SOURCES OF CHANGE IN THE MONEY STOCK

A half-thesis submitted in partial fulfilment
of the requirements for the degree of

MASTER OF COMMERCE (FINANCIAL MARKETS)

of

RHODES UNIVERSITY

by

ROBERT AYRETON BAILEY SMITH

December 2014

Supervisor: Prof AP Faure

ABSTRACT

This research provides an historical, theoretical and practical appraisal of exogenous and endogenous money and money creation, with South Africa as the focus of the practical investigation.

Monetary theory of recent decades can be categorised as belonging to one of two distinct paradigms: mainstream (neoclassical) or post Keynesian. The mainstream (orthodox) view presents a Euclidian or Cartesian, ergodic, deductive, and axiomatic theoretical interpretation of the world. This is perpetuated through the continued, and inaccurate, depiction in academia of exogenous money creation, the money multiplier concept, asset transformation by banks, imposed alterations to the money stock by central banks and long-run closed system equilibrium models (and associated homogeneity, and long term behavioural assumptions). In the real world, economic agents, structures, institutions and their interrelations are perpetually evolving.

The post Keynesian paradigm provides the theoretical framework within which to understand such a world. Unfortunately the necessity for a multiplicity of methods and methodology makes it a paradigm that is currently prohibitively complex, preventing simple exposition.

Money creation should, both historically, and according to the analysis conducted, be defined according to the actual source of change in the money stock, that is, credit extension. In a non-ergodic world, changes in the stock of money take on a causal role with regard the initiation of productive processes, and thus influence future economic conditions. The simple, although powerful, technique of balance sheet analysis conducted herein provides a detailed method of identification of causal changes in money stock. Within the context of the institutional and

structural environment, it clearly demonstrates the residual nature of money in modern economies.

This research serves to emphasise the importance of monetary matters for economic management, as well as the important difference between the money creation process and the residual deposit securities. It serves also to discourage the perpetuation of fallacies of money creation, and capabilities of monetary authorities. In South Africa, as in most countries, the central bank can influence the conditions under which borrowers and banks mutually create money, but do not themselves create or distribute money beyond the facilitation of credit extension by banks.

DECLARATION

Except for those references acknowledged in the text, this thesis wholly represents my own work and no part has been submitted for a degree at any other university.

Signed: 

Date: 16-03-2015

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ACKNOWLEDGEMENTS

My gratitude must go first to my parents, without whom this dissertation would not be possible. Mom, Dad, thank you very much for everything you have done to make it a reality for me, the sacrifices you have made, and your constant encouragement and perseverance. I hope I can make you proud.

To Pierre, thank you. Your inspiration, knowledge and patience are responsible for more than you like to take credit for. Without your guidance this project would be a fraction of what it is today; in fact I'm not sure it would have been completed at all. To Rhodes University, to the registrar, and to the Department of Economics and Economic History, thank you for the opportunity to complete this degree.

To my family and friends, thank you for all the support you have given me, and your continued efforts to include me in my absence. It's hard to say how far a gentle word of encouragement goes, but it definitely made it easier to miss out on your company.

Lastly, and especially, thank you to Jeanne, for your example of hard work and dedication, your joy at my milestones, interest in my work, and your constant and unwavering motivation, understanding, love and support.

CHAPTER 1: INTRODUCTION

Money creation has become the keystone of a much broader debate regarding the nature of macroeconomic theory and research, and has consequently attracted significant attention. The focus of this research is money creation and approaches the subject in terms of theory presented in recent decades. Wicksell[1] (1935: 2) noted that there were innumerable treatises on money, but that most focused on the specific aspects of money in different countries at specific points in time, and that there were only a handful of significant theoretical works to have advanced the understanding of the nature and laws of money[2].

Johnson (1962: 336) later summarised the major themes of these into queries relating to: the *neutrality of money* – taken to include the classical dichotomy, and money in a theory of exchange; *the theory of the demand for money* – at the time interpreted as having evolved to investigations regarding the velocity of money, and later developed into portfolio choice theory and liquidity preference; the *theory of money supply*, *monetary control and monetary dynamics* – here we believe considered to have excluded credit theories of money; *monetary policy*; *the theory of interest*; and *the theory of inflation*. We add to these *the theory of endogenous money* – taken to include credit theory of money, the circuit theory of money, accommodationism, institutionalism, structuralism and revolutionary monetary theory.

In the years since Keynes' passing, Godley and Lavoie (2007: 1) believed that these could further be narrowed into two fundamentally different paradigms of macroeconomic research, namely the neo-classical and post Keynesian. Chick (2003: 307) came to a similar conclusion except that she attributed the divergence from orthodox classical economic thinking more

[1] Wicksell died in 1927 and his lectures where subsequently translated from Swedish to English by E. Classen in 1934 and 1935 respectively.

[2] His list included A. Smith, D. Ricardo, J.S. Mill, E. Nasse, C. Menger, W. Lexis, W.S. Jevons, K. Helfferich, G.F. Knapp and T. Aschehoug. Deleplace (2014: 158), on reviewing Arnon (2010), may have included D. Hume, F. Galiani, H. Thornton, T. Tooke, W. Bagehot, L. Walras and A. Marshall. For the twentieth century, primarily from secondary reference, a non-exhaustive list could be extended to Wicksell himself, K.H. Marx, L.H.E. Von Mises*, F.A. Hayek, J.M. Keynes*, A. Graziani, J. Le Bourva*, J.V. Robinson, P. Sraffa, J.R. Hicks*, M. Kalecki, M. Friedman*, N. Kaldor*, B.J. Moore*, W. Godley*, V. Chick*, S.C. Dow*, L.R. Wray*, M. Lavoie*, L.P. Rochon* and S. Rossi*. *Authors, some of whose work the author has had on opportunity to read.

directly to Keynes. These two paradigms have enormously different perspectives on what money is, and what the role of money and money creation are in an economy.

On the one hand are those schools of thought that advocate the quantity theory of money. These are the classical, monetarist and neoclassical[3] type approaches[4] (CMN schools of thought). Monetarism, as presented by Friedman (1970), has been the most recent, most compelling, pervasive and enduring manifestation of the quantity theory of money, and as such we believe we should pay special attention to the theoretical constructs of monetarism. These approaches, which advocate the quantity theory of money, and thus exogenous money creation, have become known as 'mainstream' or 'orthodox' economics.

The basic contention of monetarism is that money is created exogenously. That is, that the exact quantity of money, in circulation with the general public, is determined by the direct decisions of a monetary authority. The quantity theory of money (as presented by Friedman (1970) in the logarithmic format) is also an elegant, neat, intuitively appealing and simple-to-explain theory regarding the nature of money in an economy. As noted by Kaldor (1970:3) the theory provides clear lines of monetary policy transmission and thereafter suggests direct and simple monetary policy tools and operational directives. The most commonly taught principles arising from this line of thinking can be found in most introductory macroeconomics text books, and include the money multiplier, adjustable and vertical money supply curves (in presentation of monetary policy), and general equilibrium. In such a world, money, although important, is simply a lubricant and prices adjust according to the quantity of money relative to the quantity of 'real' economic goods and services.

On the other hand, according to Godley and Lavoie (2007: 3), is the post Keynesian approach. Post Keynesians (KPK schools of thought) explain that the world is constantly evolving, and that as a result the future will not be the same as the past. They also emphasise the importance

[3] They include an automatic market clearing mechanism for the distribution of income, which Godley and Lavoie (2007: 2) described as a deductive system with an essential, yet unaccounted for role for money, while the backbone of this theory was essentially the principles of classical economics.

[4] The major contributors, according to Kaldor (1985: 8), to this line of thinking included David Hume, Leon Walras, Alfred Marshall, Harry Johnson, Milton Friedman and Anna Schwartz

of time[5]. In such a world, they note, it is important that access to resources needs to be gained in advance of production, and that this reality necessitates the existence of pre-financing, banks and access to credit. Post Keynesians such as Godley & Lavoie (2007: 2) note that money and credit therefore play an essential role. They explain that there is thus an explicit role for banks and credit creation, and that the credit created by these banks directly results in what we today call money (or more accurately, bank deposits).

According to Fontana (2000: 44), post Keynesian[6] authors and the authors of the theory of the monetary circuit[7] (CTOM), essentially hold the same views and as such can be categorised within the same paradigm. They emphasise that money is not and cannot be an external factor; money is an internal factor. Stated alternatively, money is endogenous. As reiterated by Rochon and Rossi (2006: 10) money is a necessary residue of the process of economic expansion. The importance of this proposition cannot be over-stated, and the implications of this for a theoretical appraisal of a modern economy are profound. The most controversial implications, as noted by Moore (1991a: 128), are that general equilibrium cannot exist; that, apart from in financial markets, prices are not determined through a price clearing process; that the money multiplier does not exist; and that central banks cannot (or rather do not and should not) control the *quantity* of money in circulation in the economy. Post Keynesians thus present a reversed causal process of endogenous rather than exogenous creation of money.

Modern specialists in the field of monetary economics (Kaldor, 1985: 12; Moore, 2001: 11; Faure, 2014: 10) have expressed frustration that the teaching of exogenous money creation continues. Modern economics text books continue, in the face of the abundant evidence and a rich history of economic theory to the contrary (as presented by post Keynesian authors), to present the money multiplier principle of money creation and to describe monetary policy through the implementation of exogenous changes to the "money supply"[8].

---

[5] The time taken to develop productive capacity to produce goods, deliver those to market, recover costs through revenues, and so on.

[6] See for example: Kaldor, 1970; Moore, 1983a, 1983b,1989,1991; Lavoie, 1984, 1992; Palley,1991; Le Bourva, 1992; Lavoie, 1992; Dow, 2006; Rochon and Rossi, 2006; Faure 2013a, 2013b, 2014; Palley 2013.

[7] As noted by Gnos (2006: 87), the circuit theory of money was initiated by the Physiocrats of eighteenth century France and advanced in the twentieth century most notably by Bernard Schmitt (1960; 1966; 1984), Jacques Le Bourva (1962), Alain Barrère (1979; 1990) and Alain Parguez (1975).

[8] See for example; Ritter and Silber (1983: 51); Kelly (1993: 309); Mishkin (2007: 374); Kidwell, Blackwell, Whidbee, & Peterson (2009: 52); Madura (2010: 103); Pilbeam (2010: 78).

Central bankers such as Kaldor (1970: 5), Goodhart (1994: 1424), Brink and Kock (2009: 21), and most recently McLeay, Radia and Thomas (2014: 15) of the Bank of England, have emphasised, directly in contrast with the orthodox academic perspectives, that money is indeed created through the credit extension process, and is thereafter accommodated by the central bank. This caused Goodhart (1994: 1424) to remark that "there is a yawning chasm of mutual misunderstanding, which has persisted for decades, between economists and those working in [central banks], which has bedevilled the subject" of what central banks can do, and actually do, in the field of monetary control.

Clearly there a need within the academic community for further discussion, exposition and development of monetary theory. If the post Keynesian authors and various central bankers are correct in their assertions, there are significant implications for the manner in which undergraduate economics is taught, and how economic textbooks portray the roles of banks, central banks and the monetary system in a monetised production economy. We believe that the endogenous (or exogenous) nature of money has important implications for the role of money in monetary policy and for any debate concerning the importance of money for monetary policy decision-making, and that this research will be able to contribute to this important field of economic enquiry.

The aim of this research is to address the nature of money creation from the theoretical, historical and practical perspectives, and thus determine which of the major paradigms most accurately reflect the reality of money creation in modern monetised production economies.

The remainder of this thesis is arranged as follows. Chapter two presents the methodological point of departure as well as the methods that have been used in the research process. In chapter three the literature is reviewed, providing a critical account of monetarism, the history of money creation and post Keynesianism with regards to money and money creation. Chapter four presents a practical example of money and money creation in the form of a qualitative descriptive analysis of the South African banking sector, as well as a balance sheet analysis for the monetary banking sector. Chapter five concludes.

CHAPTER 2: METHODOLOGY

This research will be qualitative in nature, and will utilise two qualitative research methods. The first will be a critical analysis of the monetary theory presented by the two most dominant paradigms within monetary theory of recent decades – namely the monetarist and post Keynesian.

The second will be the qualitative descriptive research method as described by Sandelowski (2000: 337). She noted, it entails an "eclectic but reasonable and well-considered combination of sampling, and data collection, analysis and re-representational techniques", and that qualitative description would be particularly appropriate for "obtaining straight and largely unadorned … answers to questions of special relevance to practitioners and policy makers." This method will be applied in two ways; the first will be a literature review of the historical development of money and money creation. The second will involve an account of the monetary policy framework employed in a particular country, and the use of a central bank technique (discussed below) to observe the modern reality of money and money creation.

The central bank technique noted above is called the Balance Sheet Approach. According to Van Staden (1963: xiv) a monetary analysis included an analysis of the "causes of change in money and near money, as derived from the changes in the assets and liabilities of the banking sector." The balance sheet approach to monetary analysis was first implemented at the South African Reserve Bank (SARB) in 1963, and was subsequently utilised as a policy tool for monetary policy decision making until it was supplanted by the more detailed flow of funds analysis. As a policy tool, this method is somewhat outdated, although this will not affect this research as the purpose is not to inform policy decisions, but rather to demonstrate the causal counterparts of money in the money creation process.

As Van Staden (1963: xv) explained, this method is conducted in two stages. The first is the demarcation of the banking sector, and demarcation of the instruments to be included in the definitions of money, and near-money. This is already conducted by the South African central bank, the South African Reserve Bank (SARB), compiled and published on a monthly basis. The second is the identification of the changes (and reasons for those changes) in balance sheet

items from the beginning of the period to the end of the period under observation. While the changes in the counterparts to money are published on a monthly basis, the causal reasons for those changes are left to subjective judgement.

There are two major disadvantages of balance sheet analysis. Firstly, if intended for policy purposes, the lack of information regarding underlying causal relationships introduces identification problems for policy analysts. The more complex flow-of-funds analysis, and associated stock-flow consistent modelling techniques[9], conducted by central banks has taken precedence over balance sheet analysis in this regard. Secondly, the balance sheet analysis is necessarily restricted to monetary banking institutions. In more developed economies the use of alternative funding mechanisms and the introduction of alternative forms of money to bank deposits cloud the information available from the counterparts of bank deposit money.

For our purposes, there are distinct advantages of balance sheet analysis. Firstly, where bank deposits and currency are the dominant forms of money, balance sheet analysis is a simple and clear method of identifying the direct balance sheet sources of change in money and near money. Secondly, the double entry accounting system ensures that all changes to bank liabilities (predominantly bank deposits) will be reflected in a change in bank assets. Balance sheet analysis offers a simple and intuitive method of identifying sources of change, over both short and long periods. As we have explained, our purposes are to discuss the theoretical understanding of the reality of money creation, and thus the demonstration of aggregate counterparts will be sufficient.

The empirical data will be sourced for South Africa, from the SARB. The choice of location is largely irrelevant for the purposes of this research, however, due to the availability of data, dominance of bank deposits as money in South Africa, and the fact that the research has been conducted at a South African institution, South Africa appears to be a suitable choice. This research has been conducted from the perspective of the Post Keynesian paradigm, and within the sphere of the Babylonian mode of thinking (or the philosophy of critical realism). Within this paradigm, the economic system is changing, and components are changing and the past is

[9] Such as presented by Godley and Lavoie (2007).

not necessarily a guide to the future, and thus there can be no complete model of an economy. Dow (1999: 21) identified the Babylonian mode of thought (which combined the complex elements of epistemology and ontology) in 1985, rather than a specific philosophical approach, and noted that it was "motivated by the need to address practical questions." This mode of thought is focused on the system as a whole, and takes the view that because of the complexity of the system, the only way to answer a question is to build holistic knowledge by addressing the problem from multiple perspectives.

Dow (1999: 22) later recognised critical realism, as presented by Lawson (1997), and Fleetwood (1999), as a closely related philosophical perspective. She (Dow, 1999: 22) noted that both "emphasize the organic complexity of human agency and social reality, which prevents the identification of causal laws; rather, the emphasis is on studying the various causal forces at work in the system, and their evolution, in order to build up knowledge that is as reliable as possible, with a view to action." The qualitative description method therefore fits well with the underlying philosophical and methodological foundations.

This is in contrast to the classical, monetarist (and 'orthodox' economic theory in general) philosophical and methodological foundations, which Dow (1999: 21) described as the Cartesian/Euclidean mode of thought, and, which she explains, involves the application of "deductive logic to a single set of axioms in order to arrive at universally applicable conclusions." The single methodology (and only acknowledged source of theoretical validity) selected within that paradigm, she noted, is mathematical formalism, which she explained has massive limitations when attempting to comprehend a non-ergodic world[10].

There are limited ethical considerations for this study, as all data (as published by the SARB) utilized and presented is available in the public domain. The conclusions, while not carrying any direct ethical considerations, might be of import to society in general in so far as the subject

[10] As noted by Say (1836: 14), "it would, however, be idle to imagine that greater precision, or a more steady direction could be given to this study, by the application of mathematics to the solution of its problems. The values with which political economy is concerned, admitting of the application to them of the terms plus and minus, are indeed within the range of mathematical inquiry; but being at the same time subject to the influence of the faculties, the wants and the desires of mankind, they are not susceptible of any rigorous appreciation, and cannot, therefore, furnish any data for absolute calculations."

matter has implications for the economic wellbeing of citizens of modern monetized production economies.

CHAPTER 3: LITERATURE: THEORETICAL BACKGROUND

As noted in the introduction, this chapter introduces money creation from three perspectives. Firstly we critically explore monetarism. Thereafter, we will briefly trace the creation of money from conceptual and early historical records through to modern monetary systems. Finally we present a critical assessment of the post Keynesian perspective. We end the chapter with a brief discussion of the methodological implications of the debate.

3.1 Exogenous money: Monetarism (Verticalism)

Goodhart (1992: 22) informed us that the breakdown of the gold standard after 1931 had led to chaotic exchange rate movements and eventually to the establishment of the Bretton Woods agreement in 1944. He also noted that, in the post war period, 1945 through to about 1960, the focus of central banks was thus torn between internal (domestic growth and price stability) and external (international trade and exchange rate stability) objectives.

According to De Kock (1954: 123), central bankers were already aware of the risk that credit expansion posed in the absence of a metallic brake, particularly for the purpose of stabilising domestic prices, and that there had been "many who expounded the view that price stabilisation is to be preferred to stabilisation of exchange rates … on the ground that the stabilisation of … prices would be most conducive to economic welfare."

This set the stage for monetarism, which Kaldor (1970: 1) described as a "Friedman Revolution" and rather unflatteringly as a self-proclaimed "positivism, or pseudo-sciencism", due to the extensive use and creative interpretation of statistics.

3.1.1 Summary of theory

The dictum of monetarism, in Kaldor's (1970: 2) view, was that money alone matters in determining "money things", which included money wages, money incomes and thus nominal aggregate output.

Essentially, money was considered by Friedman (1970: 207) to be neutral in the long run, but may have disruptive transition effects in the short run. As in neoclassical theory, money, and

the control of money, as noted by Godley and Lavoie (2007: 2) were therefore essential for the stability of prices.

Money also existed only as a stock, and therefore as an asset, or commodity which could be subjected to the classical principles of scarcity, demand and supply. Lavoie (1984: 773) later explained that because money had been reduced to a commodity, its price (the interest rate) would also adjust to changes in the quantity of money "supplied".

Friedman (1970: 207), referring to Alfred Marshall's analysis of equilibrium price adjustments, believed that prices would adjust quicker than quantities, but that there may be short term real transition effects. If we suppose that money is external, and can be some kind of disruptive force in its own right, then according to Friedman, prices would adjust to changes in money in the long run.

Perhaps the most important feature of the monetarist theory was the notion that the nominal quantity of money in the economy could therefore, with the right tools, be controlled. Kaldor (1970: 12) suggested and Friedman (1970: 227) shortly afterwards confirmed that monetarists believed that, in the USA, changes in the "money supply" were "exogenous and determined primarily by "autonomous policy decisions of the Federal Reserve Board"; Friedman explained that the adoption of this assumption was due to his judgement that the money supply function had varied greatly from time to time.

Friedman (1970: 198) proceeded in the steps of the quantity theory of money, and adjusted the total transactions component to reflect total income, thus providing a framework within which changes in the quantity of money could be evaluated relative to changes in prices and output (utilising gross national product and a price deflator to represent total income).

The final step was to introduce equilibrium, which Friedman defined logarithmically, thus as a flow concept, rather than in nominal stock terms. The prescription for stable economic growth thereafter was a stable nominal growth rate in the money stock, to be controlled directly by the monetary authorities.

