, Thatcher was largely influenced by the ideas of monetarism and free-market economics. In light of the above UK economic environment, Thatcher wished to diminish the power of the trade unions. The first policies of her conservative administration were to combat both inflation and the budget deficit (Norpoth 1992:9).

Since monetarism postulates that inflation can be controlled by regulating money supply, Thatcher did just that. In order to do this, it was necessary to reduce the government deficit; therefore extreme deflationary policies were implemented. According to Norpoth (1992:10), these measures included the raising of taxes, reduction of government spending and increase of interest rates. Although these deflationary fiscal and monetary policies were effective, this came at the cost of aggregate demand and economic growth.

Despite rising interest rates and the decline in aggregate demand, growth in money supply remained high. This in turn encouraged the UK government to maintain their tight fiscal and monetary policy stance. Inflation eventually declined but at the cost of an over-reduction in aggregate demand (Norpoth 1992:10).

Calitz and Siebrits (1999:78) argue that Thatcher, just like the Reagan government, did not implement Monetarist policies to reduce inflation in the early 1980s. Friedman (1984) states that the changes to monetary policy initiated under the Thatcher and Reagan governments cannot be classified as a Monetarist experiment, as neither the Bank of England nor the US Federal Reserve Bank attempted to fix the quantity of money or control its rate of growth in a steady, predictable manner. Calitz and Siebrits (1999:78) conclude that monetarism came into disrepute as the untested doctrine, and other ways were explored to reduce inflation.

2.2.5 New Classical theory

According to Hoover (2008:1), New Classical theory originated with the economists at the Universities of Chicago and Minnesota, namely, Robert Lucas, Thomas Sargent, Neil Wallace and Edward Prescott. The revival of Classical economics began with Lucas and Rapping's attempt to provide micro-foundations for the Keynesian labour market, stating that equilibrium in a market occurs when quantity supplied equals quantity demanded (Hoover, 2008:1).

Advocates of the New Classical theory held three prominent viewpoints. Firstly, individuals are optimisers and will therefore choose the best options available. Secondly, companies maximise profits, whereas individuals maximise utility. Thirdly, as prices adjust, they change criteria and choices of individuals, which in turn align quantity supplied and demanded (Hoover, 2008:2).

New Classical macroeconomics applies the rational expectations hypothesis. Expectations were defined as rational if they were the same as the predictions of the relevant economic theory (Calitz & Siebrits, 1999:78). However, the recession of the 1980s in both the US and Britain, characterised by high unemployment, opened up opportunity for the Keynesians.

2.2.6 New Keynesian theory

The failure of New Classical macroeconomics led to the rise of New Keynesian economics. Mankiw (2008:1) defines New Keynesian economics as the school of thought in modern macroeconomics that evolved from the ideas of John Maynard Keynes. In the 1970s, New Classical economists questioned many of the Keynesian era concepts, which brought about New Keynesian Theory in the 1980s, in response to this Classical critique by adjustments to the original Keynesian theory (Mankiw, 2008:1).

New Classical and New Keynesian economics differ primarily in the speed at which wages and prices adjust. New Classical economists hold the view that wages and prices are flexible. They believe that prices "clear" markets, quickly adjusting and balancing supply and demand. New Keynesian economists on the other hand believe that market-clearing models fail to explain short-

run fluctuations in the economy, and therefore advocate models with “sticky” wages and prices. New Keynesian theorists use this “sticky” wages and prices hypothesis to explain involuntary unemployment and the reason that monetary policy is able to influence economic activity (Mankiw, 2008:2).

Mankiw (2008:5) concludes that elements of New Keynesian economics (such as menu costs, staggered prices, coordination failures and efficiency wages) provide the intellectual basis for economists’ usual explanation of *laissez faire*. New Keynesian theorists postulate that recessions are caused by some economy-wide market failure, which in turn provides the rationale for government intervention in the economy, such as counter-cyclical monetary or fiscal policy.

2.2.7 New Monetarist theory

New Monetarism is a Friedman revolution. According to this theory, money matters when determining monetary variables, such as money, GNP, and the level as well as rate of change in money wages. Furthermore, it posits that money cannot change “real” things (interest rates, employment), only in the short term at some sort of cost (Johnson, 1991:81). New Monetarism postulates that money supply determines money expenditure, income and prices with a time lag, and that central banks should not pursue a positive stabilisation policy by varying the money supply in a contra-cyclical manner (Johnson, 1991:81).

2.2.8 Economic theory under Alan Greenspan

The Greenspan era lasted from 1987 to 2006 (Kahn, 2005:39). Ex-US Federal Reserve Bank Chairman Alan Greenspan’s approach to monetary policy was to reject reliance on a single model of the economy with fixed economic relationships and parameters. This could be attributed to a dynamic economic environment with rapid technological change, financial deregulation, as well as innovation and increasing globalisation. As a result, key economic relationships were in constant flux, rendering empirical models outdated (Kahn, 2005:39).

A key principle that guided monetary policy in the Greenspan era was the idea that achieving and maintaining price stability was central to attaining maximum sustainable growth. Another principle was one that Greenspan termed a “risk-management” approach to monetary policy (Kahn, 2005:39). Under this approach, policy-makers guarded against low probability outcomes that might have large negative effects on the economy. For example, a risk-management approach occurred in 2002/2003 when the US Federal Reserve Bank eased monetary policy to prevent the unlikely emergence of deflation (Kahn, 2005:39).

Many changes were implemented during this period, most notably increased transparency of the US Federal Reserve Bank's actions. In 1987, the policy directive adopted the release of the Federal Open Market Committee's (FOPMC) meetings minutes. Friedman (2006:174) highlights the most important of these changes as the ongoing movement away from mechanic restriction on the conduct of monetary policy. On occasions, policy even departed from dictated guidelines, in the interests of carrying out the US Federal Reserve Bank's dual mandate to pursue both stable prices and maximum employment (Friedman, 2006:174).

2.2.9 Conclusion of the various schools of thought on the role of monetary policy

The effectiveness of monetary policy in attaining the desired economic goals depends on the relative viewpoints of the various schools of thought regarding the role of the monetary authority, as well as the aspects of the policy-making environment. As the role of monetary policy evolved, various schools of thought arose as to what the role of monetary policy should be.

Keynesian ideas dominated for the majority of the 1960s and as a result fiscal policy was the primary focus in achieving macroeconomic policy objectives. Consequently, monetary policy played a passive role in stabilising interest rates at relatively low levels. Monetary policy was effected in the form of setting credit ceilings, changes in liquid asset requirements, and direct or indirect interest rate subsidies to certain sectors such as agriculture, exporters and home owners (Franzsen,1983:113–114). Although many of these monetary features remained popular throughout the 1960s, a shift towards Monetarist ideas occurred towards the end of 1970.

It was Keynesian economics that came to be associated with the approach of interest rate targeting in the 1960s. Interest rate targeting refers to the setting of an interest rate (specifically the bank lending rate) and allowing the quantity of money to adjust to that interest rate. Therefore, monetary policy in this case would be implemented in terms of interest rate targeting. In cases in which excessive money growth occurs as a result of adjusting the official interest rate, the central bank will make use of additional controls to maintain this rate and will apply these controls to the lending of commercial banks. This is particularly done in the form of credit ceilings or cash reserve requirement specifications (Mohr & Fourie, 2004:373). However, the 1970s were characterised by rampant inflation, which brought this Keynesian tool of interest rate targeting into disrepute.

In reaction to interest rate targeting, the Monetarists' solution was to fix a target for money supply allowing interest rates to normalise to their own market determined levels. This would be achieved through a monetary growth rule, in which the growth of a narrow monetary aggregate is restricted to a predetermined "steady rate" related to the growth in productivity and the growth of the labour force. Therefore, under the premise that monetary growth and the quantity theory of money is the cause of inflation, a monetary supply target would be identified. Lastly, this rule assumes that the

economy is self-adjusting and will normalise at the equilibrium rate of unemployment in the long run (Calitz & Siebrits, 1999:225).

From the above, it appears that monetary authorities are faced with the choice of targeting either the interest rate or the quantity of money. However, neither of these really operates in isolation. For example, with interest rate targeting, quantity constraints (credit ceilings) are imposed to limit the growth in the money supply. Similarly, it is obvious that pragmatic Monetarists (central bankers) do not adopt the money growth rule (Calitz & Siebrits, 1999:225). This suggests that the implementation of monetary targets reflects more of a Keynesian–Monetarist synthesis. Instead of implementing the monetary growth rule called for by the Monetarists, and fixing the quantity of money supply, central bankers have set targets for the growth of one or more of the monetary aggregates, so that they can seek to achieve a suitable adjustment of interest rates (Calitz & Siebrits, 1999:225). In order to implement this, policy interest rates cannot be held stable over time, as adjustments to interest rates may be required to keep the monetary aggregate within its target range. In order to conclude, the quantity of money is controlled by regulating the cost of cash reserves to the banks and other money market institutions (Calitz & Siebrits, 1999:225).

2.3 The theory of monetary policy

This section commences by explaining the targets of monetary policy. Central banks strive to achieve predetermined monetary goals by clarifying targets, both intermediate and operational targets. These targets are attained by utilising policy tools, specifically monetary policy instruments. Policy instruments discussed in this section are the use of accommodation policy and open-market policy, which at the time of writing were exercised by the South African Reserve Bank (SARB).

2.3.1 Targets of monetary policy

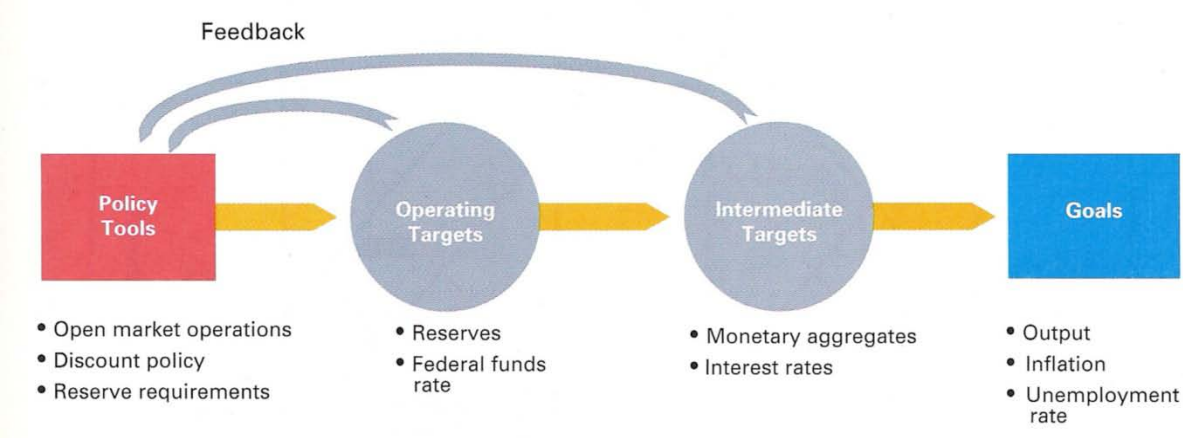
When there is uncertainty about money demand, fixing the money supply would make interest rates uncertain. The opposite is also true: fixing interest rates would make money supply uncertain (Begg *et al*., 2003:332). In order to effect monetary policy, a central bank will endeavour to manage the variables over which they have direct influence. These variables thus become the targets of monetary policy.

There are two types of targets on which the central bank relies, namely, intermediate targets and operating targets (Hubbard, 2005:480). Intermediate targets are used by the central bank in an attempt to achieve its goals, for example price stability. They are typically financial variables such as money supply or short-term interest rates. Assume that interest rates are chosen as the intermediate target, this then makes interest rates the instrument on which policy decisions are

regarding the economy are based. The intermediate targets therefore serve to enhance the central bank's ability to achieve its goals (Hubbard, 2005:480). Operating targets, however, are variables directly controlled by the central bank in conjunction with the tools of monetary policy. These variables can take the form of non-borrowed reserves and the rate at which government funds are lent (Hubbard, 2005:480).

In order to achieve its monetary goals, the central bank makes use of both intermediate and operating targets. This is done in a two-step process. First, the intermediate target is set, which helps to attain the goals. Second, operating targets are set in order to achieve the intermediate target. The success of this two-step process lies in the feedback process within both of the targets. This in turn allows the central bank to monitor the changes quickly and determine whether the changes have had the desired effect. It also creates the opportunity for corrective action, should the changes not have had the desired effect. With this in mind, it is essential to choose the appropriate targets (Hubbard, 2005:480). This process is depicted in Figure 2.1.

Figure 2.1: Achieving monetary policy goals



Source: Hubbard (2005:481)

A practical perspective of this framework of goal realisation can subsequently be examined. Begg *et al*. (2003: 332) distinguish two key worldwide monetary developments regarding the design of monetary policy: firstly, the central bank's ultimate objective changed to focus on price stability; and secondly, money importance was at an intermediate level. The financial revolution reduced money's reliability as a leading indicator of future inflation (Begg *et al*., 2003:332). Structural changes in the financial sector make it difficult to predict the way money will be held and spent, yet this is due to the changes caused in money demand (Begg *et al*., 2003:332).

Central banks more commonly use inflation targets as the intermediate target to which interest rate policy responds (Hubbard, 2005:480). The central bank pursues this intermediate target by altering the interest rate in accordance with changes in the economic environment. For example, with a

monetary target, interest rates are adjusted to keep the nominal money stock on a specified path. Should the real money demand be too high, interest rates would be raised accordingly in an attempt to curb the phenomenon. The opposite is also true: should real money demand be low, interest rates would be lowered in order to stimulate demand (Begg *et al*., 2003:340).

The income perspective of money demand is that when income is high then interest rates are also high in order to equalise money supply with money demand, thus maintaining the monetary target. This function is termed *monetary targeting*. Fluctuations in income and output are thus responsible for fluctuations in money demand (Begg *et al*., 2003:340).

An inflation target implies that interest rates are adjusted to keep inflation within a narrow range (Begg *et al*., 2003:340). This is the current policy adopted by many central banks, including that of South Africa.

With regard to inflation targeting, the Taylor rule is relevant, which states that a central bank raises (lowers) interest rates if inflation and output are expected to be above (below) targeted levels (Begg *et al*., 2003:340). Taylor found that most central banks adjust interest rates in response to output and inflation. This being the case, monetary targets would no longer play a role in interest rate decisions. Therefore, expected output and expected inflation are the intermediate targets. If a central bank follows the Taylor Rule, its focus would be both on price stability and output stability. Under this assumption, it can be stated that economic booms would result in rising inflation, while declining inflation would be experienced during economic downturn (Begg *et al*., 2003:340).

2.3.2 Instruments of monetary policy

The key instruments of monetary policy used by central banks amongst others are (Mohr & Fourie, 2004:376):

- accommodation policy
- open-market policy
- intervention in the foreign exchange market, and
- public debt management.

Intervention in foreign exchange markets and public debt management will not be discussed in this study. Rather, accommodation policy and open-market policy are considered, since South African monetary authorities focus on these policies.

2.3.2.1 Accommodation policy

A feature of the classical cash reserve system is the predetermined percentage holdings of total liabilities, which banks are required to hold in the form of cash reserves with the SARB (Mohr & Fourie, 2004:376). The reason for this is that should a bank experience a cash shortfall, it could either liquidate financial assets or borrow funds on the interbank market. In a case in which most or all banks within this particular economy have a liquidity problem and are not able to lend to this particular bank, the SARB acts as a lender of last resort and extends financing to that particular bank(s) via the repo system (repurchase–offer system). By definition, a repurchase agreement (repo) is the sale of an existing security at an agreed price, coupled with an agreement by the seller to purchase the same security at a specified future date (Mohr & Fourie, 2004:376).

The maturity value of the repo is determined in the initial agreement, consisting of the price plus an agreed amount of interest (Mohr & Fourie, 2004:376). The interest represents the cost of obtaining the funds for a week. The securities purchased may take the form of government bonds, Treasury bills, Land Bank bills, and SARB debentures of all maturities (Mohr & Fourie, 2004:376).

The accommodation policy can be summarised as the changes in the repo rate and other conditions at which cash is made available to banks. These changes in the repo rate lead to adjustments in the cost at which funds are extended to bank clients, that is, the interest rate charged. This gives the SARB an instrument by which to regulate the quantity of money via variations in the cost of credit (Mohr & Fourie, 2004:376). From the above, it can be concluded that the cost of credit in an economy is directly linked to the repo rate, and with this correlation there could be a strong pattern with other interest rates, for example deposit rates and mortgage rates, moving in line with the repo rate (Mohr & Fourie, 2004:376).

2.3.2.2 Open-market policy

Open-market transactions are conducted by the SARB in order to influence the interest rates, as well as the quantity of money. These transactions involve the sale or purchase of domestic financial assets, for example debentures, treasury bills and government bonds.

With regard to open-market transactions, should the SARB buy financial assets, it would increase money supply. Should the SARB need to induce the transaction for the moment, it could offer higher prices for the financial assets. This proposal would cause securities prices to rise and interest rates to drop. The opposite is also true regarding the sale of financial assets by the SARB (Mohr & Fourie, 2004:377).

On the other hand, there are non-market-orientated policies that are structural in nature. These could take the form of credit ceilings, changes in the terms of hire-purchase agreements, changes in exchange control regulations, SARB intervention in foreign exchange markets and public debt management (Mohr & Fourie, 2004:377). An “informal policy” that the SARB could use is moral suasion, which is influencing banks to move in a certain direction if the SARB does not wish to use a “formal policy” (Mohr & Fourie, 2004:377). In light of the two policies discussed, it is evident that the latter can be used to support the accommodation policy of the SARB.

In summary, monetary policy commences by identifying variable(s) over which the respective central bank has influence. Monetary goals are outlined, which the central bank must achieve by the use of intermediate and operational targets. These intermediate targets could, for example, take the form of money supply or short-term interest rates. The operational target however is the means by which the central bank goes about achieving the intermediate target. For example, at the time of writing the intermediate target in South Africa was interest rates, specifically the repo rate. These operational targets are used in conjunction with key instruments of monetary policy, such as a cash reserve system, liquidity management by the central bank, intervention in the foreign exchange market and public debt management in order to create a conducive environment to achieve the desired monetary goals.

2.4 The role and strategy of modern central banks

The primary responsibility of the central bank is to ensure price stability, which is manifested as stable inflation (SARB, 2009). One of the most recent developments is the willingness of central banks and governments to make low inflation an explicit policy objective. This is achieved by implementing monetary policy through a monetary policy framework, for example an inflation-targeting framework.

Monetary policy has important short-run effects on real economic activity. Therefore, achieving and maintaining low inflation cannot be the only monetary objective; other factors such as economic stabilisation must also be considered within the broader objective. Once the appropriate objectives have been agreed on and an institution established for the implementation of the relevant objectives, strategies have to be determined for achieving macroeconomic stability.

2.4.1 The role of central banks

The role of central banks starts with the role of monetary policy in the achievement of broader macroeconomic objectives. Therefore, a definition of monetary policy is a suitable starting point. The De Kock Commission (1985:139) defines monetary policy as all deliberate actions by the monetary authorities to influence the monetary aggregates, the availability of credit, interest rates

and exchange rates, with a view to affecting monetary demand, income, output, prices and balance of payments.

Having defined monetary policy, the role of monetary authorities themselves can be discussed. Since the focal point of this study is South Africa, the mission statement of the SARB is subsequently examined.

The SARB regards its primary goal in the South African economic system as “the achievement and maintenance of price stability” (SARB, 2009). The SARB maintains that South Africa has a growing economy based on the principles of a market system, private and social initiative, effective competition and social fairness. It recognises, in the performance of its duties, the need to pursue balanced economic development and growth (SARB, 2009). Even though the SARB’s primary goal is price stability, this should not come at the expense of other monetary and fiscal objectives. As confirmed below, the SARB’s position is to create a stable economic environment that is conducive for other macro-objectives to be sustainably housed.

The 1995 annual report of the SARB states that, “The best contribution it [monetary policy] can make towards achieving sustainable economic growth and development is to create a sustainable environment.” (SARB, 1995:33). Therefore, monetary policy can be used, as Krugell (2004) lists, to pursue the following macroeconomic goals, amongst others: economic growth, job creation, price stability, balance of payments stability, a socially acceptable distribution of income and poverty alleviation. Central banks achieve these objectives via various instruments of monetary policy as already discussed in Section 2.3.2.

2.4.2 Time inconsistency

Monetary policy affects output and prices in numerous ways. Under an inflation-targeting regime, as in South Africa, changes in interest rates do not only affect money supply, but can also influence exchange rates, which affects the broad economy. The repo rate has a direct effect on variables such as other interest rates, the exchange rate, money and credit, other asset prices and decisions on spending and investment (Smal & De Jager, 2001:5). If these elements do not respond to changes in the official interest rate meaningfully, monetary policy will have limited impact, if any, on the economy. This would mean that the channels in the monetary transmission mechanism are either ineffective or not fully functional (Smal & De Jager, 2001:5).

The sensitivity of the rate of change in inflation relative to change in the monetary policy stance is termed the lag effect of the transmission mechanism. These lags differ, unique to each country, as well as within the same country from time to time. The irregularities in the monetary policy

transmission mechanism are largely attributed to the differences in financial and legal structures within the respective countries (Smal & De Jager, 2001:6).

Owing to the forward-looking nature of inflation targeting, it is essential to understand the time lag for monetary policy to affect the real economy and ultimately inflation. In general, it is accepted that the lag varies between 12 and 24 months (Smal & De Jager, 2001:5). Empirical evidence in the major industrialised countries demonstrates that on average, it takes up to one year for a change in monetary policy to have its peak effect on demand and production. Furthermore, it takes an additional year for these activity changes to have their greatest impact on inflation.

It is with this in mind that central banks have to implement monetary policy prudently, being forward looking in nature, in order to forecast as accurately as possible the market's reaction to changes in instruments. The overall objective is to incur a minor cost in other economic objectives, which is subsequently discussed in the following section.

2.4.3 Inflation bias

The central bank is assumed to set the inflation rate at a level that will incur a marginal cost of inflation equal to the marginal benefit thereof. Most solutions to inflationary bias that arise under discretion alter the basic model, raising the marginal cost of inflation as perceived by the central bank.

Walsh (2000:336) studies three classes of solutions. The first class of solutions involves the central bank's reputation for delivering low inflation. Giving in to the temptation to inflate today damages the central bank's public image regarding delivering low inflation in the future. This decreases the expected value of the bank's objective function, as the public expects more future inflation. Ultimately, a poor reputation increases the marginal cost of inflation (Walsh, 2000:336).

The second class of solutions also involves the marginal cost of inflation. The difference being that instead of viewing inflation as a reputational cost to the central bank, the central bank could be allowed to have preferences making its perception of the marginal cost of inflation higher. One way this could be done is by choosing an individual as policy-maker who places a higher priority on low inflation. However, this comes at the cost of greater output variability, as a stabilisation policy with a conservative central banker would be rather weak (Rogoff, 1985).

The third class of solutions entails a limitation on the flexibility of the central bank. This involves rules requiring the central bank to achieve a predetermined rate of inflation or impose a penalty or cost should they deviate from this particular target. This penalty would also apply where monetary

policy is used against unemployment in addition to its use for price stabilisation (Hayo & Hefeker, 2000:662).

The above factors, in particular, the well-being of a central bank's reputation, marginalising the by-product costs of an inflation-targeting framework, as well as the governance of a monetary authority can only be effective if the foundational elements of monetary regulation are in place, that is, the policy objectives and strategies of that central bank.

2.4.4 Policy objectives and strategies

The primary responsibility of the SARB is to ensure price stability, which is manifested as low and stable inflation. This is by no means a new policy. What is new, however, is the willingness of central banks and governments to make low inflation an explicit policy objective. This is achieved by implementing monetary policy through an inflation-targeting framework and involves the public announcement of the inflation target. It must not be thought that monetary policy implementation in this way always involves a public target announcement, as there are central banks that do not make this target public, an example being the US Federal Reserve Bank. Monetary policy has other effects on the economy. Therefore, achieving and maintaining low inflation cannot be an isolated monetary objective; economic stabilisation must be kept in mind as well (Walsh, 2003:16).

After deciding on the appropriate monetary objectives, an institution has to be established in order to implement these objectives and strategies. A monetary strategy has been described by Issing (2002) as providing a systematic framework for the analysis of information and a set of procedures designed to achieve the central bank's main objectives.

From this, Walsh (2003:16) has identified three components within a monetary policy strategy. Firstly, objectives have to be identified. Secondly, an information structure must be created; this function processes data into a form that enables policy-makers to make informed decisions. Thirdly, operational procedures must be identified; this determines the setting of a policy instrument.

These objectives require policy-makers to have knowledge regarding the economy's structure, the sources of economic disturbances, the quality of data and the transmission mechanism for monetary policy (Walsh, 2003:16). While there has been acceptance of policy objectives, there has also been consensus on the role that inflation targeting plays in monetary policy implementation.

While there may be concern regarding a particular framework adopted, as in South Africa's case, the particular inflation target is decided upon by the South African government. This is in order to

ensure transparency and accountability, as well as attempt to obtain a correct monetary and fiscal policy mix from the outset.

2.4.4.1 Rules versus discretion

Central bank independence has been widely discussed as the modern practice to help achieve low inflation; however, this may not always be the case. For instance, a change in monetary policy may precede central bank independence, and a low inflation target may have already been achieved without or before introducing bank independence (Hayo & Hefeker, 2000:657). Empirical evidence has demonstrated that in some cases the breakpoint in monetary policy came before the institutional reform adapted in those countries. The suggestion is that in these instances a change in the effective exchange rate regime, or the introduction of an existing currency, might be more credible in changing the public's expectation of future monetary policy, rather than initially establishing central bank independence (Muscatelli, Tirelli & Trecroci, 2002). An example of such a phenomenon is France, where the law on central bank independence was passed in 1993 in the run-up to EMU, yet the break in the inflation series occurred in approximately the mid-1980s.

Furthermore, arguments against central bank independence present the viewpoint that independent central bank councils could be politically captured and be induced to select a monetary policy that meets the governments' interests. Put more simply, governments could appoint central banker governors, thus assigning persons that are aligned with their interests. Despite the theoretical sense in this theory, the empirical evidence in the reported case of Bundesbank did not corroborate this statement. Thus, from this example, actual independence could be defined as the government's behaviour in the appointment of central bankers, as well as the behaviour of the central banker once appointed (Hayo & Hefeker, 2000:658).

The role and strategies of central banks is a vast topic. The recent sections primarily highlighted the important role of central banks, namely price stability, which requires a low and stable inflationary economic environment. Subsequently, focus turned to strategy around central banking and the characteristics of monetary policy, addressing topics such as time inconsistency and inflation bias. Lastly, different policy objectives and strategies were discussed. The topic of discussion will now move to key elements and criticisms of inflation targeting as a monetary framework.

2.5 Inflation

When examining inflation and the causes thereof it can be broadly noted that there is a positive relationship between trends in inflation and money growth. However, as Walsh (2003:3) states, correlation does not imply causation, therefore the causes of both inflation and money growth must be investigated. It is possible to study causation via the study of the causes of inflation widely covered by macroeconomic theory. The main causes of inflation are, firstly, expectations, secondly, cyclical factors; and thirdly, external shocks (Walsh, 2003:2).

2.5.1 Expectations

There is increasing awareness of the important influence of expectations on actual inflation. Should the private sector believe inflation to be at or reaching a certain level, they will increase wages and prices accordingly. This action will indicate to the market what the “general” feeling is regarding the actual inflation (Jonsson, 1999:6). Therefore, public expectation must be anchored in order to maintain low and stable inflation. If this is not done, the expected inflation will cause fluctuations in the actual inflation (Jonsson, 1999:6). As Walsh (2003:4) states, research has proven that insufficient action by monetary authorities in response to inflation could lead to a self-fulfilling expectational equilibrium, resulting in the economy being pushed into a new inflationary equilibrium.