3.1.2 Nature of money

As money creation is central to the theme of this research it is necessary for us to elaborate on how the theory defined money, and thereafter how the theory described the manner in which money is created, distributed and destroyed.

As noted above, Friedman (1970: 197) believed that money existed only as a stock variable in the monetarist framework, "not a flow or a mixture of a flow and a stock."

Friedman (1970: 200) defined money as general purchasing power, but which instruments or what exactly constituted money was left to the imagination. Beyond the possibility of a temporary store of wealth, and general acceptability for trade, money was not formally addressed as a concept by monetarists. "Money" was rather endowed with the asset-like characteristics described, and emphasised, by Friedman (1970: 219), as playing a role in portfolio choice and in the process of clearing markets.

The two interpretations of the monetary model offered by Friedman (1970: 198) were the transactions version and the income version, and the most important thing about money as far as monetarists were concerned was that for the former it was transferred, and for the latter that it was held.

For enterprises Friedman (1970: 202) emphasised that money could also be seen as working capital, or a "producer's good like machinery or inventories", where it could be utilised to facilitate production. Thus money was essentially reduced to an exogenous stock asset variable the use of which was subject to portfolio decisions – whether for speculative investment purposes or as a working capital stock to be exchanged with inventories or additional capital as a firm might decide.

3.1.3 Nature of money creation

Friedman (1970: 208) brushed over the complexity of money creation, indicating that it was not the relevant point under discussion when explaining the determination of equilibrium; in this case he was most likely referring to open market operations.

As noted by Kaldor (1970: 4) "how the money gets into circulation, who it is received by, whether the recipients treat it as an addition to their spendable income or to their wealth, or whether it comes into existence in exchange for other assets without augmenting either wealth or income—is hardly considered by the orthodox Friedman school." Since monetarists never defined the instruments that constituted money, the detailed money creation process was never elaborated. Money creation was considered only in terms of "money supply".

In spite of the absence of an adequate definition of money, Lavoie (1984: 777) identified that monetarists proposed policy that directly affected banks, and banks only. The central bank was considered to be able to impose the 'money stock' level of its choice. The theoretical link was between a required level of reserves to be held by banks with the central bank (specified as a required reserve ratio to deposits) and the nominal money stock. The mechanisms it could utilise to do so were a combination of open market operations and adjustments to the required reserve ratio.

By controlling the level of reserves it was believed that the central bank could directly determine the nominal stock of money held by commercial banks on behalf of clients. From these policy measures we must assume that monetarists believed that bank deposits and currency in circulation constituted all money.

As Moore (1983b: 543) noted, the nominal stock of money was thus regarded as fixed, and when depicted graphically was represented by a vertical line (hence the label verticalists). Economic units were therefore considered to be 'stuck' with a fixed quantity of money, that could be distributed in any number of ways, but never increased or decreased except to the extent that the central bank decided to change it. Money was a so-called "hot potato".

Theoretically, Friedman (1970: 225) conjectured that economic units could accelerate or decelerate the speed at which they transacted in money, that is, they could change the velocity of the fixed stock of money provided. This implied that if spending patterns or money holding patterns were to change significantly there could be a change in the 'real' economy as a result thereof, but this velocity was professed to be stable for the one hundred year history that Friedman and Schwartz (1963) had analysed.

It would also appear that Friedman (1970) (195) included banks in his definition of "the community"; as we will show rather ironically, he believed that the repayment of debt would not affect this fixed level of money. He stated that if the community were to receive "excess" real money balances, they would "try to pay out a larger sum for the purchase of securities, goods and services, *for the repayment of debts*[11], and as gifts than they are receiving from the corresponding sources", without affecting the level of nominal money in the economy.

3.1.4 Causality

We are equally interested in the reasons why money is created. To investigate this we will describe firstly the underlying causal reasons for which new money is created, and secondly the direct causal links throughout the creation process.

In monetarism, causality begins with expectations regarding a sustainable equilibrium growth path of the economy. Friedman (1970: 224) believed that the economy had grown at a steady rate and that a steady flow of money at a similar rate would therefore create stability in prices. The initial causal factor then was this expectation. The desired growth rate could then be translated into a specific nominal quantity by which the money stock would be increased on a regular basis.

Friedman (1970: 202) explicitly stated that in the first instance, the amount of high-powered money under an international commodity standard would be determined by international flows (that is, the balance of payments), and under a fiduciary standard (that is, in a pure credit economy) *by the monetary authorities*. Secondly, the banking system would automatically adjust their stock of money according to the legally imposed ratio of bank deposits to high powered money. Lastly that the ratio of currency to public deposits would be determined through public choice, or what we now call portfolio choice.

This belief was justified by monetarists in two ways, the first of which, Kaldor (1970: 10) noted, was the empirical observation that the ratio of bank deposits to reserves had remained

[11] Emphasis added by the current author. Unless he was referring to non-bank debt, however in the absence of a distinction one can only assume.

constant. He identified the second as an assumption that banks were always loaned up, that is, they never had excess reserves and they were therefore assumed to take any reserves that were given to them and loan them out almost instantaneously[12].

To summarise the flow of causality in the monetarist theory then, it began with an expected potential rate of economic growth. This then implied a specific money stock growth rate target. The monetary authorities would then impose this on the banking system by adjusting the quantity of high powered money (reserves), typically through open market operations. Finally banks would automatically create the required level of deposits (through bank loans as determined by the money multiplier).

This is what is now known as the money multiplier approach. As Moore (1983b: 538) observed, based on the application of this theory to empirical observations, monetarists maintained that the "money stock" was an exogenously determined variable, separate from the 'real' economy. As we will discuss below, this was a deeply flawed logic.

3.1.5 Roles of participants: Central banks, banks, firms and workers

The roles of various economic participants can be deduced from the monetarist theory. As explained in the above discussion, and as noted by Le Bourva (1992: 447), the central bank was considered the supreme controller of money, banks were subservient and responded immediately to the whims of the central bank, and both firms and individuals were required to tussle for a share of the fixed stock of money. Lavoie (1984: 778) suggested that a possible basis for this logic was that bankers might stand in dread of bankruptcy or that they might have feared that their privileges would be revoked if they did not comply.

3.1.6 The process of economic growth

Monetarists believed that economic units would alter their behaviour because of the exogenously imposed fluctuations in their nominal money balances. Moore (1983b: 543) explained that a change in nominal money was seen to imply a change in real balances, and at an aggregate level, since the quantity of money was fixed, the only way the economy could

[12] A major point of inconsistency, to which we will refer later.

adjust back to the equilibrium 'real' position would be through either a change in prices or a change in output.

'Real' incomes were believed by Friedman (1970: 219) to be determined completely independently of money, and were therefore determined outside of the monetary system[13]. Lavoie (1984: 782) pointed out that it was also believed that prices would adjust far more quickly than output; therefore any excess or shortage of money supplied to the economy would result in price fluctuations.

Neither money nor monetary policy therefore played any role in economic growth, and Friedman observed that "substantial changes in the supply of nominal balances [could] and frequently [did] occur independently of any changes in demand." (Friedman, 1970: 195)

3.1.7 Implications for monetary policy: Inflation

In terms of inflation, the quantity of money was considered the single most important factor. In Kaldor's (1970: 3) view, this notion was very similar to the one proposed by the Austrian school of economics, in particular by von Mises and Hayek, although neither appeared to have been recognised for these contributions. The proposition that rapid money growth could directly affect prices had been made in 1928 by Ludwig von Mises[14] (1928: 110), who, building on the work of Wicksell, identified that there was a risk that an increase in the quantity of money in nominal terms would have a direct impact on prices, first on the prices of raw materials and later on the price of finished goods.[15]

In trying to control for inflation the central bank might then be tempted to respond to market fluctuations. Kaldor (1970: 3) explained that monetarists believed that this would be folly, stating that while money alone determined money expenditures, incomes and prices, it did so

[13] As we will discuss later this is part of the dualist, closed system methodology employed by monetary theorists. The money system, and the real system were see as separate closed-system entities.
[14] Von Mises had actually published his treatment of money in 1906 in German, however the English translation was only published later in 1928, in Chicago, the home city of Milton Friedman.
[15] The focus of Von Mises (1928: 110-114) was on interest rates and the effect that they might have on what he called circulation credit (or the creation of fiduciary money). In his version there was a unique real equilibrium rate of real interest, and inertia in the issuance of credit and the enthusiasm of both banks and firms resulted in business cycles that drive the nominal rate of interest above and below the equilibrium real rate. The inflation risk identified by Von Mises should therefore probably be discussed within the context of the credit theory of money, but the link was none the less published.

with an unknown and unpredictable lag, making the impact of such interventions unpredictable and potentially more disruptive than no intervention at all.

To summarise, in Friedman's (1970: 195) terminology, increases in the 'money supply' were assumed to be able to induce 'excess balances' in the accounts of 'people', which they would then attempt to spend (within the closed monetarist system) consequently driving prices up through additional demand for goods and services. If the rate of growth of money was kept in line with economic growth, however, inflation would not be a problem.

3.1.8 Implications for monetary policy: Economic growth

Friedman (1970: 218) specified investment as directly linked to the propensity to save (portfolio choice), and that savings were thus the source of future investment.

Monetarists also believed that a change in interest rates could affect income through its effect on investment, which would then depend on the elasticity of interest rates to changes in the supply of money and thereafter on the elasticity of investment to changes in interest rates. In Friedman's (1970: 226) view, however, interest rates were considered to be endogenously determined at a given level of money stock by the demand and supply pressures for money.

Lastly, since the level of money stock would be automatically determined by the long run expected potential economic growth rate, there was no active role for the central bank in the promotion of investment growth, real income (output) growth, or the real economy in general.

3.1.9 Implications for monetary policy: Tools available

As noted above, the primary operational tool, or instrument, utilised by the monetarist central bank was to engage in open market operations, and Friedman (1970: 214) regularly referred to monetary authorities as being able to change the amount of money by buying and selling government bonds.

According to Moore (1983b: 538) several investigators had identified a range of reserve measures that were beyond the control of the monetary authorities, but it was nevertheless assumed by monetarists that the Fed could take "offsetting-long-run actions, which [would] ultimately enable it to exercise broad control over aggregate reserve instruments".

3.1.10 Criticisms

The criticisms of monetarism are extensive; indeed much of the early post Keynesian literature was dedicated almost entirely to demonstrating the failures and errors of monetarism. The criticisms included confusion between causality, correlation and temporal ordering[16], misrepresentation of reality[17], misuse of statistical methods, creative interpretation of results[18], misunderstanding of the roles of central banks, banks, firms and individuals, and ambiguity in the description of transmission mechanisms.

Apart from squabbles over the legitimacy of methods and presentation, there were several other problems with monetarism. The first relates to the practical implementation of policy. Central bankers necessarily operate under conditions of uncertainty, and policy is typically measured against outcomes rather than theoretical consistency. In this regard, monetarism was a catastrophic failure, particularly in the United Kingdom. According to Kaldor (1985: 10) monetarism was first adopted in England by Denis Healy under Margaret Thatcher and in the United States by Paul Volker under President Ronald Reagan.

In the United Kingdom, Kaldor (1985: 11) informed us, the first year of policy saw both the money stock (M3) and the price level rise twice as quickly as it had in any one year under the previous administration. Failure to understand the role that fiscal policy had played in driving inflation led to progressively more restrictive monetary policy, excessive taxation and expenditure cuts. An overvalued pound and a positive trade balance as a result of the North Sea oil coming online kept import inflation at bay, and, together with declining domestic demand, domestic inflation reduced dramatically from 8.5 per cent in 1979 to 4 per cent in 1984.

He showed that while this may sound like a successful inflation targeting strategy it was accompanied by only a 5 per cent rise in consumption, a 9.5 per cent decline in the total number of employees (unemployment rising from 1 million to 3 million persons), and a 13 per cent fall in output by manufacturing industries (gross investment in manufacturing industries declining by 42 per cent) over the four year term. All told the four years of monetarist policy had worse

[16] As noted by Kaldor (1970: 10) and Lavoie (1984: 787), and as noted by Moore (1983b: 540) contradicted by formal causality tests, and micro-theoretic models of commercial banking.
[17] For example, Kaldor (1970: 15) and Moore (1983b: 539,540)
[18] As discussed by Kaldor (1970: 8); Kaldor (1970: 12); Lavoie (1984: 778); Moore (1983b: 543).

economic impacts in England than those of the great depression. According to Godley & Lavoie (2007: xxxvii) the unemployment figure could be increased to over four million if the "industrial workers in Wales and the North who moved from unemployment to invalidity benefit [were] counted in."

Kaldor (1985: 12) went on to explain that in the United States, while the impact on economic growth and aggregate demand was offset by expansionary fiscal policy, the effects on inflation and interest rates were profound, with both breaching 20 per cent per annum between 1980 and 1981, accompanied by a spate of financial innovation and accelerated development of alternatives to bank deposit money. He wrote, "After a year and a half of continued failures and a chaotic volatility of everything – interest rates, exchange rates, inflation rates – the experiment was abandoned and the system returned, in effect, to the traditional policy of regulating interest rates, but with a more deflationary stance."

Lavoie (1984: 773) summarised another major problem succinctly: the monetarist theory could not explain the existence of the monetised Keynesian economy. Thus, the second criticism offered was one that is equally applicable to classical and neo-classical economic theory, that money was not determined exogenously, but endogenously as a result of productive borrowing. This statement has far reaching theoretical implications, which we will deal with in more detail in the following section.

Thirdly, as noted by Moore (1983b), and covered in far greater detail and complexity by Dow (1985, 1999, 2001, 2010), is a criticism which again applies to classical and neo classical schools equally. Monetarists relied entirely on historical statistical data modelled within the orthodox methodology of mathematical formalism. Monetarist theory was thereafter applied single-mindedly through policy, largely on the misguided assumption that mathematical and statistical methods implied an objective understanding of reality. The deductive, axiomatic, reductionist logic of the CMN schools thus restricted the theorists to developing stable long run laws, and to an ergodic (long run stable) world. The nature of money was thus predetermined to be neutral as a result of methodological foundations.

Lastly, monetarist were inconsistent in their treatment of bank lending and money creation. One of the central assumptions in the transmission mechanism described above is that "*banks are always fully loaned up*". This implies that the manner in which money (commercial bank deposits) is created is through commercial bank lending. Beyond the use of this in the transmission mechanism, monetarists regarded bank lending as non-effectual on the overall quantity of money. The price of credit (the interest rate), the effect on asset prices (particularly long term debt securities) of interest rate volatility, the cash flow implications for indebted 'people' (firms, individuals and government) of interest rate changes and the variation in the level satisfaction of demand for bank loans as a result of variations in the cost of borrowing were largely neglected. The failure to account for these very important effects contributed significantly to the failure of monetarist policies in the USA and the UK.

In closing, we must echo Kaldor (1985: 4) who declared: "The great revival of 'monetarism' in the 1970s, culminating in the adoption of the strict prescriptions of the monetarist creed by a number of Western governments at the turn of the decade – particularly by President Reagan's administration in the United States and Mrs Thatcher's in Great Britain – will, I am sure, go down as one of the most curious episodes in history, comparable only to the periodic outbreaks of mass hysteria (such as the witch hunts) of the Middle Ages. Indeed, I know of no other instance where an utterly false doctrine concerning the causation of economic events had such a sweeping success in a matter of a few years without any attempt to place it in the framework of accepted theory concerning the manner of operation of economic forces in a market economy."

3.2 An abbreviated history of money

Prior to presenting the post Keynesian perspective we believe that it is necessary to present the development of the concept of money (which monetarists ironically failed to do) and the material representations of that concept over time. As in Chick (1993: 80), in order to preserve the flow of the discussion we must necessarily neglect many important developments that occurred simultaneously to those that occurred in money and banking.

For the purpose of a concrete example we will focus on the development of the banking system in England[19], and provide some additional examples where appropriate. Thereafter we will present the post Keynesian perspective, which draws on philosophical underpinnings, historical and institutional context in its design.

3.2.1 Money as a concept and money as a token

From a more fundamental perspective, Rochon and Rossi (2006: 6) consider the true nature of the concept of money (ontological definition) to have been confused with the tokens that had been used to represent it, the characteristics of these tokens, the process of creating them and the conditions under which they were created (epistemological definition).

3.2.2 Money as a representation of social value

Rochon and Rossi (2006: 6) present money as the token of a shared understanding of value. In this way, the *nature* of money is the *intangible general agreement of value* between economic units, and when we describe characteristics of money we are typically describing the characteristics of the token utilised to represent this intangible concept.

According to Kaldor (1985: 5), money was the by-product of the development of a social economy, where specialisation and the division of labour, together with the simultaneous need to exchange goods, resulted in the emergence of markets. This was accompanied by regular exchanges of one agent's goods for another's. An indirect medium of exchange made trade much easier, since the relative value of goods could be compared in a single medium. The concept of value was thus embodied in the medium of exchange, and the value of goods in terms of price was typically linked to either the cost of production or the scarcity of the good (or service).

Wicksell (1935: 3) clearly understood that it was society as a whole that dictated the tangible representation of the system of value, and noted that "…with regard to money, everything is determined by human beings themselves, i.e. the statesmen, and (so far as they are consulted)

[19] This is for several reasons, firstly, this research is conducted in the English language, and the history of banking is available in English. Secondly, as we will discuss, the English banking system developed in an organic manner, rather than through external influence. The English banking system was also arguably the first to develop to the advanced stages of bank development, and thus provides a relatively comprehensive example of bank development.

the economists; the choice of a measure of value, of a monetary system, of currency and credit legislation—all are in the hands of society, and natural conditions (e.g. the scarcity or abundance of the metals employed in the currency, their chemical properties, etc.) are relatively unimportant."

To paraphrase Rochon and Rossi (2006: 10), the need for a value system can and *only* arises out of the need to exchange, and "social money" therefore exists as a collective understanding and agreement in society that certain items, products, services or labours are of value. Money is therefore fundamentally endogenous, and the creation of tokens to represent agreed social values is equally endogenous. In this way, by its very existence, money is and always has been endogenous.

3.2.3 The representation of money by a commodity

As Kaldor (1985: 5) reminded us, the earliest mediums of exchange were themselves commodities, and included oxen and animal skins, but it was soon realised that the medium needed to be something that was in general demand, was durable, had a relatively stable exchange value and had a high value relative to its size or bulk; hence the use of precious metals.

According to Rochon & Rossi (2006: 6) another important development that happened simultaneously, was the emergence of trading intermediaries at markets, who would record the transactions of multiple traders in books of account and then settle these later. A development which they note was greatly aided by the development of double entry bookkeeping in fourteenth century Italy.

Money, was therefore the residue of a debt relationship between a buyer and a seller, and "is a social, numerical counter supplied by the banking system just as it is required … [and] the creation of money is the means by which the banking system provides the economy with a number of money units that are debited and credited respectively to the payer and payee, who use them to exchange objects between them."[20] (Rochon and Rossi, 2006: 6)

[20] To explain this pedagogically, if one works (is employed) one earns a credit against society; if one has made something and society wishes to have it (and buys it), society provides the maker with a credit against future products by the society. The record of these credits is the accumulation of social debts / credits (money). If there

3.2.4 Coinage, standard quality and money by unit count

The use of commodity representation of value by precious metals continued for several centuries, with the added development of coinage. The naming of coins and the assumption of the role of coinage by government (at the mint) roughly coincided with one another. As Faure (2013b: 23), explained, this was a critical step towards payment of debts by unit count rather than by weight.

3.2.5 Deposits with goldsmiths and paper money

As noted by Faure (2013b: 46), deposit banking existed in many forms and developed in several other places around the world, dating back to Babylonian times. In England, the issue of deposit notes by a bank-like organisation was first practiced by goldsmiths (stage one)[21], and issued as evidence of deposits of precious metals, typically gold or silver coins. Faure (2013b: 34) also identified that deposit notes (predecessors of bank notes) were later issued as bearer documents and in smaller denominations, and progressively became accepted as a means of exchange.

Sometime after this, the cheque was developed, and in a similar fashion to the giro system employed in fourteenth century Italy, payment could be made without the physical transfer of a physical commodity at all. Provided the payer and payee banked with the same institution, Faure (2013b: 46) explained that precise payment could be made by simple book keeping entry.

The social agreement of value was at this stage still embodied by a commodity, held in the vaults of what would later become banks.

3.2.6 Goldsmith banker lending in excess of deposits

Goldsmith bankers began lending and charging interest against such loans; initially this was lending of physical specie, but with the progressive acceptance of bank notes as a medium of exchange, these became the predominant method of loan. Faure (2013b: 37) highlighted that a crucial development in the banking process was the realisation by goldsmith bankers (which

was an aggregate increase in debts and credits, more tokens would be needed as a record of those – hence the creation of more money (tokens), as a *result of additional production or labour*.

[21] According to Chick (1993: 81) this is the first stage of bank development, where bank liabilities are not yet a generally accepted medium of exchange and the level of lending by banks is limited by the flow of new deposits and the extent to which depositors are willing to retain their wealth as deposits rather than to withdraw the physical specie. At this point bank reserves (deposits) are effectively determined exogenously for the bank.

from this point forward we will refer to as banks) that loans could be made in excess of the deposits held.

For the purpose of money creation, this was a vital step. As Faure (2013b: 49) pointed out, the actual specie in circulation combined with bank notes against physical specie, together with bank notes issued in excess of specie constituted the total stock of money in circulation. He also noted that this lending later evolved to the extension of loans via the simple credit to a deposit account.

Faure (2013b: 58) proposed that this was possibly the biggest development in the history of the nature of money, since the socially accepted medium of exchange was no longer directly embodied by a commodity. Banks assumed the ability to create at will additional media of exchange. This occurred during the seventeenth century, and by March 1694, the Bank of England was established as a national bank to compete with the private sector banks.

A critical brake on the system of lending was that each banker was bound by convertibility; as Faure (2013b: 39) elucidated, all notes issued against the bank could be converted into precious metal specie on demand. In this regard, banks held a certain level of reserves as a safe keeping against any unexpected withdrawals of physical specie.

According to Kaldor (1985: 6) "the essential function of banks in the creation of 'finance' (or credit) was well understood by Adam Smith, who, in his long chapter on 'Money' in Book 2 of the Wealth of Nations, regarded branch-banking as a most important invention for the enrichment of society. He described how, as a result of the finance banks were able to place at the disposal of producers, the real income of Scotland doubled or trebled in a remarkably short time."

The intermediation of the social debt exchange had become more complex. At this point, borrowing from banks (or rather the creation of means of exchange by banks for buyers) still created the ability to acquire the goods and services of other economic participants. The relationship between buyers and sellers had become somewhat more detached (intermediated

by banks); however the debit-credit relationship was maintained at an aggregate level[22]. At an aggregate level, one might say that money created for a borrower represented a debit against one member of society by the rest of society; a debit that the rest of society would be able to claim back against the borrower's produce at some point[23] through the spending of credits (money).

The need for money prior to production, according to Kaldor (1985: 6), would later be recognised by Keynes as the "finance" required for an expansion of investment.

Money as a social arrangement, and the role of banks in intermediating the arrangement, remained the same, but the ability of individual banks to extend lines of credit and to create their own paper money meant that the notes of different banks did not carry the same level of risk. The medium of exchange was therefore no longer homogenous. The quality of bank management, and confidence in each bank had an important role to play in determining the value of each bank's paper money.

This was a departure for money from the homogeneity of quality controlled coinage. From a technical point of view it was the beginning of a move back towards the fundamental nature of money. The confidence in a bank depended in large on the quality of the banker's loan book. If the loan book was poor, the value of the social debt relationships that those loans represented was likely to be lower than that of paper (or credit) money extended by a bank with a stronger loan book.

Importantly at this point, bankers assumed the responsibility of discerning the quality of borrowers on behalf of society[24]. The demand for credit would either be met or not met,

[22] What is meant by this is that whereas in the past, the buyer and seller were likely to know one another, and the debit and credit relationship (reflected by debits and credits of the record keeping bank) was likely to be more intimate, with the advance of bank lending, those who acquired credits against the resources of society through borrowing could do so on a much more impersonal basis.

[23] We will ignore the complication of interest charges by banks for ease of discussion. To continue the pedagogical explanation provided earlier: an agent that believes they can produce additional products or value for society incurs a debt against society for the opportunity to acquire the tools, labour and materials needed. When this debt is recorded by an intermediary, and the credits placed at the agent's disposal, new money has been created.

[24] In modern economies, Bossone (2001: 870), noted that the banks and non-bank financial firms share the role of selecting and financing productive entities that are truly likely to add real value to the economy. The role of non-

depending on the quality of the potential borrower and on how comfortable the banker was with extending additional loans. Bankers did not sell loans. Credit, like all money before it, was demanded by society from banks.

3.2.7 Single issuer, homogenous money and centralisation of reserves

In spite of the convertibility requirement, Faure (2013b: 60) found that imprudent bankers engaged in excessive lending, and for a number of reasons a spate of bank failures occurred resulting in panic and "runs" on banks, causing even stable banks to fail as withdrawals of specie could never be met[25]. Convertibility thus played the inadvertent role of sorting good bankers[26] from poor ones on behalf of society. The desire to withdraw specie by the general public was, however, based on a misconception of the role of gold and silver[27]. All the same, the banking system became increasingly fragile as the ratio of deposits to reserves escalated.

According to De Kock (1954: 63) the Bank of England's notes began to hold greater confidence in the eyes of the public, and with the start of the establishment of joint-stock banks in England in 1826, and the development of branches by the Bank of England in 1854 the individual and joint-stock banks adopted the custom of storing their reserves of specie, and excess bank notes, with the Bank of England[28].

Faure (2013b: 57) noted that the Bank of England was also granted a virtual monopoly on the issue of bank notes from an early stage. The notes of the Bank of England carried with them social acceptability, or confidence. These notes, and deposits backed by them, also introduced homogeneity to both the paper money and the deposit money mediums of exchange. Confidence in the banking system resulted in a relatively high re-deposit ratio, and as Kaldor (1985: 6) clarified, the quantity of the safer and more convenient deposits relative to the

---

banks features as a vital component in a more complex exposition of the circular flow of money, however that is beyond the scope of this research.

[25] Once the level of bank deposits exceeded the total level of gold or silver in the bank, it was physically impossible satisfy a withdrawal by precious metal of all deposits.

[26] Where a good banker would be one that was able to discern good borrowers from poor ones.

[27] A misconception that still influences the behaviour of investors around the world, as could be witnessed in the fleeing to gold as a safe asset during the 2007-2008 financial crisis, observable in the rapid rise in the gold price in the absence of any discernable increase in commercial value of gold as a commodity.

[28] According to Davies, Richardson, Katinaite, and Manning (2010: 327), from the introduction of the Joint Stock Banks Act, the English banking market experienced tremendous progressive consolidation of banks, with the total number of banks declining from over 750 in 1813 to less than 100 by 1913, and less than 50 by 1937. This coincided with a steady rise in the number of bank branches from roughly 50 in 1813 to over 12,000 by 1937.

quantity of notes rose. This coincided with what Chick (1993), as quoted by Dow (2006: 38), referred to as stage two of the bank development process (stage two)[29].

De Kock (1954: 65) suggested that the centralisation of cash reserves significantly strengthened the banking system, and enhanced the ability to utilise such reserves to the best effect during times of seasonal strain or financial crisis. Their use could be economised when centralised, and could contribute to greater elasticity and liquidity in the banking system, and the credit structure in general. The risk of a bank run due to panic or a failure in confidence for individual banks was thus significantly reduced.

To summarise at this point, the medium of exchange was a homogenous numerical counter represented by book keeping entry bank deposits, bank notes[30] and named coins, all of which could be utilised to repay debts at banks, and all of which could be "created"[31] by the extension of bank credit.

3.2.8 Development of the money market, discounting and accommodation by the central bank

With these developments centralised clearing of payments between banks was possible, and thereafter an increased sophistication of money markets, where banks competed for discounted income-generating bills, such as bills of exchange, government debt securities and the like.

The Bank of England was not officially a central bank until 1946, although Faure (2013b: 58) recognised that even so, it had thus from an early stage assumed many of the functions that have since become associated with central banks[32]. The development of discount houses and secondary markets for the bills of exchange and government issued securities was the next step. This later led to the development of money markets and interbank lending markets.

---

[29] According to Chick (1993: 81), stage two is characterised by the general acceptance of bank liabilities (deposits) as a means of payment, deposits are used to support consumption as well as represent savings. The re-deposit ratio of deposit notes (claims on deposit) is also sufficiently high to allow bankers to feel comfortable enough to lend freely. Making banks more vulnerable to liquidity crises and collapses of confidence.

[30] For simplicity we assume that only the notes of the Bank of England were in circulation.

[31] We use the term created here to mean brought into circulation, since the actual notes would have been created by the Bank of England, and the actual coins minted in the tower of London; however to the extent that they were in circulation or out of circulation both notes and coins were only "created" on withdrawal of deposits or extension of credit.

[32] Thus from here on we will refer to the Bank of England as the central bank.

The central bank began the practice of accommodating the liquidity needs of banks in cases of emergency[33], and introduced the bank rate (or discount rate) as a penalty rate for the use of this facility, primarily to safeguard the gold reserves of the central bank[34]. De Kock (1954: 148) tells us that the central bank began publishing the minimum rate in 1845, and the practice of pricing other rates off of the published rate was developed, depending on the bills' currency and quality (arbitrage). He explained that the "money markets" resulted in greater competition for bills and the increased liquidity brought rates for different instruments that had similar qualities in line with one another, and over time a variety of other bank lending rates (particularly the prime rate) came to be priced off of the rates discovered there (stage three)[35]. As De Kock (1954: 149) noted, domestic credit conditions thus became indirectly influenced by the bank rate offered by the central bank.

De Kock (1954: 149) went on to explain that, in 1878, the central bank began discounting bills at the market rate both to generate business and to allay grievances of its own customers who were previously paying the higher penalty rate. Thereafter, he explained that the discount market understood that it could rely on the central bank to accommodate liquidity needs on "any occasion of temporary stringency or strain", and not just in the event of a crisis (stage four)[36]. Accommodation of liquidity needs and commercial bank collaboration with the central bank were then recognised as key contributors to bank system stability. As later noted by Kaldor (1985: 10), "[c]entral banks are extremely sensitive to the danger of bank failures, which can easily escalate. To an extent rarely admitted in public, central banks regard the maintenance of the credit pyramid – the solvency of the banking system – as their most

[33] Used for the first time in 1839, and then later in 1847, 1857, and 1866 to avert bank failures. The next major bank failure was Baring Brothers, in 1890, and prompted the central bank, together with the rest of the banking system to guarantee payment at maturity of all obligations of the failing house. Demonstrating the importance of a collaborative relationship between the central bank and the commercial banks. (De Kock, 1954: 147-149)

[34] At this stage bank deposits were still fully convertible, and thus a run on any bank would result in the withdrawal of gold specie from the central reserves.

[35] Chick (1993: 82) explained that stage three of bank development involved the discovery of interbank lending, where banks began to borrow from one another to accommodate receipt surpluses and deficits, rather than resorting to the central bank. In England this was accomplished by the development of branch banking, the consolidation of the banking industry, and relationships between the banks and discount houses. In the USA the Federal Funds market was not developed until after the Second World War.

[36] According to Chick (1993: 82) this was the fourth stage, and the automatic supply of reserves is seen to reverse the causality in bank behaviour, largely because the risk of coming up short on reserves was effectively eliminated and bank lending could proceed free of that worry. A concept Chick (1993: 83) called lender of first resort, and bank reserves could be said to have become endogenous to bank behaviour.

important function, taking precedence over economic objectives if these appear to be in conflict."

With the centralisation of reserves and the adoption of the accommodative role by the central bank individual banks, and the system as a whole, were made more flexible, and individual banks could provide greater lines and larger individual credit lines than would have been possible in their individual capacity. This was due to their ability "directly or indirectly and individually or collectively, to obtain the necessary accommodation" (De Kock, 1954: 66). To rephrase, this meant that the central bank would be in a better position to accommodate the immediate cash needs of the banks, and the money market in general[37].

As highlighted by Chick (1993: 85), the system was kept effective by ensuring that the money market was always short of treasury bills, thus forcing the system 'into the bank' to borrow at the prevailing rate offered by the Bank of England. This was the foundation of the Hicksian 'overdraft economy'. As Le Bourva (1992: 451) noted in 1962, "once the money market [was] 'in the Bank', expansion [could] proceed at an almost constant rate until the central bank raise[d] its rate." The creation of bank deposits was at this point elastic at the given rates offered by banks, but always at the risk of future interest rate increases.

Money, as a social value system, remained linked to the commodities gold and silver, but the medium of exchange overwhelmingly became bank notes and deposits, and, critically, all bank notes issued by the Bank of England carried with them the same level of confidence.

3.2.9 Central bank influence over the domestic credit environment

De Kock (1954: 152) explained that, under the gold standard, a theory of domestic credit control developed around the discount rate. With organised money markets, and London acting as the international clearing house, the link to gold affected domestic credit conditions in England through the application of discount rate policy.

[37] The underlying need was that of trade and industry to be able to acquire finance as and when required to support both working capital and capital requirements. (De Kock, 1954: 148)

He went on to explain that the basic theory was as follows. If there was a trend of outflow of gold, it was presumed that the domestic market was out of equilibrium, and would lead to serious problems if allowed to continue, and was typically attributed to maladjustments in imports and exports or an outflow of foreign capital. To correct the situation discount rates would be raised, and the system would adjust largely through a reduction of domestic credit extension[38].

In line with this, Goodhart (1992: 22) suggested that it was noted at the time that central banks had in their power the ability to adjust interest rates, and that in cases where the domestic currency had depreciated, raising interest rates would have the combined effect of suppressing domestic credit expansion, output and inflation together with the attraction of capital inflows from abroad, the net effect of which would be to strengthen the domestic currency.

The implications of this were two-fold. Firstly the quantity of gold (and therefore money) was determined by the supply of the commodity. As noted by Kaldor (1985: 5), at times the production of or acquisition of the commodity ran ahead the productive capacity of the economy, and the introduction of excess commodity money resulted in inflationary pressures. Later, after the introduction of paper money, the maximum quantity of money was determined by some multiple of the quantity of the commodity that could be acquired (either though production of gold, or through favourable trade balance).

Secondly, Kaldor (1985: 8) explained that, because of these links, the development economic theory, particularly the quantity theory of money, by authors including Hume, Walras, Irving, and Marshall, (upon whom Friedman would build) considered money as an externally determined factor that would always be determined in a fixed proportionate manner to the commodity base.

---

[38] As explained by De Kock (1954: 152), the expected result was a "liquidation of commodities and securities, contraction of domestic demand, decline in investment and speculative activity, lower prices, lower wages etc. the course of events in the country concerned would normally have the effect of encouraging exports and discouraging imports, while higher money rates would tend to attract foreign capital and to encourage the withdrawal of foreign balances. If the corrective measures were maintained long enough, they would not only stop the outflow of gold but would even reverse the flow and bring about recovery of the gold lost, which would in turn relieve the credit stringency, reduce money rates, and revive general business activity. On the other hand, continued inflow of gold would tend to sow the seeds of disequilibrium through its operation on the credit structure of the receiving country."

The quantity of money created domestically was thus dependent on entirely exogenous forces of a wide variety[39], but in a direct fashion, was considered to be exogenously determined by the quantity of gold. Commodity based money thus had a very strong exogenous component, and the productive economy thus ebbed and flowed depending on the state of international trade, and the national reserves of gold. Domestic demand would therefore be closely correlated to changes in the level of gold reserves, although with some lag depending on the flexibility of domestic production. Causality thus was concluded to run from the quantity of gold ("real money") to output.

The critical aspect of the policy however, was not the quantity of money in existence, but the relative ease or stringency at which money could be acquired, that is, credit conditions. The influencing factor was equally not the level of gold reserves, but the level of interest rates applied by monetary authorities, albeit induced by changes in the level of gold reserves. Credit conditions determined the relative ease with which credit *could* be acquired, but certainly did not determine by whom, in what quantity or for what purpose credit *would* be acquired.

This is the point at which monetarists (bullionists, or quantity theorists in general) might choose to emphasise the impact of the quantity of gold reserves on the level of domestic money. To the contrary, however, the creation of new money remained a function of the demand for credit at the given discount rate – or the risk adjusted rate available to the particular borrower – albeit with an implicit commodity cap on credit expansion.

3.2.10 Detachment of money from commodities

As noted by Bordo (1981: 1) the link between money and commodities was permanently severed with the abandonment of the gold standard in 1933[40]. From that point forward, at least

[39] As noted by De Kock (1954: 152) with organised money markets, and London acting as the international clearing house, the link to gold affected domestic credit conditions in England through the application of discount rate policy. The sources of change in international money market pressures were both many and unpredictable.
[40] According to Bordo, the gold standard was initially suspended for periods of several years in 1861 and 1914, but officially abandoned in 1931 in the United Kingdom and 1933 in the United States.

at a domestic level, money was entirely irredeemable, except to the extent that it was generally accepted as a medium of exchange[41].

The only restriction on the creation of money at this point was the extent to which banks would refuse to extend loans, and the extent to which the central bank could influence the price at which banks offered credit to their customers, neither of which were consistent across banking systems. All the same, De Kock (1954: 121) explained that the control or adjustment of credit was "accepted by most economists and bankers as the main function of the central bank."

At this point (as is currently the case), the creation of money (predominantly bank deposits) resulted in two records on a bank balance sheet, as explained in detail by Faure (2013b: 14): one on the asset side (loan to the borrower) and one on the liability side (deposits of the borrower). By the extension of a loan the bank simultaneously creates the debt and the means by which the debt will be repaid – no more and no less. Just as they are created, these tokens are destroyed, and since for the most part they are now simply electronic records of debit and credit, when the debt is repaid, the deposits (electronic records) are simply extinguished.

In layman's terms, when someone borrows money from a bank, the bank creates money for them. When they repay the debt to the bank, the bank destroys the money (tokens)[42]. The question then is how is it possible that we still have enough money to go around? The answer, as will be explained in the penultimate section of this research, is that the net level of borrowing from banks is perpetually increasing[43]. Remarkably, mainstream economists have completely missed this aspect of money creation[44]. This means that banks lend from 'nothing', and in so doing create money. They do *not* "receive deposits" of which they lend a portion out; they *create* deposits.

---

[41] As noted by Friedman (1986: 643), although the gold standard was abandoned in 1933, it was only after President Nixon closed the gold window and officially ended the Bretton Woods system in 1971 that no major currency had any link to a commodity.

[42] This seemingly obvious fact will be demonstrated empirically in the penultimate section of this research.

[43] This is what is referred to as the monetary circuit, and was understood in great clarity by Le Bourva (1992: 448) as early as 1958, although only translated to English in 1992 with the help of Marc Lavoie and Mario Seccareccia. Le Bourva (1992) explained that "should the new loans exceed the old, the quantity of money generated through credit will increase; whereas, should the new and the old be equal, the money supply will remain stable; and finally, if repayments were to exceed loans, the quantity of money will decline."

[44] As we noted earlier, Friedman believed that the repayment of bank debt would not affect the nominal level of money in the economy!

3.2.11 Bank reserves: Statutory minimum requirements

The development of banking systems was not uniform around the world, and, with the departure from a commodity brake, governments, including that of the USA, faced the very real possibility of economic calamity. Faure (2013b: 154) recorded that in many countries state mismanagement of the monetary system (largely through excessive government borrowing) was clearly evident, and hyperinflation became a feature of several non-convertible currencies.

The role of the Bank of England as a central bank was formalised in March 1946, and, according to Allen (2012: 21), the bank was nationalised by the labour government in the wake of the Second World War, at which time treasury, rather than the Bank of England, was in control of interest rates.

As De Kock (1954: 69) explained, in several countries in the early 1950s the benefits of centralised reserves had already been achieved through voluntary actions by banks, while in others the benefits of centralisation of reserves were required to be imposed, some with minimum requirements[45] and some without[46]. Where older central banks existed, legislation was not necessary because the benefits were self-evident, both to the individual banks and the system as a whole.

The magnitude of the banking system in the United States surely played a role in the need to legislate the introduction of minimum reserves[47]. According to De Kock (1954: 66), the statutory introduction of minimum reserves was, however, intended to secure the minimum benefits available from such centralisation, not least of all, the stability and solvency of the banking structure, through the centralised access to accommodation in times of need. A secondary goal was to be able to keep the reserves created in line with the level of credit extended, and potentially provide greater control of the credit market.

---

[45] These included the United States, Mexico, New Zealand, India, South Africa, Brazil and Paraguay. (De Kock, 1954: 66)

[46] These included Ecuador, Venezuela, Sweden, Australia, Egypt, Ireland, West Germany, Ceylon, Pakistan, Burma, Philippines, Denmark, Portugal, Romania, Bolivia, Canada, Chile, Columbia, Greece and Switzerland. (De Kock, 1954: 67)

[47] In 1951, there were 14,089 commercial banks in operation in the United States, of which 4,939 were national banks and 1,901 were state banks. (De Kock, 1954: 65)

From a money creation perspective, the primary form of money remained bank deposits. The method of deposit creation had equally remained unchanged. As Tobin (1963: 1) had stated, at an aggregate level, "depositors entrust to bankers whatever amounts bankers are willing to lend."