Walsh (2003:4–5) outlines two lessons for monetary policy and central banking. The first lesson is that the central bank must provide the nominal anchor for the economy. There are many ways this objective can be achieved, for example a flexible inflation-targeting framework, a fixed exchange rate or a currency board/monetary union (Walsh, 2003:4). If monetary policy is to be implemented via an interest rate rule, the nominal interest rate needs to have a stronger ratio effect on inflation than one-to-one (Walsh, 2003:4); this principle is known as the Taylor Rule, which was discussed earlier in this chapter.

The second lesson for monetary policy and central banking is that credibility matters. As Walsh (2003:5) explains, a credible policy of low inflation held by a central bank (that has earned its creditability) anchors expectations, and has a far more probable chance of achieving its objectives. It should be remembered in the two upcoming sections, that inflation depends critically on the way in which expectations adjust. While anchoring inflation expectations is a key starting point to inflation targeting, the second cause of inflation is also paramount, namely, the managing of cyclical factors.

2.5.2 Cyclical factors

Inflationary cycles are the product of business cycles; and interest rate cycles are forecast and applied based on the above. Cyclical factors can be identified by measuring movements of real output to a benchmark level. The benchmark level should eliminate nominal fluctuations, since it is practically an estimate of trend or potential output. Cyclical factors cause “economic” pressures, thus affecting the inflation-rate.

Cyclical factors also involve a dual role for the central bank. Firstly, monetary policy acts with long variable lags between the change in monetary policy instruments and the inflation outcome (Jonsson, 1999:17). Again, increased transparency and accountability of the central bank will minimise the period of the lag. From this, one can see the need of the central bank to monitor these cyclical developments or tendencies in order to react to them sufficiently. Secondly, the monetary authority is able to respond to these cyclical factors in order to obtain or maintain a low and stable inflation rate. As stated by Wash (2003:6), “The state of the business cycle is of legitimate concern as an objective of monetary policy”.

The opportunity to increase output in the short run may induce central banks to adopt overboard-expansionary policies, not to mention the inflationary cost of the output expansion (Walsh, 2003:6). This brings back the expectation factor, where the public expects this reaction from the central bank, rendering the intended effects void in terms of output and/or unemployment reduction.

Another dilemma is that central banks have often focused on real economic activity that is either incorrectly defined or incorrectly measured. For example, when faced with real shocks, it is inefficient to stabilise output (perhaps employment) around some trend level. The problem is that the benchmark level of output around which actual output should be stabilised is not constant; neither does the growth rate occur at a constant rate over time. Yet, these are the constraints within which the central bank has to work, as this random efficient output level is not discernible. This leaves central banks with having to estimate this level (Walsh, 2003:6).

Transition economies in particular have a difficult time estimating the cyclical component affecting inflation. Walsh (2003:7) outlines three lessons regarding cyclical factors: firstly, that central banks must avoid overly optimistic targets, secondly, that they must recognise that only short-run effects exist and not long-run effects on real economic variables; and thirdly, not all fluctuations have to be stabilised.

In summary, the central bank should focus on real objectives, regardless of whether defined as output, unemployment, growth rates and/or any other real variable; the stabilisation policy must be defined in terms of gaps. Despite the possible cyclical clashes with inflation, there are theories that

suggest that inflation-targeting regimes are advantageous when dealing with cyclical impacts on the economy. Jonsson (1999:6) states that it provides the central bank with flexibility to deal with aggregate demand and supply shocks; however, there is always the risk of inefficient output stabilisation in the event of large exogenous shocks.

2.5.3 Shocks

Shocks entail all those independent factors that fall outside of the borders of expectations and cyclical factors. These shocks could take the form of cost shocks or supply shocks; examples could be oil shocks, terrorist attacks, terms of trade shocks and fiscal shocks. Walsh (2003:8) gives an opinion on shocks, stating that the best possible monetary framework would require contractionary policy should a positive price shock occur. This would require the central bank to slow down the economy, causing a rise in unemployment. However, it is still favourable to allow inflation to increase to some extent. Again, the expectation element of inflation is relevant to this particular point. Should the central bank not maintain the expectations of the public regarding its commitment to inflation targeting, it could result in a permanent increase in the inflation rate. However, should the public have good faith in the capabilities of the central bank, the ease of reducing the inflation will be enhanced. Therefore, by fulfilling the credibility element of inflation targeting in making the shock effects temporary in nature, the central bank would improve stabilisation and investor sentiment (Jonsson, 1999:6).

It is, therefore, good for inflation to rise in response to shocks. However, credibility must be maintained at the same time, thus making the inflationary response temporary. Often linked to reputation, high credibility is one of the most important conditions to ensure the success of a monetary policy (Blinder, 1998).

2.5.4 Criticism of inflation targeting

The main criticism of inflation targeting is the concern that other macroeconomic objectives, such as real income and stable employment, are compromised for low and stable inflation (Walsh 2003:19). Yet, as Walsh (2003:19) states, this is not the case in an inflation-targeting framework. The argument is put to rest by the former Bank of England Governor Sir Eddie George's statement that "People think it's just about low inflation; it isn't. Low inflation is really a means to the end of stable growth" (Walsh 2003:19).

An inflation-targeting framework becomes flexible once contained in the larger context, which includes output objectives as well (Jonsson, 1999:6). The emphasis then placed on achieving these output objectives would have an inverse effect on the period required to achieve inflation targets. The same applies to the normalisation period when a shock causes inflationary pressure.

A second criticism is that an inflation-targeting framework is more complicated to implement when compared with other monetary frameworks that focus on money growth or the nominal exchange rate. The essentials for the success of inflation targeting are a good inflation-forecasting model and policy instruments that affect the inflation forecast with relative precision (Jonsson, 1999:7).

It can thus be said that targeting regimes do not need to be ridged. Instead inflation targeting can accommodate short-run fluctuations in inflation, designed to help stabilise the real economy. A notable advantage of inflation targeting is that it expresses policy in terms of one primary goal that the central bank can achieve (Walsh, 2003:24).

Conclusions can be drawn on the effect public expectations have on inflation, which highlights the need for the central bank to anchor these expectations by way of a defined monetary framework. From this point, the credibility of the central bank is earned by setting out to achieve targets defined. Understanding other factors such as business and interest rate cycles, as well as the impact of shocks on inflation, is vital in managing inflation and overall stability in the economy. Having discussed inflation and the various elements affecting inflation, the dissertation proceeds by examining monetary policy history in South Africa.

2.6 Monetary policy in South Africa

This section on monetary policy commences by examining monetary policy within South Africa in two categories, namely, in pre-inflation-targeting and inflation-targeting regimes. Having given a broad overview, the section supplements the monetary policy overview with a more in-depth historical sequence of events. This is addressed under two defined periods, namely, pre-1979 and post-1979 to date.

2.6.1 Pre-inflation targeting

The South African economy was plagued with higher inflation rates in the 1970s, as was the rest of the world. At the time, Monetarist ideology had considerable influence, particularly in the banking sector (Fourie, 2001:350). However, this influence wore off and by early 1980s talk was of a synthesis between the Monetarist and Keynesian ideology. This philosophy of monetary policy was followed by South Africa, and when the De Kock Commission Report appeared in 1985 the theoretical basis of the report was described as a blend of “conservative Keynesian demand management and pragmatic monetarism” (Krugell, 2004:6). The demand management was the Keynesian aspect, in other words, controlling spending in order to maintain the balance of payment and inflationary elements, while the Monetarist element was the control of monetary supply with the need of monetary targeting (Krugell, 2004:7). This reflects the Keynesian–Monetarist synthesis

that to some extent provides the eclectic theoretical framework in the assessment of monetary policy.

In South Africa, the De Kock Commission promoted a market-orientated monetary policy. The intention being that interest rates must normalise to a market-related equilibrium level (Mohr & Fourie, 2004:373). This, however, did not mean that interest rates were market determined. As in the major industrial countries, the SARB manipulated interest rates with the objective of achieving monetary policy goals. Therefore, despite interest rates no longer being targeted, they were still adjusted with the aim of reaching monetary policy targets. The 1990s monetary policy implementation illustrated that there is no easy decision between the control of interest rates and control of the quantity of money. Remembering that the cost of money is interest rates, therefore, by controlling the cost of money (interest rates) to banks and other money market institutions, the quantity of money is indirectly controlled (Calitz & Siebrits, 1999:226).

As a consequence, the SARB introduced a new subdivision of its accommodation policy to replace the previous bank rate system used in 1998. This subdivision, termed the *repurchase agreement*, or otherwise known as the repo rate (of which the level is determined by an auction system), effected the principle of a more market-related interest rate level. Yet, the SARB still has the ability to steer interest rate levels by manipulating the quantity of accommodation offered to the daily money market (Calitz & Siebrits, 1999:226).

2.6.2 Formal inflation targeting

In February 2000, the SARB announced that formal inflation targeting would be adopted in South Africa's monetary policy framework. This was nothing new in the inflation-targeting world, as Australia, Brazil, Canada, Chile, Mexico, Sweden and the UK all have adopted this framework, following New Zealand who was the first to do so in 1990 (Van der Merwe, 2004:1).

Van der Merwe (2004:1–2) lists four reasons that authorities decided to revert to formal inflation targeting. Firstly, informal inflation targeting created public uncertainties about the monetary policy stance. Secondly, formal inflation targeting improves co-ordination between monetary policy and other economic policies via the structured decision-making process element in the formal inflation-targeting framework. Regarding this point, inflation targeting is a formalised approach defining the co-ordinated effort needed to contain inflation in the pursuit of broader economic objectives. Thirdly, formal inflation targeting increases the central bank's accountability and serves to discipline monetary policy. This is affected by setting clear targets that the central bank has to meet. Should these targets be missed, the central bank will explain why, leading to better public understanding on monetary policy decisions. Finally, the application of inflation targeting affects inflationary expectations. If inflation targets are perceived to be realistic, they will form the basis for

future price and wage setting. Therefore, in theory, inflation targets should influence the rate of increase in operational cost and price setting.

However, inflation targeting involves more than the announcement of the target and time horizon envisioned. According to Mishkin (2001:1), inflation targeting encompasses five core elements. The first of these is the public announcement of medium-term numerical targets. The second is institutional commitment to price stability, as well as to the primary goal of monetary policy. The third is an information inclusive strategy in which numerous variables, other than monetary variables, are included in decision-making and the setting of policy instruments. The fourth is the increased transparency of the monetary policy strategy. This is done through communication to the public and markets regarding plans, objectives and decisions of the monetary authorities. The fifth is the increased accountability of the central bank for attaining its inflation objective.

Mohr and Fourie (2004:372) specify the following qualities regarding South Africa's monetary framework. Firstly, it has the ultimate objective of balanced and sustainable economic growth. Secondly, the intermediate objective is a pre-announced inflation target. Thirdly, the operational variable is short-term interest rates governed by changes in the repo rate. Finally, the monetary control system is a classical cash reserve system characterised by a minimum cash reserve requirement of 2.5% of a bank's total liabilities and policy instruments aimed at creating a shortage of cash. After which, there is a provision of cash reserves via the repo system and the marginal lending facility. The objective is for changes in the repo rate to filter through to short-term interest rates in the market. Changes in short-term interest rates influence credit creation, money supply and other variables, and ultimately the rate of inflation.

From the points of discussion covered in this chapter, it is possible to distinguish between two periods in which the different approaches to monetary policy were adapted, specifically, the pre-1979 period relative to the direct controls of the SARB (the bank rate) and the post-1979 period relative to the market mechanism involving the repurchase agreement via the tendering process. It is also possible to identify four phases of exchange rate regimes and monetary arrangements that fall within these two periods. First was a phase of direct monetary controls and the desire to maintain some stability in the exchange rate of the rand during the 1970s. This was followed by a transition to more market-orientated measures and the adoption of money supply targets in the 1980s. Nevertheless, during the 1990s, informal inflation targeting and managed floating of the rand was adopted. Finally, from 2000 to date of writing, a formal inflation-targeting framework has been adopted with a floating exchange rate regime (Van der Merwe, 2003:1–2). Table 2.1 outlines the monetary policy approaches within South Africa from 1960 to date.

Table 2.1: Monetary policy regimes within South Africa

PERIOD	MONETARY POLICY FRAMEWORK
1960–1981	Liquid asset-based system with quantitative controls over interest rates and credit
1981–1985	Mixed system during transitionary period
1986–1998	Cost of cash reserves-based system with pre-announced monetary target (M3)
1998–1999	Daily tenders for cash reserves through repurchase transactions (repo system), plus pre-announced M3 target and informal target for core inflation
2000–present	Formal inflation targeting

Source: Aron and Muellbauer (2000:35)

2.6.3 The pre-1979 period

In the 1970s, direct monetary controls were applied accompanied by exchange controls. This was due to the perceived need to maintain low interest rates for mortgage bonds and agricultural loans, as well as to maintain the purchasing power parity of the rand. The direct control measures took the form of ceilings applicable to credit extended to the private sector, deposit controls, import deposits and hire-purchase controls. This was accompanied by the request that banks extend credit on a selective basis (Van der Merwe, 2003:3).

The objectives were price stability, balance of payments equilibrium and optimal, as well as stable, economic and employment growth. However, it soon became evident that the direct monetary controls aimed at steering towards these objectives were ineffective (Van der Merwe, 2003:3). The Commission of Inquiry into the Monetary System and Monetary Policy in South Africa brought to attention the deficient elements responsible:

I. The rates of increase of monetary aggregates were not adequately controlled by the system.
II. The system led to disintermediation and re-intermediation practices being applied, which caused marked fluctuations in the velocity of circulation of money.
III. Interest rates were not always allowed to rise to levels that would have been appropriate to achieve more moderate and stable growth in bank credit extension and money supply.
IV. Spot and forward rates of the rand were not always allowed to adjust to levels that would have contributed to the appropriate level of monetary demand.
V. The rand moved with the US dollar for long periods at a time without taking domestic economic conditions into consideration, as the rand–dollar peg changed infrequently; this often causing speculative capital outflows.

VI. A heavy reliance was placed on exchange control, which was an economically inefficient way of rationing the available foreign exchange amongst the various domestic uses, and deterred the inflow of foreign capital.

The first occurrence of monetary policy within this period was on 30 October 1972, when T.W. de Jongh, the SARB Governor at that time, in an attempt to revive a sluggish economy, abolished the ceilings on bank credit and revised the liquid asset requirement (Calitz & Siebrits, 1999:228). This was illustrated by a statement made by the Governor that the amended form of credit control would afford more opportunity for sound competition amongst banking institutions. He added that banks would have more “freedom” regarding the purpose for extending credit, but requested that they give production and export sectors preference (SARB, 1972:23–24). This statement reveals the SARB’s hopes of stimulating competition in the banking sector with the abolishing of credit ceilings. Furthermore, the statement proceeds to highlight sectors for the extension of credit, namely for production and export industries (Calitz & Siebrits, 1999:228).

The use of direct controls can be seen again in early 1976, with the previous occurrence of rapid growth in the monetary aggregates (M2 specifically) and balance of payment deficit in 1975 (Calitz & Siebrits, 1999:228). At the time, the SARB stated that there was a clear link between the excessive increase in bank credit to the private sector, accompanied by abnormally high purchases of foreign exchange from the SARB. After this, the SARB decided to impose direct quantitative restrictions on bank credit to the private sector (SARB, 1976:25–26).

These statements illustrate the philosophy of monetary policy in the pre-1979 period: interest rates being kept rather stable, adjusted only from time to time. This adjustment was the prime overdraft rate fluctuation of 8% to 12.5% between 1970 and 1979 (Calitz & Siebrits, 1999:229). When observing the M2 monetary aggregate, it is clear that there was a decline in growth between 1975 and 1977. This was restrained owing to the abnormally high purchases of foreign exchange, as a result of credit extension given to the private sector (Calitz & Siebrits, 1999:229).

2.6.4 The post-1979 period

This was the period noted for the move towards a more market-orientated policy system, which was to conduct monetary and exchange rate arrangements. The vision was to rectify the deficiencies of the direct control system. The market-orientated phase was implemented in 1980, with the removal of deposit rate controls and later bank credit ceilings, as well as the relaxation and simplification of exchange controls. Within this system, monetary authorities allowed greater interest rate movements in response to market force.

In the beginning of 1985, however, authorities were forced to reinstate strict exchange control measures, as well as declare a standstill on the repayment of foreign debt, from September 1985, owing to financial sanctions imposed on the country (Van der Merwe, 2003:3). Owing to rapid financial innovation changes in the financial system, as well as a shift in monetary policy to a more market-related approach during the early 1980s, monetary targets were not imposed. During this time, more attention was given to method of implementing and achieving targets, rather than determining the usefulness of targets. With this, the SARB exercised discretionary judgement with regard to choosing the most appropriate combination of money supply, interest rates and exchange rates, paying careful attention to retaining the respect of the public with regard to the policy framework (Van der Merwe, 2003:5).

Despite the implementation of these measures, the prime overdraft rate fluctuated between 9.5% and 24% after 1979, reaching 25% in August 1984 and January 1985. Simultaneously, monetary aggregates attained record growth rates, which can be noted specifically of the M1 monetary aggregate, during 1981, 1984 and 1988. (The reason behind this growth, particularly in 1981 and 1984, was the relatively higher gold price in 1980 and 1983.)

In an attempt to avoid the direct controls (on the extension of credit to the private sector) used during the early 1970s, interest rates were raised to curb the growth in the monetary aggregates. The intention thereof was to bring interest rates to a market-related level, which would reduce the amount of credit extended (Calitz & Siebrits, 1999:229). This was the free-market mechanism. The SARB was still, however, indirectly controlling movements in monetary policy via the setting of interest rates.

The interest rate response in 1984 was unfortunately excessive in that the higher interest rates resulted in a collapse in economic activity, as well as the demand for credit. As a result, interest rates had been vastly reduced in order to prevent a collapse in the growth in the monetary aggregates by the end of 1985. When monetary targets were introduced in early 1986, the M1 monetary aggregate was at a negative growth rate. In an attempt to revive the demand for credit and money, the SARB allowed interest rates to decline. The low interest rate environment however caused inflation to rise, forcing the SARB to hike interest rates again. Towards the end of 1987, particularly between March 1988 and October 1989, the SARB increased the bank rate from 9.5% to 18%, unnecessarily stunting economic activity (Krugell, 2004:13).

Despite all this, it should be remembered that the domestic monetary policy environment is largely influenced by external factors, as during the period following the foreign debt standstill. Should the interest rates of South Africa’s trading partner’s economies rise, this would encourage international traders to switch financing from foreign to domestic, which would in turn place pressure on the

South African money market. Should the domestic interest rates not be increased, this would decrease the foreign exchange reserves and depreciate the currency (Calitz & Siebrits, 1999:230). For example, in 1995, when government commenced gradually phasing out exchange controls, high interest rates were maintained in order to maintain balance of payment stability (Calitz & Siebrits, 1999:230). Again in 1996, the SARB increased interest rates on two occasions by one percentage point at a time to counteract negative investor sentiment and resultant losses of net international reserves, in an attempt to bring the internal and external environments into equilibrium (SARB, 1997:2).

In the 1990s, the South African authorities commenced a policy of slowly abolishing exchange controls. The first step was the final debt-rescheduling agreement, concluded on 27 September 1993 with foreign creditors. This was followed by the removal of the dual exchange rate system. Starting on 13 March 1995, they removed almost all the exchange control restrictions on non-residents (Van der Merwe, 2003:5). The normalisation allowed the SARB to focus monetary policy on a long-term perspective, in order to create a financial environment conductive to increased economic growth. Van der Merwe (2003:6) identifies the new monetary policy objectives as being:

I. to reduce the rate of inflation to the average rate of inflation in trading partner and competitive countries,
II. to manage money creation in a way that is adequate, yet not excessive,
III. to maintain positive real interest rates,
IV. to increase gold and foreign reserves, and
V. to create a stable financial infrastructure housing healthy financial institutions and efficient financial markets, in order to provide relevant financial services for the economy.

The stance adopted in the 1990s can be described as “informal inflation targeting”, as the primary objective within the monetary policy framework was to combat inflation to levels relative to trading partners and competitors. Inflation targeting was thus the primary objective and all other targets were subject to this, hence the phrase “informal inflation targeting” (Van der Merwe, 2003:6). However, it was soon realised that it was unwise to rely greatly on money supply to steer the economy, partly owing to the vastly changed domestic and international environments (Van der Merwe, 2003:6).

With a lesson learned, money supply targets were changed to money supply *guidelines*. These guidelines were mostly missed, believed to be the globalisation effect, with foreign banks being able to access domestic financial resources through local banks. Despite the disadvantages, informal inflation targeting was significantly successful in decreasing the inflation rate. Considering

that consumer price inflation was fluctuating around 15% in the late 1980s and early 1990s, it declined to single digits in 1993, and declined to 5.2% in 1999 (Van der Merwe, 2003:7-8).

In February 2000, the government announced that South Africa had adopted a formal inflation-targeting monetary policy framework. Van der Merwe (2003:8) identifies the following four reasons that this framework was adopted. Firstly, it provides an anchor to monetary policy decision-making. Secondly, it promotes a more co-ordinated approach between monetary and other policy measures. Thirdly, it makes monetary policy more transparent, which increases its effectiveness. Lastly, the clear rules and procedures of the system strengthen the accountability and governance of the SARB, and help to focus monetary policy.

Again, the SARB is primarily concerned with inflation targeting within the monetary policy framework. The reasoning for this is that the other policy objectives can be sustainably implemented once a stable environment has been created via the satisfaction of the primary objective. The pre-emptive character of inflation targeting should be to prevent wide fluctuations in prices, output and interest rates.

2.7 Conclusion

Chapter 2 has outlined the distinguishing elements of four core schools of economic thought within the development of monetary theory, namely, the Mercantilist era, Classical era, Keynesian era and Monetarist era. It is evident that the ongoing testing of each school of thought brought about acceptance of the next as theory evolved. This in turn resulted in new schools of thought built on the fundamental principles of the respective schools, which brought about New Classical, New Keynesian and New Monetarist theories, which have been briefly discussed. Economic theory under ex-US Federal Reserve Bank Chairman, Alan Greenspan, has also been discussed, as well as the manner in which the schools of thought affect the role of monetary policy as we know it today.

In addition, the chapter has examined the theory of monetary policy, highlighting targets and various policy instruments of monetary policy. Attention has also been given to monetary authorities and their role in the monetary system. Aspects such as the time inconsistency of monetary policy, inflation bias and the policy objectives and strategies of monetary authorities have been covered.

This branched off to a discussion on the main causes of inflation. Conclusions were drawn on the effect of public expectations on inflation, which highlighted the need for the central bank to anchor these expectations by way of a defined monetary framework. Here the credibility of the central

bank is earned by setting out to achieve targets defined. Understanding other factors such as business and interest rate cycles, as well as the impact of shocks on inflation, are vital in managing inflation and overall stability in the economy.

The chapter has also provided an historical perspective on monetary policy in South Africa, specifically with regard to the eras of pre-inflation targeting and formal inflation targeting. This was then elaborated under two defined time-periods, namely, pre-1979 and post-1979.

Chapter 3 will subsequently address the topic of disintermediation. It will commence by examining the functioning of the financial system and thereafter the role of financial intermediaries. At this point disintermediation and factors influencing the occurrence thereof will be discussed.

Chapter 3

Disintermediation

3.1 Introduction

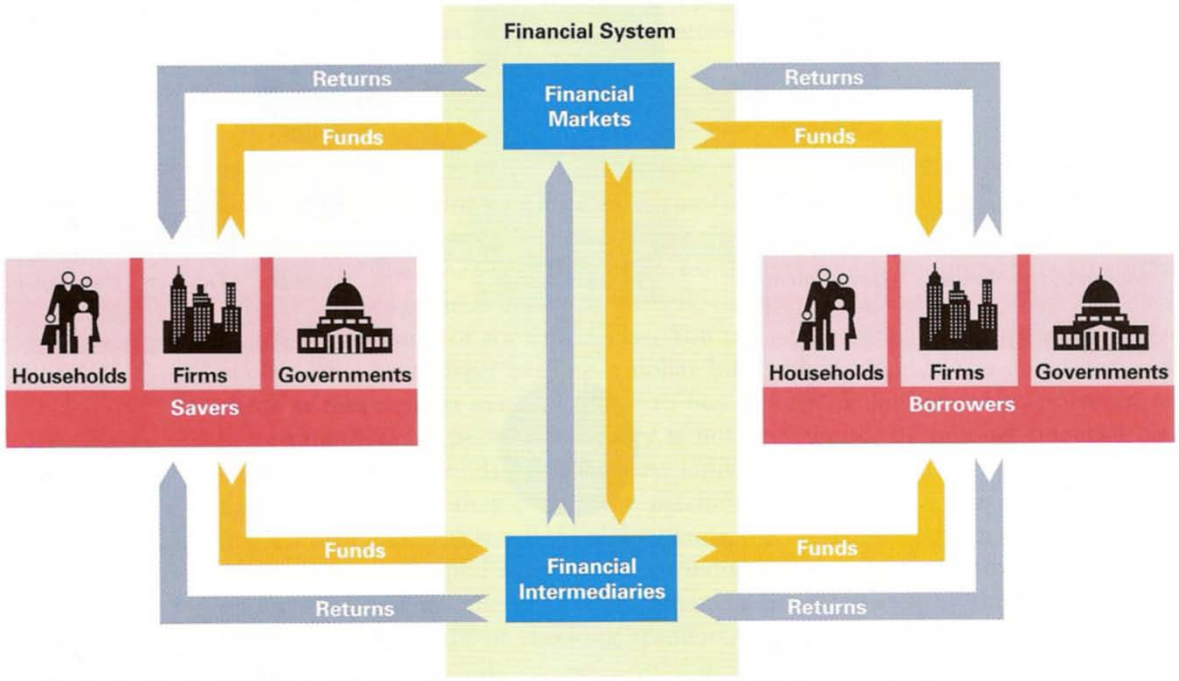
Chapter 2 examined the origins of the development of monetary theory, highlighting the role and function of the monetary authority, in this case the central bank. As the monetary hierarchy broadens, other participants are encountered, namely, governments, financial intermediaries and ultimately households. These all operate within a monetary environment referred to as the financial system.

The aim of this chapter is to examine the financial system and the routes of monetary flow theoretically in order to understand the causes and consequences of disintermediation for an economy. Firstly, the financial system is defined and described in Section 3.2; thereafter the important role of financial intermediaries in the financial system is discussed in Section 3.3. Having outlined the financial system, as well as financial intermediaries, the concepts of *disintermediation*, *re-intermediation* and *non-intermediated credit extension* are discussed in Section 3.4 with special attention given to identifying the different ways in which intermediation and disintermediation occur. In Section 3.5, possible causes of disintermediation are discussed. The chapter then discusses ways in which to identify disintermediation in Section 3.6. Lastly, it introduces the 2008 financial crisis and characteristics that coincide with topics relating to disintermediation in Section 3.7.

3.2 The financial system

By definition, the financial system provides fund transfer channels, whereby funds saved by individuals and groups are transferred to individuals and groups that require financing. Services offered by the financial system could be listed as a payment mechanism, intermediation between surplus and deficit units, financial services (for example, insurance and pension schemes), and portfolio adjustment facilities. Households, companies and governments are typically the users of these facilities (Hubbard, 2005:32). Figure 3.1 illustrates the channelling of funds from savers to borrowers via financial intermediaries and financial markets within the financial system.

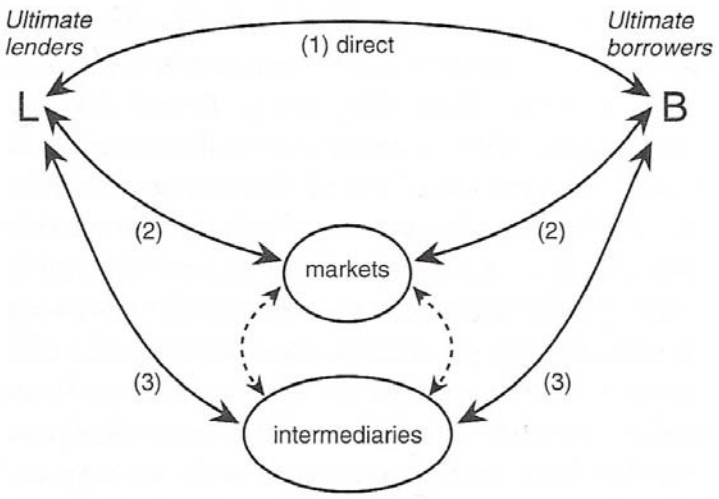
Figure 3.1: Moving funds through the financial system



Source: Hubbard (2005:33)

While individual elements within the financial system specialise in different areas, with the intention of either lending or borrowing, the common thread between them is that they bring surplus and deficit units together (Brummerhoff, 1984:45). Howells and Bain (2002:4) name three options end users have within the financial system as illustrated in Figure 3.2. The first option is for users to deal with each other directly. The second option is for market participants to deal within organised markets, where lenders buy the liabilities issued by borrowers. The third option is for end users to operate through financial intermediaries that produce liabilities in the form of non-marketable liabilities.

Figure 3.2: The options for lenders and borrowers



Source: Howells and Bain (2002:5)

These options have different levels of appeal with regard to simplicity, accessibility, earnings yield and risk of counterparty default. Hubbard (2005:33) distinguishes three services facilitated by the financial system, namely, risk sharing, provision of liquidity, as well as information sharing and communication. These properties within the financial system are subsequently discussed.

3.2.1 Risk sharing

A financial risk can be defined as the probability that the value of a financial asset will change relative to an individual's expectations. The financial system allows the sharing of risks. Risk sharing entails portfolio diversification, for example, where some assets perform well, while other assets perform poorly; however, the overall outcome of the portfolio is a profitable return. The same concept applies concerning return on investment. Should an investor have a high risk profile, the return or loss of that investment will be higher than normal. Yet, should an investor be risk averse, the investment will have lower yields and more constant returns.

As crucial a role that risk sharing plays in the financial system, it is not the only significant element thereof. Owing to the volume of transactions processed by the financial system, certain structural functions are in place to facilitate the property of liquidity within the financial system.

3.2.2 Provision of liquidity

By definition, liquidity is the speed and ease at which an asset is exchanged for money to purchase other assets or goods and services. Liquidity of a financial asset is viewed as a benefit by savers, enabling them to respond quickly to new or unexpected opportunities or events. Stocks or bonds, for example, are financial assets available within the financial system to enhance liquidity. In essence, the financial system provides access to assets, as well as systems for increasing liquidity (for example, matching and netting off). Therefore, an indicator of efficiency in the financial system is the extent to which it can transform illiquid assets into the liquid claims that savers demand (Hubbard, 2005:35).

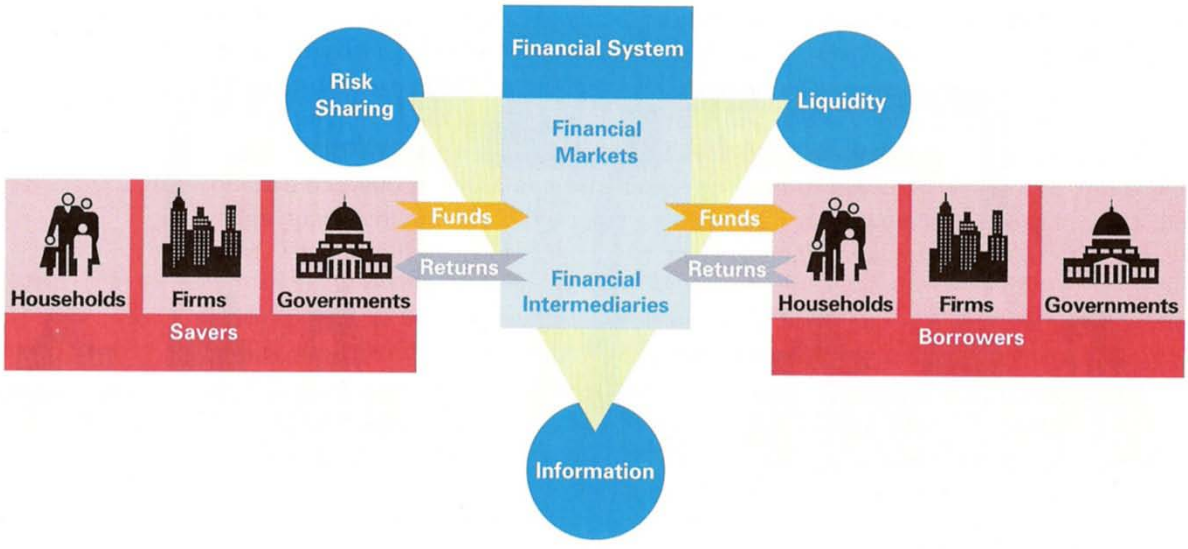
While the financial system facilitates liquidity, it is at the same time a network of information, both informing market participants of news as it occurs, as well as, executing transactions. Financial markets are driven by sentiment, and sentiment is transmitted by means of communication. This indicates the importance of the flow of information within the financial system, which is subsequently discussed.

3.2.3 Information sharing and communication

The third property of a financial system is information sharing and communication. Information is collected regarding prospective borrowers and the destination or use of the borrowed funds. The financial market furthermore plays a communicative role by incorporating information into the pricing of stocks, bonds, and other financial assets. The result of this is that savers and borrowers receive the benefit of the information by examining asset returns (Hubbard, 2005:36).

In summary, the services facilitated by the financial system are depicted in Figure 3.3, expanding on the concept illustrated in Figure 3.1. by further illustrating the manner in which both savers and borrowers of similar units are brought together by the financial system. This financial system consists of financial markets and intermediaries, which affords the savers and borrowers avenues through which to channel funds and gain returns. Importantly, the financial system has the properties of risk sharing, the provision of liquidity and information that is extended to both savers and borrowers.

Figure 3.3: Functions of the financial system



Source: Hubbard (2005:34)

As a result, the financial system plays a crucial role through financial markets and intermediaries to both savers and borrowers. In the following section, the qualities of financial intermediaries are discussed by way of definition, as well as the role of financial intermediaries in the financial system.

3.3 Financial intermediaries

As mentioned, financial intermediation refers to deficit units borrowing from an intermediary instead of directly from surplus units. Matthews and Thompson (2005:33) distinguish financial intermediaries according to four characteristics. Firstly, their liabilities – namely, deposits, are specified for a fixed sum, unrelated to the performance of their portfolio. Secondly, their deposits are of a short-term nature, much shorter than the term of their liabilities. In other words, financial intermediaries find themselves in a position in which they borrow short term and lend long term (Howells & Bain, 2002:11). Thirdly, a high proportion of their liabilities are chequeable. Lastly, neither their liabilities nor assets are in the main transferable (this characteristic must be qualified by the existence or certificates of deposit and securitisation).

The discussion on the role of financial intermediation proceeds in reference only to financial institutions that accept deposits and make loans directly to borrowers. The way in which this is done is consequently discussed, focusing on banks in general.

3.3.1 The role of banks and monetary transmission

When funds are deposited at a bank, the respective bank can extend this money as a loan to other clients in order pay the depositor interest due and ultimately to gain return on the funds. Therefore, in principle the duration of the deposit and loan should coincide, thus being able to issue the depositor with the amount deposited, as well as the interest accumulated when the debtor repays the loan. However, in practice this is not the case, as a bank has multiple creditors and debtors. With this in mind, it can be concluded that the paper money deposited is not the exact same paper money received; this is the result of money's general acceptability. Therefore, the key characteristic of banks is that some of their liabilities are used as the medium of exchange.

In reality, this process of deposits and loans expands across the banking sector. This is facilitated by an interbank clearing mechanism, which is the interbank settlement of the net flows amongst banks (Begg *et al*., 2003:314). In South Africa, the clearing and settlement system is a facility managed by the SARB, where at the end of each day banks either owe or are owed a sum of money resulting from the day's deposits and transfers between the banks. This amount is settled electronically between the particular parties' accounts, which they hold at the SARB (SARB College, 2006:79).

A bank, just like any ordinary business, has to make a profit. It does this by lending those funds that have been deposited and adding a margin in the form of interest rates. The deposited funds are broadly invested to constitute a diverse portfolio, yielding different kinds of interest rate earnings, which are proportional to the risk of that particular investment.

In the books of the bank, a deposit is a liability, as the bank will have to return the principal with the accumulated interest earned. A loan, in contrast, is regarded as an asset, owing to the debtor having to repay the principal with interest charged to the bank at the maturity date of that loan (Matthews & Thompson, 2005:33).

According to Begg *et al.* (2003:316), a financial intermediary specialises in bringing lenders and borrowers together. Commercial banks are financial intermediaries licensed to make loans and issue deposits, including deposits against which cheques can be written. Therefore, it can be said that banks play an intermediary role between the lender and the borrower.

In conclusion, the difference between the financial markets and intermediaries is the way in which they provide these additional services. This is characterised by the means by which various financial assets and liabilities are made available to savers and borrowers. Financial markets issue claims on individual borrowers directly to savers, for example the stock and bond markets. Financial intermediaries, in contrast, act as a go-between. Financial intermediaries perform this role by issuing claims, based on a portfolio of assets held, to savers. Examples of financial intermediaries are typically banks, mutual funds and insurance companies. (Hubbard, 2005:32).

Therefore, the process of financial intermediation constitutes surplus and deficit units being brought together via an intermediary. This being so, the opposite (surplus and deficit units meeting directly) would therefore classify as disintermediation.

3.4 Disintermediation, re-intermediation and non-intermediated credit extension

The De Kock Commission (1985:A4) defines *disintermediation* as the replacement of credit normally or previously extended through the intermediation of a bank or other financial institution by non-intermediated credit extended directly by primary lenders to ultimate borrowers. This entails a shift by banks from on-balance-sheet to off-balance-sheet financing.

3.4.1 What are disintermediation and re-intermediation?

In order to understand disintermediation, it is necessary to examine the flow of funds between the primary lender and the intermediate borrower (banking institution), who in turn extends the funds to the ultimate borrower. Through this operation, the bank is the intermediary between the primary lender and ultimate borrower, resulting in the bank being the borrower and the lender. By facilitating this process, the bank removes the risk involved in the transaction where the loan is extended directly between the primary lender and ultimate borrower (Howells & Bain, 2002:3). The

risk eliminated here is that should the ultimate borrower default and not be able to repay the loan, the primary lender would have to bear the inconvenience of either having to renegotiate the repayment period or method, or lose all the funds loaned. The bank in this scenario is viewed as a Deposit Receiving Financial Intermediary (DRFI), as Grieve (1989:6) terms it. Important to remember is that both the primary lender and ultimate borrower are private non-banking institutions.

With this in mind, *disintermediation*, as Grieve (1989:16) defines it, is the process whereby funds previously deposited with a DRFI are withdrawn by the primary lender and extended directly to the ultimate borrower, who repays the bank loan, thus repaying the new loan and interest instalments to the ultimate borrower instead of the DRFI. From this definition, it must be remembered that the funds are withdrawn from the DRFI and the funds are extended to the ultimate borrower who repays a loan held at a DRFI as well. Grieve (1989:16) also defines *disintermediation* as the process whereby the primary lender withdraws the deposit held with the DRFI and purchases a debt instrument from a DRFI. From both definitions, the flow of funds to and from the DRFI is necessary in this case and, logically, intermediation has to occur in order to facilitate the disintermediation process.

From a South African perspective, the De Kock Commission (1985:A5), at the time of the inquiry, identified that South African banks participate in disintermediation by entering the money brokering field and arranging off-balance-sheet financing for clients. The De Kock Commission identified four ways in which they do this: firstly, by arranging inter-company borrowing and lending, as well as other off-balance-sheet matching of borrowers' and lenders' requirements; secondly, banks selling assets under repurchase agreements to the non-banking private sector; thirdly, the creation of acceptance facilities and the rediscounting of such acceptances outside the banking system by companies seeking to invest their liquid funds; and lastly, the discounting of bank-endorsed trade bills with large depositors, rather than by banks for their own account.

On the other hand, re-intermediation, as Grieve (1989:17) states, occurs when funds that were previously extended to the ultimate borrower are withdrawn by the primary lender (private non-banking) and deposited with a DRFI. The deposit's influence on the DRFI's books would be reflected as a liability in the balance sheet, thus forming a component of money supply (Grieve, 1989:17). This is simply the reverse of the disintermediation process.

3.4.2 What is non-intermediated credit extension?

Disintermediation without drawing funds from a deposit held with a DRFI is known as *non-intermediated credit extension*. This is due to there being no intermediary in the original transaction, therefore classifying it as non-intermediated credit extension.

The De Kock Commission (1985:101) formally defined non-intermediated credit extension as all borrowing and lending outside of banks and other financial institutions. This is in contrast to intermediation, which is the acquisition of financial claims by financial intermediaries, funded from liabilities to the public. It is specifically mentioned that these assets and liabilities reflect on the balance sheets of the financial institution concerned.

For example, should a company with surplus funds (from profits) meet a deficit-financing requirement of another company, this would be non-intermediated credit extension, as there was no withdrawal from a DRFI. The funds originated from profits or capital accumulated. These types of transactions are usually between parent companies and their subsidiaries, which is known as *inter-company borrowing and lending* (Brummerhoff, 1984:45). *Non-intermediated credit extension* can then formally be defined as the process whereby a primary lender meets the deficit-financing need of the ultimate borrower with surplus funding held by the primary lender that never required the withdrawal of funds from a DRFI or repayment of a DRFI loan held by the ultimate borrower prior to the transaction (Grieve, 1989:12).

Furthermore, non-intermediated credit extension can occur in different forms. Grieve (1989:12) identifies three forms of non-intermediated credit extension: firstly, direct lending, where a lender extends a loan directly to the borrower; secondly, financial agency, where a lender uses a financial agent to allocate the funds directly to a borrower; and lastly, debt instruments, where a lender buys a debt instrument issued by a borrower either directly or through another institution. These forms of non-intermediated credit extension are subsequently discussed in more detail.

3.4.2.1 Direct lending

Direct lending occurs not only at company level, but also amongst individuals. The benefit derived from inter-company loans is the ability for companies to even out liquidity changes between them. The concern is that companies infringe on the operations of banks. These actions are referred to as *grey market transactions* (Brummerhoff, 1984:45).

Inter-company loans could be encouraged by certain banking facilities, for example, a cash management system. This allows a company group to have a shared main account, the result being that all sub-accounts are aggregated into the main account and for the surplus funds of one company to be carried over to another company that requires funding. This account allows cash transfers such as this on a daily basis. The benefits to the company group are that by pooling resources, the group eliminates commercial bank or broker charges and at the same time develops a central financing department, thus achieving economies of scale and meeting funding requirements of the various sub-group companies (Grieve, 1989:13).

Direct lending amongst companies outside of the mutual group usually happens solely for profitability reasons. This occurs due to the benefit derived by both the company lending and the company borrowing, the first obtaining a higher interest earnings rate and the latter a lower interest as opposed to the bank rate (Grieve, 1989:13). The assumption is that the larger the gap between the lending and borrowing rate is, the greater the probability of inter-company borrowing and loans will be (Brummerhoff, 1984:46). However, instances in which companies are not directly affiliated could lead to the second form of non-intermediated credit extension, this being the use of a financial agent.

3.4.2.2 Financial agency

Financial agency differs from financial intermediation in that the agent brings the lender and the borrower together, with the main difference being that the agent has no financial commitment concerning the transaction (Grieve, 1989:15). This is the second way in which funds in the non-intermediated market are transferred. Commercial banks, merchant banks, money-broking companies, trust companies, stock-broking companies, legal practices and accounting companies are some of the many institutions that act as agents in the financial market (Grieve, 1989:13).

Grieve (1989:14) summarises the requirements for money-broking conducted by the banking sector that have to be fulfilled. Firstly, banks must act as agent only under a written mandate. Secondly, banks must inform the parties in writing of all particulars regarding the transaction, particularly the existence and identity of the other party. Lastly, banks must maintain separate accounting and other records in connection with money-broking. These regulations apply specifically to the banking sector, while financial agents have no formal regulations. However, financial agents should keep the provisions of the Bank Act in mind, particularly with regard to soliciting funds as a principle from the general public (Grieve, 1989:14). In addition to this second form, there is a third form whereby non-intermediated credit extension can occur, and that is through the use of debt instruments, which is discussed in the next section.

3.4.2.3 Debt instruments

Grieve (1989:14) lists some of these instruments as bankers' acceptances, promissory notes, trade bills, and government and quasi-government securities. Often lenders purchase debt instruments from a borrower, or from a financial institution. In the case of the purchase of a debt instrument indirectly from an institution or directly from the borrower, either way, the credit is extended through the non-intermediated credit market. Therefore, if a lender chooses to bypass the DRFI and purchase a debt instrument directly from the borrower instead, the funds will no longer be expressed as a deposit in the balance sheet of the DRFI (Grieve, 1989:15).

In a technologically advanced financial market the flow of funds occurs at such a fast rate that the surplus and deficit-financing environment is constantly switching between the intermediated and non-intermediated credit sectors. Again, this is solely determined by the pricing advantage, the lender's perception of the risk profile and the availability of funds and debt instruments between these sectors. In certain cases, the switching of funds to and from the intermediated sector is termed *disintermediation* or *re-intermediation* (Grieve, 1989:15).

In conclusion, within the market for intermediated credit, the lender is faced with the option of either using a DRFI or excluding the intermediary and meeting directly with the borrower. These two options vary in feasibility, depending on the extra yield earned via the non-intermediated credit extension process compared with that of the intermediated market. The risk profiles of these two options also vary largely from one another. Should the lender pursue the intermediated route, the DRFI will absorb the loss potential. In the scenario of the borrower defaulting on the capital repayment, the intermediary will absorb the bad debt and the lender will still be entitled to the funds deposited. Where in the case of the lender utilising a non-intermediated channel, the lender will carry the total potential risk, thus should the borrower default, the full liability will be borne by the lender. Apart from bank-endorsed debt instruments, the unique feature of the non-intermediated channel is that the lender's liability for the interest income and capital lies with the ultimate borrower (Grieve, 1989:15).

Up to this point, disintermediation, re-intermediation and non-intermediated credit extension have been discussed by way of definition. Subsequently, environments as well as certain financial instruments that are theoretically conducive for disintermediation will be addressed. In the following section, the chapter identifies causes of disintermediation in particular.

3.5 Causes of disintermediation

Causes of disintermediation according to the De Kock Commission (1985:101) arise from the application of semi-direct or direct monetary controls. Such controls could result in an artificially large gap between lending and borrowing rates of banks or financial institutions concerned, providing incentive within this interest rate gap. This gap creates feasibility for a disintermediated market. Such a gap could also purely arise if the lending rates of these institutions are too high and/or their deposit rates are too low, relative to the rates indicated by the underlying supply and demand situation.

Disintermediation could furthermore be facilitated by money brokers and or other non-bank parties. For example, money brokers specialise in placing clients' funds, on best terms available, with

municipalities, public corporations, semi-government enterprises and large business companies, as well as in participation mortgage bonds in order to earn a raising fee from borrowers. Given the choices available to the money broker from short-term and long-term funds, the money broker performs a time-saving and advisory function and is able to weigh up the creditworthiness of various borrowers. Money brokers thus assess information from both sides and attempt to find the most appropriate source of finance to meet a particular need, possibly outperforming the prevailing market rate (De Kock Commission, 1985:102).

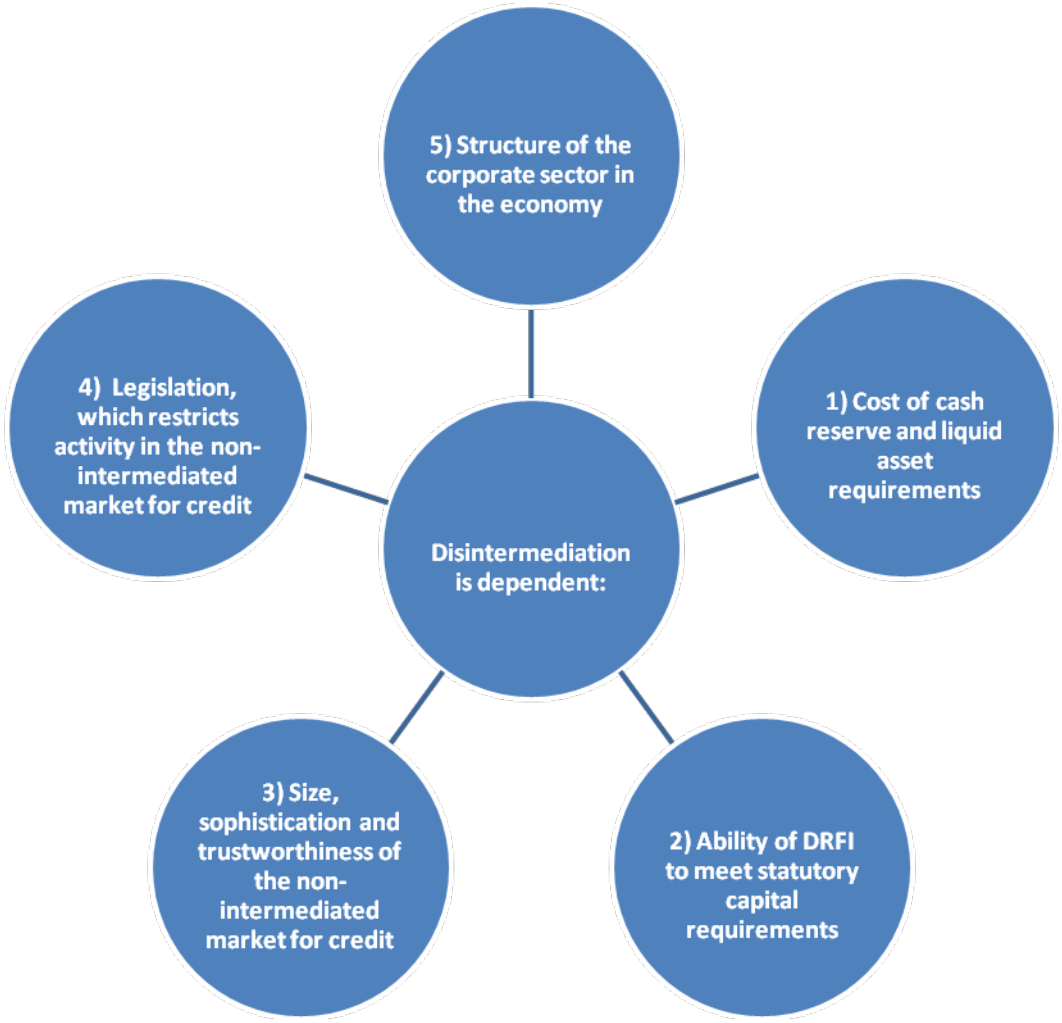
De Kock (1985:7) attributes causes of disintermediation and the rise in the velocity of circulation of the monetary aggregates between 1976 and 1980 to the application of direct and semi-direct instruments of monetary policy. These direct and semi-direct instruments took the form of bank credit ceilings, deposit rate control and high liquid asset requirements. This resulted in artificially large gaps between the lending and borrowing rates of banks and other financial institutions concerned.

However, following the 1980s, De Kock (1985) identified a decline in the velocity of money reflecting re-intermediation. This was mainly the logical and inevitable consequence of a monetary policy transition period from predominantly direct to more market-orientated instruments. The main steps that marked this transition were the abolition of deposit rate controls, abolition of bank credit controls, increased flexibility of prime overdraft rates and other money market rates, more realistic Ladofca rates, changes in SARB accommodation to discount houses and banks, and tap and tender issues of government stock (De Kock Commission, 1985:8–9).

Thus, semi-direct and direct controls have been identified as conducive to disintermediation, while the relaxation or abolishment of controls resulted in re-intermediation. While this was the case post-1980s era in South Africa, via the easing of controls, it is interesting to note how controls had to be re-introduced to some extent by many countries during the 2007–2009 Financial Crisis. More details and consequences relating to the Financial Crisis are expanded on later in this chapter.

In examining the causes of disintermediation, Grieve (1989) specifies five factors on which disintermediation is dependent, as illustrated in Figure 3.4. The causes of disintermediation relate to macroeconomic dynamics, specifically the cost of statutory reserve requirements, the ability of DRFIs to meet capital requirements, the size and structures of the corporate sector and non-intermediated market for credit, legislative restrictions, and the structure of the corporate sector in the economy, which are discussed in further detail in this section.

Figure 3.4: Five causes of disintermediation



Source: Grieve (1989)

3.5.1 Cost of cash reserve and liquid asset requirements

The first cause of disintermediation is the cost of cash reserve and liquid asset requirements. This reserve requirement is the percentage of risk-weighted liabilities of the bank required to be held in the form of reserves with the central bank. These requirements were historically regarded as a prudential measure to ensure financial stability within the system and not meant as a monetary policy instrument (SARB, 2006a:60).

Typically, prudential requirements relate to: firstly, capital adequacy, based on the bank's asset risk composition so that the bank maintains an adequate amount of capital and reserves to honour its solvency; secondly, a minimum cash reserves balance with the SARB of 2.5%; thirdly, minimum liquid asset holdings to provide for liquidity risks; and lastly, large credit exposures, requiring the bank's board of directors to grant permission for an investment or loan exposure to be given to a

client, should the amount exceed a prescribed percentage of the bank's capital and reserves, which must also be reported to the Registrar of Banks (SARB, 2006a:62).

It can be argued that a disadvantage of reserve requirements is that they impose a "tax" on banks. This creates a trade-off between its effectiveness as a monetary control and the tax it imposes on the banking system. With high reserve requirements, banks will attempt to hold more "non-reserve requirement" deposit liabilities, resulting in disintermediation from the domestic banking system. Therefore, even if higher reserve requirements increase the effectiveness of controlling the official measure of money supply, disintermediation is likely to make it less effective (SARB, 2006a:61).

In the sphere of monetary policy, reserve requirements can be used to create a short-term structural shortage by withdrawing liquidity in the market. Central banks prefer to be price-makers rather than price-takers, and thus would rather lend to the market at a set rate than borrow. Doing so gives them greater influence over market rates. From a long-term perspective, reserve requirements can be used as an instrument to influence the banks' rates of lending and deposits. For example, should the reserve requirement be raised, the supply of funds available would decrease, which in turn raises the cost of financing (SARB, 2006a:61).

3.5.2 Ability of Deposit Receiving Financial Institution to meet statutory capital requirements

Banks and mutual banks are regulated on an institutional basis in terms of the Banks Act (94/1990)[1] and the Mutual Banks Act (124/1993; SARB, 2006b:39).[2] Chapter 5 of the Banks Act deals with the prudential requirements and incorporates the principles on which these prudential requirements are based. The emphasis is on the maintenance of prudential management of banking business and risks. The management of these risks occurs through the holding of statutory capital requirements.

Capital requirements for banks are based on the risk composition of their assets. The definition and method of calculation are in accordance with the Basel Committee's recommendations, with a minimum capital requirement of R250 million or 10% of risk-weighted assets (SARB, 2006b:39). However, the argument arises that with small banks this requirement may be a larger burden in comparison with larger banks. For example, should 10% of their risk-weighted assets be less than R250 million, according to the Act they would be required to cover R250 million which would work out to more than the 10% burden of the larger banks.

[1] Hereafter referred to as "the Banks Act".
[2] Hereafter referred to as "the Mutual Banks Act"

Despite prudential requirements, financial institutions are becoming large, intricate and even obscure in the overall risk exposures, which affects the trustworthiness of the credit market. This highlights the need for financial regulation in the market concerned.

3.5.3 Size, sophistication and trustworthiness of the non-intermediated market for credit

In South Africa, private-sector financial institutions are extensively regulated. These regulations operate at four distinct levels. Firstly, general legislation is usually relevant to all companies, for example the Companies Act (71/2008). Secondly, financial institutions are subject to specific prescriptive legislation according to their function, for example the Banks Act. Thirdly, specific directives define the rules applied by their respective registrars, for example the rules issued in terms of the Act by the Registrar of Banks. Lastly, there are self-imposed rulings of industry associations to which the industry is bound, for example the Banking Council (Falkena, Bamber, Llewellyn & Store, 2001:145).