3.2.12 Innovations and alternatives to bank deposits

As noted by Kaldor (1985: 5), when the production of the commodity that was utilised to embody money lagged behind the growth of an economy, the obstacle implied by the shortage was typically overcome through the successive introductions of money substitutes. In more recent years, in a review of the impacts of deregulation, Isenberg (2006: 370) identified that monetary innovation was first prominent in the USA. The post-depression years had fuelled increased levels of regulation and separation of roles for financing institutions in the USA, each with a designated target market[48]; a structure which served to reduce the risk of collapse and contagion.

She explained that the 1950s saw a corporation-driven innovation by commercial banks into repurchase agreement (RP) markets in the USA. These corporates were motivated by the search for return on deposits, as well as the search for alternative funding options[49]. This more direct form of financing posed a challenge to the main source of commercial bank profit, commercial lending; forcing banks to become participants in the RP markets.

Strong fiscal expansion policies in the 1960s, Isenberg (2006: 373) suggested, again pushed banks to innovate in order to capture market share, with supply limited by legislation, new sources of 'reserve' funds were created in the form of negotiable certificates of deposit (CDs) (1961), the Eurodollar market (shortly after CDs were regulated), further development of bank holding of commercial paper issued by bank holding companies (1969), and complex interbank Eurodollar loans (stage five)[50].

---

[48] Free functioning capital markets geared towards long term capital investment, commercial banks geared towards commercial lending, and savings and loans institutions geared towards long term residential finance.

[49] She noted that there was an imbalance between commercial banks and commercial enterprises, in that commercial banks were restricted in terms of the industry that they could serve, while the commercial enterprises had the freedom to choose the institutions or mechanisms by which they could acquire financial services.

[50] This was the fifth stage of bank development according to Chick (1993: 83), and was called 'liability management'. An important feature of which was bank competition for both loans and deposits (for the purpose of additional reserves), which had the potential to drive both deposit and loan interest rates upwards rather than downwards. Also, creditworthy loans were all likely to be met, irrespective of the wishes of monetary authorities.

She (Isenberg, 2006: 375) summarised that unchecked corporate innovation had led the Fed to try and impose restrictive monetary policy on the banking industry through statutory mechanisms, ultimately disrupting the pre-existing post-war financial structure. The banking system had been both forced and allowed to innovate its way out of traditional banking and the lines between the various financial market structures became increasingly blurred (stages six, and seven)[51].

In the UK, Davies, Richardson, Katinaite, and Manning (2010: 329) noted that Competition and Credit Control was introduced in 1971, ending collusion on interest rates and permitting commercial banks' access to wholesale deposit markets. This was followed by the 1979 Banks Act, which introduced additional competition to the commercial banking environment. Banks were also permitted to participate in a broader range of financial services, mainly on the promise that it would increase competitiveness and reduce rigidities in financial markets.

The political focus on deregulation and privatisation in both England and the USA altered the roles of participants, and, from an institutional point of view thereafter, banks developed into comprehensive financial conglomerates, with interwoven linkages to all aspects of financial markets. We believe that it is fair to say that at this point the collaborative relationship between the central bank and the banking sector and mutual appreciation of the importance of monetary stability had broken down in the USA, and was in the process of decoupling in the UK.

The heightened competition led to new rounds of consolidation, and a progression towards what Davies et al (2010: 329) called a universal bank, where clients could access any financial service or product they desired. As they pointed out, these developments have led to institutions that are, practically speaking, too big for financial authorities to allow to fail, and consequently too big to control. The 2008 financial crisis, as Seccareccia (2012: 277) believes, was partly as a result of the perverse impact that the realisation of this had, particularly on the risk taking behaviour of such financial institutions[52].

---

[51] Chick (1993: 90) identified the securitisation of debt as stage six, and the subsequent blurring of distinction between financial institutions as leading into stage seven (which she had not yet defined at that stage).

[52] Seccareccia (2012: 278) describes the issue in terms of a transformation of the banking sector from industrial financing to a hyperfinancialized international power. He then covers the impact of the 2008 financial crisis which

More importantly, for our current purposes, while the mechanisms by which credit could be controlled were eroded by deregulation and financial innovation, and accessibility to credit broadened beyond the traditional banking industry, money creation remained and continues to remain directly linked to credit extension, and loans continue to be demand driven. The composition of instruments that constitute a measureable aggregate stock of money has become broader in countries where financial innovation has been prevalent, but the fundamental nature of money and money creation has not changed since the departure from a commodity base.

3.3 Endogenous money: Post Keynesianism

As noted by Kaldor (1985: 4), the basic error which persisted in monetarist theory was in the assumption that 'money supply' was the source of the demand for goods. In reality, however, this false causality was more of an artefact of the monetary system as it developed between the seventeenth and twentieth century.

3.3.1 Summary of theory

As noted in the introduction, the early protagonists for the post Keynesian paradigm were Nicolas Kaldor, Basil Moore, Marc Lavoie, Philip Arestis and Alfred Eichner. The shift away from the orthodox views presented at the time, would only be described as a paradigm by Lavoie in 1984. A more in depth reading of previous authors, and the maturation of ideas within the paradigm have since led to the inclusion of several prominent earlier authors, including Joan Robinson, Michał Kalecki, Hyman Minsky and most prominently John Maynard Keynes (particularly philosophical and methodological contributions of the *General Theory*, and his *Treatise on Money*).

Lavoie (1984: 771) noted that post Keynesians were authors that attempted to continue Keynes' attempt to break from traditional economic thinking, and the initial works could loosely be described as a rejection (or antithesis) of the monetarist and neoclassical views that had become orthodoxy. The central point of contention, as Moore (1983b: 538) and Palley (2002: 157) noted, was the source of changes in the level of the stock of money, specifically whether it was

has since led the financial sector to be dependent on the public (government and tax) systems to remain viable. A passage from what he calls pre 2007 financial wizardry to post 2008 feeble dependency.

exogenously determined (as the monetarists claimed), or whether it was determined endogenously by economic forces (as the post Keynesians believed).

As Dow (1999: 22) noted, due to the eclecticism of method, post Keynesians as a group are quite difficult to define, as there is no fixed perspective that will always apply. There is, however, one central theme that does apply. Post Keynesians essentially believed that the way that the macro economy was depicted was out of line with reality and required significant changes. They perceived the economy as an evolving organism, with no long run equilibrium – a divergence in thinking that she explained can be traced back to Keynes.

One's view of the world, according to Chick (2003: 314), and one's perspective of the role of money, are mutually dependent on one another. If one acknowledged money as an endogenous residue of productive activity, a deterministic world (general equilibrium) was no longer possible. As Moore (1991a: 128) stated, "in the real world there is no unique 'general equilibrium position' toward which the economy is tending. Moreover, for a credit money (monetary production) economy, it is not analytically valid or heuristically useful to postulate one."

Endogenous money, Palley (1991: 397) explained, was thus the "cornerstone of post Keynesian descriptions of the macro economy … [where] … the conventional reasoning that deposits create loans is reversed, and instead bank lending creates deposits."

Moore (1991a) (130) noted that "money presupposes nonergodic[53] uncertainty for its very existence," and it is in changes in the (credit) money stock that we find both the beginning and the end of the monetised economy. Money only exists in the presence of productive activity, and productive activity only persists[54] with access to money (a token of social value), regardless of how it is represented. Stated differently, the world could not be deterministic, which precluded long term equilibrium. Clearly a drastic change in perspective from the views of the CMN schools, which still promote such thinking though output-gap models.

[53] Ergodic systems exhibit the same behaviour on average in the long run. Non-ergodic systems develop over time, and thus long term averages can be very misleading, since we do not necessarily expect the system to revert back to an average.
[54] In the absence of slavery.

The authors of the circuit theory of money (CTOM) we believe should be included in this group, although the two groups appear to have developed largely independently of each other, and Fontana (2000: 27) noted that while the CTOM authors were even less united than those of the post Keynesian group, both had "a genuine commitment to understand the nature and functions of money in modem economies." He (Fontana, 2000: 44) explained that they both recognised money as an important device to meet and alleviate the problems of exchange and production in the face of general (or fundamental) uncertainty.

In line with this, Dow (2010: 10) noted that money has developed as an institution to provide liquidity in the face of uncertainty, and that central banks have developed in order to facilitate that role. Much earlier, Arestis and Eichner (1988: 1004) had noted that within the post Keynesian perspective, money capital as an institution was thus inseparable from the other institutions that constituted economic systems. Rather than just a medium of exchange, they explained that it was closely integrated with the behaviour of the private business sector and the overall economy. Due to practical realities of financing, money played a central and crucial role. This was again in direct contrast with the orthodox view of money as a neutral "lubricant".

3.3.1.1 Early divisions

The two major camps, into which post Keynesianism was initially divided, were the accommodationist, and the structuralist. Pollin (1991: 367) first coined the distinction between accommodationism and structuralism within post Keynesians. He noted that both approaches however, shared a common starting point, that "the rate of money [stock] growth and, more important, credit availability, are fundamentally determined by demand side pressures within financial markets." The early differences, as Dow (2006) noted, could better be described as misunderstandings, where authors were writing at cross purposes and utilising terminology with different understandings of the definitions thereof.

The differences in theory, according to Palley (1991: 398), typically regarded the nature of accommodation by the central bank, and the resulting shape of the money supply curve. As Dow (2006: 35) noted, this had implications for how much the central bank could be expected to affect monetary conditions. With further exposition of thinking and discussion amongst post

Keynesians it appears that the differences were fewer. Lavoie (2006: 24) later explained that the differences were largely a matter of emphasis, where the initial intention of post Keynesians such as Moore and Kaldor was to distance themselves from monetarism and to emphasise the endogeneity of *money creation*, rather than to provide an exposition of the practical nuances of central banking.

The structuralist approach, as clarified by Dow (2006: 37), rather than contradicting the horizontalist approach, added an additional layer of consideration. As she explained, there was a need to incorporate different national and institutional structures when applying the endogenous money theory in practice. There were practical constraints to the level of credit extension, and structural and institutional considerations were important when assessing the impact of various policy measures.

Lavoie (2006: 19), an advocate of horizontalism, contrasted the horizontalist and structuralist approaches and identified several reasons why the suggested restrictions against monetary (credit) expansion might not apply in the immediate term. In his conclusions he suggested that the ultimate monetary expansion effects over time could resemble both the horizontalist (flat money supply curve) and structuralist suggestions (initially suggested to be an upward sloping money supply curve).

The use of various apparatus (such as supply curves), as Dow (2006: 37) concluded, appears to have obscured the most potent innovation of the post Keynesian theory, that *money creation*, however restricted, was fundamentally *demand determined (driven)*.

As noted in Godley and Lavoie (2007: 2) there was a great need for a unified framework within which to assess the workings of a monetised (post Keynesian) economy, in the true spirit of Keynes. Prior to 2007 they were frustrated by the reduction of post Keynesian publication and overriding dominance of mainstream theory, particularly in economic teaching. Unfortunately, as noted by Rochon and Lang (2012: 387), the prominent post Keynesian modelling specialists have yet to embrace a comprehensive structure. Fortunately, as noted by Seccareccia (2012: 278), in the wake of the 2008 crisis, mainstream economic theory has been unable to explain

the severity and causes thereof, and post Keynesian research has once again become a fruitful area of academic interest.

3.3.1.2 Post Keynesian theory and the theory of the monetary circuit

Although not strictly 'post Keynesian', the CTOM resembles the arguments proposed by post Keynesians in the 1970s almost verbatim. Le Bourva (1959, 1962) published in French the theory of the monetary circuit over ten years before Kaldor's (1970) scathing response to monetarism. He also quoted several authors, including Wicksell of the banking school, as the origins of several of his theoretical positions, suggesting that the ideas presented by post Keynesians were not as novel as they appear to be in several of the earlier texts.

According to Fontana (2000: 43), later circuitists, including Graziani (1996), specifically recognised that Keynes had presented several of the underlying theoretical concepts that they used. Fontana (2000: 28) included Marc Lavoie amongst the advocates of the circuit theory of money, although he is well published in the Post Keynesian Journal of Economics (Godley and Lavoie, 2001, 2006). While we do not suggest that Keynes was the ultimate source of these theories or even the inspiration for their development, we believe it is safe to say that both post Keynesians and circuitists are in fact both post-Keynes, and as such we will refer to them as a single group. As summarised by Fontana (2000: 44), the primary difference between the two schools of thought was a question of emphasis rather than disagreement. He believed that the post Keynesians had focussed on the role of a store of value in the face of uncertainty and the impact of inter-temporal transfer of purchasing power to an indeterminate future. The circuitists, he suggests, focused more on the importance of the availability (and creation) of a medium of exchange in the initiation and perpetuation of productive activity.

An additional distinction described by Bossone (2001: 859) is that the CTOM typically focussed on macro rather than microeconomic aspects of financing. Something that was necessary for the discussion of aggregate circuit flows of money.

The work of Wynn Godley in Godley and Cripps (1983) and Godley (1999), together with his work with Marc Lavoie (2001, 2003, 2006, 2007), would appear to be representative of a bridge between the two theories. Godley's exceptional and complex model resembles very closely the

circuitists approach. His (Godley, Lavoie 2007) (xxxvi) self-confessed detachment from theoretical frameworks was a serious motivation to work with Lavoie, while he specifically associates his perspectives with those of Nicolas Kaldor (a renowned post Keynesian). Their model (Godley and Lavoie, 2007) is the culmination of over 30 years of development and boasts the ability to integrate the detail of microeconomic behaviour into a cohesive stock-flow accounting model, in order to be able to model macroeconomic circuit flows of money in an economy.

Attribution aside, both post Keynesians and circuit theorists believed that the existing framework within which the macro economy was depicted was outdated and deeply flawed, which induced Chick (1993: 80) to comment that it seemed to her "that we economists [we]re still using theoretical structures developed in the 1930s or earlier, having lost track of the assumptions that gave validity to our theories; or we have given ascent to ideas that do not match reality at all."

3.3.2 Nature of money

As with the monetarist section before, we are interested in what post Keynesians believe to be "money". Unlike the monetarists, who gave only vague clues as to the real life manifestation of money, early post Keynesian writers such as Kaldor (1970: 7), clarified the issue up front, he noted that "what at any time is regarded as 'money' are those forms of financial claims which were commonly used as means of clearing debts." While this may have appeared a vague description, he was critically aware of the fact that money could take any form.

At the time Moore (1983a: 120) and Kaldor (1985: 6) noted that the majority of such claims were represented by bank deposits[55] (kept in non-interest bearing cheque accounts), which, as described in the section above, were created as credits against the extension of bank loans. Post Keynesians thus viewed money as having a temporary existence, where it exists while there is a debt outstanding, and when the debt is repaid the tokens (credit money) issued are extinguished.

[55] Both referring to the United States of America, and to England.

As noted by Lavoie (1984: 791), money could be described as two separate concepts, "credit-money" (or money creation by borrowing) and "income-money" (or asset money). Income-money would comprise credits that have been distributed to households via factor payments, but that have not yet been returned to borrowers for the repayment of debt. He noted that the recipients of money have the option of holding it, and as such it comes to resemble an asset (asset money), subject to portfolio choice decisions. As he explained, however, portfolio choice, from quantitative point of view therefore only affects how and how quickly the credit money will get back to the agents who originally borrowed it, in order to repay their debts.

This separation lends itself to both the post Keynesian concerns with uncertainty, and the circuitists concerns of the creation of the medium of exchange.

3.3.3 Nature of money creation

How money is created is once again important. Post Keynesians believed, as is historically the case and noted again above, that bank deposit money was created as a by-product of the extension of loans.

As Moore (1983a: 120) pointed out, the "evidence suggest[ed] that the quantity of bank intermediation is determined primarily by the demand for bank credit." He also noted that loans were acquired by demand, and therefore deposits were created according to contract. As Moore (1991a: 126) explained, "for all goods produced 'to contract', the supply depends on contractual orders."

He went on to explain, credit money (bank deposit money) is created exactly according to contractual order in terms of loans, and as a result it is impossible for an "excess quantity of money" to be created. All money in existence came about due to demand driven credit extension. As he (Moore, 1991a: 126) exclaimed, "[o]ne cannot have a supply of credit money independent of the demand for credit money, any more than one can have a supply of haircuts independent of the demand for them." Le Bourva[56] (1992: 448) explained "at the very least, that bankers and borrowers share the responsibility."

[56] Section translated from Le Bourva (1962).

At an aggregate level, as noted by Le Bourva (1992: 454) and Bossone (2001: 865), all money in existence is thus necessarily the counterpart of a bank balance sheet entry on the asset side (a loan). Consequently, all repayment of loans also necessarily reduces the level of deposits, and all new issues of bank loans increase the level of deposits. The net effect of which can be observed in the growth rate of various monetary and credit aggregates.

Post Keynesians discredited the notion that central bank reserves are an imposed limitation, and emphasised the practical necessity for accommodative behaviour by central banks[57]. As explained by Moore (1983b: 544), if the central bank did not accommodate the banks, and banks had already lent money and created deposits, it would be impossible (no matter how hard they scrambled) for them to collectively meet their reserve requirements. Le Bourva (1992) suggested in 1962 that it "therefore seem[ed] necessary to abandon the concept of money multipliers, which [were] relics of the quantity theory of money, and to find another technical explanation for the development of bank credit."

Lavoie (1984: 784) noted that most modern monetised economies are overdraft based systems, which means that "commercial banks [could] own reserves at the central bank, but a large part of their liabilities [with the central bank] … constituted of *advances from* the central bank … [and] the latter promise[d] to produce [sufficient] high-powered money, whenever required, at a given rate"[58], a point reemphasised by Dow (2006: 35). The role for the central bank was thus considered to be entirely different to that suggested by monetarists. Rather than an autocratic role in the determination the stock of reserves, the central bank played the role of accommodation of the liquidity needs of the country, and certainly no causal role in the creation of money.

[57] Le Bourva (1992: 459) noted that the banking system as a whole was not restricted in terms of the total quantity of money that could be created. He also explained that individual banks might have limitations, depending on the risk they faced to their liquidity (possibly due to clearing house deficits or an inadequate re-deposit ratio), and that individual borrowers might equally face definite limitations depending on their particular risk profile. This however did not detract from the fact that the banking system is not quantity constrained, especially not via the imposition of high-powered money restrictions.

[58] As noted by Lavoie (2006: 22) "in the USA, over the reserve-averaging period, the Fed supplies high powered money on demand, as in overdraft economies or in zero-reserve financial systems, but it is unable to do so perfectly on a day-to-day basis."

The permanent availability of borrowed reserves from the central bank implied that banks are not, and cannot be, quantitatively constrained in terms of lending[59]. There is thus theoretically an unlimited quantity of money available for creation[60]. Moore (1983b: 544), explained that at least in the very short term this would result in a horizontal 'money supply' curve[61], in extreme contrast to the vertical 'money supply' curve suggested by the CMN schools of thought.

Post Keynesians might say that "money supply" at an aggregate level should correctly be termed monetary accommodation, since the supply of liquidity (credit money) actually happens at a micro level and is only accommodated at a macro level (bottom-up rather than top-down). As noted by Lavoie (1984: 775) post Keynesians collectively reject the notion of a money multiplier[62], since deposits do not magically appear (even from Friedman's helicopter).

Any relation between the level of reserves and the level of the money stock is referred to as the credit divisor. This, as Lavoie (1984: 779) explained, is the result of an accommodation of new money creation. Credit is extended, and based on the total level of deposits in existence the central banking system enforces a particular level of reserves in order to secure the benefits of centralised reserves for efficiency purposes. As he (Lavoie, 1984: 779), Kaldor (1985: 11) De

---

[59] As noted by Arestis and Eichner (1988: 1008) the "existence of substantial "unused overdraft facilities" and "open credit lines" supports this proposition. These credit facilities, which are not included in monetary aggregates and the utilization of which is at the discretion of the banks' borrowers (not the banks themselves), are reported as having exceeded bank demand deposits in the United States in 1980." Palley (2002: 160) on the other hand argues that these credit lines are typically provided with variable interest rates, normally linked to the prime interest rate. As a consequence the monetary authorities can *de facto* extinguish these credit lines by raising interest rates sufficiently. Nevertheless, these contractual credit lines do exist.