The larger and more sophisticated the market is, the greater the need for financial supervision will be, which in turn seeks to instil trustworthiness in the overall financial market. That is the reason that, additional to these, inspectorates as in South Africa's case the Financial Services Board and the Bank Supervision Department perform a regulatory role and impose a monitoring and supervision regime on private financial institutions. However, no matter how well financial institutions are regulated, the business of banking has to be regulated too, prohibiting non-financial institutions and individuals.

3.5.4 Legislation that restricts activity in the non-intermediated market for credit

The Banks Act (23/1965) was re-written in 1990 in an attempt to ensure legislative equality for all banks and building societies, as well as to update legislation with regard to international banking and bank supervisory practice. The regulatory emphasis of the new Banks Act is specifically geared towards the function of deposit taking. Under this, every entity that takes deposits as defined in the Banks Act is regarded as a bank and must be licensed as such. Lastly, the Banks Act was re-written with a supervisory emphasis on risk management in banks and the adequacy thereof (SARB, 2006b:31).

In attempt to fill the gap between formal and informal financial sectors, the Mutual Banks Act was enacted. Mutual banks are subject to the same principles of accountability and risk management as banks. The distinction comes with regard to the nature of capital and the minimum capital requirement.

At the level of informal banking services, provision has been made for structures such as credit unions, stokvels and village financial services co-operatives giving them certain conditions under which to operate. This particular legal framework was established in an attempt to bring banking services to the poor in remote communities, as well as to promote a culture of saving (SARB, 2006b:32).

3.5.5 Structure of the corporate sector in the economy

Financial institutions can be grouped according to their function into three broad categories: banks, insurers and investment companies. These can be subdivided, with banks as commercial banks, merchant banks and mutual banks; insurers subdivided according to the type of insurance offered, long-term and short-term insurance; and investment companies can be split into fund managers, securities traders and brokers (Falkena *et al*., 2001:144).

Up to this point, the causes of disintermediation discussed have been a function of the financial environment as well as regulation thereof. Having examined five theoretical causes of disintermediation in this regard, the chapter proceeds to examine possible ways in which disintermediation or re-intermediation can be identified. Specifically, the study will be focusing on disintermediation and financial instruments.

3.6 Quantifying disintermediation

It is important to remember that when examining for disintermediation, a precise figure is not the result in this process, rather broad trends of disintermediation or re-intermediation are sought for. Therefore, the aim of this study is to identify a trend of either disintermediation or re-intermediation, however to begin with, the study will theoretically examine ways to quantify disintermediation.
Early literature by Brummerhoff (1984) classifies the occurrence of disintermediation and re-intermediation by changes in four possible variables, namely, repurchase agreements, bills rediscounted, bankers' acceptances and money velocity. These measures are subsequently discussed.

3.6.1 Repurchase agreements

A repurchase agreement relates to the sale of financial assets, for example securities, with a firm undertaking by the seller to repurchase the same or equivalent securities after a fixed period at a price determined at the time of the sale (Brummerhoff, 1984:47). It is the sale of a financial asset by a bank with an undertaking to repurchase the asset after the agreed period of time (Grieve, 1989:38).

A repurchase agreement represents a sale of an asset that is usually funded by a deposit. Therefore, in the balance sheet of the bank, an asset and a liability are removed for the duration of the repurchase agreement (Grieve, 1989:38). When financial instruments (for example, stocks, treasury bills, promissory notes and bankers' acceptances) are sold under repurchase agreements by banking institutions to the private sector, the money supply and amount of bank credit extension will be reduced (Brummerhoff, 1984:47).

However, as Brummerhoff (1984:47) states, many repurchase agreements are short-dated, making them close substitutes for money. With this in mind, when measuring private-sector liquidity through monetary aggregates, short-dated repurchase agreements should be accounted for.

Brummerhoff (1984:48) attributes an increase in repurchase agreements entered into by banking institutions as proof of disintermediation, which in turn will reduce the M1 and M2 money supply and bank credit extension. However, a decrease in repurchase agreements by banking institutions would indicate re-intermediation, being the re-incorporation of transactions to banking institutions. This would therefore increase the M1 and M2 money supply, and furthermore increase credit available at banks.

3.6.2 Bills rediscounted

The number of bills rediscounted is the second way Brummerhoff (1984) identifies assets moving to and from the balance sheets of banks. Banks trade money market instruments by way of discounting them before maturity. However, only paper that is endorsed by banks, and subsequently sold prior to maturity, is included in this category constituting a contingent liability for the bank.

Brummerhoff (1984) states that the changes in the total number of rediscounted bills reported by banking institutions are due to the borrowers' preference for using bills rather than an overdraft facility, as well as demand to hold bills. The first involves the process of rediscounting or selling bank-endorsed bills of exchange outside the banking sector. For example, should a borrower wish to obtain a loan, he or she may discount or sell a debt instrument to a bank (promissory note). The bank could then sell or rediscount this promissory note to a lender. Disintermediation occurs when the bank rediscounts the bill. In order to enhance the bill's marketability, the bank may have to endorse the bill and in doing so, the bank raises either a direct or contingent liability. It is this endorsement process that enables quantification.

Therefore, it is important to keep in mind that rediscounted bills not endorsed by the banking sector are not quantifiable and that a decrease in reported liabilities on account of bills rediscounted does not necessarily mean that the bills have reverted to discounts on the balance sheet of the bank.

The bill may have been redeemed by the drawer, who gave an alternative form of credit or who did not require further credit (Grieve, 1989:40–41).

In summary, changes in bills rediscounted, could prove as a signal of disintermediation or re-intermediation. More specifically, if there is an increase in bills rediscounted, and in bank-endorsed bills held outside the banking sector by non-bank parties, there is a transfer of assets from the balance sheet of banks. In this case, this would represent disintermediation.

3.6.3 Bankers' acceptances

The third method of identifying disintermediation is through changes in bankers' acceptances held by banks (Brummerhoff, 1984:49). Bankers' acceptances are traded at a discount from face value on the secondary market and are often used in money market funds. Contrary to its name, bankers' acceptances, banking institutions do not hold all outstanding bankers' acceptances. A varying number of these acceptances is held outside the banking system by the non-banking private sector.

This method of identifying disintermediation observes the changes in the number of bankers' acceptances held by the banking sector in particular. In practice, when a corporate body uses acceptance credit, the accepting bank is able to advance the funds, either rediscounting the acceptance in the secondary market or holding it in a portfolio. Should the bank sell the acceptance to a non-bank investor, it will no longer be reflected as an asset in the balance sheet of the bank. The same applies to the liability, as the investor's funds, previously held as a deposit, are used to purchase the acceptance. This overall process indicates disintermediation.

The feasibility of relocating bankers' acceptances to and from the balance sheet of banks is influenced by two factors. The first factor is the effective cost of bankers' acceptances finance relative to the prime overdraft rate and overdraft facilities. If the effective cost of bankers' acceptances exceeds overdraft rates, for example, borrowers may rather utilise their overdraft facilities to meet financing needs. The second factor that determines the number of bankers' acceptances that banks wish to hold is the banks' ability to use bankers' acceptances for meeting their liquid assets requirement. Depending on the effective cost of bankers' acceptances, borrowers will tend to move between various types of credit (Brummerhoff, 1984:50).

Brummerhoff (1984) uses a ratio of banks' holdings of bankers' acceptances to total bankers' acceptance facilities utilised in order to identify disintermediation. For example, a low ratio represents disintermediation, as the larger proportion of utilised acceptance facilities are being held by parties other than the accepting banks. In summary, should the effective cost of bankers' acceptances increase to a level above overdraft rates, borrowers may rather use their overdraft

facilities, and the outstanding number of bankers' acceptances will tend to decline. Furthermore, a decline in the demand for bankers' acceptances will be reflected in smaller sales by banks, and relatively larger holdings in their own portfolios (Brummerhoff, 1984:50).

Up to this point, disintermediation and re-intermediation is identified by possible changes in repurchase agreements, bills rediscounted and bankers acceptances. The fourth way in which trends of disintermediation and re-intermediation is sought for is a more broad measure, namely, by examining changes in money velocity.

3.6.4 Money velocity

As observed in Section 2.2.2.1, Fisher (1926:17) describes the velocity of money as the monetary value of a year's transactions in a country divided by the average amount of money in circulation in that country during that year. The details of Fisher's exchange equation were discussed in Section 2.2.2.1, which brings us to the money velocity equation, which is given as:

$$MV = PT \tag{3.1}$$

Where:

- M is the amount of money in circulation during the period, or the supply of money during the particular period;
- V is the average velocity rate of M during the period;
- P is the average price per transaction; and
- T is the number of transactions during the particular period.

Rearrange the equation to get velocity (V) on its own:

$$V = PT / M \tag{3.2}$$

Since the study is evaluating monetary velocity of the economy as a whole, it can be assumed that total prices (P) and transactions (T) would equate to the country's Gross Domestic Product (GDP), as given below:

$$P \times T = GDP \tag{3.3}$$

Therefore, the velocity of circulation of a monetary aggregate, for example $M1$, is expressed as the ratio of the nominal GDP to the value of the $M1$ monetary aggregate, as follows:

$$V1 = \frac{GDP}{M1} \tag{3.4}$$

The same can be done for both the $M2$ and $M3$ monetary aggregates, resulting in the velocity of circulation of each monetary aggregate during the various time-periods concerned. De Kock (1985:3) defines this velocity of circulation of a monetary aggregate as the ratio of quarterly nominal GDP, at a seasonally adjusted annual rate, to the average value of the seasonally adjusted monetary aggregate during the quarter concerned.

Should the velocity of the money supply in circulation (V) increase, this could reflect the occurrence of disintermediation, as the value of the monetary aggregate (M) relative to GDP has declined. While the opposite also holds, should the velocity of the money supply circulation (V) decrease, it could suggest re-intermediation, as the value of the monetary aggregate (M) relative to GDP has increased (Grieve, 1989:49).

However, increases in domestic money demand and velocity of money, for example, do not solely indicate disintermediation. As indicated by Wesso (2002:3), the South African economy has undergone many structural changes, specifically the relaxation of exchange controls, financial innovations and the integration of the South African financial market into the global financial market. Historically, the South African economy underwent long periods of trade sanctions, operated under the financial rand system, had widespread exchange controls on residents, was under different monetary policy regimes and endured fluctuations in terms of trade. Wesso (2002:4) states that these kinds of factors may cause money demand functions to become unstable over time.

Furthermore, global financial liberalisation and changes in the technology of payments and settlements have led to large volatilities in money demand worldwide. Internationally, factors such as private-sector liquidity preferences and portfolio shifts, stemming from uncertainty regarding interest rates, equity markets and bond markets cause shifts in money demand (Wesso, 2002:6). These factors lead to volatility even under “normal” circumstances and more so under times of crisis. This brings the study to an examination of the 2008 financial crisis and the background thereof, which is discussed in the following section.

3.7 The Financial Crisis

Although disintermediation and re-intermediation are largely driven by monetary policy, financial crises have proven to impact monetary phenomena such as disintermediation and re-intermediation. The reason for this influence lies in the fact that financial crises tend to stem from or lead to an underlying liquidity crisis. For this reason, a short exposition is given of the causes and effects of the most recent financial crisis.[3]

3.7.1 Events leading up to the Financial Crisis

Schwartz (2009:19) attributes the foundation of the financial crisis to expansive monetary policy that lowered interest rates, propagating the real estate boom in the US. The US Federal Reserve Bank was also said to be too accommodative from 2001, delaying tightening until June 2004, ending its interest rate hiking cycle in August 2006. The US government further played a role in the real estate boom after government-sponsored enterprises (GSEs), the Federal National Mortgage Association (Fannie Mae) and the Federal Home Loan Mortgage Corporation (Freddie Mac), were encouraged to increase their purchases of mortgages to low and moderate income borrowers (Schwartz, 2009:20).

The pre-2007 financial crisis environment was largely a deregulated one. Many studies attribute the primary cause of the crisis to the lack of regulatory frameworks keeping pace with innovative financial packages. While most agree that the financial crisis was due to a real estate bubble, the crisis did not start there (Schwartz, 2009:19). The initial backdrop for the financial crisis was in a low interest rate and overheated economic environment. As a result, there was excess capital globally. This excess capital was channelled into the US mortgage market via securitisation (Crouhy, Jarrow, & Turnbull, 2008:7).

Securitisation in this particular instance was a financial vehicle that pooled mortgages together in a unitary form, which was then traded by investors as an asset class, even in secondary markets (Crouhy *et al*., 2008:7). The perceived benefit of this securitisation at the time was that it smoothed out the risk of default due to the non-explicit relation to the underlying asset. Mortgage-backed securities (MBSs) nevertheless were considered low risk, with investors trading the asset globally, despite the lack of understanding and information regarding the pooled underlying assets (Schwartz, 2009:21).

As mentioned, this occurred within a low interest rate environment, the result being that mortgages were extended to high-risk borrowers and additionally also pooled into financial vehicles, with the

[3] For a full time-line of the financial crisis, see the appendix at the end of this dissertation.

purpose of generating higher yields on securitised subprime mortgages. Low interest rates, combined with subprime lending in the US set the platform for the real estate bubble as it were (Crouhy *et al*., 2008:4).

The continuous rise in house prices, as well as financial innovations made subprime borrowers attractive customers for mortgage lenders. Structures such as Adjustable Rate Mortgages were introduced by lenders with “teaser rates” and no down payments. Furthermore, borrowers were in some cases allowed the opportunity to postpone some of the interest payments, adding it to the principle of the loan. This, however, was not all; there were further financial innovations such as securitisation of mortgages, which involved selling packaged securities to investors, who would receive *pro rata* payments of principal and interest from the borrowers. While US government-sponsored mortgage-lending enterprises Fannie Mae and Freddie Mac developed this financing technique in the 1970s, they guaranteed these MBSs to ensure marketability at the time, nevertheless confined guarantees to “prime borrowers”, who took out conforming loans. The private sector later developed MBSs, backed by non-conforming loans that had other means of credit enhancement (Baily, Litan, & Johnson, 2008:7). The presumption behind MBSs was that the majority of the pool of assets would perform. In this case, with the mortgage market, the pool consisted of mortgages from geographically diverse areas. This at the time was believed to be a risk measure, protecting the overall pool from default (Baily *et al.*, 2008:24).

Of the most recent, these financial innovations were topped by Collateralised Debt Obligations (CDOs), which private-sector commercial and investment banks developed, dividing the cash flows into tranches in order to appeal to investors with different risk appetites. Moreover, credit-rating agencies assigned high ratings to securities in the various tranches, in order to endorse their appeal (Baily *et al.*, 2008:7).

All these innovations caused a boost in subprime lending. The channelling of funds from investors caused ineligible households, who were unable to qualify for mortgage credit, to become eligible for loans. This new group of borrowers increased housing demand, inflating the price of housing (Baily *et al.*, 2008:8).

When subprime borrowers started defaulting, subprime lenders too began declaring bankruptcy, (approximately in March 2007). The crisis spread to other markets owing to counterparty exposure to subprime MBSs. Ultimately, in March 2008, Bear Stearns went bankrupt, in July 2008 IndyMac Bank went into receivership and the pinnacle was the bankruptcy of Lehman Brothers in September 2008. Panic and systemic risk set in and the crisis spread beyond financial markets (Crouhy *et al*., 2008:25). All this uncertainty culminated in cash hording, with banks uncertain of the possible contagion effects of those financial institutions that had defaulted, while speculation grew

as to whom would risk default next. Consequently, credit lines dried up as banks repatriated funds, with a wait-and-see approach. This caused the subprime mortgage crisis to advance into a global liquidity crunch, which is subsequently discussed.

3.7.2 The Crisis and liquidity

One of the most prominent factors regarding the financial crisis was the issue of liquidity. From a theoretical aspect, Brunnermeier (2009:91) groups liquidity into two categories, namely, funding liquidity and market liquidity. He describes funding liquidity as the ease with which investors and arbitrageurs can obtain funding from financiers, and market liquidity as the overall liquidity condition in the market. For example, market liquidity would be low if prospective borrowers cannot borrow funds and have to resort to raising money by selling an asset; furthermore, should selling the asset depress the sale price of the asset, the balance sheet would shrink. The liquidity environment is further defined by, firstly, bid–offer spreads; the narrower the bid–offer spreads are, the more liquid the market. Secondly, it is defined by market depth, which indicates the number of transactions that can be conducted at the prevailing price. Lastly, liquidity is defined by market resilience, which has to do with the amount of time it takes for prices that have temporarily moved to normalise or return to equilibrium (Brunnermeier, 2009:92).

Troubles in the interbank lending market arose between 2007 and 2008, after it became apparent that conduits, structured investment vehicles and other off-balance-sheet vehicles would draw on credit lines extended by sponsored banks. The result was precautionary cash hoarding by banks, hinged on banks' uncertainty regarding their individual potential funding requirements. This led to further doubt whether banks could tap into the interbank market, since it was not known to what extent other banks were exposed. This resulted in sharp spikes in interbank market interest rates as seen in the London Interbank Offered Rate (LIBOR) (Brunnermeier, 2009:95).

While this provideds a brief overview of the financial crisis, the point of interest lies with the crisis's impact on liquidity, possibly resulting in disintermediation. In the heat of the financial crisis, interbank lending came to a standstill as banks hoarded funds owing to uncertainty regarding potential claims. Lack of confidence, in particular counterparty risk, following the default of Lehman Brothers resulted in cash hording. Banks were forced to reflect their positions in their pricing, in some cases offering well above market in order to attract funds.

3.8 Conclusion

Chapter 3 commenced by providing an overview of the financial system. The financial system plays a vital role in supporting the elements within this system, namely, financial markets and financial intermediaries. These units assist in effectively fulfilling the need of savers and borrowers. The financial system further provides the functions of risk sharing, liquidity and information sharing amongst units.

The chapter then discussed financial intermediaries. Financial intermediaries are distinguished from financial markets by the way in which they provide access to financial assets and liabilities, essentially bringing to forefront their intermediary role as banks in the monetary system. At this point, disintermediation, re-intermediation and non-intermediated credit extension were introduced, and definitions and various cases for each were examined.

The chapter focused on disintermediation, which the De Kock Commission defines as the replacement of credit normally extended through the intermediation of a bank by non-intermediated credit extension directly by primary lenders to ultimate borrowers. Certain economic environments and regulatory structures sometimes prove conducive for disintermediation to occur. The study subsequently named the causes of disintermediation, in relation to macroeconomic dynamics; specifically, the cost of statutory reserve requirements, the ability of DRFIs to meet capital requirements, the size and structures of the corporate sector and non-intermediated market for credit, legislative restrictions, and the structure of the corporate sector in the economy. Furthermore, ways in which to identify trends of disintermediation were found. The literature highlighted four ways to identify disintermediation, namely, through changes in repurchase agreements, bills rediscounted, bankers' acceptances and money velocity.

Changes in the technology of payments and settlements, as well as global financial liberalisation, have led large volatilities in money demand worldwide. With reference to the Financial Crisis, financial derivative packaging in particular illustrated the manner in which technology dominated a particular market, in this case US mortgages, and marketed the underlying US housing sector worldwide. The global integration of world financial markets is evidenced by the liquidity crunch during the recent Financial Crisis. The Financial Crisis in particular highlighted the consequences of regulatory structures not keeping pace with financial innovations. This brings to light the complexity of the financial system, contagion, and more specifically counterparty risk.

Consequently, having theoretically examined the financial system and intermediaries therein, as well as, macro-economic causes and ways to quantify disintermediation in Chapter 3, the study will explore the occurrence of the disintermediation in the South African market between 1970 and

2010 in Chapter 4. This will be done by examining income velocity and real interest rates over the period concerned, in comparison to monetary policy development in South Africa.

Chapter 4

Disintermediation

With reference to South Africa

4.1 Introduction

Many studies prior to this have focused on the topic of disintermediation. While they collectively agree on the definition of *disintermediation*, they either serve as a literature review or by empirical analysis seek to identify the occurrence of disintermediation. These studies analyse disintermediation relative to a specific country, while others address disintermediation from a broader theoretical perspective. Numerous elements are examined in the various studies, ranging from financial instruments to disintermediation and monetary transmission mechanisms.

A brief overview of studies regarding disintermediation is subsequently provided in Section 4.2. Thereafter, the literature most relevant to the South African situation is discussed in Section 4.3. The methodology is presented in Section 4.4, which reviews the last four decades (from the 1970s), with the intention of identifying disintermediation in the South African market. Lastly, findings and results for the study are discussed in Section 4.5 of this chapter.

4.2 Literature review of disintermediation

Early literature published in 1955 by Gurley and Shaw addressed the theory of financial intermediation. Gurley and Shaw (1955:520) identify the need for banks to facilitate an intermediary role between surplus and deficit units. They describe banks as takers of deposits from savers, in turn extending those funds to borrowers. Through this action, banks transform the quality of capital with respect to fund size, maturities and risks, and by doing so increase the social value of capital through the efficient allocation thereof (Gurley & Shaw, 1955:516).

Gurley and Shaw (1955:518–519) classify external financing as direct financing or indirect financing. Direct financing is explained as the borrowing of deficit units from surplus units, through the sale and purchase of debt instruments, for example securities. Indirect financing involves an intermediary in the above-mentioned process, where the intermediary issues debt, enabling it to fulfil the financial requirements of both surplus and deficit units.

Subsequently, Brummerhoff (1984) covered topics around disintermediation and discusses measures for identifying disintermediation or re-intermediation taking place. He focused his study on the South African economy, seeking confirmation of disintermediation or reintermediation by examining changes in repurchase agreements, bills rediscounted and bankers' acceptances held outside the banking system. Thereafter, De Kock (1985), who mentions the deficiencies of the South African monetary policy framework at the time, studied disintermediation, re-intermediation and the velocity of circulation of money. A more in depth discussion regarding these two studies in particular will follow later in this chapter(Section 4.3).

In 1988, Brown and Smith studied innovations in interest rate risk management and re-intermediation of commercial banking. In their study, they gave special attention to the source of corporate demand, as well as bank supply of interest rate risk management products. Moore (1989) constructed a simple model of bank intermediation by examining the role of central banks in the money supply process, as well as banks' asset and liability management process. Moore (1989) found that innovations in liability management, together with sophisticated global money markets as marginal funding sources, have permitted large banks to take on off-balance-sheet loan commitments. In short, liability management has enabled banks to rely on purchased funds to meet unexpected increases in loans (Moore, 1989:25). Moore's model describes the manner in which the volume of bank intermediation and the supply of credit money outstanding are determined by market forces. Moore's study is largely written from a general perspective on re-intermediation, while numerous studies have focused on specific economic structures and the disintermediation process within certain monetary areas or countries.

Of those studies, Adhikary (1992:18) focused on the deregulation of the financial sector in developed countries and found that if financial disintermediation is the reason behind deregulation, the impact on non-bank financial intermediaries, as a result of re-intermediation of funds to the banking sector, has to be taken into consideration. Frankel (1993:5) examined the changes in the financial system of Asia and Pacific countries and concluded that corporations switch from relying on bank loans to issuing securities directly in developed markets, resulting in disintermediation, despite the ease at which intermediated funding can be obtained. Schmidt, Hackethal and Tyrell (1999:62) studied disintermediation and the role of banks in Europe. They observed a decline in the role of banks, and furthermore identified disintermediation at the level of banks accompanied by a simultaneous trend towards securitisation at a system-wide level. Rushdi and Tennant (2003:232) examined the profitability of Australian banks between 1985 and 2001 and found that banks' interest rate margins are exogenously determined by factors such as entry of new competitors, as well as disintermediation and re-intermediation of funds.

In a study on disintermediation and monetary transmission in Canada, Roldos (2006:12) concluded that the process of disintermediation contributed to changes in the sensitivity of aggregate demand to real interest rates, which is deemed vital in the transmission of monetary policy to the real economy. In a related study, Tan and Goh (2007) studied implications of monetary policy in Malaysia by focusing on financial disintermediation in the 1990s. They found that real interest rate elasticity had lost its significance in influencing the output gap in post-1990 period. Thus, they concluded that the increased financial disintermediation since the early 1990s may have made the conduct of monetary policy in Malaysia more difficult (Tan & Goh, 2007:16). Similarly, Capelle-Blancard, Couppey-Soubeyran and Soulat (2008) focused their study on the measurement of financial intermediation in Japan. Their results demonstrated that the intermediation ratio in Japan remained stable between 1979 and 2004, at approximately 85% (Capelle-Blancard *et al*., 2008:54).

Studies examining the South African market are subsequently examined, specifically those of Brummerhoff (1984) and De Kock (1985). These articles are discussed in order to explore possible ways of quantifying disintermediation in the South African financial market following the open-trade policy and progression of the domestic economy.

4.3 Literature review from the South African perspective

There are two prominent studies on disintermediation in the South African context. The first was conducted by Brummerhoff (1984) and the second by De Kock (1985). Although these two studies are fairly similar, De Kock expands on Brummerhoff's study by including the velocity of money as a gauge for disintermediation. The following sections detail these two studies.

4.3.1 Brummerhoff (1984)

Brummerhoff's (1984) study was one of the earliest studies examining disintermediation in the South African economy for the period 1979 to 1983. In his study of disintermediation and re-intermediation in South Africa, Brummerhoff (1984:45) refers to methods of identifying non-bank-intermediated credit, such as changes in repurchase agreements, bills rediscounted and bankers' acceptances held outside the banking system. However, changes in non-intermediated credit could be the result of changes in policy measures or perhaps merely reflect normal activities of banking institutions and may not be the direct result of disintermediation. Therefore, the methods identified provide only at best a proxy of disintermediation (Brummerhoff, 1984:47).

The study consequently briefly discusses these three methods highlighted by Brummerhoff (1984). The first method employed relates to changes in repurchase agreements, which Brummerhoff (1984:47) defines as the sale of financial assets, normally securities, with a firm undertaking by the seller to repurchase the same or equivalent securities normally for a fixed period of time at a

predetermined price. In his study, Brummerhoff (1984:47) states that an increase in repurchase agreements reported by banking institutions is evidence of disintermediation, reducing the M1 and M2 monetary aggregates, as well as bank credit.

The second method by which Brummerhoff (1984:49) identifies the occurrence of disintermediation by changes in the number of bills rediscounted by the banks. This involves various bank-endorsed money market instruments, for example promissory notes and/or bankers' acceptances, that are sold by banking institutions in the financial market. If more endorsed bills are held outside the banking sector by non-bank parties, assets then move from the balance sheets of banks, representing a form of disintermediation.

The third method by which to determine disintermediation is through the use of bankers' acceptances (Brummerhoff, 1984:49). Therefore, changes in the number of bankers' acceptances, held by banks represent another form of disintermediation or re-intermediation. Two main reasons, at the time, for the transfer of bankers' acceptances to and from the balance sheets of banking institutions were suggested. The first reason was the effective cost of bankers' acceptances in relation to prime overdraft and other rates. The second reason was that there was the need for banking institutions to hold bankers' acceptances to meet their liquid asset requirement. However, since Brummerhoff's study, South Africa's economy and financial markets in particular have undergone significant changes, which may distort the drivers behind increases in the use of bankers' acceptances. Therefore, bankers' acceptances were not used as a proxy for disintermediation for this study.

In summary, Brummerhoff (1984:52) mentions that disintermediation and re-intermediation have an impact on the monetary aggregates and their velocity of circulation, as well as on the credit intermediated on the banking system. De Kock (1985) followed Brummerhoff's study, evaluating disintermediation, re-intermediation and the velocity of circulation of money.

4.3.2 De Kock (1985)

The De Kock (1985:3) study on disintermediation addresses the velocity of money circulation. The velocity of a monetary aggregate is expressed as a ratio of the seasonally adjusted nominal GDP, to the average value of the seasonally adjusted monetary aggregate during the same period. His study is largely a literature review, examining graphs of the income velocity of the M1, M2 and M3 monetary aggregates. In his study, De Kock (1985:7) identifies the rise in disintermediation and accompanied rise in the velocity of money between 1976 and 1980. This rise he attributes to the application of direct and semi-direct monetary policy instruments at the time, such as bank credit ceilings, deposit rate control and high liquid asset requirements. According to De Kock (1985:7), these controls increased the margin between lending and borrowing, resulting in a non-

intermediated credit extension within this gap. A decline in velocity is noted from 1980 to 1984 as re-intermediation occurred. The re-intermediation and declining velocity, as De Kock indicates, were the result of movement away from direct monetary policy instruments to a more market-orientated approach.

4.3.3 Conclusion

Both literature studiesof disintermediation in South Africa, by Brummerhoff and De Kock, agree that disintermediation had an impact on both the M1 and M2 monetary aggregates at the time of writing. For the purpose of this study, the money velocity approach was adopted, with specific attention to income velocity of the M3 monetary aggregate. Income velocity and real interest rates were scrutinised for common direction in identifying disintermediation or re-intermediation.

4.4 Data, methodology and findings

In this section, the data is discussed, specifically the source and time frequency of the data, as well as the time-period under review. Instruments examined in this study are largely based on articles by Brummerhoff (1984) and De Kock (1985) as discussed above, as well as in Chapter 3. The methodology is based on movements in the velocity of money and interest rates, specifically real interest rates. The period under evaluation is from the first quarter of 1970 to the first quarter of 2010, which was divided into tranches and is discussed accordingly. All the data used in this study was obtained from the SARB.

4.4.1 Data on the income velocity of circulation of the M3 monetary aggregate

The first set of data used in the study is the income velocity of circulation of the M3 monetary aggregate. As Brink and Kock (2009) explain, the expansion of money is measured by monetary aggregates, which classifies money in terms of the liquidity, specifically the extent to which a financial asset can be bought or sold at short notice with ease without deviating largely from its market price. For the purpose of this study, the income velocity of circulation of the M3 monetary aggregate was examined, denoted as V3. The M3 monetary aggregate is classified in Table 4.1 below.

Table 4.1: Monetary aggregates comprising money supply

M1A	Narrow definition of money: • bank notes and coin in circulation outside the monetary sector • plus cheque and transmission accounts of the domestic private sector with monetary institutions
M1	M1A plus demand deposits held by the domestic private sector
M2	M1 plus other short- and medium-term deposits held by the domestic private sector with monetary institutions
M3	Broad definition of money: • M2 • plus long-term deposits held by the domestic private sector with monetary institutions

Source: Brink and Kock (2009:19)

The income velocity of circulation, of the M3 monetary aggregate used in this study was used, as calculated by the SARB. The frequency of the data is quarterly from first quarter of 1970 to the first quarter of 2010.

4.4.2 Data on real interest rates

The real interest rate was calculated from SARB data, namely, the domestic repo rate and producer price index (PPI) data. The frequency of both data series, namely, the repo rate and PPI was converted to quarterly data to match the V3 income velocity. Subsequently PPI inflation (i) is calculated as follows:

$$i = \frac{\left[PPI_{(t)} - PPI_{(t-1)}\right]}{PPI_{(t-1)}} \tag{4.1}$$

Lastly, a simple Fisher Equation was used to calculate the real interest rate:

$$r = n - i \tag{4.2}$$

where:

- r is the real interest rate (PPI);
- n is the nominal interest rate (repo rate); and
- i is the inflation rate (PPI inflation rate).

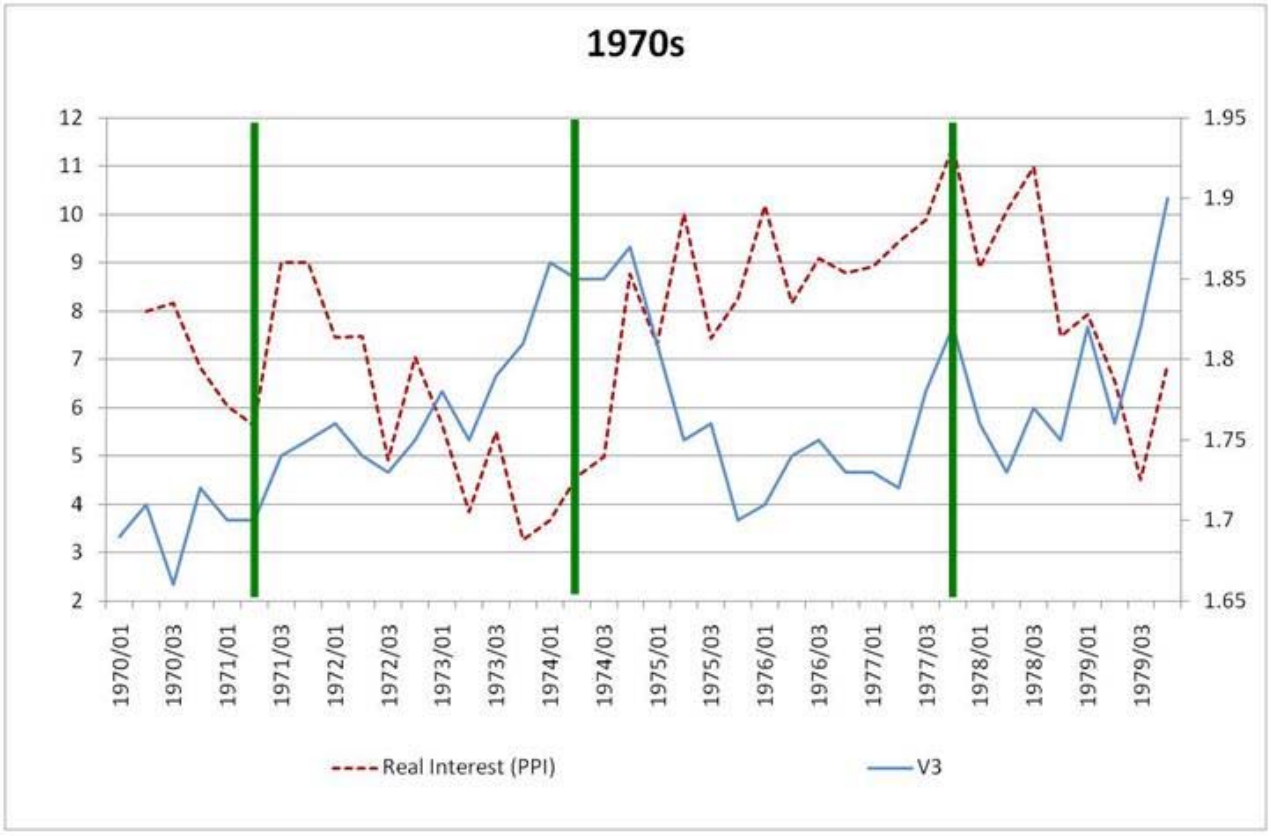
4.4.3 Methodology and findings

The study examined the trends in the V3 income velocity relative to real interest rates in four decades (1970-2010) with regard to the South African economy. The focus was on the literature of prominent events within each decade. The background and monetary schools of thought to the four decades concerned has to a large extent already been covered in the latter sections of Chapter 2 of this study; however, subsequently, monetary policy frameworks, as well as major economic and political events are highlighted in each decade in this section. The times of the South African general elections are indicated by the green vertical bars in the graphs for each decade below. The first decade under review is the 1970s.

4.4.3.1 1970s

The monetary framework during this decade was one of a liquid asset-based system with quantitative controls over interest rates and credit. These direct controls took the form of ceilings applicable to credit extended to the private sector, deposit controls, import deposits and hire-purchase controls. However, in 1972, the SARB Governor at the time, T.W. de Jongh, abolished the ceilings on bank credit and revised the liquid asset requirement in an attempt to revive a sluggish economy.

Figure 4.1 Decade of 1970



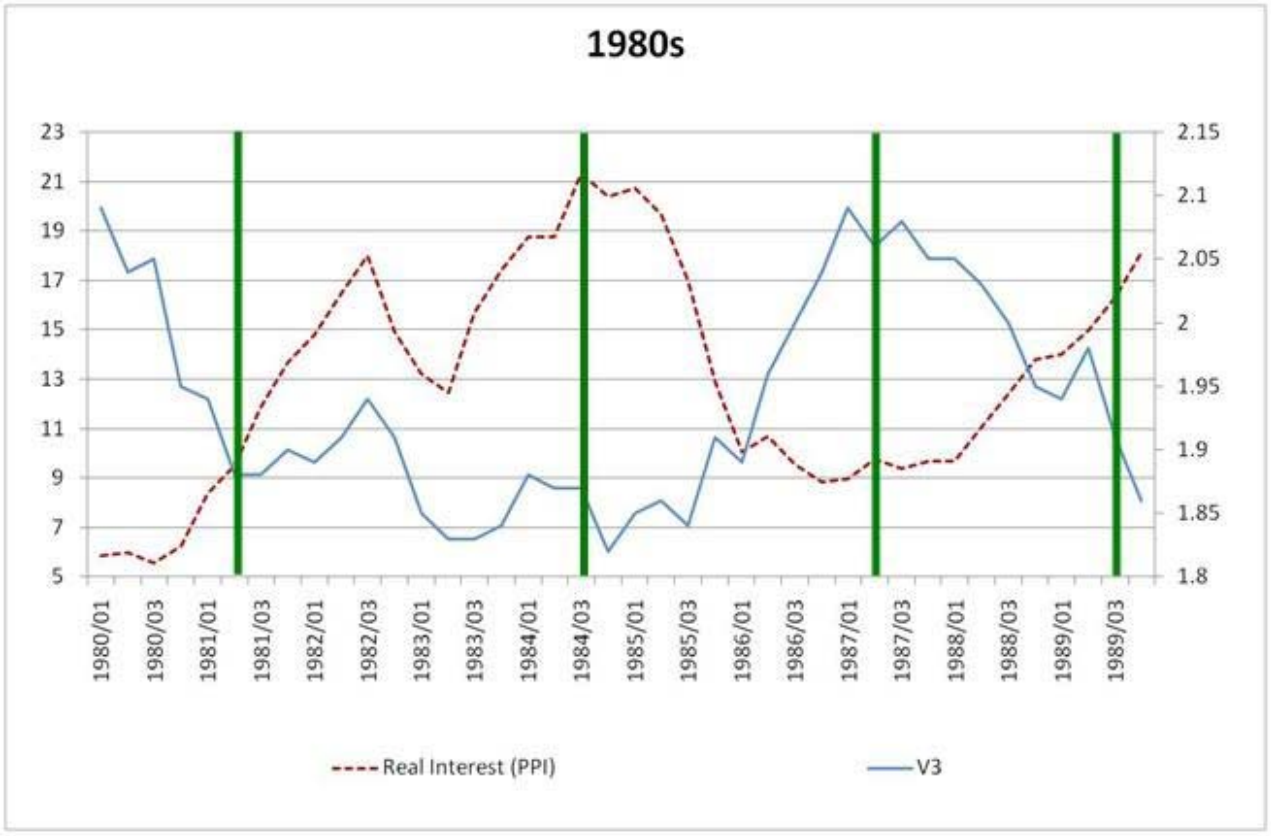
Source: SARB (2010)

Figure 4.1 compares the changes in real interest rates and the income velocity of the M3 monetary aggregate (V3) from the first quarter of 1970 to the fourth quarter of 1979. In the figure, the most notable occurrence of disintermediation is between the fourth quarter of 1971, running up to the 1974 general elections. An increase in V3 is observed during this period, while real interest rates declined concurrently. The same evidently occurs around the second quarter of 1979 and continues into the 1980s.

4.4.3.2 1980s

The first five years of the 1980s were a transitional period of the domestic monetary policy. The framework followed during the 1970s, was of a liquid asset-based system with quantitative controls over interest rates and credit, mixed with the cost of cash reserves-based system with pre-announced monetary targets, specifically of the M3 monetary aggregate. However, despite moving towards a more market-orientated policy system at the beginning of 1985, authorities were forced to reinstate strict exchange control measures, as well as declare a standstill on the repayment of foreign debt, owing to financial sanctions imposed on the country.

Figure 4.2 Decade of 1980



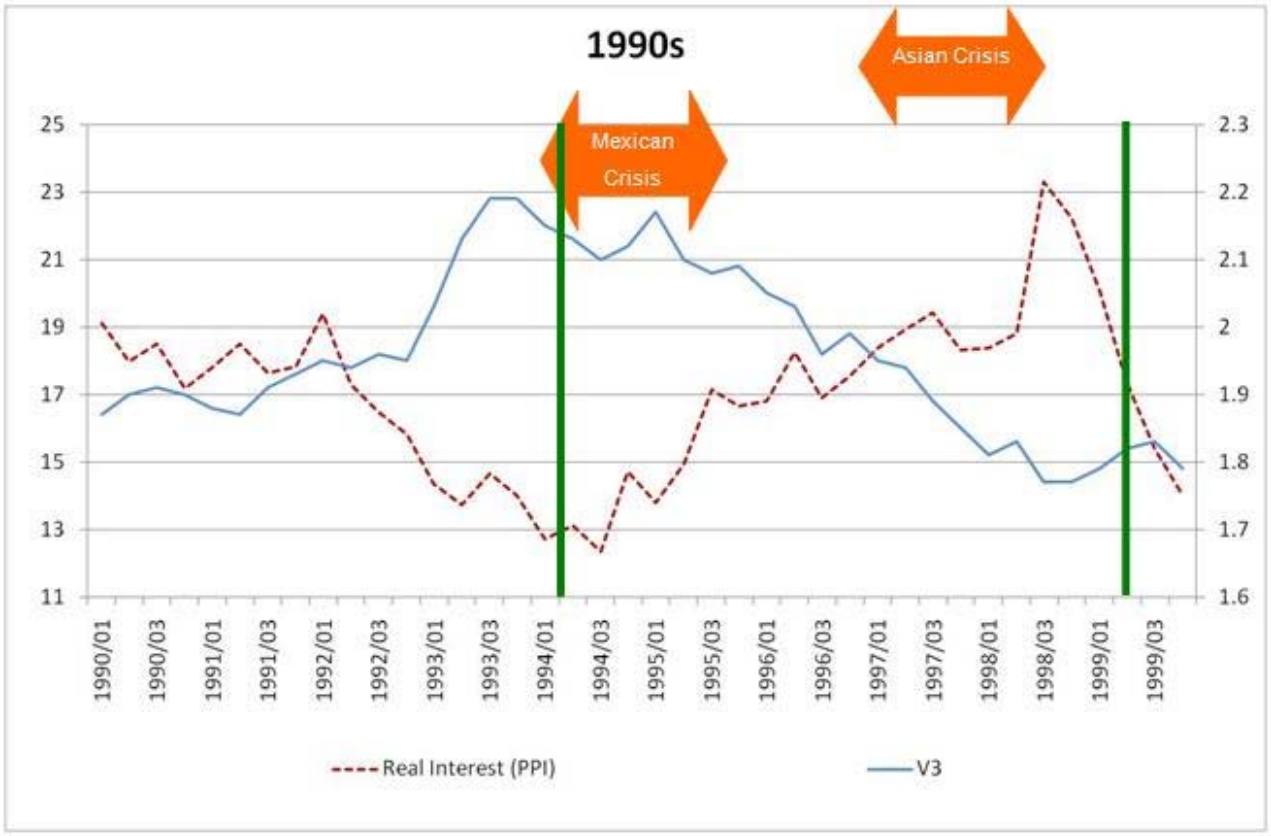
Source: SARB (2010)

Disintermediation was observed at the end of the 1970s, however this trend steadily reversed between the beginning of 1980 to the general elections of 1981, around the second quarter of that year, as illustrated in Figure 4.2. However, during 1985 until the general elections of 1987, disintermediation is observed, with V3 steadily rising during this period. As mentioned previously, financial sanctions were imposed at the beginning of 1985, accompanied by a debt standstill. Nevertheless, re-intermediation is clear, following the general elections of 1987 to the end of the 1980s.

4.4.3.3 1990s

In the 1990s, the South African authorities commenced slowly abolishing exchange controls. Amongst others was the final debt-rescheduling agreement in 1993 with foreign creditors. Most notably, this was followed by the abolishment of the dual exchange rate system. In 1995, authorities removed almost all exchange controls on non-residents. Overall, the monetary policy framework for the majority of the 1990s was a continuation of the latter half of the monetary policy regime of the 1980s, namely, the cost of cash reserves with a targeted level for the M3 monetary aggregate. This framework was expanded during 1998 and 1999 with the daily cash tender process through the repo system, maintaining the pre-announced M3 target and adding an informal target for core inflation.

Figure 4.3 Decade of 1990



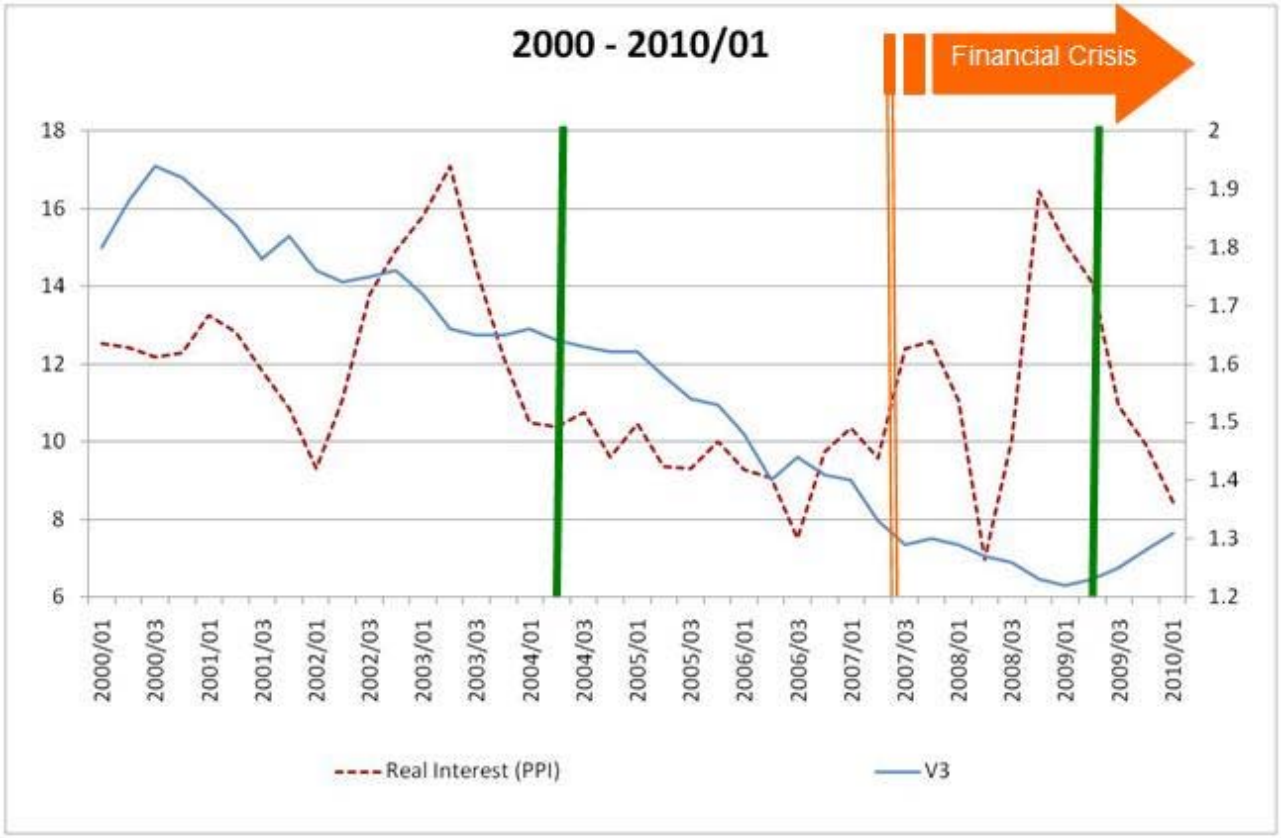
Source: SARB (2010)

The first occurrence of disintermediation in Figure 4.3 is observed starting in the fourth quarter of 1992. Both V3 and real interest rates inversely peak and trough, respectively, at the first democratic general elections held in 1994. This same period was most notably characterised by the removal of the dual exchange rate, amongst others, and the opening up of the South African economy to outside trade. V3 gradually declined for the remainder of the decade, while real interest rates rose to 23% at the end of 1998, which was the end of the Asian crisis.

4.4.3.4 2000 to 2010/01

In 2000, South Africa formally adopted an inflation-targeting monetary framework, via the use of interest rates to target core inflation, and a pre-determined inflation target range. The mechanism of a formal inflation-targeting framework was discussed in Chapter 2. The first decade of 2000 was characterised by volatile interest rates and inflation. The opening up of the domestic economy, the new political environment and the adoption of formal inflation targeting were some of the challenges of the first ten years. Major international factors of this decade are specifically, the "dot com" bubble in 2001 and the Financial Crisis of 2007 to 2010.

Figure 4.4 Decade of 2000



Source: SARB (2010)

Nevertheless, as illustrated in Figure 4.4, V3 maintained a gradual decline throughout most of the decade. The broadly tranquil nature of V3 during this decade can be attributed to the following: South Africa was starting to feature on the international market, and exchange controls over this period were relaxed, accompanied by sound fiscal and monetary governance. South Africa was now positioned as an ideal emerging market investment opportunity from an international perspective and, most importantly, funding channels were more accessible.

On the contrary, real interest rates were very volatile, accompanied by high inflation, particularly in the first half of the decade. The Financial Crisis starting in 2007, however, saw a turnaround in V3, along with a low real interest rate environment, indicating disintermediation. This is possibly due to the liquidity crunch experienced during the Crisis. Existing funding avenues were largely not renewed, new applications for credit were declined, while the international interbank market in itself battled to function. However, domestically, South African banks were largely shielded from the heat of the subprime crisis, due to bank regulation, which possibly eased funding difficulties locally at the time.

4.5 Discussion

From the South African perspective literature review in this chapter, both Brummerhoff and De Kock mentioned changes in income velocity as an indicator of disintermediation and re-intermediation. The study followed a similar approach, by comparing changes in income velocity to changes in real-interest rates.

Interestingly, despite the different monetary frameworks adopted in South Africa from 1970 to 2010, a uniform response can be noted, specifically in real interest rates and the income velocity of the M3 monetary aggregate. The study's findings confirm the role of interest rates in the occurrence of disintermediation. Across all four decades (1970 to 2010) it can be observed that whenever real interest rates trough, V3 income velocity in turn peaks indicating disintermediation. The opposite is true for a high real interest rate environment; V3 income velocity declines, indicating re-intermediation, as returns are sought for in the banking sector. These results were found by the examining income velocity data and real interest rates of the South African economy for the period concerned.

Therefore, in summary, it can be observed that monetary policy implementation proves difficult owing to its forward-looking nature. Complications arise out of the elasticity of transmission mechanisms, the lag effect thereof and models that are backward looking based on historical data. In short, the study finds that care should be taken by central banks not to over-act in either

direction, whether monetary tightening or easing, as this results in spikes in disintermediation and re-intermediation, respectively.

4.6 Conclusion

The Chapter commenced by giving a literature overview of disintermediation. Many studies presented examined disintermediation within a specific country or country region. Studies ranged from examining interest rate risk management, the role of central banks in managing money supply, deregulation of the financial sector, banking sector profitability as well as sensitivity of demand to real interest rates.

The approach for this study was based on income velocity that both Brummerhoff and De Kock used for identifying disintermediation. The study consequently examined income velocity in relation to real interest rates within the South African economy over four decades from 1970 to 2010. The details regarding the data, methodology and findings were subsequently examined, giving insight into the use of income velocity V3 as well as the calculation of real interest rates.

Overall findings, and interpretation of results, were concluded in the discussion section of Chapter 4. Results showed that when real interest rates trough, income velocity peaks, indicating disintermediation. The opposite also held with regard to a high real interest rate environment as income velocity declined, indicating re-intermediation.

Chapter 5 concludes this study with an overview of monetary theory, monetary policy, disintermediation, and disintermediation in South Africa. A brief summary of the findings of disintermediation and monetary policy in South Africa follows, as well as suggestions and comments for further study into the topic are put forward.

Chapter 5

Conclusion

5.1 Introduction

This chapter begins with a brief review of the most pertinent factors covered in the previous sections of this study. It starts by examining the link between the four schools of economic thought with regard to the manner in which monetary policy is viewed and managed today. Thereafter, an overview of the financial system, financial intermediaries and disintermediation is given in Section 5.3. This is followed by a brief synopsis of other studies regarding disintermediation and subsequently concludes with the findings of this study with regard to disintermediation in South Africa in Section 5.4. Lastly, suggestions are made for further study on the topic in Section 5.5.

5.2 Study review of monetary theory and policy

Monetary policy theory and development thereof was evaluated at the beginning of the study. Chapter 2 commenced by examining the four core schools of economic thought, namely, the Mercantilist era, Classical era, Keynesian era and the Monetarist era in the development of monetary theory. It was noted that the Mercantilists were of the opinion that a country's wealth is equivalent to the precious metal it holds, which however resulted in an increase in prices and inflation as countries precious metal inventories rose.

The Classical era introduced the idea of a free-functioning market mechanism, largely opposed to government intervention. At this point, Fisher's exchange equation was introduced and then the velocity of money was explained, which was described as the monetary value of a year's transactions in a country divided by the average amount of money in circulation in that country, during that year. The events of the 1930s Great Depression however raised concern regarding the Classical model, which brought about the Keynesian era.

The Keynesian model regarded saving as a function of income and not solely interest rates. It regarded that interest rates were determined by the demand and supply of money. In addition to these theories, by incorporating the Phillips curve (originally the relationship between the rate of unemployment and rate of change in money wages) into the IS-LM model (which determines employment, and consequently the unemployment rate), Keynesians obtained what appeared to

be a credible theory for inflation. However, the above relationship did not hold in the late 1960s and early 1970s, which meant that the Phillips curve of the Keynesians offered no plausible theory for the existence of inflation. This lack of explanation of inflation gave rise to the birth of Monetarism.

The Monetarists state that the economy can be steered by controlling money supply. By exercising control over money supply, assurance is given that money supply itself is not a disturbance, which furthermore provides stability by influencing people's expectations regarding the prospects of prices becoming more stable.

These schools of economic thought, as well as the evolution within those schools, gave rise to the theory of monetary policy. The comprehension of the function of money, velocity of money and inflation assists in implementing the most effective monetary policy framework. Monetary authorities implement monetary policy by way of either one or a mixture of policies, namely, accommodation policy, open-market policy, intervention in the foreign exchange market, and through public debt management.

The vastness of the monetary policy brings to light the need for monetary governance. The initial existence of an independent monetary body is required in order to manage monetary policy reliably and thereby achieve economic goals within a country. Following which, monetary policy tools are decided upon to manage operational and intermediate targets in order to create an environment conducive to achieving economic goals such as optimal inflation, economic growth and employment. This highlights the important role central banks fulfil, in maintaining price stability by using correct strategies relevant for the economy. Among the functions central banks perform, their function in managing inflation requires understanding in the management of expectations, cyclical factors as well as external shocks.

Domestically, South Africa's monetary framework underwent vast changes, moulded by not only international developments, but also domestic political changes resulting in the opening up of the local economy. Broadly, policy initiated in 1960 with a focus on liquid asset-based system accompanied by quantitative controls over interest rates and credit. Policy slowly progressed around the year 1981, from a transitional period, to a cost of cash reserves-based system in 1986, with a pre-announced monetary target, namely, M3. In 1998 the monetary framework adopted a daily tendering process for cash through the use of repurchase agreements, as well as established an informal target for inflation. It was in 2000 that South Africa switched to a formal inflation targeting monetary framework.

5.3 Study review of disintermediation

Chapter 3 reported on the dependence of the effectiveness of monetary policy on the elasticity of the monetary sector to changes in the monetary instrument. Although the changes in the monetary instrument, for example interest rates, are primarily between the monetary authority and the banking sector, it ultimately adjusts at a micro-level between surplus and deficit units.