[60] This is subject, as explained by Bossone (2001: 871), to the structure of the banking system, corporate and banking negotiation power, the creditworthiness and availability of borrowers, the relative size of banks and, as Disyatat (2011: 728) emphasised, the balance sheet positions of both banks and borrowers.

[61] As Le Bourva (1992: 450) explained, at a given bank interest rate, the supply of money is said to be infinitely elastic, unless the credit policy adopted calls for quantitative limits. In practice, however, any such limits will frequently be shifted to prevent business ventures from being squeezed."

[62] This has since been reinforced by research conducted by Carpenter and Demiralp (2012: 73), who concluded, based on a VAR assessment of the United States' monetary system, that in addition to institutional arguments, the "relationships implied by the money multiplier do not exist in the data for the most liquid and well-capitalized banks", and that the textbook role of the multiplier is not and has not been operative historically. Lavoie (1984: 775) also noted that Post Keynesians do recognise the Keynesian spending multiplier (or credit multiplier), and pointed out that this credit multiplier, while important, is not causal and thus cannot explain prices or employment. He also noted that while the change in credit affects spending and can affect aggregate demand in a multiplicative manner (depending on the velocity of money) the credit multiplier does not affect the quantity of money (credits) *at all*. The credit multiplier, like money, is a residual effect of endogenous conditions and money creation. Disyatat (2011: 714) demonstrated that for various operational system structures (of Japan, the United Kingdom, New Zealand and Thailand) that "[t]here is no direct link between monetary policy and the level of reserves, and no causal relationship from reserves to bank lending."

Kock (1954: 152) and Faure (2014: 139) explained, the purpose of open market operations was to create a liquidity shortage (of central bank money) to force banks to utilise the discount window, and so make the administered discount (or key) interest rate effective.

This allowed the central bank to indirectly exercise control over the price of new money creation[63], but very importantly, not over the quantity thereof. It is thereafter emphasised that while the level of accommodation of a particular kind of money can be restricted[64], the level of money (credit) demanded and created cannot be forcibly increased by monetary authorities[65], thus an imposed or excess 'supply' is impossible[66]. To summarise, Lavoie (1984: 784), referring to Kaldor (1982: 241), stated that "monetary policy is represented not by a given quantity of money stock but by a given rate of interest; and the amount of money in existence will be demand-determined."

3.3.4 Causality

The endogeneity of money has unsurprisingly been explored extensively by post Keynesian authors. Depending on the context of the argument the term endogenous can be utilised to describe an enormous variety of circumstances. Palley (2002) presented a comprehensive review of a variety of ways in which money can be termed endogenous[67], and while these are

[63] As Lavoie (2006: 24) explained, a borrower's risk level would determine the interest rate at which banks would require in order to lend, and that all such rates would be priced off of the base interest rate, determined by the central bank.

[64] Moore (1983b: 545) noted that "banks have some scope for affecting the quantity of loans granted through non-price terms, e.g., collateral requirements applied to discriminate among the fringe of unsatisfied borrowers."

[65] Ignoring the relatively unimportant element of notes and coins, and here assuming that the vast majority of money stock is in the form of bank deposits. As noted by Lavoie (1984: 789), an "historical example can be found in the large free reserves of U.S. banks during the Great Depression."

[66] A point to note here is that the government could borrow (create) money by borrowing from the banking sector, and in so doing create an excess of money. Also, in some cases the central bank acts as banker to government directly, in which case, when the central bank lends money to government *directly*, there is money creation.

[67] Depending on the context of the argument the term endogenous can be utilised to describe an enormous variety of circumstances. Palley (2002: 66) described "evolutionary endogeneity, central bank endogeneity, fiscal endogeneity, money multiplier portfolio endogeneity, credit money endogeneity, financial intermediary supply-side endogeneity, monetary circuit endogeneity and open economy endogeneity." These various forms of endogeneity appear along the full spectrum of: the history of the existence of money; the selection of what token will represent money; the sectoral allocation of money balances; hypothetical alternative financial system structures; the direct or indirect ability of central banks to effect changes in the quantity of money in circulation; the direct or indirect ability of the central bank to affect the decisions of borrowers and banks; the influence of government financial requirements; the effects of portfolio choice decisions (by individuals and banks); the possibility of asset and liability management by banks; the effect of foreign exchange within various regimes; the existence of multiple monetary circuits.

not all directly relevant to this research, they highlight the importance of presenting endogeneity explicitly.

Causality is investigated by post Keynesians in the direct sense. As such, we are interested in the direct causal actions that result in new money, rather than the underlying factors that influence the behaviour of those parties involved in the act of money creation[68]. In light of the potential complexity, the task set here is relatively simple. We are interested in who initiates the creation of money, who creates the money, what happens when the money is created, in what order those actions occur, and how this can be observed (confirmed). We also contrast this to the vague and incomplete description provided by the CMN schools of thought. We are thus interested in the endogeneity of the act of creating money, with a focus on realistic events in most modern monetised economies.

Post Keynesians present a reversed causal process (endogenous rather than exogenous), and this has been demonstrated in a number of ways, including: qualitative descriptive explorations of bank and central bank processes[69], philosophies[70], institutional mechanisms[71] and the temporal ordering of lagged fractional reserve accounting[72]; formal causality tests[73]; historical records of the development of money and the creation of money[74]; microtheoretic models of banking[75]; critical analysis of the methodological and philosophical foundations of CMN and KPK schools of thought (and economic theory in general)[76]; detailed pedagogical

[68] The *de facto* underlying causal reasons for the motivations of the parties involved is far more complex an issue, and beyond the scope of this research. The interested reader is referred to Lavoie (1984: 781) for a discussion of effective demand, for a discussion of the role of pre-financing in a monetised economy Kaldor (1970: 16), Moore (1983b: 547), and Rochon and Rossi (2006: 4).
[69] Le Bourva (1992: 451) noted that the quantity of money increases regularly without substantial changes in money market interest rates or bank rates, suggesting that changes in quantity do not affect the 'price' of new money, as suggested by CMN schools of thought. Covered also in great detail by De Kock (1954), and Faure (2013a, 2013b, 2013c).
[70] As covered in detail by Dow (1985, 1999, 2001, 2005, 2007, 2008, 2010), and Chick and Dow (2001, 2002, 2005).
[71] Arestis and Eichner (1988), Dow (2006), Lavoie (1996, 2006).
[72] Godley and Cripps (1983), Godley and Lavoie (2007).
[73] As explained by Moore (1983b: 540).
[74] As covered in great detail by Faure (2013d).
[75] As explained by Moore (1983b: 541).
[76] Explored by Chick (2003).

demonstrations of the balance sheet impacts of bank lending[77]; and comprehensive stock flow accounting models of entire economies[78].

In the spirit of the Babylonian mode of thinking (and critical realism), post Keynesians have typically focused on the micro causal factors, from which they conclude that at an aggregate level it is impossible that causality can run in a top down fashion. As noted above, post Keynesians recognised that the majority of money in circulation was bank deposits, and that the creation of these deposits was the result of bank lending. The focus therefore is on the direct causal events that result in bank lending of various kinds[79].

Some factors are generic to all loans. Crucially, *all loans* are initiated by the borrower[80], and therefore all money creation is initiated by an economic agent that demands credit. Bossone (2001: 860) explained that the CTOM divides the economic participants into four groups: firms; households; banks; and non-bank financial intermediaries. He (Bossone, 2001: 869) emphasised that the separation of banking from financial intermediaries is crucial; he explained that banks *are not* financial intermediaries in the sense that they do not intermediate between deficit and surplus units when lending money[81]. He emphasised that banks create liquidity, allow for the transfer of liquidity via the payments system and retire liquidity on repayment of loans, while lending by non-banks transfers existing liquidity from surplus units to deficit units, and thus constitutes intermediation and possibly asset transformation.

---

[77] Presented by Faure (2013d).
[78] Covered in progressively greater depth by Godley and Lavoie (2001, 2003, 2005, 2007).
[79] According to post Keynesians the causal motivations for the creation of money, as Le Bourva (1992) had in 1962 noted, were necessarily (and still are) the same as those that could be identified for the demand for credit. Primarily the need for liquid balances in order to engage in consumption or investment. As he explained, the initial causal motivation for borrowing money (money creation) is dependent on the borrower, however all borrowers have the same direct causal reason for borrowing. That is, that they do not have enough liquid capital (money) at their disposal to spend on what they want to or need to. Due to the general acceptability of money as a medium of exchange, liquid balances allow the borrower to access the resources of the economy in order to pursue their short term objectives (spending).
[80] One instance where this might be disputed is the telephonic interbank market, where traders for banks with an excess clearing balance at the central bank offer to place funds with banks that have a shortage after the clearing process. This however is an artefact of the interbank borrowing market, which effectively operates as a secondary market for existing money balances. No new money is created as a result of these interbank loans.
[81] This discredits the concept of asset transformation by banks. If this theory holds, the idea that banks convert illiquid assets into liquid deposits and vice versa is deeply flawed, since banks create both the loans and deposits simultaneously. The idea that banks extend loans as a result of their ability to accumulate deposits (intermediate between lenders and borrowers) would then be equally false.

For bankers to be able to respond to the demand for credit without limits, Le Bourva (1992: 449) explained, the loans extended must be able to satisfy the demand for credit and simultaneously create the assets required to meet those demands. Post Keynesians, such as Faure (2013d: 16), have once again emphasised that this is precisely the case, and that the initial extension of a loan simultaneously increases the asset (loans) and liability (deposits) side of the lending bank's balance sheet.

Godley and Lavoie (2007: 22) emphasise that this also automatically requires a double entry on the counterpart's balance sheet (borrower) to both the asset (deposits) and liability (loans) sides. They refer to this as the quadruple entry principle. This is a basic explanation of flow of funds accounting. They note that balance sheet records of economic participants, where available, provide valuable insight into the ordering of events in time, as well as context into the expected uses of borrowed (newly created) money. Godley and Lavoie (2007: 9) noted that depending on the granularity of data (especially in terms of time frequency), micro causal factors could be identified (observed directly in an accurate time sequence) and modelled accordingly. Collection of and analysis of individual transactions data, however, they noted, is close to impossible due to both the massive volume of data and the confidentiality considerations regarding personal financial data.

According to Faure (2013c: 14), the ultimate borrowers in a financial system can form part of the corporate sector, the household sector, the government sector, or the foreign sector. He (Faure, 2013c: 97) explains also that banks alone can create money; however there are additional instances where money can come into existence other than as a result of the extension of bank credit.

Van Staden (1963) (xiv) had previously explained that at an aggregate level these changes could be observed by reviewing the collective balance sheet of the monetary banking sector. Faure (2013c: 97) elaborated on and simplified this explanation by presenting a reduced version of the collective balance sheet of the monetary banking sector. This simplified balance sheet is presented below.

TABLE 3.3.4.1: SIMPLIFIED BALANCE SHEET OF THE MONETARY BANKING SECTOR

BALANCE SHEET OF THE MONETARY BANKING SECTOR (MBS)	
Assets	**Liabilities**
D. Foreign assets E. Loans to government F. Loans to the NBPS	A. Notes and coins of NBPS B. Deposits 1. Government 2. NBPS C. Foreign loans

Source: Faure (2013c: 101)

Faure (2013c: 101) then explained the following identity[82]:

$$M3 = A + B2 = (D - C) + (E - B1) + F$$

M3 is the commonly referred to broad monetary aggregate, of which bank deposits together with the cash in the hands of the non-bank private sector (NBPS) are the direct components (thus M3 = A + B2).

The other components constitute the remainder of the balance sheet, and due to the principles of double entry accounting, any change in M3 will be reflected in a change of one or more of the remaining components.

D – C = Foreign assets net of loans to the MBS by foreigners (i.e. forex borrowings)
E – B1 = Loans to government (net of government deposits with the MBS)[83]
F = Loans to the non-bank private sector (NBPS)

These are the balance sheet counterparts to money (M3), and can be abbreviated to net foreign assets (NFA), net loans to government (NLG) and loans to the non-bank private sector

[82] A proper definition of each of the underlying components is vital for an accurate understanding of this identity. It is presented here in a pedagogical format in order to maintain clarity in the discussion.
[83] As noted by Brink and Kock (2010: 11) the use of tax and loan accounts, held by the commercial banks, as opposed to with the central bank, helps to minimise the disruptive impacts of loans, tax receipts and transfers of government deposits.

(LNBPS). As Faure explains, it is then easy to show that a change in money will be reflected by a change in one or more of these counterparts. Thus the identity:

$$\Delta M3 = \Delta NFA + \Delta NLG + \Delta LNBPS$$

The contention of post Keynesians is that the changes in M3 are a residual effect of the actions that result in the changes of the counterparts of M3. Faure (2013c: 115) explains that of these counterparts, changes in LNBPS constitute the overriding balance sheet source of change in M3 in most countries[84].

Van Staden (1963: xiv) presented the analysis of this phenomenon as a tool for monetary analysis at the South African Reserve Bank (SARB) in 1963. We will cover this method in greater detail below; however at this point we are interested in the reasons why these observable counterparts might change.

Net foreign assets

As explained by Faure (2013c: 102) banks and the central bank make portfolio choices with regards the conversion of foreign exchange assets (money balances) into domestic assets (money balances). To the extent that domestic currency is created (foreign currencies purchased), the quantity of money (domestic liquidity) will increase. To the extent that banks and the central banks extinguish domestic currency (sell foreign currency), the quantity of money will decrease. As he explained, changes in NFA are thus essentially portfolio choices made by members of the MBS that are authorised to purchase and sell foreign currency. These choices are heavily influenced by the composition of international trade (trade balance), international liquid capital flows, and central bank (National Treasury / governmental) exchange rate stabilisation policy. Apart from the central bank reaction function, these portfolio

[84] Apart from the obvious proportional dominance of LNBPS, the influence of other forms of money creation are actively reduced to nil. Lavoie (2006: 31) notes that this is because central banks engage in defensive neutralising activities in order to minimise the impacts of both governmental and foreign exchange fund transfers on the domestic monetary environment. This is primarily due to the fact that central banks target short term interest rates, which would otherwise experience upward or downward pressure due to these fund transfers. As explained by Lavoie (2006: 30) methods of neutralising foreign exchange fluctuations include; under fixed exchange rates – the compensation mechanism; In a currency board – transfers between government tax and loan accounts and the CB accounts of the exchequer; In an open economy – the compensation mechanism, which arises from the decision of central banks to keep short-term interest rates constant.

choice decisions are essentially beyond the control of monetary authorities and are determined endogenously by prevailing economic activity.

Net loans to government

Faure (2013c: 102) noted that changes in the quantity of money occur when banks and the central bank change their holdings of government securities. If government banks with the central bank directly, transfers from the NBPS to government (for example the payment of taxes), and from government to the NBPS (for example for services rendered) would decrease and increase the level of money (domestic liquidity) in the hands of the NBPS respectively. In practice this decision is indirectly influenced by the needs of government (both national and local) to manage the term structure of their debt (retirement and re-issue of government bonds and treasury bills) and to meet budgetary requirements (to correct the misalignment between receipts and expenditures), and portfolio decisions of private and MBS participants[85] regarding their purchase and holding of government issued debt[86].

Loans to the non-bank private sector

Faure (2013c: 103) explained that the satisfaction of the loans demanded by the NBPS from banks will result in an increase in the level of money stock in the hands of the NBPS, as we have explained previously. Repayment of these loans will equally result in a reduction of the level of money stock. As we have discussed in detail in this section, the issue of debt to the domestic private sector (regardless of the participant in question) is the result of the satisfaction of the demand for credit at a particular price. As also noted above, the quantity of new lending is beyond the control of monetary authorities, except to the extent that monetary authorities exercise an indirect, but powerful, influence over the price of new credit money (interest rates).

In summary, according to post Keynesians, all new money creation within an economy is either initiated by or a reaction to prevailing *endogenous* economic conditions, and the change in the quantity of money in all circumstances occurs *after* the actual cause of change. The central

[85] In which we include the central bank of any particular country.

[86] The utilisation of open market operations by monetary authorities might be a point that Monetarists raise as an imposed creation of money by the central bank. As Lavoie (2006: 30) explained, these operations are actually the method via which authorities maintain the integrity of the payments system via the neutralisation of disturbances to domestic monetary conditions.

bank does not play a direct causal role in any of the above events, but can, if it deems necessary, respond to these changes. Post Keynesians emphasise that it is therefore impossible for money (M3) to be a primary causal factor in economic processes[87]. All bank deposit money is created by banks, and banks alone. This money is automatically credited to the deposit accounts of those on whose behalf it was created, resulting in an observable balance sheet event for both the bank and the borrower. One's theoretical disposition becomes largely irrelevant as the flow of funds (causal ordering) is therefore *directly observable*.

As a concrete example of such a balance sheet, the collective balance sheet of the monetary banking sector in South Africa for the final quarter of 2013 is presented below[88]. The degree to which the counterparts of money can be analysed depends on the level of detail collected and stored by the lending institutions and monetary authorities with regards the debt contracts issued by banks, as well as the accuracy with which borrowers represent their intentions when money is created on their behalf.

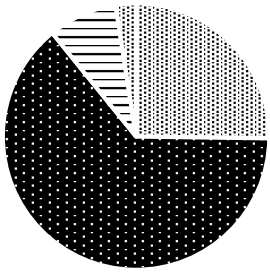
The degree to which monetary policy can pre-emptively influence changes in these counterparts depends heavily on the sensitivity of the respective agents to changes in interest rates.

Just below are two charts providing a visual cue with which to interpret the data in the balance sheet which follows. For effect the counterparts in Figure 3.3.4.1 below, as per Table 3.3.4.3 have been shaded similarly.

[87] Le Bourva (1992: 452) noted that an increased demand for money (for whatever purposes) could be observed through more intensive use of deposits and overdraft facilities, and that because borrowing is expensive, new money would only be created after those with excess balances had exhausted their idle balances (dishoarded).
[88] Note the additional inclusion of net other assets and liabilities. The reason for the relatively large size of this balance sheet component is discussed later in the balance sheet analysis.

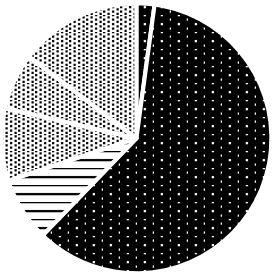
FIGURE 3.3.4.1: ASSETS AND LIABILITIES OF THE MONETARY BANKING SECTOR (MBS): SOUTH AFRICA, DECEMBER 2013

Composition of assets of the MBS: South Africa, 2013 Q4



- MBS A: Total foreign assets
- MBS: Total credit extended to the private sector
- MBS A: Gross claims on the government sector
- Other assets of the monetary sector (Excluding foreign assets of government)

Composition of liabilities of the MBS: South Africa, 2013 Q4



- MBS L: Banknotes and coin in circulation
- MBS L: Total deposits of domestic private sector
- MBS L: Government deposits
- MBS L: Total foreign liabilities
- MBS L: Total capital and reserves
- MBS L: Other liabilities

Source: SARB (2014b)

TABLE 3.3.4.2: BALANCE SHEET OF THE MONETARY BANKING SECTOR: SOUTH AFRICA, DECEMBER 2013 – ASSETS

Balance sheet of the monetary banking sector (MBS): South Africa, 2013, Q4 (ZAR millions)

Assets	Foreign assets	Gold and foreign exchange	SARB A: Total gold and other foreign reserves	R	520 189			
			MBS A: Other banks' gold & foreign exchange(excluding SARB and government)	R	381 811			
			MBS A: Total gold and foreign exchange (excluding government)			R	902 000	
			MBS A: Long-term foreign assets			R	118 664	
			MBS A: Total foreign assets					**R 1 020 664**
	Claims on the private sector		MBS A: Claims of the SARB on the private sector			R	1 414	
			MBS A: Claims of the CPD on the private sector			R	4 249	
			MBS A: Claims of the Land Bank on the private sector			R	31 794	
			MBS A: Claims of other monetary institutions on the private sector			R	2 550 482	
			MBS: Total credit extended to the private sector					**R 2 587 938**
			MBS: Claims on local authorities	R	17 480			
	Claims on the government sector	Credit	MBS A: Claims on the government sector – SARB	R	8 208			
			MBS A: Claims on the government sector - CPD	R	47			
			MBS A: Claims on the government sector - Other monetary institutions	R	330 225			
			MBS A: Claims on the government sector - Total credit			R	338 480	
			MBS A: Gross claims on the government sector					**R 338 480**
			Other assets of the monetary sector (Excluding foreign assets of government)					**R 99 721**
			Total assets of the monetary sector					**R 4 046 804**

Source: (SARB, 2014b)

TABLE 3.3.4.3: BALANCE SHEET OF THE MONETARY BANKING SECTOR: SOUTH AFRICA, DECEMBER 2013 – LIABILITIES

Balance sheet of the monetary banking sector (MBS): South Africa, 2013, Q4 (ZAR millions)

Liabilities		**MBS L: Banknotes and coin in circulation**			**R**	**87 014**
	Deposits of domestic private sector, local authorities and public enterprises and/or corporations	MBS L: Cheque and transmission deposits of domestic private sector	R	549 221		
		MBS L: Other demand deposits of domestic private sector	R	495 692		
		MBS L: Savings deposits of domestic private sector	R	168 345		
		MBS L: Short-term deposits of domestic private sector	R	295 920		
		MBS L: Medium-term deposits of domestic private sector	R	455 736		
		MBS L: Long-term deposits of domestic private sector	R	466 200		
		MBS L: Total deposits of domestic private sector			**R**	**2 431 114**
		MBS L: Government deposits			**R**	**311 087**
	Foreign liabilities	Foreign liabilities of the SARB and CPD	R	7 475		
		MBS L: Other (depository corporations') foreign liabilities (SARB & CPD excluded)	R	343 952		
		MBS L: Total foreign liabilities			**R**	**351 427**
	Capital and reserves	MBS L: Domestic capital and reserves	R	257 869		
		MBS L: Foreign capital and reserves	R	15 777		
		MBS L: Total capital and reserves			**R**	**273 646**
		MBS L: Other liabilities			**R**	**592 516**
		Total liabilities of the monetary sector			**R**	**4 046 804**

Source: (SARB, 2014b)

TABLE 3.3.4.4: THE COMPONENTS OF THE BALANCE SHEET IDENTITY: SOUTH AFRICA, DECEMBER 2013

Monetary identity	Net foreign assets	NFA = Total foreign assets - Total foreign liabilities	**R**	**669 237**
	Net loans to government	NLG = Gross claims on the government sector - Government deposits	**R**	**27 393**
	Loans to the non-bank private sector	LNBPS = Total credit extended to the private sector	**R**	**2 587 938**
	Net other assets	NOA = Other assets of the monetary sector - Total capital and reserves - Other liabilities	**R**	**-766 440**
	Net Value		**R**	**2 518 128**
	M3	M3 = Banknotes and coin in circulation + Total deposits of domestic private sector	**R**	**2 518 128**

3.3.5 Economic growth and the roles of participants: Central banks, banks, firms and workers

In the post Keynesian macroeconomic setting, the roles of economic participants are directly linked to economic growth, and we therefore discuss the two topics as a single section. These roles are significantly different from those depicted by authors of the CMN schools of thought. We will describe the roles of various participants in the order in which they appear in an over-simplified single cycle version of the CTOM. The expansion into a multi-firm, multi-cycle model does not alter the fundamental roles explained below.

Firms[89] (entrepreneurs), as noted by Le Bourva (1992: 452), Moore (1983b: 546) and Lavoie (1984: 774) are the initiators of the monetary circuit. These entrepreneurs require access to productive resources (capital, labour and materials) required for production, and, in this simple model, the only option they have is to request the necessary credits from the monetary banking sector[90]. Firms present their ideas for production and expectations of future profits of sale to the commercial banks, in the hope that they will be supplied with the necessary means to access their factors of production.

Banks[91] assess the proposals of would-be borrowers and, depending on the level of credit-worthiness, they create credits (money) on behalf of the entrepreneurs. They create exactly the amount of money required by the borrower, and in modern economies this money is created as bank deposits[92]. Banks also provide the mechanisms via which transfers of these newly created liquid money balances can be made (the payments and clearing system).

---

[89] As noted by Bossone (2001: 860), firms are only those firms that are willing to borrow money in order to produce goods. Downstream commercial activity is captured by the definition of households. Therefore all firms are necessarily indebted to commercial banks. This is a crucial distinction. A business that is not indebted to the MBS is therefore considered to be part of the household sector.

[90] In the first instance money does not yet exist, and thus the sale of equity or any other method of finance is impossible.

[91] As Le Bourva (1992: 454) did, we imagine a system with only one bank, and ignore initially the complication of interbank clearing and debts. In the circuit system, banks are rentiers and extract an interest rental from borrowers, the initial extent of which is determined in the debt contract negotiation process. He also notes that banks can create the loans without ever even having to consider their existing holdings of deposits. In its functions, he explains, a bank is not an intermediary, but an institution "*specialising in the creation and cancellation of money*."

[92] This situation results from what Bossone (2001: 871) termed seigniorage, where banks enjoy the exclusive right to be able to create claims (liabilities / deposits) drawn on themselves, which are generally accepted as a means of payment. This exclusive right, he explains, means that firms have no other recourse for the creation of money on their behalf. It is important to note that the money created in the first instance by the bank amounts to the total capital repayment required by the borrower. He explained that this amount excludes interest payments that will be required to be paid by the borrower to the bank. When the debt is repaid, the additional money required to

Households[93] contribute a factor of production to firms (labour or other middleman services), and are remunerated for it. Crucially, households are willing to accept the money created by banks in return for their efforts. Firms therefore pay away the liquid balances that they have borrowed to a combination of other firms and households (materials and middleman services) and households (wages), and are thus able to produce goods and services. Households in the next instance must decide what to do with the liquid credits that are in their possession.

In a perfect cycle where all goods produced are exactly what households desire (supply is equal to effective or realised demand), households purchase all goods produced and the credits flow back through the payments system to the entrepreneurs (borrowers) and they are able to repay their debts at the bank. At this point the credits that were created are extinguished and the debts extinguished alongside them. As noted by Lavoie (1984: 774), "any flow of production [therefore] requires a flow of new credit or the renewal of past flows of credit [and] [t]he banking system creates the necessary credit."

In reality, circuitists explain, there are several potential impediments in the circuit flow of money that necessitate the existence of additional participants; Bossone (2001: 876) called these circuit breakdowns. One such breakdown, as noted by Fontana (2000: 32) and one that is reported as problematic by both post Keynesians and authors of the CTOM, is the hoarding of cash balances. He explains that post Keynesians recognise this as the problem of unfulfilled aggregate demand[94], and circuitists emphasise that these cash balances are stalled and therefore prevent firms from being able to repay their debt. In this way, Le Bourva (1992: 455) notes, money is both *a flow* and a stock, and the flow aspect is critically important. He expressed, in the 1960s, that "[h]oarding, or liquidity preference, seem[ed] to be a marginal phenomenon compared to those linked to the actual quantity of money."

service interest payments has to therefore be recovered from the money created for other borrowers, this imbalance between the amount of money created for a loan and the amount of money required to settle a loan can result in net transfers of wealth.

[93] Bossone (2001: 860) explains that households can engage in a combination of middleman (retail) services, and direct provision of labour.

[94] Fontana (2000: 32) explains that the holding of precautionary balances by savers in the face of uncertainty (that is in order to alleviate the risks imposed by an uncertain future) has the unfortunate and rather ironic impact of creating an even more uncertain future for firms, some of which will not be able to repay their debts.

This has important implications for the relationship between savings and investment, which is depicted to run from savings to investment by the CMN schools. A explained by Lavoie (1984: 775) and Rochon (2001: 291), referring to Lavoie (1992), "in sequential analysis in historical time, savings can only result from a prior act of expenditure. The creation of income, resulting from an increase in investment, leads to the creation of saving. Savings, therefore, cannot finance investment. In fact, savings[95] are a residual that drains the system: it depletes effective demand. This means that savings cannot cause investment."

Non-bank financial intermediaries[96] have an additional and vital role to play in the completion of the monetary circuit. Bossone (2001: 869) noted that they operate downstream of the money creation process, and allow for stagnant (precautionary) money balances to return to firms[97] in order to allow the repayment of debts. If firms cannot convince households to purchase their goods in the future, they may collectively be required to sacrifice equity in exchange for the money balances required to repay debts[98]. Bossone (2001: 870) emphasised that both banks and non-banks share the role on behalf of society of selecting those borrowers (entrepreneurs) that are likely to add real value to an economy[99].

Le Bourva (1992: 450) explained that the primary source of profit for banks is their assets (loans) and that in the absence of regulation they would engage in excessive lending, and put the stability of the system at great risk[100]. For production to be possible in future periods, it is

[95] It is important to note here that savings refers specifically to the holding of liquid cash balances, and not to the private procurement of financial securities of firms. This will be discussed shortly.
[96] Which, in the CTOM, form a part of the household sector.
[97] As Bossone (2001: 870) emphasised, both the commercial banking and non-banking financial functions could be carried out within a larger "universal" financial institution, but that this should not "shade their distinct nature and role in the context of the circuit process."
[98] He explained that in order for the monetary circuit to be completed, money balances need to travel back from those who receive the money as income (households) to those who borrowed it (firms), and that efficient financial markets are critical for the achievement of that end. Households that wish to retain a portion of their wealth (rather than consume their current income) have access to the financial markets, and through the offer of financial instruments, firms have the opportunity to recover some of the liquidity that is withheld by households. Albeit at the sacrifice of portions of ownership (in the case of the sale of equity), or the burden of future capital and interest payments (in the case of corporate debt). He also explained that firms have the ability to shift this dynamic in their favour, depending on the structure of the economy within which they operate.
[99] He (Bossone, 2001: 870) explained that the "complementarity of banking and non-banking functions is reflected in the information specialization that the two entail. Whereas banks … build up knowledge of their borrowers' day-to-day operations, liquidity needs, payment flows, as well as of short-term factor and product market developments, non-banks develop knowledge of longer-tem business prospects, investment potential, market trends, and changes in economic fundamentals."
[100] As noted by Faure (2013d: 11) there is evidence of this throughout the history of banking. As explained by Moore (1983b: 543) "the commercial banking system is the central institution in the liquidity-creating process.

vital that the credits created by the banking system continue to be accepted as a means of payment, and that entrepreneurs continue to be able to access financing. As explained by Kaldor (1970: 9), these conditions necessitate the existence of a regulatory function, typically assumed by the central bank.

Post Keynesians, such as Faure (2013d: 134) note that the central bank has in its power the ability to determine interest rates[101]. It is also in a position to monitor the behaviour of banks and to impose certain prudential requirements. As noted by Kaldor (1970: 9), this role is however interdependent on the ability of the banking sector to remain the overriding source of liquidity for businesses. Central banks have many roles, but for the purpose of changes in the money stock, the key roles played are therefore the accommodation of new bank lending[102] (and so ensuring that firms are always able to access liquidity if needed) and, as noted by Rochon (2001: 291), ensuring that changes to interest rates are made effective by commercial banks and in so doing ensure the long term stability of the financial system in general[103].

In summary, the circuit is started when planned productive activities of firms (based on profit expectation and expected effective demand) initiate the introduction of money (money creation by banks) into the economy. Banks create money on behalf of creditworthy firms at the cost of interest and this money facilitates the mobilisation of resources that would otherwise have remained dormant. The payment by firms for factors of production allows for households to make decisions regarding consumption (and potentially cause circuit breakdowns). In successive repetitions of the cycle, the future effective demand for goods determines which firms are successful and which firms fail. Central banks regulate the banking industry and provide several centralised services to facilitate the stability of the financial system, most

---

As a result by far the most basic obligation of all monetary authorities is to support, maintain, and encourage orderly conditions in financial markets generally, and in the commercial banking system in particular."

[101] A caveat is required here. Although this is indeed the case in almost all modern monetised economies (as demonstrated by Faure (2013d: 174), there are institutional and operational practices that are vital for successful operation of discount rate policy.

[102] Arestis and Eichner (1988: 1007) explained that a failure to do so would (and had in the past) "give[n] rise to one or more of the following effects: (a) a financial crisis, (b) a cyclical downturn, or (c) a rise in the level of interest rates. The last, and least undesirable, of these three possible consequences of a non-accommodating policy by the central bank is the one likely to be felt most immediately." As was the case in the USA during the restrictive practices of monetarism, Arestis and Eichner (1988: 1008) emphasised that in "the longer run, the effect of a non-accommodating policy is likely to be a series of financial innovations that further diminish the monetary authorities' control over the banking system." A point noted earlier by Lavoie (1984: 780).

[103] As explained by Moore (1983b: 543) the central rationale for the creation of central banks was to facilitate an elastic supply of currency, and in order to ensure that all financial assets were ultimately liquid (and thus the viability of the financial system as a whole), central banks would be required to stand as lender of last resort.

importantly, the role of lender of last resort, the centralised clearing of payments, and setting the price for new money (interest rates). Breakdowns in the circuit flow of money result in the need for additional participants, especially non-bank financial intermediaries.

Post Keynesians assert that economic growth is therefore the result of the satisfaction of the demand for credit[104], which, both in the immediate term (by the need for liquid balances) and in the long run (through the impact of effective demand), is demand determined, and therefore endogenous. Money (or more accurately credit) can therefore not be separated from the prospects of "real" economic growth, as is suggested by the CMN schools of thought. Long term sustainable growth therefore depends much more on the entrepreneurial ability of a country together with the stability of the monetary system, and reliable and predictable access to financing, than on a backward looking stable level of growth in the money stock (with little or no understanding of the actual creation and 'distribution' of the new money).

3.3.6 Implications for monetary policy: Drivers of inflation

The post Keynesian paradigm requires an eclectic approach to inflation. Post Keynesians perceive inflation (like the growth in the money stock) to be an endogenous factor, rather than a simple quantitative imbalance between the supply and demand for money. From a monetary policy perspective this necessitates a broad understanding of the possible sources as well as the micro-causal factors that might lead to inflation.

Inflation, from a post Keynesian perspective is considered problematic to the extent that it might divert attention of productive agents away from productive activities. It is expected to be able to do so by directing efforts towards protection against inflation-induced destruction of wealth.

After the 1970s, White (2006: 1) noted, most central banks have made their primary objective the achievement of an economic environment of stable prices (or more accurately a low and stable inflation rate). As noted by Chick (2003: 316), within a port Keynesian framework it is explained that inflation (or pricing patterns in general) are the result of *decisions* taken by

[104] Also, although the post Keynesian literature and the CTOM both focus on the creation of *bank* credit, both are also aware that money can take many forms, and that therefore so can credit providers take many forms. The emphasis is that money is created, provided that the credit extended is *not* simply a re-allocation of existing bank credits between economic participants, as would be the case with non-bank financial intermediaries. De Kock (1954: 127) explained the scope of central bank credit control to include such additional forms of credit creation.

economic agents. The future sales price of any item is determined and implemented *by firms*, partially based on the current cost of inputs, an appropriate mark-up[105], and expectations about future changes in input costs and effective demand for the goods produced.

As pointed out by Mohr (2008: 4), inflation is a process rather than an isolated event, and is characterised by a continuous increase in the general price level at a particular rate. In terms of the inflationary process, post Keynesians, such as Kaldor (1970: 16), and Moore (1983b: 542), identified increases in the level of money wages as the single largest contributor, particularly through the process of wage negotiation, or, as Dos Santos (2011: 295) refers, the distributive conflict between firms and workers.

According to Lavoie (1984: 793), money wages depend on a range of social, political and historical factors. Within this view, the rising demand for goods resulting from a wage increase drives price increases. An alternative view, as presented by Bossone (2001: 881), is that since the distribution of resources is determined at the close of the monetary circuit (after the sale of products), the increase in money wages paid by firms induces firms to raise their selling prices in order to secure a greater ultimate share of resources (which he terms the supply side effect, in this case resulting in capital accumulation in favour of firms)[106]. In a similar vein, Lavoie (1984: 793) noted that, even though accelerating investment or a shift in the degree of monopoly could induce (once off) price increases in the absence of nominal wage increases, he concurred with Kaldor and Moore that the primary cause of *inflation* (as a continuous process) is the struggle for a share of the profits of a productive economic process between the producers of goods and their labourers.

As Dow (2006: 36) explained, credit demand is primarily determined by expectations and expenditure plans (and firms spend money on factors of production), which are necessarily derived from price expectations, and, as such, the general price level or expected changes

[105] Specifically, Godley and Lavoie (2007: 17) advocate the use of Kalekian mark-up costing.

[106] Bossone (2001: 881) described in detail that the extent to which each of the major economic agent groups (firms, banks, and workers) were able to accumulate net wealth at the close of the monetary circuit depended on a range of factors. These included the general level of financial development, the strength of firms and isolation of wealth, the importance of individual investment decisions, and the bargaining power of each party at different points in the circuit (i.e. of banks at the circuit start, of households at wage negotiation, of firms at product pricing stage) relative to one another. The full detail is beyond the scope of the present discussion, however, this only serves to emphasise the importance of institutional and structural context when assessing various causal economic interrelationships.

therein are more likely to cause changes in the quantity of money than vice versa. In a post Keynesian system the quantity of money is not and cannot be constrained[107], and as such there is an inherent risk of an inflationary spiral where the expectations of rising expenses leads to higher prices, which lead to higher nominal wage demands, which again lead to higher prices, and so on. Expectations and the credibility of those expectations are thus very important.

As noted by Le Bourva (1992: 453), dishoarding (or changes in portfolio choice decisions) by households, can trigger price increases. Alternatively price increases (as charged by firms) could be met by the dishoarding process. As he explained, to the extent that firms are exposed to rising prices, they might utilise the expected increases in costs to justify additional credit from banks (via increases in their bills of exchange). He noted that since the amount of new loans could exceed those that fall due each day, the general price level (or rather the progression of changes in the general price level, the inflation rate) is "an independent variable: it does not depend on the quantity of money; on the contrary, the quantity of money depends on it." As Lavoie (2006: 17) again noted, post Keynesians therefore assert that the endogenous nature of money creation precludes any suggestion that money creation is a primary cause of inflation, regardless of whether the inflation is driven by rising demand or through supplier cost justifications.

Inflation is thus considered a dynamic process in which the expectations developed in previous periods influence the decisions made in the current period. The primary method of controlling inflation in a post Keynesian framework is to develop stable (and preferably low) expectations regarding the inflationary outlook for an economy. This has taken the form of prominent and well publicised inflation targeting objectives by central banks, which, Dos Santos (2011: 296) emphasises, must be credible (this will be elaborated upon in the following section). An alternative tool that he suggests that would be in keeping with post Keynesian theory is the use of incomes policies[108] to limit the extent of wage acceleration.

[107] As noted previously, it can be constrained, but only with severe economic casualties.

[108] As he explains, "incomes policies are defined as formal and informal institutions that structure and mediate the behaviour of price fixing and salaries so as to reduce conflicts over income shares." De Kock (1986a: 44) however, noted that the practical problems associated with the implementation of strict wage controls, would likely outweigh the anti-inflationary benefits, and thus recommended against these.

3.3.7 Implications for monetary policy: Tools available

This section will first introduce monetary policy within the post Keynesian framework. Thereafter we will briefly cover the primary mechanisms of monetary policy implementation within that framework. Thirdly we will discuss the additional tools utilised to ensure that the system does not suffer external disruptions, and, finally we will address how the post Keynesian monetary policy framework addresses the economic goal of low and stable rates of inflation (in light of the above discussion).

Post Keynesians, such as Godley and Lavoie (2007: 2), emphasise that due to the organic nature of the economy, any depiction of the workings of the economy or the transmission of monetary policy (or any other economically relevant action) can only be constructed as a reference point at one *particular point in time*. They make it very clear that it is neither possible nor heuristically useful to make deductive observations regarding the workings of the economy as a whole over extended periods of time, as institutions and behavioural patterns change drastically. Godley and Lavoie (2007: 10) also emphasise that this does not mean that the economy cannot be modelled, but that the steady state is simply an analytical device that can never in practice be reached. As they explain, the economy can and should be modelled, but the model (and its parameters) needs to be able to adapt to changes in the underlying behavioural patterns and institutional changes that are inevitable[109].

Godley and Lavoie (2007: 2) also emphasise that firms and individuals act with their own and separate interests, and that the employment of resources by firms is part of a non-ergodic progression of development. As a result there is no natural progression towards full employment, and that if full employment is an overriding economic goal for a country there is a necessity for state involvement. Within this view the ultimate goals of monetary policy can therefore only be achieved if implemented in conjunction with effective fiscal policy[110].

---

[109] As an example Godley and Lavoie (2007: 14) highlight that households hold a variety of assets and the choice between those assets should logically comply with Brainard and Tobin's (1968) principles of asset selection. In reality however, they note that even though this theory has been problematic to prove empirically, "there is no theoretical reason to assume that Tobin's asset demands are (stable enough to be) amenable to econometric treatment in the first place." Their emphasis is that while certain patterns may emerge, it is important that policy makers do not slip into the habit of generating long term average parameter estimates in lieu of seeking alternative methods to uncover and understand actual, real-time behaviours.