By definition, the financial system provides fund transfer channels whereby surplus funds are transferred to deficit units. Advantages of the financial system is that it distributes risk, increases liquidity as well as communicates information. End users nevertheless have options within the financial system. The first option is for users to deal with each other directly. The second is for market participants to deal in organised markets, where lenders buy the liabilities issued by borrowers. The third option calls for end users to operate through financial intermediaries.

Financial intermediaries perform a function by bring surplus and deficit units together. The difference between financial markets and financial intermediaries is the way in which financial assets and liabilities made available to either savers or borrowers. Financial intermediaries act as a “go-between” by issuing claims based on a portfolio of assets, which enable both funding requirements of savers and borrowers to be met.

Disintermediation is the replacement of credit normally or previously extended through the intermediation of a bank or other financial institution to non-intermediated credit extended directly from primary lenders to ultimate borrowers. Causes of disintermediation arise from the application of semi-direct or direct monetary controls, which in turn creates abnormal interest rate gaps. Interestingly, the post-1980s era was dominated with the easing of controls, only to be re-introduced to some extent with the 2007–2010 Financial Crisis (one of which was the temporary ban on the short selling of banking sector shares).

5.4 Study review of disintermediation with regard to South Africa

Chapter 4 discussed various literature studies on disintermediation. Some focused on the occurrence of disintermediation itself, while others examined the disintermediation process in a specific economy. Early literature published in 1955 by Gurley and Shaw addressed the theory of financial intermediation and identified the need for banks to facilitate an intermediary role between surplus and deficit units.

A later study by Brummerhoff (1984) discusses measures for identifying disintermediation or re-intermediation taking place. This study classifies the occurrence of disintermediation and re-

intermediation by changes in four possible variables, namely, repurchase agreements, bills rediscounted, bankers' acceptances and money velocity.

Thereafter, De Kock (1985), who mentions the deficiencies of the South African monetary policy framework at the time, studied disintermediation, re-intermediation and the velocity of circulation of money. Money velocity was consequently used in this study.

In 1988, Brown and Smith studied innovations in interest rate risk management and re-intermediation of commercial banking. In their study, the source of corporate demand and bank supply of interest rate risk management products were given special attention. Moore (1989) constructed a simple model of bank intermediation by examining the role of central banks in the money supply process, as well as the bank's asset and liability management process.

Numerous studies focus on specific economic structures and the disintermediation process within certain monetary areas or countries. Of those studies, Adhikary (1992), Frankel (1993), Schmidt *et al*. (1999), Rushdi and Tennant (2003), Roldos (2006), Tan and Goh (2007) and Capelle-Blancard *et al*. (2008) focused their studies on South East Asia, Asia-Pacific countries, Europe, Australia, Canada and Malaysia, respectively.

The results for this study on South African data confirm the role of interest rates in the occurrence of disintermediation. Across all four decades, from 1970, it can be observed that whenever real interest rates trough, V3 income velocity in turn peaks, indicating disintermediation. The opposite is true for a high real interest rate environment; V3 income velocity declines, indicating re-intermediation, as returns are sought for in the banking sector. The results were gained by evaluating the income velocity data and real interest rates of the South African economy for the period of the study.

5.5 Summary of findings

The research objective of this study was to determine monetary policy's effect on disintermediation and re-intermediation in South Africa in the period 1970 to 2010, which was successfully done in examining V3 income velocity in comparison to real interest rates. Disintermediation and re-intermediation can be clearly identified through an observed inverse relationship between the V3 income velocity and real interest rates. While the topic is vast, four dominant observations can be taken from this study.

The first is that of economic cycles. Many cycles exist within an economy, which could be seasonal in nature, while some could be induced by monetary action, for example. Cycles have both a

domestic and global characteristic. Domestically, care can be taken not to overdo monetary easing, as well as monetary tightening, and by doing so avoid a “whiplash” response in transmission mechanisms. Globally, a diffusion of sorts can occur when interest rate cycles do not match those of other major economies. Uncorrelated interest rate cycles can be responsible for further instability, as international investors exploit domestic opportunities on yield differentials, for example the carry trade phenomena.

The second is the importance of monetary policy frameworks and the ease at which disintermediation occurs. While the South African perspective could be obscure in concluding this owing to numerous co-existing factors, such as economic sanctions, it has to be noted that money supply targeting appeared conducive to swings in real interest rates. This can be seen in dominant verification of disintermediation and re-intermediation in the first three decades under review.

The third observation is the independence of monetary authorities and the political agendas of the country. It was observed that at times certain cycles peak around the time of general elections. Perhaps by chance, nevertheless specific attention can be drawn to those of 1974, 1981, 1987 and 1994.

Finally, regulations imposed on an economy and their effect on that economy has to be noted. Volatility of money supply in particular appears more prevalent prior to 1994. The cause of this however can be a number of reasons, some of which could be the monetary policy regime at the time, international sanctions imposed, or it could be the direct controls adopted during that period. Nevertheless, V3 income velocity appears more subdued for the decade 2000 to 2010 compared with that of the previous three decades, possibly as controls were relaxed and the South African financial system and rand attracted international attention and confidence.

5.6 Suggestions for further study

The scope for studies on disintermediation is vast. As most are focused on the relevant literature and findings and thus form literature reviews, the first suggestion is to conduct an empirical study seeking to verify disintermediation and re-intermediation in the South African economy. This study focused on the disintermediation in South Africa, which could be examined in conjunction with other emerging market countries. At the time of writing, foreigners were accepted as net buyers and sellers of South African bonds and equities, which requires foreigners to buy rand in order to invest in domestic assets. In light of this, further study could be devoted to evaluating disintermediation relative to the US dollar–rand exchange rate in order to evaluate whether foreigners contribute to disintermediation in the South African economy, and if so, the extent and nature of the correlation.

Appendix

The Financial Crisis: A timeline of events and policy actions (Federal Reserve Bank of St. Louis, 2007 - 2010)

27 February 2007 | Freddie Mac press release

The Federal Home Loan Mortgage Corporation (Freddie Mac) announces that it will no longer buy the most risky subprime mortgages and mortgage-related securities.

2 April 2007 | US Securities and Exchange Commission filing

New Century Financial Corporation, a leading subprime mortgage lender, files for Chapter 11 bankruptcy protection.

1 June 2007 | Congressional testimony

Standard and Poor's and Moody's Investor Services downgrade over 100 bonds backed by second-lien subprime mortgages.

7 June 2007

Bear Stearns informs investors that it is suspending redemptions from its High-Grade Structured Credit Strategies Enhanced Leverage Fund.

28 June 2007 | Federal Reserve press release

The FOMC votes to maintain its target for the federal funds rate at 5.25%.

11 July 2007 | Standard and Poor's Ratings direct

Standard and Poor's places 612 securities backed by subprime residential mortgages on a credit watch.

24 July 2007 | US Securities and Exchange Commission filing

Countrywide Financial Corporation warns of "difficult conditions".

31 July 2007 | US bankruptcy filing

Bear Stearns liquidates two hedge funds that invested in various types of MBSs.

6 August 2007 | US Securities and Exchange Commission filing

American Home Mortgage Investment Corporation files for Chapter 11 bankruptcy protection.

7 August 2007 | Federal Reserve press release

The FOMC votes to maintain its target for the federal funds rate at 5.25%.

9 August 2007 | BNP Paribas press release

BNP Paribas, France's largest bank, halts redemptions on three investment funds.

10 August 2007 | Federal Reserve press release

The Federal Reserve Board announces that it "will provide reserves as necessary … to promote trading in the federal funds market at rates close to the FOMC's target rate of 5.25%. In current circumstances, depository institutions may experience unusual funding needs because of dislocations in money and credit markets. As always, the discount window is available as a source of funding".

16 August 2007 | US Securities and Exchange Commission filing

Fitch Ratings downgrades Countrywide Financial Corporation to BBB+, its third lowest investment-grade rating, and Countrywide borrows the entire $11.5 billion available in its credit lines with other banks.

17 August 2007 | Federal Reserve press release

The Federal Reserve Board votes to reduce the primary credit rate 50 basis points to 5.75%, bringing the rate to only 50 basis points above the FOMC's federal funds rate target. The Board also increases the maximum primary credit borrowing term to 30 days, renewable by the borrower.

17 August 2007 | Federal Reserve press release

Following an intermeeting conference call, the FOMC releases a statement about the current financial market turmoil, and notes that the "downside risks to growth have increased appreciably".

14 September 2007 | UK Treasury Department press release

The Chancellor of the Exchequer authorises the Bank of England to provide liquidity support for Northern Rock, the UK's fifth-largest mortgage lender.

18 September 2007 | Federal Reserve press release

The FOMC votes to reduce its target for the federal funds rate 50 basis points to 4.75%. The Federal Reserve Board votes to reduce the primary credit rate 50 basis points to 5.25%.

10 October 2007 | HOPE NOW press release | Treasury Department press release

US Treasury Secretary Paulson announces the HOPE NOW initiative, an alliance of investors, servicers, mortgage market participants, and credit and homeowners' counsellors encouraged by the Treasury Department and the Department of Housing and Urban Development.

15 October 2007 | Bank of America press release

Citigroup, Bank of America and JPMorgan Chase announce plans for an $80 billion Master Liquidity Enhancement Conduit to purchase highly rated assets from existing special purpose vehicles.

31 October 2007 | Federal Reserve press release

The FOMC votes to reduce its target for the federal funds rate 25 basis points to 4.5%. The Federal Reserve Board votes to reduce the primary credit rate 25 basis points to 5%.

1 November 2007 | **Additional information**

Financial market pressures intensify, reflected in diminished liquidity in interbank funding markets.

11 December 2007 | **Federal Reserve press release**

The FOMC votes to reduce its target for the federal funds rate 25 basis points to 4.25%. The Federal Reserve Board votes to reduce the primary credit rate 25 basis points to 4.75%.

12 December 2007 | **Federal Reserve press release** | **Additional information**

The Federal Reserve Board announces the creation of a Term Auction Facility (TAF) in which fixed amounts of term funds will be auctioned to depository institutions against a wide variety of collateral. The FOMC authorises temporary reciprocal currency arrangements (swap lines) with the European Central Bank (ECB) and the Swiss National Bank (SNB). The Board states that it will provide up to $20 billion and $4 billion to the ECB and SNB, respectively, for up to six months.

21 December 2007 | **Federal Reserve press release**

The Federal Reserve Board announces that TAF auctions will be conducted every two weeks as long as financial market conditions warrant.

21 December 2007 | **Bank of America press release**

Citigroup, JPMorgan Chase and Bank of America abandon plans for the Master Liquidity Enhancement Conduit, announcing that the fund “is not needed at this time”.

11 January 2008 | **Bank of America press release**

Bank of America announces that it will purchase Countrywide Financial in an all-stock transaction worth approximately $4 billion.

18 January 2008 | **US Securities and Exchange Commission filing**

Fitch Ratings downgrades Ambac Financial Group’s insurance financial strength rating to AA, CreditWatch Negative. Standard and Poor’s places Ambac’s AAA rating on CreditWatch Negative.

22 January 2008 | **Federal Reserve press release**

In an intermeeting conference call, the FOMC votes to reduce its target for the federal funds rate 75 basis points to 3.5%. The Federal Reserve Board votes to reduce the primary credit rate 75 basis points to 4%.

30 January 2008 | **Federal Reserve press release**

The FOMC votes to reduce its target for the federal funds rate 50 basis points to 3%. The Federal Reserve Board votes to reduce the primary credit rate 50 basis points to 3.5%.

13 February 2008 | **Public Law 110-185**

President Bush signs the Economic Stimulus Act of 2008 (Public Law 110-185) into law.

17 February 2008 | **UK Treasury Department press release**

Northern Rock is taken into state ownership by the Treasury of the UK.

5 March 2008 | Carlyle Capital Corporation press release

Carlyle Capital Corporation receives a default notice after failing to meet margin calls on its mortgage bond fund.

7 March 2008 | Federal Reserve press release

The Federal Reserve Board announces $50 billion TAF auctions on 10 March and 24 March and extends the TAF for at least six months. The Board also initiates a series of term repurchase transactions, expected to cumulate to $100 billion, conducted as 28-day term repurchase agreements with primary dealers.

11 March 2008 | Federal Reserve press release | Additional information

The Federal Reserve Board announces the creation of the Term Securities Lending Facility (TSLF), which will lend up to $200 billion of Treasury securities for 28-day terms against federal agency debt, federal agency residential MBSs, non-agency AAA/Aaa private label residential MBS and other securities. The FOMC increases its swap lines with the ECB by $10 billion and the SNB by $2 billion and also extends these lines through 30 September 2008.

14 March 2008 | Federal Reserve press release

The Federal Reserve Board approves the financing arrangement announced by JPMorgan Chase and Bear Stearns (see note for 24 March). The Federal Reserve Board also announces they are "monitoring market developments closely and will continue to provide liquidity as necessary to promote the orderly function of the financial system".

16 March 2008 | Federal Reserve press release | Additional information

The Federal Reserve Board establishes the Primary Dealer Credit Facility (PDCF), extending credit to primary dealers at the primary credit rate against a broad range of investment grade securities. The Board votes to reduce the primary credit rate 25 basis points to 3.25%, lowering the spread between the primary credit rate and FOMC target for the federal funds rate to 25 basis points. The Board also votes to increase the maximum maturity of primary credit loans to 90 days.

18 March 2008 | Federal Reserve press release

The FOMC votes to reduce its target for the federal funds rate 75 basis points to 2.25%. The Federal Reserve Board votes to reduce the primary credit rate 75 basis points to 2.5%.

24 March 2008 | Federal Reserve Bank of New York press release

The Federal Reserve Bank of New York announces that it will provide term financing to facilitate JPMorgan Chase & Co.'s acquisition of The Bear Stearns Companies Inc. A limited liability company (LLC; Maiden Lane) is formed to control $30 billion of Bear Stearns assets that are pledged as security for $29 billion in term financing from the New York Fed at its primary credit rate. JPMorgan Chase will assume the first $1 billion of any losses on the portfolio.

30 April 2008 | Federal Reserve press release

The FOMC votes to reduce its target for the federal funds rate 25 basis points to 2%. The Federal Reserve Board votes to reduce the primary credit rate 25 basis points to 2.25%.

2 May 2008 | Federal Reserve press release

The FOMC expands the list of eligible collateral for Schedule 2 TSLF auctions to include AAA/Aaa-rated asset-backed securities (ABS), in addition to already eligible residential and commercial MBS and agency collateralised mortgage obligations. The FOMC also increases existing swap lines with the ECB by $20 billion and with the SNB by $6 billion. The Federal Reserve Board expands TAF auctions from $50 billion to $75 billion.

5 June 2008 | Federal Reserve press release

The Federal Reserve Board announces approval of the notice of Bank of America to acquire Countrywide Financial Corporation.

5 June 2008 | US Securities and Exchange Commission filing

Standard and Poor's downgrades monoline bond insurers AMBAC and MBIA from AAA to AA.

25 June 2008 | Federal Reserve press release

The FOMC votes to maintain its target for the federal funds rate at 2%.

11 July 2008 | Federal Deposit Insurance Corporation press release

The Office of Thrift Supervision closes IndyMac Bank, F.S.B. The Federal Deposit Insurance Corporation (FDIC) announces the transfer of the insured deposits and most assets of IndyMac Bank, F.S.B. to IndyMac Federal Bank, F.S.B.

13 July 2008 | Federal Reserve press release

The Federal Reserve Board authorises the Federal Reserve Bank of New York to lend to the Federal National Mortgage Association (Fannie Mae) and the Federal Home Loan Mortgage Corporation (Freddie Mac), should such lending prove necessary.

13 July 2008 | Treasury Department press release

The US Treasury Department announces a temporary increase in the credit lines of Fannie Mae and Freddie Mac and a temporary authorisation for the Treasury to purchase equity in either GSE if needed.

15 July 2008 | US Securities and Exchange Commission press release

The US Securities and Exchange Commission (SEC) issues an emergency order temporarily prohibiting naked short selling in the securities of Fannie Mae, Freddie Mac and primary dealers at commercial and investment banks.

30 July 2008 | Public Law 110-289

President Bush signs into law the Housing and Economic Recovery Act of 2008 (Public Law 110-289), which, amongst other provisions, authorises the Treasury to purchase GSE obligations and

reforms the regulatory supervision of the GSEs under a new Federal Housing Finance Agency (FHFA).

30 July 2008 | Federal Reserve press release

The Federal Reserve Board extends the TSLF and PDCF through 30 January 2009, introduces auctions of options on $50 billion of draws on the TSLF and introduces 84-day TAF loans. The FOMC increases its swap line with the ECB to $55 billion.

5 August 2008 | Federal Reserve press release

The FOMC votes to maintain its target for the federal funds rate at 2%.

7 September 2008 | Treasury Department press release

The FHFA places Fannie Mae and Freddie Mac in government conservatorship. The US Treasury Department announces three additional measures to complement the FHFA's decision: 1) Preferred stock purchase agreements between the Treasury/FHFA and Fannie Mae and Freddie Mac to ensure the GSEs positive net worth; 2) a new secured lending facility which will be available to Fannie Mae, Freddie Mac, and the Federal Home Loan Banks; and 3) a temporary programme to purchase GSE MBS.

14 September 2008 | Federal Reserve press release

The Federal Reserve Board expands the list of eligible collateral for the PDCF to include any collateral that can be pledged in the tri-party repo system of the two major clearing banks. Previously PDCF collateral had been limited to investment-grade debt securities. The Board also expands the list of collateral accepted by TSLF to include all investment-grade debt securities and increases the frequency of Schedule 2 TSLF auctions and total offering to $150 billion. The Board also adopts an interim final rule that provides temporary exceptions to Section 23A of the Federal Reserve Act to allow insured depository institutions to provide liquidity to their affiliates for assets typically funded in the tri-party repo market.

15 September 2008 | Bank of America press release

Bank of America announces its intent to purchase Merrill Lynch & Co. for $50 billion.

15 September 2008 | US Securities and Exchange Commission filing

Lehman Brothers Holdings Inc. files for Chapter 11 bankruptcy protection.

16 September 2008 | Federal Reserve press release

The Federal Reserve Board authorises the Federal Reserve Bank of New York to lend up to $85 billion to the American International Group, Inc. (AIG) under Section 13(3) of the Federal Reserve Act.

16 September 2008 | Federal Reserve press release

The FOMC votes to maintain its target for the federal funds rate at 2%.

16 September 2008 | Reserve Funds press release

The net asset value of shares in the Reserve Primary Money Fund falls below $1, primarily owing to losses on Lehman Brothers commercial paper and medium-term notes.

17 September 2008 | Treasury Department press release

The US Treasury Department announces a Supplementary Financing Program consisting of a series of Treasury bill issues that will provide cash for use in Federal Reserve initiatives.

17 September 2008 | US Securities and Exchange Commission press release

The SEC announces a temporary emergency ban on short selling in the stocks of all companies in the financial sector.

18 September 2008 | Federal Reserve press release

The FOMC expands existing swap lines by $180 billion and authorises new swap lines with the Bank of Japan, Bank of England and Bank of Canada.

19 September 2008 | Federal Reserve press release

The Federal Reserve Board announces the creation of the Asset-Backed Commercial Paper Money Market Mutual Fund Liquidity Facility (AMLF) to extend non-recourse loans at the primary credit rate to US depository institutions and bank holding companies to finance their purchase of high-quality asset-backed commercial paper from money market mutual funds. The Board also announces plans to purchase federal agency discount notes (short-term debt obligations issued by Fannie Mae, Freddie Mac and Federal Home Loan Banks) from primary dealers.

19 September 2008 | Treasury Department press release

The US Treasury Department announces a temporary guarantee programme that will make available up to $50 billion from the Exchange Stabilization Fund to guarantee investments in participating money market mutual funds.

20 September 2008 | Treasury Department press release | Draft legislation

The US Treasury Department submits draft legislation to Congress for authority to purchase troubled assets.

21 September 2008 | Federal Reserve press release

The Federal Reserve Board approves applications of investment banking companies Goldman Sachs and Morgan Stanley to become bank holding companies.

24 September 2008 | Federal Reserve press release

The FOMC establishes new swap lines with the Reserve Bank of Australia and the Sveriges Riksbank for up to $10 billion each and with the Danmarks Nationalbank and the Norges Bank for up to $5 billion each. The swap lines are authorised through 30 January 2009.

25 September 2008 | Office of Thrift Supervision press release

The Office of Thrift Supervision closes Washington Mutual Bank. JPMorgan Chase acquires the banking operations of Washington Mutual in a transaction facilitated by the FDIC.

26 September 2008 | Federal Reserve press release

The FOMC increases existing swap lines with the ECB by $10 billion and the SNB by $3 billion.

29 September 2008 | Federal Reserve press release

The FOMC authorises a $330 billion expansion of swap lines with Bank of Canada, Bank of England, Bank of Japan, Danmarks Nationalbank, ECB, Norges Bank, Reserve Bank of Australia, Sveriges Riksbank, and SNB Swap lines outstanding now total $620 billion. The Federal Reserve Board expands the TAF, announcing an increase in the size of the 84-day maturity auction to $75 billion and two forward TAF auctions totalling $150 billion to provide short-term (1- to 2-week) TAF credit over year-end.

29 September 2008 | Treasury Department press release

The US Treasury Department opens its Temporary Guarantee Program for Money Market Funds (see note for 19 September). The temporary guarantee programme provides coverage to shareholders for amounts that they held in participating money market funds as of the close of business on 19 September 2008.

29 September 2008 | Federal Deposit Insurance Corporation press release

The FDIC announces that Citigroup will purchase the banking operations of Wachovia Corporation. The FDIC agrees to enter into a loss-sharing arrangement with Citigroup on a $312 billion pool of loans, with Citigroup absorbing the first $42 billion of losses and the FDIC absorbing losses beyond that. In return, Citigroup would grant the FDIC $12 billion in preferred stock and warrants.

29 September 2008 | Treasury Department press release

The US House of Representatives rejects legislation submitted by the Treasury Department requesting authority to purchase troubled assets from financial institutions (see note for September 20).

3 October 2008 | Federal Reserve press release

Wells Fargo announces a competing proposal to purchase Wachovia Corporation that does not require assistance from the FDIC.

3 October 2008 | H.R. 1424 | Public Law 110-343

Congress passes and President Bush signs into law the Emergency Economic Stabilization Act of 2008 (Public Law 110-343; EESA), which establishes the $700 billion Troubled Asset Relief Program (TARP).

6 October 2008 | **Federal Reserve press release**

The Federal Reserve Board announces that the Fed will pay interest on depository institutions' required and excess reserve balances at an average of the federal funds target rate less 10 basis points on required reserves and less 75 basis points on excess reserves.

7 October 2008 | **Federal Reserve press release**

The Federal Reserve Board announces the creation of the Commercial Paper Funding Facility (CPFF), which will provide a liquidity backstop to US issuers of commercial paper through a special purpose vehicle that will purchase 3-month unsecured and asset-backed commercial paper directly from eligible issuers.

7 October 2008 | **Federal Deposit Insurance Corporation press release**

The FDIC announces an increase in deposit insurance coverage to $250,000 per depositor as authorised by the EESA.

8 October 2008 | **Federal Reserve press release**

The Federal Reserve Board authorises the Federal Reserve Bank of New York to borrow up to $37.8 billion in investment-grade, fixed-income securities from AIG in return for cash collateral.

8 October 2008 | **Federal Reserve press release**

The FOMC votes to reduce its target for the federal funds rate 50 basis points to 1.5%. The Federal Reserve Board votes to reduce the primary credit rate 50 basis points to 1.75%.

12 October 2008 | **Federal Reserve press release**

The Federal Reserve Board announces its approval of an application by Wells Fargo & Co. to acquire Wachovia Corporation.

13 October 2008 | **Federal Reserve press release**

The FOMC increases existing swap lines with foreign central banks. The Bank of England, ECB, and SNB announce that they will conduct tenders of US dollar funding at seven-, 28-, and 84-day maturities at fixed interest rates.

14 October 2008 | **Federal Reserve press release**

The Federal Reserve announces additional details of the CPFF.

14 October 2008 | **Federal Reserve press release**

The FOMC increases its swap line with the Bank of Japan.

14 October 2008 | **Treasury Department TARP press release** | **Additional information**

US Treasury Department announces the TARP that will purchase capital in financial institutions under the authority of the EESA. The US Treasury will make available $250 billion of capital to US financial institutions. This facility will allow banking organisations to apply for a preferred stock investment by the US Treasury. Nine large financial organisations announce their intention to subscribe to the facility in an aggregate amount of $125 billion.

14 October 2008 | Federal Deposit Insurance Corporation Temporary Liquidity Guarantee Program press release

The FDIC creates a new Temporary Liquidity Guarantee Program (TLGP) to guarantee the senior debt of all FDIC-insured institutions and their holding companies, as well as deposits in non-interest-bearing deposit transaction through 30 June 2009.

21 October 2008 | Federal Reserve press release

The Federal Reserve Board announces creation of the Money Market Investor Funding Facility (MMIFF). Under the facility, the Federal Reserve Bank of New York provides senior secured funding to a series of special purpose vehicles to facilitate the purchase of assets from eligible investors, such as US money market mutual funds. Amongst the assets the facility will purchase are US dollar-denominated certificates of deposit and commercial paper issued by highly rated financial institutions with a maturity of 90 days or less.

22 October 2008 | Federal Reserve press release

The Federal Reserve Board announces that it will alter the formula used to determine the interest rate paid to depository institutions on excess reserve balances. The new rate will be set equal to the lowest FOMC target rate in effect during the reserve maintenance period less 35 basis points.

24 October 2008 | PNC Press release

PNC Financial Services Group Inc. purchases National City Corporation, creating the fifth largest US bank.

28 October 2008 | Treasury Department Capital Purchase Program transaction report

The US Treasury Department purchases a total of $125 billion in preferred stock in nine US banks under the Capital Purchase Program (CPP).

28 October 2008 | Federal Reserve press release

The FOMC and Reserve Bank of New Zealand establish a $15 billion swap line.

29 October 2008 | Federal Reserve press release

The FOMC votes to reduce its target for the federal funds rate 50 basis points to 1%. The Federal Reserve Board reduces the primary credit rate 50 basis points to 1.25%.

29 October 2008 | Federal Reserve press release

The FOMC also establishes swap lines with the Banco Central do Brasil, Banco de Mexico, Bank of Korea, and the Monetary Authority of Singapore for up to $30 billion each.

29 October 2008 | International Monetary Fund press release

The IMF announces the creation of a short-term liquidity facility for market-access countries.

5 November 2008 | Federal Reserve press release

The Federal Reserve Board announces that it will alter the formula used to determine the interest rate paid to depository institutions on required and excess reserve balances. The rate on required

reserves will be set equal to the average target federal funds rate over the reserve maintenance period. The rate on excess balances will be set equal to the lowest FOMC target rate in effect during the reserve maintenance period.

10 November 2008 | Federal Reserve press release

The Federal Reserve Board approves the applications of American Express and American Express Travel Related Services to become bank holding companies.

10 November 2008 | Federal Reserve press release | Treasury Department press release

The Federal Reserve Board and the US Treasury Department announce a restructuring of the government's financial support of AIG. The Treasury will purchase $40 billion of AIG preferred shares under the TARP programme, a portion of which will be used to reduce the Federal Reserve's loan to AIG from $85 billion to $60 billion. The terms of the loan are modified to reduce the interest rate to the three-month LIBOR plus 300 basis points and lengthen the term of the loan from two to five years. The Federal Reserve Board also authorises the Federal Reserve Bank of New York to establish two new lending facilities for AIG: the Residential Mortgage-Backed Securities Facility will lend up to $22.5 billion to a newly formed LLC to purchase residential MBS from AIG; the Collateralized Debt Obligations Facility will lend up to $30 billion to a newly formed LLC to purchase CDOs from AIG (Maiden Lane III LLC).

11 November 2008 | Treasury Department press release

The US Treasury Department announces a new streamlined loan modification programme with cooperation from the FHFA, Department of Housing and Urban Development and the HOPE NOW alliance.

12 November 2008 | Treasury Department press release

US Treasury Secretary Paulson formally announces that the Treasury has decided not to use TARP funds to purchase illiquid mortgage-related assets from financial institutions.

14 November 2008 | Treasury Department Capital Purchase Program transaction report

The US Treasury Department purchases a total of $33.5 billion in preferred stock in 21 US banks under the CPP.

17 November 2008 | Lincoln National press release | Hartford press release | Genworth press release

Three large US life insurance companies seek TARP funding: Lincoln National, Hartford Financial Services Group and Genworth Financial announce their intentions to purchase lenders/depositories and thus qualify as savings and loan companies to access TARP funding.

18 November 2008 | Senate hearing

Executives of Ford, General Motors and Chrysler testify before Congress, requesting access to the TARP for federal loans.

20 November 2008 | **Fannie Mae press release** | **Freddie Mac press release**

Fannie Mae and Freddie Mac announce that they will suspend mortgage foreclosures until January 2009.

21 November 2008 | **Treasury Department press release**

The US Treasury Department announces that it will help liquidate The Reserve Fund's US Government Fund. The Treasury agrees to serve as a buyer of last resort for the fund's securities to ensure the orderly liquidation of the fund.

21 November 2008 | **Treasury Department Capital Purchase Program transaction report**

The US Treasury Department purchases a total of $3 billion in preferred stock in 23 US banks under the CPP.

23 November 2008 | **Federal Reserve press release** | **Summary of terms**

The US Treasury Department, Federal Reserve Board and FDIC jointly announce an agreement with Citigroup to provide a package of guarantees, liquidity access and capital. Citigroup will issue preferred shares to the Treasury and FDIC in exchange for protection against losses on a $306 billion pool of commercial and residential securities held by Citigroup. The Federal Reserve will backstop residual risk in the asset pool through a non-recourse loan. In addition, the Treasury will invest an additional $20 billion in Citigroup from the TARP.

25 November 2008 | **Federal Reserve press release**

The Federal Reserve Board announces the creation of the Term Asset-Backed Securities Lending Facility (TALF), under which the Federal Reserve Bank of New York will lend up to $200 billion on a non-recourse basis to holders of AAA-rated ABS and recently originated consumer and small business loans. The US Treasury will provide $20 billion of TARP money for credit protection.

25 November 2008 | **Federal Reserve press release**

The Federal Reserve Board announces a new programme to purchase direct obligations of housing related GSEs – Fannie Mae, Freddie Mac and Federal Home Loan Banks – and MBS backed by the GSEs. Purchases of up to $100 billion in GSE direct obligations will be conducted as auctions amongst Federal Reserve primary dealers. Purchases of up to $500 billion in MBS will be conducted by asset managers.

26 November 2008 | **Federal Reserve press release**

The Federal Reserve Board announces approval of the notice of Bank of America Corporation to acquire Merrill Lynch and Company.

2 December 2008 | **Federal Reserve press release**

The Federal Reserve Board announces that it will extend three liquidity facilities, the PDCF, the AMLF and the TSLF through 30 April 2009.

3 December 2008 | US Securities and Exchange Commission press release

The SEC approves measures to increase transparency and accountability at credit-rating agencies and thereby ensure that firms provide more meaningful ratings and greater disclosure to investors.

5 December 2008 | Treasury Department Capital Purchase Program transaction report

The US Treasury Department purchases a total of $4 billion in preferred stock in 35 US banks under the CPP.

10 December 2008 | Federal Deposit Insurance Corporation press release

The FDIC reiterates the guarantee of federal deposit insurance in the event of a bank failure.

11 December 2008 | National Bureau of Economic Research press release

The Business Cycle Dating Committee of the National Bureau of Economic Research announces that a peak in US economic activity occurred in December 2007 and that the economy has since been in a recession.

12 December 2008 | Treasury Department Capital Purchase Program transaction report

The US Treasury Department purchases a total of $6.25 billion in preferred stock in 28 US banks under the CPP.

15 December 2008 | Federal Reserve press release

The Federal Reserve Board announces that it has approved the application of PNC Financial Services to acquire National City Corporation.

16 December 2008 | Federal Reserve press release

The FOMC votes to establish a target range for the effective federal funds rate of 0 to 0.25%. The Federal Reserve Board votes to reduce the primary credit rate 75 basis points to 0.50%. The Board also establishes the interest rates on required reserve balances and excess balances at 0.25% for reserve maintenance periods beginning 18 December 2008.

19 December 2008 | Treasury Department press release | General Motors term sheet | Chrysler term sheet

The US Treasury Department authorises loans of up to $13.4 billion for General Motors and $4 billion for Chrysler from the TARP.

19 December 2008 | Federal Reserve press release

The Federal Reserve Board announces revised terms and conditions of the TALF. Amongst the revisions are an extension of TALF loans from maturities of one year to three years and an expansion of eligible ABS collateral.

19 December 2008 | Treasury Department Capital Purchase Program transaction report

The US Treasury Department purchases a total of $27.9 billion in preferred stock in 49 US banks under the CPP.

22 December 2008 | Federal Reserve press release

The Federal Reserve Board approves the application of CIT Group, Inc., an $81 billion financing company, to become a bank holding company. The Board cites "unusual and exigent circumstances affecting the financial markets" for expeditious action on CIT Group's application.

23 December 2008 | Treasury Department Capital Purchase Program transaction report

The US Treasury Department purchases a total of $15.1 billion in preferred stock from 43 US banks under the CPP.

24 December 2008 | Federal Reserve press release

The Federal Reserve Board approves the applications of GMAC LLC and IB Finance Holding Company, LLC (IBFHC) to become bank holding companies, on conversion of GMAC Bank, a $33 billion Utah industrial loan company, to a commercial bank. GMAC Bank is a direct subsidiary of IBFHC and an indirect subsidiary of GMAC LLC, a $211 billion company. The Board cites "unusual and exigent circumstances affecting the financial markets" for expeditious action on these applications. As part of the agreement, General Motors will reduce its ownership interest in GMAC to less than 10%.

29 December 2008 | Treasury Department press release

The US Treasury Department announces that it will purchase $5 billion in equity from GMAC as part of its programme to assist the domestic automotive industry. The Treasury also agrees to lend up to $1 billion to General Motors "so that GM can participate in a rights offering at GMAC in support of GMAC's reorganization as a bank holding company". This commitment is in addition to the support announced on 19 December 2008.

30 December 2008 | Federal Reserve press release

The Federal Reserve Board announces that it expects to begin to purchase MBSs backed by Fannie Mae, Freddie Mac and Ginnie Mae [Government National Mortgage Association] under a previously announced programme in early January 2009 (see 25 November 2008 note).

30 December 2008 | US Securities and Exchange Commission press release

The SEC releases a report that recommends against the suspension of fair value accounting standards. The report was mandated by the EESA.

31 December 2008 | Treasury Department Capital Purchase Program transaction report

The US Treasury Department purchases a total of $1.91 billion in preferred stock from seven US banks under the CPP.

5 January 2009 | Federal Reserve Bank of New York press release

The Federal Reserve Bank of New York begins purchasing fixed-rate MBSs guaranteed by Fannie Mae, Freddie Mac and Ginnie Mae under a programme first announced on 25 November 2008.

7 January 2009 | Federal Reserve press release

The Federal Reserve Board announces two changes to the MMIFF that: 1) expand the set of institutions eligible to participate in the MMIFF; and 2) reduce the minimum yield on assets eligible to be sold to the MMIFF.

8 January 2009 | Moody's special comment on Federal Home Loan Banks

Moody's Investor Services issues a report suggesting that the Federal Home Loan Banks are currently facing the potential for significant accounting write-downs on their $76.2 billion private-label MBS securities portfolio. According to Moody's, only four of twelve banks' capital ratios would remain above regulatory minimums under a worst-case scenario.

9 January 2009 | Congressional Oversight Panel press release

The Congressional Oversight Panel issues its second monthly report on the expenditure of the TARP.

9 January 2009 | Treasury Department Capital Purchase Program transaction report

The US Treasury Department purchases a total of $4.8 billion in preferred stock from 43 US banks under the CPP.

12 January 2009 | Federal Deposit Insurance Corporation press release

The FDIC issues a letter to FDIC-supervised institutions calling on them to implement a process to monitor their use of capital injections, liquidity support and/or financing guarantees obtained through Treasury, FDIC, and Federal Reserve financial stability programmes.

12 January 2009 | White House press release | More information

At the request of President-Elect Obama, President Bush submits a request to Congress for the remaining $350 billion in TARP funding for use by the incoming administration.

13 January 2009 | Federal Home Loan Bank of Seattle press release

The Federal Home Loan Bank of Seattle reports that it will likely report a risk-based capital deficiency and suspend its dividend because of a decline in the market value of its MBSs portfolio. The move follows a similar announcement on 8 January by the Federal Home Loan Bank of San Francisco.

16 January 2009 | Treasury Department Capital Purchase Program transaction report

The US Treasury Department purchases a total of $1.4 billion in preferred stock from 39 US banks under the CPP.

16 January 2009 | Federal Reserve press release | Term sheet

The US Treasury Department, Federal Reserve and FDIC announce a package of guarantees, liquidity access and capital for Bank of America. The US Treasury and the FDIC will enter a loss-sharing arrangement with Bank of America on a $118 billion portfolio of loans, securities, and other assets in exchange for preferred shares. In addition, and if necessary, the Federal Reserve will

provide a non-recourse loan to back-stop residual risk in the portfolio. Separately, the US Treasury will invest $20 billion in Bank of America from the TARP in exchange for preferred stock.

16 January 2009 | Treasury Department press release

The US Treasury Department, Federal Reserve and FDIC finalise the terms of their guarantee agreement with Citigroup. (See note on 23 November 2008).

16 January 2009 | Treasury Department press release

The US Treasury Department announces that it will lend $1.5 billion from the TARP to a special purpose entity created by Chrysler Financial to finance the extension of new consumer auto loans.

23 January 2009 | Treasury Department Capital Purchase Program transaction report

The US Treasury Department purchases a total of $326 million in preferred stock from 23 US banks under the CPP.

28 January 2009 | National Credit Union Administration press release

The National Credit Union Administration (NCUA) Board announces that the NCUA will guarantee uninsured shares at all corporate credit unions through February 2009 and establish a voluntary guarantee programme for uninsured shares of credit unions through December 2010. The Board also approves a $1 billion capital purchase in US Central Corporate Federal Credit Union. Corporate credit unions provide financing, check clearing and other services to retail credit unions.

30 January 2009 | Federal Reserve press release

The Board of Governors announces a policy to avoid preventable foreclosures on certain residential mortgage assets held, controlled or owned by a Federal Reserve Bank. The policy was developed pursuant to Section 110 of the EESA.

30 January 2009 | Treasury Department Capital Purchase Program transaction report

The US Treasury Department purchases a total of $1.15 billion in preferred stock from 42 US banks under the CPP.

3 February 2009 | Federal Reserve press release

The Federal Reserve announces the extension, through 30 October 2009, of the existing liquidity programmes scheduled to expire on 30 April 2009. The Board of Governors and the FOMC note “continuing substantial strains in many financial markets”. In addition, the swap lines between the Federal Reserve and other central banks are also extended to 30 October 2009. The expiration date for the TALF remains 31 December 2009, and the TAF does not have an expiration date.

6 February 2009 | Federal Reserve press release

The Federal Reserve Board releases additional terms and conditions of the TALF. Under the TALF, the Federal Reserve Bank of New York will lend up to $200 billion to eligible owners of certain AAA-rated ABS backed by newly and recently originated auto loans, credit card loans, student loans and SBA-guaranteed small business loans.

6 February 2009 | Treasury Department Capital Purchase Program transaction report

The US Treasury Department purchases a total of $238.5 million in preferred stock from 28 US banks under the CPP.

6 February 2009 | Special Inspector General Troubled Asset Relief Program

The Office of the Special Inspector General for the TARP issues its quarterly report to Congress on the operation of the TARP.

10 February 2009 | Treasury Department press release | Fact sheet

US Treasury Secretary Timothy Geithner announces a Financial Stability Plan involving Treasury purchases of convertible preferred stock in eligible banks, the creation of a Public-Private Investment Fund to acquire troubled loans and other assets from financial institutions, expansion of the Federal Reserve's TALF, and new initiatives to stem residential mortgage foreclosures and to support small business lending.

10 February 2009 | Federal Reserve press release

The Federal Reserve Board announces that is prepared to expand the TALF to as much as $1 trillion and broaden the eligible collateral to include AAA-rated commercial mortgage-backed securities (CMBSs), private-label residential MBSs, and other ABS. An expansion of the TALF would be supported by $100 billion from the TARP. The Board will announce the date that the TALF will commence operations later this month.

13 February 2009 | Treasury Department Capital Purchase Program transaction report

The US Treasury Department purchases a total of $429 million in preferred stock from 29 US banks under the CPP.

17 February 2009 | American Recovery and Reinvestment Act of 2009

President Obama signs into law the American Recovery and Reinvestment Act of 2009, which includes a variety of spending measures and tax cuts intended to promote economic recovery.

17 February 2009 | Treasury Department press release

The US Treasury Department releases its first monthly survey of bank lending by the top twenty recipients of government investment through the CPP. The survey found that banks continued to originate, refinance and renew loans from the beginning of the programme in October through December 2008.

18 February 2009 | Executive summary

President Obama announces The Homeowner Affordability and Stability Plan. The plan includes a programme to permit the refinancing of conforming home mortgages owned or guaranteed by Fannie Mae or Freddie Mac that currently exceed 80% of the value of the underlying home. The plan also creates a $75 billion Homeowner Stability Initiative to modify the terms of eligible home loans to reduce monthly loan payments. In addition, the US Treasury Department will increase its

preferred stock purchase agreements with Fannie Mae and Freddie Mac to $200 billion, and increase the limits on the size of Fannie Mae and Freddie Mac's portfolios to $900 billion.

23 February 2009 | Federal Reserve press release

The US Treasury Department, Federal Deposit Insurance Corporation, Office of the Comptroller of the Currency, Office of Thrift Supervision and the Federal Reserve Board issue a joint statement that the US government stands firmly behind the banking system, and that the government will ensure that banks have the capital and liquidity they need to provide the credit necessary to restore economic growth. Further, the agencies reiterate their determination to preserve the stability of systemically important financial institutions.

24 February 2009 | Treasury Department Capital Purchase Program transaction report

The US Treasury Department purchases a total of $365.4 million in preferred stock from 23 US banks under the CPP.

25 February 2009 | Federal Reserve press release

The Federal Reserve Board, Federal Deposit Insurance Corporation, Office of the Comptroller of the Currency and Office of Thrift Supervision announce that they will conduct forward-looking economic assessments or "stress tests" of eligible US bank holding companies with assets exceeding $100 billion. Supervisors will work with the firms to estimate the range of possible future losses and the resources to absorb such losses over a two-year period. The assessment process is expected to be completed by the end of April 2009.

26 February 2009 | Federal Deposit Insurance Corporation quarterly banking profile

The FDIC announces that the number of "problem banks" increased from 171 institutions with $116 billion of assets at the end of the third quarter of 2008 to 252 insured institutions with $159 billion in assets at the end of fourth quarter of 2008. The FDIC also announces that there were 25 bank failures and five assistance transactions in 2008, which was the largest annual number since 1993.

26 February 2009 | Fannie Mae press release

Fannie Mae reports a loss of $25.2 billion in the fourth quarter of 2008, and a full year 2008 loss of $58.7 billion. Fannie Mae also reports that on 25 February 2009, the FHFA submitted a request for $15.2 billion from the US Treasury Department under the terms of the Senior Preferred Stock Purchase Agreement in order to eliminate Fannie Mae's net worth deficit as of 31 December 2008.

27 February 2009 | Treasury Department press release

The US Treasury Department announces its willingness to convert up to $25 billion of Citigroup preferred stock issued under the CPP into common equity. The conversion is contingent on the willingness of private investors to convert a similar amount of preferred shares into common equity. Remaining US Treasury and FDIC preferred shares issued under the Targeted Investment Program and Asset Guarantee Program would be converted into a trust preferred security of greater structural seniority that would carry the same 8% cash dividend rate as the existing issue.

27 February 2009 | Federal Deposit Insurance Corporation press release

The FDIC announces changes in its risk-based assessment system and a 20 basis point emergency special assessment on insured depository institutions (IDSs) to be collected on 30 September 2009.

27 February 2009 | Treasury Department Capital Purchase Program transaction report

The US Treasury Department purchases a total of $394.9 million in preferred stock from 28 US banks under the CPP.

2 March 2009 | AIG press release | Federal Reserve press release | Treasury Department press release

The US Treasury Department and Federal Reserve Board announce a restructuring of the government's assistance to AIG. Under the restructuring, AIG will receive as much as $30 billion of additional capital from the TARP. In addition, the US Treasury Department will exchange its existing $40 billion cumulative preferred shares in AIG for new preferred shares with revised terms that more closely resemble common equity. Finally, AIG's revolving credit facility with the Federal Reserve Bank of New York will be reduced from $60 billion to no less than $25 billion and the terms will be modified. In exchange, the Federal Reserve will receive preferred interests in two special purpose vehicles created to hold the outstanding common stock of two subsidiaries of AIG: American Life Insurance Company and American International Assurance Company Ltd. Separately, AIG reports a fourth quarter 2008 loss of $61.7 billion, and a loss of $99.3 billion for all of 2008.

3 March 2009 | Federal Reserve press release

The US Treasury Department and the Federal Reserve Board announce the launch of the TALF. Under the programme, the Federal Reserve Bank of New York will lend up to $200 billion to eligible owners of certain AAA-rated ABS backed by newly and recently originated auto loans, credit card loans, student loans and small business loans that are guaranteed by the Small Business Administration. The Federal Reserve and Treasury expect to include ABS backed by other types of loans in future monthly fundings. Subscriptions for funding in March will be accepted on 17 March 2009. Securitisations will be funded by the programme on 25 March 2009. The programme will hold monthly fundings through December 2009 or longer if extended by the Federal Reserve Board.

4 March 2009 | Treasury Department press release

The US Treasury Department announces guidelines to enable servicers to begin modifications of eligible mortgages under the Homeowner Affordability and Stability Plan.

6 March 2009 | Treasury Department Capital Purchase Program transaction report

The US Treasury Department purchases a total of $284.7 million in preferred stock from 22 US banks under the CPP.

11 March 2009 | Federal Reserve press release

The Federal Reserve Board releases the minutes of its meetings from 13 July 2008 through 16 December 2008 concerning Federal Reserve liquidity facilities and other issues related to the financial turmoil.

11 March 2009 | Freddie Mac press release

Freddie Mac announces that it had a net loss of $23.9 billion in the fourth quarter of 2008, and a net loss of $50.1 billion for 2008 as a whole. Further, Freddie Mac announces that its conservator has submitted a request to the US Treasury Department for an additional $30.8 billion in funding for the company under the Senior Preferred Stock Purchase Agreement with the Treasury.

13 March 2009 | Treasury Department Capital Purchase Program transaction report

The US Treasury Department purchases a total of $1.45 billion in preferred stock from nineteen US banks under the CPP.

17 March 2009 | Federal Deposit Insurance Corporation press release

The FDIC decides to extend the debt guarantee portion of the TLGP from 30 June 2009 through 31 October 2009, and to impose a surcharge on debt issued with a maturity of one year or more beginning in the second quarter of 2009 to gradually phase-out the programme.

18 March 2009 | Federal Reserve press release

The FOMC votes to maintain the target range for the effective federal funds at 0 to 0.25%. In addition, the FOMC decides to increase the size of the Federal Reserve's balance sheet by purchasing up to an additional $750 billion of agency MBSs, bringing its total purchases of these securities to up to $1.25 trillion this year, and to increase its purchases of agency debt this year by up to $100 billion to a total of up to $200 billion. The FOMC also decides to purchase up to $300 billion of longer-term Treasury securities over the next six months to help improve conditions in private credit markets. Finally, the FOMC announces that it anticipates expanding the range of eligible collateral for the TALF.

18 March 2009 | Federal Reserve Bank of New York press release

The Federal Reserve Bank of New York releases more information on the Federal Reserve's plan to purchase Treasury securities. The Desk will concentrate its purchases in nominal maturities ranging from two to ten years. The purchases will be conducted with the Federal Reserve's primary dealers through a series of competitive auctions and will occur two to three times a week. The Desk plans to hold the first purchase operation late next week.

19 March 2009 | Treasury Department press release

The US Department of the Treasury announces an Auto Supplier Support Program that will provide up to $5 billion in financing to the automotive industry. The Supplier Support Program will provide selected suppliers with financial protection on monies ("receivables") they are owed by domestic auto companies and the opportunity to access immediate liquidity against those obligations.

Receivables created with respect to goods shipped after 19 March 2009 will be eligible for the programme. Any domestic auto company is eligible to participate in the programme. Any US-based supplier that ships to a participating auto manufacturer on qualifying commercial terms may be eligible to participate in the programme.

19 March 2009 | Federal Reserve press release

The Federal Reserve Board announces an expansion of the eligible collateral for loans extended by the TALF to include ABS backed by mortgage servicing advances, loans or leases related to business equipment, leases of vehicle fleets, and floorplan loans. The new categories of collateral will be eligible for the April TALF funding.

19 March 2009 | Federal Reserve Bank of New York press release

The Federal Reserve Bank of New York releases the initial results of the first round of loan requests for funding from the TALF. The amount of TALF loans requested at the 17–19 March operation was $4.7 billion.

19 March 2009 | Federal Deposit Insurance Corporation press release

The FDIC completes the sale of IndyMac Federal Bank to OneWest Bank. OneWest will assume all deposits of IndyMac, and the 33 branches of IndyMac will reopen as branches of OneWest on 20 March. As of 31 January 2009, IndyMac had total assets of $23.5 billion and total deposits of $6.4 billion. IndyMac reported fourth quarter 2008 losses of $2.6 billion, and the total estimated loss to the Deposit Insurance Fund of the FDIC is $10.7 billion. The FDIC had been named conservator of IndyMac, F.S.B. on 11 July 2008.

20 March 2009 | Treasury Department Capital Purchase Program transaction report

The US Treasury Department purchases a total of $80.8 million in preferred stock from ten US banks under the CPP.

23 March 2009 | Federal Reserve press release

The Federal Reserve and the US Treasury issue a joint statement on the appropriate roles of each during the current Financial Crisis and into the future, and on the steps necessary to ensure financial and monetary stability. The four points of agreement are: 1) the Treasury and the Federal Reserve will continue to cooperate in improving the functioning of credit markets and fostering financial stability; 2) the Federal Reserve should avoid credit risk and credit allocation, which are the province of fiscal authorities; 3) the need to preserve monetary stability, and that actions by the Federal Reserve in the pursuit of financial stability must not constrain the exercise of monetary policy as needed to foster maximum sustainable employment and price stability; and 4) the need for a comprehensive resolution regime for systemically critical financial institutions. In addition, the Treasury will seek to remove the Maiden Lane facilities from the Federal Reserve's balance sheet.

23 March 2009 | Treasury Department press release

The US Treasury Department announces details on the Public-Private Investment Program (PPIP) for Legacy Assets. The programme will have two parts: a Legacy Loans Program (LLP) and a Legacy Securities Program. The LLP will facilitate the creation of individual Public-Private Investment Funds, which will purchase distressed loans that are currently held by banks. The US Treasury intends to provide 50% of the equity capital for each fund. The FDIC will provide oversight for the formation, funding and operation of these funds, and guarantee the debt issued by the funds. Under the Legacy Securities Program, the US Treasury Department will approve up to five asset managers, who will have the opportunity to raise private capital to acquire distressed securities currently held by banks. The US Treasury will provide 50% of the equity capital for each investment fund and will consider requests for loans to each fund. In addition, the investment funds would also be eligible for non-recourse loans from the TALF.

25 March 2009 | Treasury Department press release | Draft legislation

The US Treasury Department proposes legislation that would grant the US government authority to put certain financial institutions into conservatorship or receivership to avert systemic risks posed by the potential insolvency of a significant financial firm. The authority is modelled on the resolution authority that the FDIC has with respect to banks and that the FHFA has with regard to the GSEs. The authority would apply to non-bank financial institutions that have the potential to pose systemic risks to the economy but that are not currently subject to the resolution authority of the FDIC or the FHFA.

26 March 2009 | Treasury Department press release

The US Treasury Department outlines a framework for comprehensive regulatory reform that focuses on containing systemic risks in the financial system. The framework calls for assigning responsibility over all systemically important firms and critical payment and settlement systems to a single independent regulator. Further, it calls for higher standards on capital and risk management for systemically important firms; for requiring all hedge funds above a certain size to register with a financial regulator; for a comprehensive framework of oversight, protection and disclosure for the over-the-counter (OTC) derivatives market; for new requirements for money market funds; and for stronger resolution authority covering all financial institutions that pose systemic risks to the economy.

27 March 2009 | Treasury Department Capital Purchase Program transaction report

The US Treasury Department purchases a total of $193 million in preferred stock from fourteen US banks under the CPP.

31 March 2009 | General Accounting Office report: March 2009 status of efforts to address transparency and accountability issues (GAO-09-504)

The General Accounting Office releases a report on the status of efforts to address transparency and accountability issues for the TARP. The report provides information about the nature and

purpose of TARP funding through 27 March 2009, the performance of the Treasury Department's Office of Financial Stability and TARP performance indicators.

31 March 2009 | Treasury Department press release

The US Treasury Department announces an extension of its temporary Money Market Funds Guarantee Program through 18 September 2009. This programme will continue to provide coverage to shareholders up to the amount held in participating money market funds as of the close of business on 19 September 2008. The programme currently covers over $3 trillion of combined fund assets and was scheduled to end on 30 April 2009. Four bank holding companies announced that they had redeemed all of the preferred shares that they had issued to the US Treasury under the CPP of the TARP. The four banks are Bank of Marin Bancorp (Novato, CA), Iberiabank Corporation (Lafayette, LA), Old National Bancorp (Evansville, IN) and Signature Bank (New York, NY).

1 April 2009 | Board of Governors' letter to Congressional Oversight Panel | Response to Congressional Oversight Panel

Federal Reserve Chairman Bernanke and Federal Reserve Bank of New York President Dudley respond to questions from the Congressional Oversight Panel about the TALF, explaining in detail the rationale and operation of the TALF.

2 April 2009 | Financial Accounting Standards Board press release

The Financial Accounting Standards Board approves new guidance to ease the accounting of troubled assets held by banks and other financial companies. In particular, the Board provides new guidance on how to determine the fair value of assets for which there is no active market.

3 April 2009 | Treasury Department Capital Purchase Program transaction report

The US Treasury purchases a total of $54.8 million in preferred stock from ten US banks under the CPP.

6 April 2009 | Federal Reserve press release

The Federal Reserve announces new reciprocal currency agreements (swap lines) with the Bank of England, the ECB, the Bank of Japan and the SNB that would enable the provision of foreign currency liquidity by the Federal Reserve to US financial institutions.

7 April 2009 | Congressional Oversight Panel press release

The Congressional Oversight Panel releases its monthly report on the TARP. This report, entitled "Assessing Treasury's strategy: Six months of TARP", provides information about expenditures and commitments to date of TARP funds, evaluates the Treasury Department's strategy for improving the condition and functioning of financial institutions and markets, and discusses potential policy alternatives.

9 April 2009 | Financial Accounting Standards Board Financial Accounting Standards Board press release

The Financial Accounting Standards Board issues three final Staff Positions intended to provide additional application guidance and enhance disclosures regarding fair value measurements and impairments of securities.

10 April 2009 | Treasury Department Capital Purchase Program transaction report

The US Treasury purchases a total of $22.8 million in preferred stock from five US banks under the CPP.

17 April 2009 | Treasury Department Capital Purchase Program transaction report

The US Treasury purchases a total of $40.9 million in preferred stock from six US banks under the CPP.

21 April 2009 | Special Inspector General Troubled Asset Relief Program

The Office of the Special Inspector General for the TARP issues its quarterly report to Congress on the operation of the TARP.