[110] Kaldor (1985: 9) went a step further and suggested that "there is no evidence to show that these are important objectives of economic policy that couldn't be equally well attained (and with far better prognostication of its effects) by fiscal policy."

Post Keynesians, including Moore (1983b: 539), recognised the importance of an elastic supply of credit money[111], as well as the dynamic and endogenous nature of the credit money needs of the monetary circuit. Arestis and Eichner[112] (1988: 1010) therefore emphasised that credit and its availability should receive attention, more so than monetary aggregates[113]. An elastic supply of money directly implies that the quantity *cannot* be fixed. Within the scope of monetary economics post Keynesians are therefore more concerned with money creation and destruction (credit) than they are with the residue of those processes (money).

As noted by Godley and Lavoie (2007: 2), post Keynesian theory constructed around stylised facts that can generally be verified in real life, and as such we would expect (as is the case) that the monetary policy tools within the post Keynesian framework are the same as those that can be found in practice. As noted by Brink and Kock (2010: 3), interest rate policy (where central banks target short term interest rates as operational targets) is by far the most commonly employed operational system in central banks around the world. In line with this, the primary tool of monetary policy in a post Keynesian framework is the price of credit, the interest rate.

The basic principle, as described by Faure (2013d: 169), is that the central bank sets the rate at which it is willing to lend liquidity to the commercial banks (key interest rate / discount rate / overnight rate / repurchase rate / REPO rate) and the commercial banks price their lending rates directly from that rate. As Dow (2006: 36), noted, and Kaldor (1970: 7) explained, "the ultimate monetary authority [therefore] can and does exercise control over the volume of borrowing, because it can control interest rates … and because, within limits, it can control the volume and direction of lending by the clearing banks[114], which have such a powerful role in the system as suppliers of credit." This type of central bank strategy is called discount rate (or interest rate) policy.

---

[111] Moore (1983b: 539) explained that the major historical factor that determined the need for the formation of the Federal Reserve System was an elastic source of liquidity to in order "to offset weekly, monthly, and seasonal shocks, and avert the resulting chaotic interest rate fluctuations and financial crises."

[112] This is a slight misnomer, as Philip Arestis published this article after the passing of Alfred Eichner, although the views do reflect those of both authors.

[113] This does not mean that post Keynesians are blind to the effects of a change in the general portfolio preferences of firms or households, Le Bourva (1992: 450) was very aware of the impact that changes in the structure of wealth and money holdings could have. The emphasis here is that, while such compositional changes are important, money is residual rather than causal. The implication of which is that for progress to be possible one should look to the causal factors rather than downstream artefacts of the system.

[114] In South Africa the terminology would be Settlement banks, or more generically, commercial banks.

Ultimately the success of discount rate policies depends on the extent to which the commercial banking sector responds to changes in the discount rate applied by the central monetary authority, as well as the extent to which external disturbances to domestic monetary conditions can be minimised (or neutralised). As noted by De Kock (1954: 129), there are numerous methods by which authorities can both encourage and attempt to enforce cooperation by the commercial banks[115]; however he emphasised that for the system to function properly a collaborative attitude between all monetary participants was recommended. Particularly in that commercial banks should endeavour to work closely with the central bank in order to achieve a collectively beneficial and sustainable long term environment.

Brink and Kock (2010: 3) note that one of three dominant mechanisms are employed by central banks in most industrialised countries and emerging markets. The first method is conducted through the implementation of borrowed reserves[116], where commercial banks are legally required to hold reserves with the central bank (which are not remunerated), and the central bank forces banks to borrow reserves (which it creates, at the cost of the key interest rate) in order to meet their requirements, thus making the key interest rate effective.

The second, which Brink and Kock (2010: 3) call a targeted market rate approach, is similar to the first except that the central bank only suggests the key interest rate, and then manipulates the money market in such a way as to ensure that the rate available to banks at the end of each day is close to or at the stated rate (this is the system employed by the Federal Reserve System, or Fed, in the USA).

---

[115] De Kock (1954: 129) explained, that there are three essential ingredients for successful central bank influence; firstly, the central bank should "be endowed with adequate statutory powers and resources; secondly, that all the commercial banks of any importance operating in a country shall be brought within the purview of the central bank and have direct customer relations with it, and that they shall regularly furnish the central bank with the requisite statistical and descriptive data concerning their operations; and thirdly, that the commercial banks shall co-operate whole-heartedly and intelligently with the central bank in the carrying out of its credit policy to the best of their knowledge and ability." He also emphasised that central banks should utilise their 'moral suasion' to influence the commercial banks to cooperate.

[116] Faure (2013d: 172) noted that the monetarist method of stipulating a fixed level of reserves, to which the banking sector is required to adjust, is called a *firm required reserves* system. The system described here he calls the *firm borrowed reserves* system, since the level of reserves is firm as a percentage of deposits, but the actual quantity will change depending on endogenous money creation. The level of borrowing (liquidity shortage) by banks from the central bank is then determined by the central banks through open market operations (liquidity drainage). Brink and Kock (2010: 3) explained that the central bank thus creates what is known as a liquidity shortage position and in so doing forces banks into the discount window (as in South Africa).

The third, as covered by Lavoie (2006: 19) is called the tunnel, or corridor system[117], or what Faure (2013d: 178) calls the interbank rate model. In this system, there may or may not be reserve requirements, however settlement balances (or reserves) are remunerated at a rate marginally below that charged for borrowing settlement shortages (in the case of Canada, 50 basis points below). As Lavoie explained, the Bank of Canada intervenes *only to neutralise external influences*, and relies on the fact that if necessary it would have the capacity to force banks to comply with the administered rates. As noted by Brink and Kock (2010: 2) all of these systems require liquid markets for short term large denomination debt instruments (money markets) and efficient interbank markets.

Post Keynesians demonstrate that most central banks around the world, including the Federal Reserve System of the USA, practice discount rate targeting strategies. As noted by Arestis and Eichner (1988: 1016) "the notion of a market equilibrium interest rate is simply a theoretical construct bearing no resemblance at all to the real world. The corollary of all this is that short-term interest rates are a set of politically administered, rather than market-determined, prices." A point which unsurprisingly severely undermines the monetarist notion of a market clearing 'price' for money. In reality, at the short end of the yield curve, interest rates are administered.

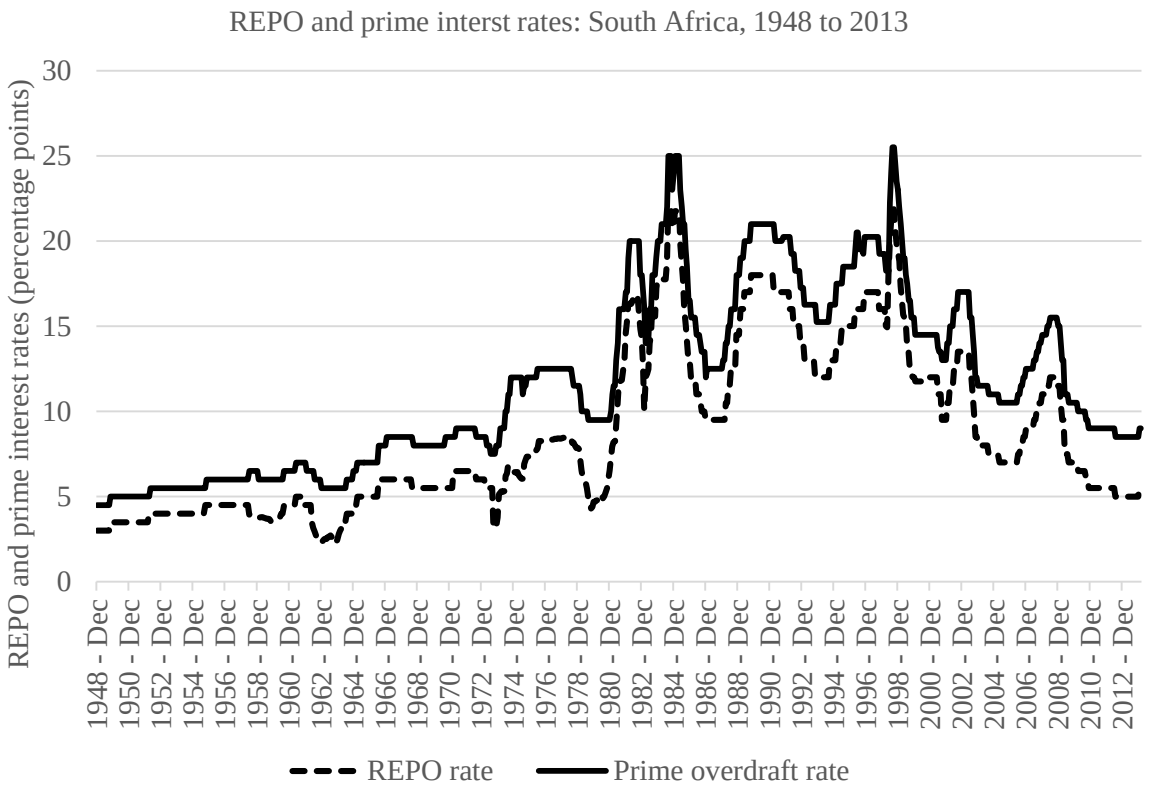
The interest rates on other debt securities adjust rapidly to these changes through a process of arbitrage, largely based on the discounted future values of comparative assets[118]. For the purposes of affecting the rate of money creation directly, this means that central banks have within their means the ability to almost exactly determine the price of new money creation.

[117] As noted by Lavoie (2006: 19), this system is implemented in Canada, Sweden, Switzerland, Australia and New Zealand. In Canada "there are now no reserve requirements. Banks may borrow freely from the Bank at the bank rate if they so desire (provided they have some collateral), and banks can deposit excess reserves at a positive rate, 50 basis points below the bank rate. There is an official target overnight rate, which is in the middle of the horizontal band delineated by the first two rates." Lavoie (2006: 19) explained that the successful implementation of interest rate policies is thus completely separable from reserve requirements.

[118] As noted by Moore (1988: 381), in the USA "all wholesale short-term rates are maintained through bank arbitrage closely aligned with the Federal funds rate, after appropriate adjustments for any maturity, liquidity, and risk differentials. An arbitrage process similarly operates to determine market long-term rates so as to equalize expected holding period yields. Long-term rates thus represent the weighted average of capital market participants' current expectations of the level of future short term rates which will be set by the Fed over the relevant maturity, plus any required liquidity premium."

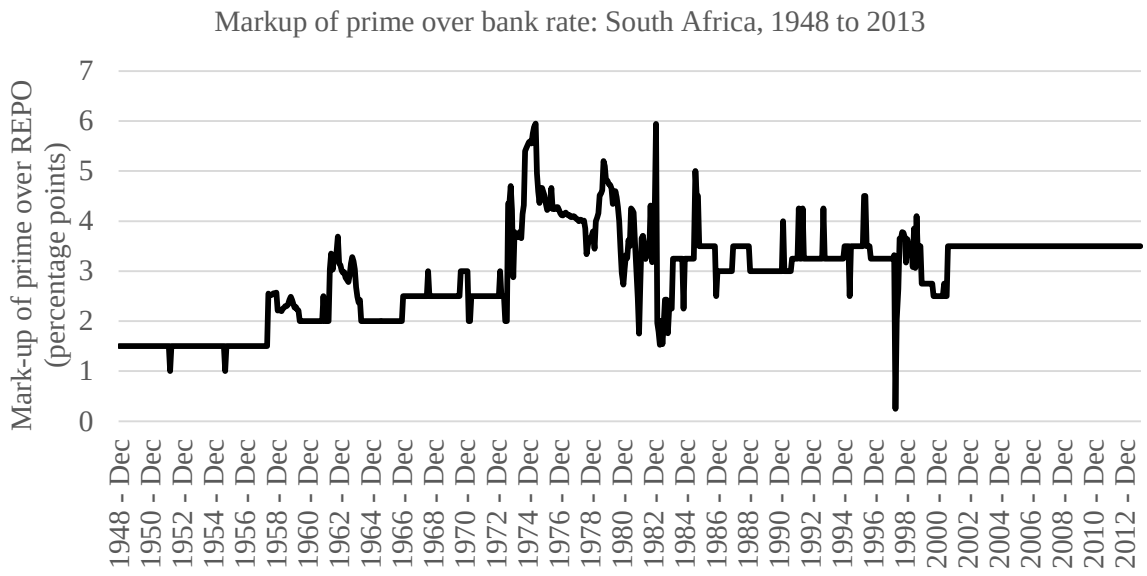
As another concrete example, the prime interest rate is presented alongside the key interest rate for South Africa below for 1965 to 2013. The chart which follows that is a graph of the difference between the two rates for the period 1948 to 2013, or rather, the mark-up that banks apply to the key interest rate (REPO rate) in order to get to the prime rate that they offer to their clients. As can be seen, since the modifications to the repurchase refinancing system implemented by the SARB in 2001 (Brink and Kock, 2010: 5), the month end mark-up has been exactly 3.5%. As noted by Lavoie (2006: 21), in Canada the prime rate follows the announced bank rate with a similar nearly constant 300 basis point premium, and adjusts to this mark-up within the same day as any announced change to the key interest rate without any need for central bank intervention in the money markets.

FIGURE 3.3.7: KEY INTEREST RATE (REPO RATE) AND PRIME INTEREST RATE: SOUTH AFRICA, 1965 TO 2013



Source: SARB (2014b)

FIGURE 3.3.8: MARK-UP FROM REPO TO PRIME INTEREST RATES: SOUTH AFRICA, 1948 TO 2013



Source: SARB (2014b)

As noted by Moore (1983b: 541), in the interbank market, banks are therefore price takers, and in countries where they are required to borrow reserves, they determine the quantity of reserves created on their behalf (depending on their needs). The opposite is true at the retail level, where banks set the prices for credit, and thereafter, the demand for credit by the non-bank private sector determines the net level of credit created or retired. Viewed in this way, *price is exogenously determined* and causality runs from the central bank, through the interbank system to banks, and finally to borrowers. *Quantity is endogenously determined*, and causality runs from borrowers to banks, through the interbank system and finally to the central bank (if necessary).

In a previous section we noted that there are essentially three possible sources of changes in the domestic quantity of money. A change in net foreign assets, a change in net loans to government, and a change in loans to the private sector. Post Keynesians explain that when changes to the net foreign asset position[119], or net government loan (or deposit) position[120] occur, these are likely to exert pressure on short term interest rates, and since the central bank targets a particular level for short term interest rates these pressures are considered disruptive.

[119] For example through the purchase of foreign exchange by the central bank in order to influence the domestic exchange rate, or as a result of portfolio changes of banks.
[120] For example through spending on an account held at the reserve bank, or the issue or retirement of government debts.

Lavoie (2006: 20) explains that this occurs through the impact that these transactions have on the net settlement balances of the commercial banks with the central bank (or stated otherwise, the level of liquidity faced by banks, or the 'natural' organic quantity of money in the economy). In such cases, he explains, most central banks engage in 'defensive' operations. These entail using a combination of open market operations and transfers between deposit balances of government, at the central bank and commercial banks, to neutralise the impact that these disruptions have on the domestic monetary system. As examples, he explained, the institutional structure in Canada permits the Bank of Canada to do this precisely, whereas in the USA, where the institutional environment is more dispersed and less advanced, the Federal Reserve Banks (Fed Banks) have to estimate the required neutralisation (a process that Moore (1988: 381) termed 'dirty' interest rate targeting procedure[121]).

In contrast to the orthodox view, as pointed out by Arestis and Eichner (1988: 1018), the ability of monetary authorities to manage domestic credit conditions is consequently not affected by the presence of flexible exchange rates. Le Bourva (1992: 452) and Arestis and Eichner (1988: 1018) also pointed out that the monetary circuit has a built in capacity to absorb money creation by government, in that the money balances spent by government would eventually end up in the accounts of firms (who were in debt) and thereafter be used to repay debts; thus reducing the quantity of money back to its original level. As Le Bourva (1992: 452) explained however, the (positive) impact on banks' capital adequacy positions, and on business expectations regarding future sales and thus additional expenditure requirements, could just as easily support additional money creation and potentially an inflationary process.

[121] Lavoie (2006: 21) referring to Fullwiler (2003) noted that the primary objective of the open market desk of the Federal Reserve is to "maintain the integrity of the payments system through provision of sufficient quantities of Fed balances such that the targeted funds rate is achieved", and that Eichner (1987) had pointed out that "the Fed's purchases or sales of government securities are intended primarily to offset the flows into or out of the domestic monetary-financial system." Moore (1991b: 410) therefore noted that "[t]he Fed's argument that it merely follows market rates, which are purportedly determined by other factors (such as the stage of the cycle, expectations of inflation, or the magnitude of the federal government's deficit, etc.), is disingenuous in the extreme. As shown the Fed is responsible for the differential between the federal funds rate and the discount rate, and so is responsible for the level of the federal funds rate and short-term market rates generally, by the degree of reserve restraint it imposes on the system (i.e., the extent to which it forces banks "into the window"). This complicated process, which has appositely been termed "dirty" interest rate targeting, is precisely designed to hide the controlling hand of the Federal Reserve Board behind the level of short-tern market interest rates. (Unfortunately, since its change in operating procedures in 1979, the Fed has also succeeded in fooling most of the academic profession as well as the general public, although much less so the money market cognoscenti)."

As noted in the previous section, the inflation rate has become the primary target (or at least one of the primary targets of) most central banks around the world. Within the post Keynesian framework, as can also be gathered from the discussions above, central banks do not have direct control over inflation, as it is a function largely of the complex interrelations of firms and households. Post Keynesians, and central bankers alike, point out that while the creation of money is essentially out of the hands of the central bank, accommodation of new money is a necessary component of an inflationary spiral.

As noted by Moore (1983b: 544) accommodation to higher nominal wages occurs through the use of credit markets[122], and as we have explained, central banks have near-direct control over conditions in credit markets. Post Keynesians thus note that, at best, policy makers can make it more difficult (or expensive) to acquire additional money. Also, as we have noted, all money is created as a corollary to debt (credit); an additional point to note is that the interest rate charged on the vast majority of debt created by banks is more or less directly linked to changes in the interest rate set by the central bank[123]. As noted by Disyatat (2011: 726)[124], a significant increase in interest rates is likely to have strong negative impacts on the balance sheet and cash flow positions of all debt holders (making the existing composition of debt holdings crucially important for interest rate decisions). Also, since households earn income as a result of factor payments dispersed by firms, an increase in interest rates is expected to be equally damaging to the collective position of households as a group[125].

To the extent that monetary policy can restrict the terms or price at which monetary accommodation can occur, post Keynesians contend that interest rate policy is an effective inflation targeting tool. Moore (1988: 381) thus noted that "the true indication of the degree of

---

[122] A point confirmed by de Kock (1986a: 43) who noted, for a twenty-five year period of high inflation in South Africa, that "[a]t the very least, excessive monetary expansion was a necessary condition for the inflation."

[123] There is extensive literature available on the subject of interest rate pass-through. In the South African context Angelis, Aziakpono and Faure (2005: 661) describe the interest rate transmission mechanism in great detail and discuss the extent to which monetary policy changes are reflected in bank rates.

[124] Disyatat (2011) constructed a formalised model for the bank lending channel, adjusted to take into account several post Keynesian type acknowledgements. His model built upon work presented by Bernanke and Gertler (1995), Bernanke (2007) and Borio and Disyatat (2009), and explicitly takes into account the effect of bank leverage and external financing in the determination of monetary policy effectiveness, specifically though impacts on the potential for credit extension.

[125] It must be noted here that post Keynesians and authors of the CTOM have detailed extensive transmission mechanisms for a variety of economic shocks, as well as within multiple structural and institutional environments. We are simply highlighting one of the major links between interest rates and economic policies aimed at combating inflation.

ease or tightness of monetary policy is the average level of ex ante real interest rates expected by the private sector."

The importance of the expectations of the general public cannot be overstated[126]. In a truly post Keynesian fashion, Selody (2001: 32) noted that central banks typically do not rely on a single paradigm, and internally develop a range of different perspectives and views in order to be able to make the best informed policy decision possible. As he explains, the complexity of this decision making environment is necessarily outside of the general knowledge and comprehension of the vast majority of the general public (and, as it would appear, many practicing economists).

As a result, Selody (2001: 42) noted that "in public commentary, many central bankers refer to inflation as a monetary phenomenon even though their main macroeconomic model does not reflect this view." Central bankers thus utilise the ignorance of the general public to good effect by (at least in their communication) linking an announced inflation target with the functional capabilities of central banks – not least of all by describing the transmission mechanism through which a change (increase) of interest rates results in a change (reduction) in inflation.