23 April 2009 | Federal Reserve press release

The Federal Reserve publishes the annual financial statements for the combined Federal Reserve Banks, the twelve individual Federal Reserve Banks, the limited liability companies that were created in 2008 to respond to strains in the financial markets, and the Board of Governors for the years ended 31 December 2008 and 2007.

24 April 2009 | Federal Reserve press release

The Federal Reserve Board publishes a white paper describing the process and methodologies employed by federal banking supervisory authorities in their forward-looking assessment ("stress test") of large US bank holding companies.

24 April 2009 | Treasury Department Capital Purchase Program transaction report

The US Treasury purchases a total of $121.8 million in preferred stock from twelve US banks under the CPP.

1 May 2009 | Federal Reserve press release

The Federal Reserve Board announces that, starting in June, CMBSs and securities backed by insurance premium finance loans will be eligible collateral under the TALF. The Board also authorises TALF loans with maturities of five years. Currently, all TALF loans have maturities of three years. TALF loans with five-year maturities will be available for the June funding to finance purchases of CMBSs, ABS backed by student loans, and ABS backed by loans guaranteed by the Small Business Administration.

1 May 2009 | Treasury Department Capital Purchase Program transaction report

The US Treasury purchases a total of $45.5 million in preferred stock from seven US banks under the CPP.

7 May 2009 | Federal Reserve press release

The Federal Reserve releases the results of the Supervisory Capital Assessment Program ("stress test") of the nineteen largest US bank holding companies. The assessment finds that the nineteen firms could lose $600 billion during 2009 and 2010 if the economy were to track the more adverse scenario considered in the programme. The assessment also finds that nine of the nineteen firms already have adequate capital to maintain Tier 1 capital in excess of 6% of total assets and common equity capital in excess of 4% under the more adverse scenario. Ten firms would need to add $185 billion to their capital to maintain adequate buffers under the more adverse scenario. However, transactions and revenues since the end of 2008 have reduced to $75 billion the additional capital that these firms must raise in order to establish the capital buffer required under the programme. A bank holding company needing to augment its capital buffers will be required to develop a detailed plan to be approved by its primary supervisor within thirty days and to implement its plan to raise additional capital by early November 2009.

8 May 2009 | Fannie Mae press release

Fannie Mae reports a loss of $23.2 billion for the first quarter of 2009. The Director of the FHFA, which has been conservator of Fannie Mae since 6 September 2008, requests $19 billion from the US Treasury Department under the terms of the Senior Preferred Stock Purchase Agreement between Fannie Mae and the Treasury to eliminate the firm's net worth deficit. Separately, on 6 May 2009, the Treasury Department and the FHFA enter into an amendment to the Senior Preferred Stock Purchase Agreement to increase the Treasury's funding commitment to Fannie Mae to $200 billion from $100 billion, increase the allowed size of Fannie Mae's mortgage portfolio to $900 billion, and to increase the firm's allowable debt outstanding to $1,080 billion.

8 May 2009 | Treasury Department Capital Purchase Program transaction report

The US Treasury purchases a total of $42 million in preferred stock from seven US banks under the CPP.

12 May 2009 | Freddie Mac press release

Freddie Mac reports a first quarter 2009 loss of $9.9 billion, and a net worth deficit of $6 billion as of 31 March 2009. The Director of the FHFA submits a request to the US Treasury Department for funding in the amount of $6.1 billion in his capacity as conservator of Freddie Mac. Further, on 6 May 2009, the Treasury Department and FHFA, acting on Freddie Mac's behalf as its conservator, entered into an amendment to the Purchase Agreement between the company and Treasury that increases the Treasury's funding commitment to the firm to $200 billion from $100 billion, increases the allowed size of Freddie Mac's mortgage-related investments portfolio by

$50 billion to $900 billion, and increases the firm's allowable debt outstanding to $1,080 billion until 31 December 2010.

13 May 2009 | Treasury Department press release

The US Treasury Department proposes amendments to the Commodity Exchange Act and securities laws to enhance government regulation of OTC derivatives markets. The proposed changes include requirements that all standardised OTC derivatives be cleared through regulated central counterparties, and that all OTC derivatives dealers and all other firms whose activities in those markets create large exposures to counterparties be subject to prudential supervision and regulation. In addition, the US Treasury Department proposes new recordkeeping and reporting requirements on all OTC derivatives and increased authority for the Commodity Futures Trading Commission to regulate OTC derivatives trading.

15 May 2009 | Treasury Department Capital Purchase Program transaction report

The US Treasury purchases a total of $107.6 million in preferred stock from fourteen US banks under the CPP.

19 May 2009 | Federal Reserve press release

The Federal Reserve Board announces that, starting in July, certain high-quality CMBSs issued before 1 January 2009 ("legacy CMBSs") will become eligible collateral under the TALF. The objective of the expansion is to restart the market for legacy securities and, by doing so, stimulate the extension of new credit by helping to ease balance sheet pressures on banks and other financial institutions. Eligible CMBSs must have a triple-A rating from at least two major rating services.

20 May 2009 | Federal Deposit Insurance Corporation press release

President Obama signs the Helping Families Save Their Homes Act of 2009, which temporarily raises FDIC deposit insurance coverage from $100,000 per depositor to $250,000 per depositor. The new coverage at FDIC-insured institutions will expire on 1 January 2014, when the amount will return to its standard level of $100,000 per depositor for all account categories except IRAs and other certain retirement accounts. This action supersedes the 3 October 2008 changes.

May 21, 2009 | Federal Deposit Insurance Corporation press release

The FDIC announces the approval of GMAC Financial Services to participate in the TLGP. GMAC will be allowed to issue up to $7.4 billion in new FDIC-guaranteed debt.

21 May 2009 | Standard and Poor's press release

Standard and Poor's Ratings Services lowers its outlook on the UK government debt from stable to negative because of the estimated fiscal cost of supporting the nation's banking system. The firm estimates that this cost could double the government's debt burden to about 100% of GDP by 2013.

22 May 2009 | Federal Reserve press release

The Federal Reserve Board announces the adoption of a final rule that will allow bank holding companies to include in their Tier 1 capital without restriction senior perpetual preferred stock issued to the US Treasury Department under the TARP.

22 May 2009 | Treasury Department Capital Purchase Program transaction report

The US Treasury purchases a total of $108 million in preferred stock from twelve US banks under the CPP.

27 May 2009 | Federal Deposit Insurance Corporation quarterly banking profile

The FDIC announces that the number of “problem banks” increased from 252 insured institutions with $159 billion in assets at the end of fourth quarter of 2008 to 305 institutions with $220 billion of assets at the end of the first quarter of 2009. The FDIC also announces that there were 21 bank failures in the first quarter of 2009, which is the largest number of failed institutions in a quarter since the first quarter of 1992.

29 May 2009 | Treasury Department Capital Purchase Program transaction report

The US Treasury purchases a total of $89 million in preferred stock from eight US banks under the CPP.

1 June 2009 | General Motors press release

As part of a new restructuring agreement with the US Treasury and the governments of Canada and Ontario, General Motors Corporation and three domestic subsidiaries announce that they have filed for relief under Chapter 11 of the US Bankruptcy Code.

1 June 2009 | Federal Reserve press release

The Federal Reserve Board announces the criteria it will use to evaluate redemption applications from the nineteen bank holding companies that received US Treasury capital as part of the Supervisory Capital Assessment Program. An initial set of redemption approvals are expected to be announced during the week of 8 June.

3 June 2009 | Federal Deposit Insurance Corporation press release

The FDIC announces that the previously planned sale of impaired bank assets under the LLP will be postponed. According to Chairman Bair: “Banks have been able to raise capital without having to sell bad assets through the LLP, which reflects renewed investor confidence in our banking system.”

5 June 2009 | Treasury Department Capital Purchase Program transaction report

The US Treasury purchases a total of $40 million in preferred stock from three US banks under the CPP.

9 June 2009 | Treasury Department press release

The US Treasury Department announces that ten of the largest US financial institutions participating in the CPP have met the requirements for repayment established by the primary

federal banking supervisors. If these firms choose to repay the capital acquired through the programme, the Treasury will receive up to $68 billion in repayment proceeds.

10 June 2009 | Federal Reserve press release | Credit and liquidity report

The Federal Reserve issues the first of an ongoing series of monthly reports on its credit and lending facilities. The report provides information on borrowing patterns and collateral for many of the Federal Reserve's credit and liquidity programmes, including the number of borrowers and borrowing amounts by type of institution, collateral by type and credit rating, and data on the concentration of borrowing. The report also includes information on liquidity swap usage by country, quarterly income for important classes of Federal Reserve assets, and asset distribution and other information on the limited liability companies created to avert the disorderly failures of Bear Stearns and AIG.

12 June 2009 | Federal Reserve press release

The Federal Reserve announces that it is reviewing regulatory capital requirements for banking organisations in response to a decision by the Financial Accounting Standards Board to address weaknesses in accounting and disclosure standards for off-balance sheet vehicles.

12 June 2009 | Treasury Department Capital Purchase Program transaction report

The US Treasury purchases a total of $39 million in preferred stock from seven US banks under the CPP.

17 June 2009 | US Treasury Department regulatory reform proposal

The US Treasury Department releases a proposal for reforming the financial regulatory system. The proposal calls for the creation of a Financial Services Oversight Council and for new authority for the Federal Reserve to supervise all firms that pose a threat to financial stability, including firms that do not own a bank.

19 June 2009 | Treasury Department Capital Purchase Program transaction report

The US Treasury purchases a total of $84.7 million in preferred stock from ten US banks under the CPP.

24 June 2009 | US Securities and Exchange Commission press release

The SEC proposes rule amendments designed to strengthen the regulatory framework for money market funds. The proposed rules are intended to reduce the risk in money market funds by introducing liquidity requirements, shortening the average maturity limits, and increasing the requirements for credit quality. In addition, the proposals would require the monthly reporting of portfolio holdings and will allow suspension of redemptions if a fund "breaks the buck".

24 June 2009 | Federal Reserve press release

The Federal Reserve announces extensions of and modifications to a number of its liquidity programmes. The expiration date of the AMLF, CPFF, PDCF and TSLF is extended through 1 February 2010. The expiration date of the TALF remains set at 31 December 2009. In addition, the

temporary reciprocal currency arrangements (swap lines) between the Federal Reserve and other central banks have been extended to 1 February 2010. The Federal Reserve also announces that the amounts auctioned at the biweekly auctions of TAF funds will be reduced from $150 billion to $125 billion, effective with the auction to be held on 13 July 2009.

25 June 2009 | American International Group press release

American International Group announces that it has entered into an agreement with the Federal Reserve Bank of New York to reduce the debt AIG owes the Federal Reserve Bank of New York by $25 billion. The Federal Reserve Bank of New York will receive preferred interests of $16 billion and $9 billion, respectively, in two new special purpose vehicles holding the equity of AIG subsidiaries American International Assurance Company and American Life Insurance Company.

26 June 2009 | Treasury Department press release

The US Treasury announces its policy regarding the disposition of warrants acquired under the CPP. For publicly traded companies, the Treasury received warrants to purchase common shares of stock; these warrants have not been exercised. The Treasury's policy allows banks to repurchase warrants following a multi-step process to determine fair market value.

30 June 2009 | Treasury Department press release

The US Treasury proposes a bill to Congress that would create a new Consumer Financial Protection Agency. The bill would transfer all current consumer protection functions of the Federal Reserve System, Comptroller of the Currency, Office of Thrift Supervision, FDIC, FTC and NCUA to the new agency. In addition, Treasury proposes amendments to the Federal Trade Commission Act with regard to coordination with the proposed Consumer Financial Protection Agency.

8 July 2009 | Treasury Department press release

The US Treasury Department, Federal Reserve and the FDIC announce the details of the Legacy Securities PPIP. Under this programme, the US Treasury will invest up to $30 billion with private-sector fund managers and private investors for the purpose of purchasing legacy securities. The Legacy Securities PPIP will participate in the market for CMBSs and non-agency residential MBSs. To qualify for purchase, these securities must have been issued prior to 2009 and have originally been rated AAA (or an equivalent rating by two or more nationally recognised statistical rating organisations) without ratings enhancement and must be secured directly by the actual mortgage loans, leases, or other assets ("eligible assets"). The US Treasury pre-qualified nine firms to participate as fund managers. The fund managers will be required to raise at least $500 million of capital from private investors; the equity capital will be matched by US Treasury. In addition, the fund manager must also invest a minimum of $20 million of firm capital. Upon raising this private capital, the fund managers can begin purchasing eligible assets.

10 July 2009 | Congressional Oversight Panel press release

The Congressional Oversight Panel for the TARP releases its July report, which examines several issues raised by the repayment of TARP funds by institutions that have received TARP assistance.

15 July 2009 | **House Democrats press release** | **House Republicans press release** | **Public Law**

Congress announces the appointment of members to the Financial Crisis Inquiry Commission (FCIC). The Commission was established by the Fraud Enforcement and Recovery Act of 2009 (Public Law 111-21), which was enacted on 20 May 2009. The Commission is required to report its findings on the causes of the Financial Crisis to Congress by 15 December 2010.

21 July 2009 | **Special Inspector General Troubled Asset Relief Program**

The Office of the Special Inspector General for the TARP issues its quarterly report to Congress on the operation of the TARP.

21 July 2009 | **Federal Reserve press release**

Chairman Ben Bernanke presents the second of the Federal Reserve's semi-annual Monetary Policy Report to the Congress. Chairman Bernanke testifies that "the extreme risk aversion of last fall has eased somewhat, and investors are returning to private credit markets".

23 July 2009 | **Federal Reserve press release**

The Federal Reserve Board proposes significant changes to Regulation Z (Truth in Lending) intended to improve the disclosures consumers receive in connection with closed-end mortgages and home-equity lines of credit. Amongst other changes, the Board's proposal would improve the disclosure of the annual percentage rate on closed-end mortgages and require lenders to show consumers how much their monthly payments might increase for adjustable-rate mortgages. The proposal would also prohibit payments to a mortgage broker or loan officer that are based on a loan's interest rate or other terms, and prohibit lenders from steering consumers to transactions that are not in their interest in order to increase the lender's compensation.

23 July 2009 | **Citigroup press release**

Citigroup announces that it completed a previously announced exchange offer with private investors of convertible preferred securities and a previously announced matching exchange offer with the US Government. Citigroup exchanged $12.5 billion in aggregate liquidation value of convertible preferred securities held by private holders for interim securities and warrants, and made a similar exchange of $12.5 billion in aggregate liquidation value of convertible preferred securities held by the US Government for interim securities and warrants. The interim securities will convert to common stock, subject to shareholder authorisation of the increase in Citigroup's authorised common stock.

24 July 2009 | **Federal Reserve press release**

The Federal Reserve announces that the amounts of TAF credit offered at each of the two auctions in August will be reduced to $100 billion from $125 billion in July. The reduction is consistent with the expectation that TAF auction amounts would be reduced gradually further in coming months if market conditions continue to improve.

26 July 2009 | Citigroup press release

Citigroup announces the preliminary results of its offers to exchange its publicly held convertible and non-convertible preferred and trust preferred securities for newly issued shares of its common stock. Citigroup also announces that it expects to complete a further exchange with the US Government of $12.5 billion in aggregate liquidation preference of Citigroup preferred stock, and that in aggregate, approximately $58 billion in aggregate liquidation value of preferred and trust preferred securities will have been exchanged to common stock as a result of the completion of all the exchange offers.

6 August 2009 | Fannie Mae press release

Fannie Mae reports a loss of $14.8 billion in the second quarter of 2009. The Director of the Federal Housing Finance Agency, which has been acting as Fannie Mae's conservator since 6 September 2008, requests $10.7 billion from the US Treasury Department under the terms of the Senior Preferred Stock Purchase Agreement between Fannie Mae and the Treasury in order to eliminate the firm's net worth deficit. Under the agreement, the Treasury will have provided $45.9 billion of capital to Fannie Mae to cover net worth deficits through the second quarter of 2009.

17 August 2009 | Federal Reserve press release

The Federal Reserve Board and the Treasury Department announce an extension to the TALF. Eligible loans against newly issued ABS and legacy CMBSs can now be made through 31 March 2010. Because new CMBS deals can take a significant amount of time to arrange, TALF lending against newly issued CMBSs was approved through 30 June 2010. The previously announced deadline for TALF loans was 31 December 2009. The Federal Reserve and the Treasury said they do not anticipate any further additions to the types of collateral that are eligible for the TALF.

25 August 2009 | White House press release

President Obama nominates Ben S. Bernanke for a second term as Chairman of the Board of Governors of the Federal Reserve System.

27 August 2009 | Federal Deposit Insurance Corporation press release

The FDIC announces that the number of "problem banks" increased from 305 insured institutions with $220 billion in assets at the end of first quarter of 2009 to 416 institutions with $299.8 billion of assets at the end of the second quarter of 2009.

28 August 2009 | Federal Reserve press release

The Federal Reserve announces that the amounts of TAF credit offered at each of the two auctions in September will be reduced to $75 billion from $100 billion in August. This follows on a reduction from $125 billion in July. The reduction is consistent with expectations that the TAF auction amounts will continue to decrease as market conditions improve.

9 September 2009 | Federal Deposit Insurance Corporation press release

The FDIC Board adopts a Notice of Proposed Rulemaking (NPR) that reaffirms the expiration of the debt guarantee component of the TLGP on 31 October 2009. Under the NPR, the Federal Deposit Insurance Corporation will seek comment on whether a temporary emergency facility should be left in place for six months after the expiration of the current programme. There are two alternatives contemplated under the NPR. Under Alternative A, the Debt Guarantee Program (DGP) would expire as provided for by the FDIC's existing regulation on 31 October 2009 with FDIC's guarantee for such debt expiring no later than 31 December 2012. Under Alternative B, the DGP would expire as provided for in the current regulation; however, the FDIC would establish a 6-month emergency guarantee facility to be made available in emergency circumstances to IDSs and certain other entities participating in the DGP upon application to the FDIC and with the approval of the Chairman, after consultation with the Board.

14 September 2009 | Treasury Department press release

The US Treasury releases the report "The next phase of government financial stabilization and rehabilitation policies". This report focuses on winding down those programmes that were once deemed necessary to prevent systemic failure in the financial markets and the broader economy.

16 September 2009 | Federal Deposit Insurance Corporation press release

The FDIC announces the signing of a bid confirmation letter with Residential Credit Solutions in a pilot sale of receivership assets under the LLP of the PPIP. The PPIP is being developed to help banks remove troubled assets from their balance sheets. The pilot sale was conducted to test the funding mechanism for the LLP.

18 September 2009 | Treasury Department press release

The US Department of the Treasury announces the expiration of the Guarantee Program for Money Market Funds, which was implemented in the wake of the failure of Lehman Brothers in September 2008. The Program was initially established for a three-month period that could be extended up through 18 September 2009. Since its inception, the Treasury had no losses under the Program and earned approximately $1.2 billion in participation fees.

29 September 2009 | Federal Deposit Insurance Corporation press release

The Board of Directors of the FDIC adopts a NPR that would require insured institutions to prepay their estimated quarterly risk-based assessments for the fourth quarter of 2009 and for all of 2010, 2011 and 2012. The FDIC estimates that the total prepaid assessments collected would be approximately $45 billion. The FDIC Board also votes to adopt a uniform 3-basis point increase in assessment rates effective on 1 January 2011, and extend the restoration period from seven to eight years.

14 October 2009 |

The Dow Jones Industrial Average closes above 10,000 for the first time since 3 October 2008.

21 October 2009 | Special Inspector General Troubled Asset Relief Program

The Office of the Special Inspector General for the TARP issues its quarterly report to Congress on the operation of the TARP.

22 October 2009 | US Treasury Department press release

The Special Master for TARP Executive Compensation releases determinations on the compensation packages for the top 25 most highly paid executives at the seven firms that received exceptional TARP assistance (AIG, Citigroup, Bank of America, Chrysler, Chrysler Financial, General Motors and GMAC).

22 October 2009 | Federal Reserve press release

The Federal Reserve Board issues a proposal designed to ensure that the incentive compensation policies of banking organisations do not undermine the safety and soundness of their organisations. The proposal includes two supervisory initiatives. One, applicable to 28 large, complex banking organisations, will review each firm's policies and practices to determine their consistency with the principles for risk-appropriate incentive compensation set forth in the proposal. Second, supervisors will review compensation practices at regional, community, and other banking organisations not classified as large and complex as part of the regular, risk-focused examination process.

1 November 2009 | CIT bankruptcy filing

CIT Group, Inc., files for bankruptcy protection under Chapter 11 of the bankruptcy code. The US Government purchased $2.3 billion of CIT preferred stock in December 2008 under the TARP. The firm's pre-packaged bankruptcy is expected to wipe out the equity stakes of CIT's current shareholders, including the US Government.

5 November 2009 | Fannie Mae press release

Fannie Mae reports a net loss of $18.9 billion in the third quarter of 2009, compared with a loss of $14.8 billion in the second quarter of 2009. The loss resulted in a net worth deficit of $15 billion as of 30 September 2009. The Acting Director of the FHFA submitted a request for $15 billion from the US Treasury to cover the deficit. Fannie Mae has lost a total of $111 billion since September 2008, when the firm was placed under government conservatorship.

9 November 2009 | Federal Reserve press release

The Federal Reserve Board announces that nine of the ten bank holding companies that were determined in the Supervisory Capital Assessment Program earlier this year to need to raise capital or improve the quality of their capital now have increased their capital sufficiently to meet or exceed their required capital buffers. GMAC was the one firm that to date has not raised enough capital to meet its required capital buffer.

17 November 2009 | Federal Reserve press release

Citing continued improvement in financial market conditions, the Federal Reserve Board approves a reduction in the maximum maturity of primary credit loans at the discount window for depository institutions to 28 days from 90 days effective 14 January 2010. The Federal Reserve had lengthened the maximum maturity of primary credit loans first to 30 days on 17 August 2007, and then to 90 days on 16 March 2008.

1 December 2009 | American International Group press release

American International Group announces that it has closed two transactions with the Federal Reserve Bank of New York. This agreement reduces the debt AIG owes the Federal Reserve Bank of New York by $25 billion in exchange for preferred equity interests in newly formed subsidiaries.

2 December 2009 | Bank of America press release

Bank of America announces that it will repurchase the entire $45 billion of cumulative preferred stock issued to the US Treasury under the TARP after the completion of a securities offering.

9 December 2009 | US Treasury Department press release

US Treasury Secretary Timothy Geithner sends a letter to Congressional leaders outlining the Administration's exit strategy for the TARP. Secretary Geithner announces that the programme will be extended to 3 October 2010, and focus on three areas: 1) foreclosure mitigation; 2) providing capital to small and community banks; and 3) possible increases in the Treasury Department's commitment to the TALF.

11 December 2009 | US House of Representatives press release

The US House of Representatives approves legislation that would create a Financial Stability Council to identify financial firms that pose systemic risk and which will be subject to increased oversight and regulation. The legislation would also create a Consumer Financial Protection Agency, impose new regulations on OTC financial derivatives, require the registration of hedge funds with the SEC, and establish an orderly process for shutting down large, failing financial institutions.

14 December 2009 | Citigroup press release

Citigroup announces that it has reached an agreement with the US Government to repay the remaining $20 billion in TARP trust preferred securities issued to the US Treasury. Citi will issue $20.5 billion of capital and debt, and the US Treasury will sell up to $5 billion of the common stock it holds in a concurrent secondary offering.

14 December 2009 | Wells Fargo press release

Wells Fargo and Company announces that it will redeem the $25 billion of preferred stock issued to the US Treasury under the TARP, upon successful completion of a $10.4 billion common stock offering.

24 December 2009 | US Treasury Department press release

The US Treasury Department announces the removal of caps on the amount of preferred stock that the Treasury may purchase in Fannie Mae and Freddie Mac to ensure that each firm maintains a positive net worth. Previously, such purchases had been capped at $200 billion for each firm. The Treasury Department announces that the removal of these caps "should leave no uncertainty about the Treasury's commitment to support these firms".

28 December 2009 | Federal Reserve press release

The Federal Reserve Board proposes amendments to Regulation D (Reserve Requirements of Depository Institutions) that would enable the establishment of a term deposit facility. Under the proposal, the Federal Reserve Banks would offer interest-bearing term deposits to eligible institutions through an auction mechanism.

7 January 2010 | Federal Reserve press release

The Federal Reserve releases an advisory reminding depository institutions of supervisory expectations for sound practices in managing interest rate risk. This advisory, adopted along with the other financial regulators, reiterates the importance of effective corporate governance, policies and procedures, risk measuring and monitoring systems, stress testing, and internal controls related to the interest rate risk exposures of depository institutions.

12 January 2010 | Federal Reserve press release

The Federal Reserve Board announces preliminary unaudited results indicating that the Reserve Banks transferred approximately $46.1 billion of their estimated 2009 net income of $52.1 billion to the US Treasury. This represents a $14.4 billion increase over the 2008 results. The increase was primarily due to increased earnings on securities holdings during 2009.

13 January 2010 | Financial Crisis Inquiry Commission hearings

The FCIC, created by Section 5 of the Fraud Enforcement and Recovery Act of 2009, holds its first public hearing in Washington, DC.

19 January 2010 | Federal Reserve Bank of New York press release

In response to a request from the House Committee on Oversight and Government Reform, the Federal Reserve Bank of New York provides documents that relate to Maiden Lane III LLC and the public disclosures made by AIG in December 2008 concerning the transactions entered into by Maiden Lane III. Maiden Lane III is an LLC that was formed in the fourth quarter of 2008 to facilitate a restructuring of the New York Fed's financial support to AIG. The New York Fed extended credit to Maiden Lane III to purchase multi-sector collateralised debt obligations from certain counterparties of AIG Financial Products Corporation.

21 January 2010 | White House press release

President Obama proposes new restrictions on the trading activities and market shares of commercial banks. Specifically, he calls for prohibiting banks from owning, investing in or

sponsoring hedge funds, private equity funds or proprietary trading operations for their own profit. He also calls for broader market share limits on commercial banks.

1 February 2010 | Federal Reserve press release

The CPFF, AMLF, PDCF and TSLF programmes expire.

18 February 2010 | Federal Reserve press release

The Federal Reserve Board announces an increase in the primary credit rate (generally referred to as the discount rate) from 1/2 to 3/4%, effective 19 February 2010. The Board also announces that, effective on 18 March, the typical maximum maturity for primary credit loans will be shortened to overnight. In addition, the Board announces that it has raised the minimum bid rate for the TAF by 1/4 percentage point to 1/2%. The final TAF auction will be on 8 March 2010. The Board cites continued improvement in financial market conditions for the changes to the terms of its discount window lending programmes.

23 February 2010 | US Treasury Department press release

The US Treasury increases the balance in the Supplementary Financing Account, a product of the Supplementary Financing Program, from $5 billion to $200 billion. This will return the balance to the level maintained between February and September 2009.

23 February 2010 | Federal Deposit Insurance Corporation press release

The FDIC announces that the number of “problem banks” increased from 552 insured institutions with $345.9 billion in assets at the end of third quarter of 2009 to 702 institutions with $402.8 billion of assets at the end of the fourth quarter of 2009.

24 February 2010 | Freddie Mac press release

Freddie Mac reports a net loss of $6.5 billion in the fourth quarter of 2009 and a full-year 2009 net loss of $21.6 billion, compared with a $50.1 billion net loss in 2008.

26 February 2010 | Fannie Mae press release

Fannie Mae reports a net loss of $15.2 billion in the fourth quarter of 2009 and a full-year 2009 loss of $72.0 billion. The fourth quarter loss resulted in a net worth deficit of $15.3 billion as of 31 December 2009, and as a result, the Acting Director of the FHFA submitted a request for $15.3 billion from the US Treasury on the company’s behalf.

31 March 2010 | Federal Reserve Bank of New York press release

The Federal Reserve Bank of New York releases additional information on the three Maiden Lane LLCs that were formed to facilitate the merger between JPMorgan Chase and Bear Stearns (Maiden Lane I) and to facilitate the government’s financial support of AIG (Maiden Lane II and III).

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