From the broader perspective of economic goals, post Keynesians and authors of the CTOM both emphasise that efficient management of the monetary system in the absence of competent institutional and structural development within the government and private sectors would not be sufficient to achieve those goals. Effective monetary policy is thus a necessary but not sufficient condition for economic growth and development. Le Bourva (1992: 465) also noted that "monetary policy must not confine itself to modifying the relations between the banks and

[126] As noted by Selody (2001: 32), the implementation of monetary policy essentially involves five components: the objective; information variables (or indicators); an instrument (typically the overnight or key interest rate); a means to calibrate the extent to which an alteration to the instrument should be made (in other words some way of assessing the impact of changing the instrument); and finally a way to explain the policy action to the public. The final component (communication) together with the extent to which the central bank is able to achieve their desired goals (success), are essential components of central bank credibility. He (Selody, 2001: 32) also noted that there are multiple participants, each with varying degrees of understanding of central bank and monetary system functions. These include model builders and policy analysts inside central banks (technical experts with a detailed understanding of their apparatus), policy advisers (who collate information to be presented to decision makers), policy makers (who make decisions on policy actions), external technical experts (such as academics, who provide commentary and can engage in policy debate), and members of the general public. These components and participants, he explained, can be arranged in a variety of institutional and structural configurations in order to achieve the most favourable decision making environment.

the central bank. It must also have repercussions on the relations between the regular banks and their clients, indeed even on the relationships between the customers themselves."

3.3.8 Criticisms

The post Keynesian paradigm is certainly not without criticism. It is useful to group these criticisms according to the core and peripheral aspects of the post Keynesian theory. At the core of the post Keynesian theory are the claims that time is important, that the economy is non-ergodic, and that money (deposits) are created in *response* to the creation of debt (or rather the existence of debt relationships). The first type of criticism that has arisen relates to the manner in which authors have constructed and presented the post Keynesian paradigm, and some of the implications of the existing structure. Peripheral arguments relate to how these fundamental characteristics are manifest in reality, and we only call these peripheral because they must necessarily change as the structural and social environment changes. These also typically relate to the manner in which the non-ergodic world of endogenous money behaves, and consequently, how monetary authorities should deal with this reality. We will deal with criticisms of the latter first.

Criticisms of peripheral issues involve empirical testing and general observation. Most criticisms in this regards were made within the post Keynesian paradigm of itself and typically related, as presented by Dow (2006: 37), to the extent to which the central bank could or would be accommodating and thus the extent to which the supply of money could in fact be depicted as a horizontal line; the limitations of credit expansion; and other structural credit supply factors that could influence for whom or how much credit would be created. From a theoretical point of view, those criticisms were thus largely cosmetic, and added the understanding of rather than undermined the core arguments of post Keynesian theory.

The rejection of portfolio choice as a driver of money creation raised more significant criticism. As noted by Howells (2006: 53) the two primary assertions in this regard by Moore (1988) were that money was created due to the necessity for pre-financing, and that because the majority of debt incurred at the time was by firms (presumably for working capital), borrowing would be insensitive to interest rates. One of the major shortfalls of these suggestions and the assertions of CTOM, as noted by Bossone (2001: 859), was the neglect of consumer credit, and

alternative motivations for credit creation in general[127]. Howells (2006: 57) explained that by 1997, "60 per cent of total bank and building society lending in the UK was going to households, compared with only 20 per cent to [industrial companies and corporations] and 20 per cent to financial firms." He noted that portfolio choice theory, and household behavioural patterns, therefore played a significantly larger role in money creation than post Keynesians may have initially expected[128]. The management of money in a credit driven economy clearly required a more detailed assessment of household behaviour than first suggested; however, even if portfolio choice is causal for money creation in the broader sense, this criticism still does nothing to undermine the core principles of post Keynesian theory[129].

The core features of the theory have in fact, to the best of the author's knowledge, not been challenged or refuted, or possibly have not attracted sufficient attention to be debated in a meaningful way. We now turn to the criticisms of the construction and presentation of the post Keynesian paradigm. These may help to shed some light on why the paradigm has not become dominant or mainstream.

The first is that the Post Keynesian theory emerged largely as the antithesis of the quantity theory of money, and more specifically Monetarism, attempting, as does this study, to overturn the seemingly immovable misconceptions that still linger in the academic teaching of

[127] Additional problems developed with advances in the financial markets, increased financialisation, increased ease of access to financial markets and innovations away from the use of bank credit to finance productive activities (something that would not have been possible in the absence of extensive growth in consumer credit). The majority of money creation, he noted, was thus powered by the private sector (consumer demand), and as he explained, the private sector was sensitive to interest rate changes. He noted that depending on the influence of financial firms and the investment choices by households, changes in interest rates could have a variety of effects on the prices and rates of return of several other financial assets, and therefore generated complex relative rate effects for consumers.

[128] Disyatat (2011: 726) also pointed to the potential impacts to balance sheets of individuals, firms and banks, and the amplification effects of the external finance premium (additional risk premium paid when finance is acquired from a non-bank). Also, the relative change in interest rates for higher risk lending (private consumption) would likely be larger than for long term productive lending (commercial loans) in response to changes in the base (key) interest rate. The structure of the debt utilised to fund the initial creation of money thus has important impacts on; firstly, the likely impact to aggregate demand that a change in interest rates will have, particularly as a result of changes to cash flow situation of borrowers; and secondly, the extent to which banks extract rent from the economy.

[129] Regardless of the motivation for borrowing, money creation can still only occur through borrower induced loans from banks. The inter-temporal impact of various loan and interest cost structures would be even more relevant, and such a situation would also necessarily be the result of a complex interaction of institutional and social systems, both of which we know to be evolving constantly in a non-ergodic fashion. As noted by Lavoie (2006: 25) "[a]s soon as one takes a macroeconomic stance, and especially a comprehensive macroeconomic stance, it then becomes clear that [observable trends in various macroeconomic indicators] become endogenous variables that are not really under the control of individual agents. In other words, we enter the possible realm of 'fallacies of composition'.

economics. As noted by Lavoie (2006: 17) some initially theoretical suggestions by horizontalists have since been noted to be oversimplifications and in some instances, as explained by Howells (2006: 52), invalidated by empirical evidence. Another criticism relates to attribution. As noted by Howells (2006: 53), the endogeneity of the money supply was recognised at least as early as Schumpeter (1911) and Wicksell (1898), although attribution of the concepts previously presented by such authors was severely lacking in early post Keynesian writing.

The nature of post Keynesian methodology has also been criticised. As noted by Dow (1999: 21) the post Keynesian literature and theory has been criticised as pluralist. The multiplicity of methods and approaches utilised by post Keynesian authors, mean that post Keynesian theories are difficult to evaluate and compare. The CMN schools (in contrast) utilise a single methodological framework and employ a very narrow type of positivism in the form of mathematical formalism. This, as noted by Dow (2001: 1), allows for a direct comparison of theories, with a focus on predictive accuracy as the indicator of validity. Mainstream theories are thus *easy* to evaluate. As she explained, the idea that positivist validation through mathematical formalism was necessary became so entrenched and generally accepted (mainstream) that alternative methods, regardless of their internal validity have all but been rejected by academia and practicing economists (placing post Keynesian theories outside of generally accepted forms of validity). Evaluation of post Keynesian theories on the other hand require an up-to-date knowledge of a far broader range of historical, political, institutional and social systems. In that way, post Keynesian theories are *difficult* to evaluate.

Our final and perhaps the most telling critique is that raised by Godley and Lavoie (2007: 3) referring to Pasinetti, who noted that there was a lack of theoretical cohesion between the pieces that emerged from the Keynesian (and post Keynesian) school, and that there was not enough attention paid to the establishment of foundations and guidelines on top of which a coherent alternative paradigm could be built. In contrast to the intuitively appealing axiomatic constructs of the classical and monetarist schools, post Keynesians provide few 'heuristically useful' guides, or rules of thumb, as introductory concepts.

The implications of the post Keynesian paradigm are that the economy cannot be properly understood with a simple elegant, universally applicable model that can be taught to

undergraduates and elementary school learners. The post Keynesian economy is complex to understand, and is necessarily entirely contextual and dynamic. The organic nature of the KPK world requires a working knowledge of not only multiple systems, but also knowledge how those interact with one another, the monetary system and the financial system in general. Thus making the conclusions or policy recommendations of a post Keynesian analysis impossible to apply universally, and difficult both to study, and to teach.

Godley and Lavoie (2007) have in our opinion broken new ground with their textbook *Monetary Economics - An Integrated Approach to Credit, Money, Income, Production and Wealth*, in which they integrate the collective learning of the post Keynesian and CTOM principles, and provide a framework for analysing economic developments that can be adapted to fit any modern monetised economy. That being said, their model in our opinion is too complex for introductory economic teaching. Asensio, Lang, and Charles (2012: 410), in a review of post Keynesian models urged that "Post Keynesians really need to be able to propose a simple, teachable, and realistic alternative to the unrealistic but very simple and teachable mainstream models." It would appear that Godley and Lavoie have presented the groundwork for such a simple theory, but that this has not yet been developed further. We believe that the balance sheet approach presented below is one such simple theory for the understanding of monetary systems.

3.4 Philosophical and methodological foundations

The discussion of endogenous and exogenous money creation would not be complete without reference to the methodological and philosophical foundations of these two major paradigms[130].

In the discussions above we focused on monetarism, rather than the broader classical and neoclassical paradigm. The main reason for this was that monetarism has been the only theoretical monetary framework within the CMN (classical, monetarist and neoclassical) schools of thought to have been implemented wholeheartedly since the monetary departure from a commodity standard. Also, at a fundamental level, monetarism is an excellent example

[130] A paradigm, explained Dow (2001: 12), can be described as a "disciplinary matrix based on a particular world view and communicated by exemplars", where the world view (ontology) "determines the core beliefs about the nature of the subject matter and the questions asked, whereas the disciplinary matrix provides the theoretical and empirical tools used to answer these questions."

of the underlying methodological and philosophical practices and disposition of the CMN schools of thought.

As in the methodology chapter above, we will provide a very brief description of the underlying principles of each paradigm. In order to deal with this we must digress momentarily into the higher levels of thinking[131]. As noted by Dow (1999: 20), "all schools of economic thought are defined by their philosophical and methodological[132] foundations; these lend cohesion to the particular theories and policy stances of economists within each school of thought."

3.4.1 CMN Schools of thought

The problems with monetarist theory, it appears, are symptoms of far deeper problems with theory conceived and based on similar methodology and philosophy (epistemology and ontology). The CMN paradigm can be classified as such because of the common methodological basis of theory construction, and, because of the monist approach to methodology, the philosophical foundations are also singular. Dow (1999: 21) described these as the Cartesian/Euclidean mode of thought, which involved the application of "deductive logic to a single set of axioms in order to arrive at universally applicable conclusions."

She noted that the methodology of the CMN schools of thought, mathematical formalism, gained inertia and has been the preferred choice of methodology since the 1950s. Due to this dominance, the CMN schools of thought can be linked to what has been dubbed mainstream, or orthodox economics[133].

In summary, explained Chick (2003: 321), the economy in these systems is based on certainty (complete knowledge) and objectivity – in the absence of which, it is assumed that there can be no knowledge (dualism). The economy can also be easily dissected and assessed as the sum

[131] For a deeper discussion of mode of thinking, method and the implications for the construction of theory and policy the reader is referred to Dow (1985, 1999, 2005, 2007), Chick and Dow (2001, 2005) and Chick (2003).
[132] Dow (1999: 21) distinguished between the declining levels of metamethodology (philosophy), methodology, and method. Theory could then be developed as a consequence of the results obtained in the final stage, but would be crucially dependent on the framing of questions developed in the higher order stages.
[133] According to Dow (2007: 5) in an attempt to capture a greater portion of the complexity of reality, mainstream economics has become increasingly diverse and pluralist in terms of theory, and can no longer be classified as a single theoretical system – including "game theory, experimental economics, evolutionary economics, behavioural economics, complexity economics, and so on." The unifying factor in mainstream economics, according to Dow (2007: 6) is in the choice of methodology, which is mathematical formalism, even though there has been increasing plurality in the underlying reasoning and verbal interpretation (translation) of the mathematics.

of its parts (atomism). The economic components considered are reduced to homogenous core, perpetual components, with predictable behaviours and motivations (rationality)[134]. She noted also that clear assumptions about the behaviour of participants allow for simple interpretation of the effects of shocks to the system. Time is of no consequence, because in the long run, the system will always be comprised of its core components, and will therefore settle in a predictable way – long run relationships are therefore expected to be stable (thus permitting the long run laws). As can clearly be identified in monetarism, the principle adjustment mechanism in CMN theory for all imbalances is price.

The result of the application of this philosophy and methodology, Moore (1991a) (128) noted, was that "'general equilibrium' in a monetary production economy requires not only that technology, tastes, institutions, and resources are all held constant, but also that *all expectations of their future values, on average, must be assumed unchanged over time*." [135] Chick (2003: 321) explained that this is essentially a deterministic world with a long run equilibrium, and consequently extended to the orthodox view of money. That is, money is external to the "real" economy, and only serves as a "lubricant".

3.4.2 KPK schools of thought

As Dow (2010: 1) noted, Keynes was both a philosopher and an economist, and central to the general theory that he presented was his philosophy of knowledge. In contrast to the orthodox theorists, she noted, Keynes attempted to build an economic theory based on realistic observations.

According to Chick (2003: 318) and Dow (2010: 3), Keynes viewed the world as organic rather than atomistic. Dow (2010: 5) explained that an organic system would involve "complex and evolving interactions among heterogeneous and evolving elements." What this means is that the system is so vastly complex and interwoven that the interrelationships between components play as big a role as each component individually, and that these will vary significantly over

[134] This is associated with this were two important, although unrealistic, axioms; the homogeneity postulate and the assumption of rationality. As noted by Leontief (1936: 192) a vital element of this is the homogeneity postulate and the generalisation of certain characteristics across all economic agents. This axiom was applied to all major economic participants, and decisions in the CMN schools were considered to be made under the assumption of 'rationality', which Dow (2010: 12) defined as the "application of calculative deductive logic … to a set of premises taken as given (optimizing behaviour with respect to a set of preferences, endowments and technologies). It requires agents to make calculative choices among the array of all possible options (including contingent options), and for these choices to be consistent."

[135] Emphasis same as original.

time. The economy (with all of its sub components) would therefore need to be an open system[136], both in practice and theoretically.

According to Chick (2003: 320) the economy is assumed to be perpetually changing. The only thing for certain is that the future is uncertain (uncertainty), meaning that theory would need to evolve based on the evolution and developments in subcomponents and interrelations thereof. This necessitated an eclectic approach to method and methodology in order to build holistic, although entirely contextual, time specific, and fallible knowledge. In Keynes' mode of thought, she explained, time is of great significance. The reason for this is that events would be ordered in time, and irreversible - unlike in a closed system (such as monetarism) where time is less significant because of the expectation of long term system stability (equilibrium).

As Chick (2003: 320) explained, because the future is uncertain, participants must necessarily be limited to partial knowledge, and all decisions must therefore be taken under conditions of uncertainty[137]. As Keynes' (1937: 213) stated, "we have, as a rule, only the vaguest idea of any but the most direct consequences of our acts." As Dow (2010: 4) later noted, Keynes took the position that the general case would be uncertainty, and that certainty or certainty equivalence would be highly specialised cases. This uncertainty, she explained, precludes orthodox rationality. Each participant, explained Chick (2003: 320), was expected to behave intelligently, but within the limits of what they were reasonably expected have knowledge of. Decisions are therefore always made based on expectations (with relative ignorance), or what Dow (2010: 3) described as logical probability[138], and not based on exact rational calculations.

---

[136] According to Dow (2010: 5) the evolving nature of the system and its subcomponents also renders historical information (such as historical equity prices) inappropriate for forward looking decisions[136]. As Dow (2010: 5) explained, if "the system's internal structure is evolving in a non-deterministic manner, and the influences to which it is subject in the future are not known (or all knowable) in advance, then the scope for using frequency distributions to quantify a probabilistic or stochastic expectation is lacking. Keynes believed that this was particularly the case with social systems." For an excellent and concise discussion of open and closed systems, we recommend Chick and Dow (2005).

[137] According to Dow (2010: 10), Keynes believed that where actual knowledge of potential future outcomes is lacking, decision makers are expected to resort to substitution of actual knowledge with various conventional judgements. She noted that Keynes had identified two: expert opinions, and conventional (or generalised social) expectations. In the face of general uncertainty neither, of course, could be based on any more 'demonstrable logic' than individual judgement, but they could theoretically provide a more objective benchmark as a point of reference.

[138] As Dow (2010: 6) elucidated, this is very different to quantified probability, in that a subjective interpretation of information leads the decision maker to assign weight to their expectation depending on their perceptions at the time. The weight is dependent on what information they have access to, their ability to interpret the information, their perceptions of social conventions which might affect the decision (such as moral, ethical, or general consensus conventions), and the individual's heterogenic disposition towards acting under uncertainty.

3.4.3 Importance for the present discussion

One's view of the world and one's perspective of the role of money are mutually dependent on one another. If one believes, as implicitly do the CMN schools, that the economy is deterministic, real and nominal forces are separate, and that in the long run will revert to an equilibrium, then money plays only a 'lubricating' or temporarily disruptive role in the greater scheme of things. The deterministic nature of the system leaves no role for money, or the creation of money in the determination of future states of the world.

If, however, one believes that money creation is closely integrated with the behaviour of the private business sector and the overall economy, as do the post Keynesians, as noted by Arestis and Eichner (1988: 1004), then money capital as an institution is inseparable from the other institutions that constituted economic systems. Investment, production and economic growth are thus dependent on actions taken by an enormous variety of participants within a constantly evolving institutional and structural environment; axiomatic models become significantly less meaningful, and money and money creation play a critical role in the determination of future economic existence.

The nature of the creation of money, and the causal forces that result in the creation of money thus potentially have important implications for the validity of the theoretical constructs of each paradigm, as well as for existing studies which utilise data that spans multiple institutional and structural regimes.

All of which evolve and change over time, as well as with inclusion or exclusion of different pieces of information, particularly the 'unknown unknowns', which are only revealed with the passing of time. A concept that Chick (2003: 316) referred to as situated rationality. Dow (2010: 8), quoted Keynes (1937: 124), where he stated, "we tend, therefore, to substitute for the knowledge which is unattainable certain conventions, the chief of which is to assume, contrary to all likelihood, that the future will resemble the past." Dow (2010: 7) noted that due to this general uncertainty, and the role of human heterogeneity, it would never be possible to consider all possibilities and order them "according to risk and uncertainty in a reliable way. Even if it were feasible to contemplate an identification of all future possibilities and complete orderings of these according to risk, the degree of uncertainty attached to these calculations [would be] liable to discrete shifts according, not only to new information, but also how that information feeds back into the subjective knowledge system which generated the risk estimates."

CHAPTER 4: MONEY CREATION IN SOUTH AFRICA

As noted in the chapter on methodology above we will be using a 'reasonable and well considered combination of analysis and re-representational techniques' in an attempt, from a holistic perspective, to provide a realistic account of the sources of change in the money stock in a modern monetised economy. For this purpose we have chosen South Africa as a representative economy. As in the sections on causation above, we are interested in who initiates the creation of money, who creates the money, what happens when the money is created, in what order those actions occur, and how this can be observed (confirmed). From a monetary policy perspective, we are also interested in how the SARB influences this money creation process.

This will be presented in three parts, the first will be a brief, but complete, outline of the strategic and tactical monetary policy regime as described by the South African Reserve Bank (SARB). The second will be an abbreviated version of the balance sheet analysis technique, and the third will be a simplified discussion of some finer details with regards balance sheet procedures and the implications for monetary policy.

4.1 The monetary policy framework of South Africa

The primary objective of the SARB is to maintain the value of the domestic currency in the interests of economic growth[139]. As explained by van der Merwe (2004: 1), this end can be achieved in a variety of ways. He noted that Carare and Stone (2003) defined three forms of inflation targeting[140], and he explained that as of February 2000 South Africa has implemented fully-fledged inflation targeting[141], although, informal inflation targeting had been applied at

[139] As stated in Section 3 of the South African Reserve Bank Amendment Act, No. 57 of 2000: "The primary objective of the Bank shall be to protect the value of the currency of the Republic [of South Africa] in the interest of balanced and sustainable economic growth in the Republic." As noted by van der Merwe (2004: 3), Section 224(2) of the Constitution Act, No. 8 of 1996 "further determines that the Reserve Bank, in pursuit of its primary objective, must perform its functions independently and without fear, favour or prejudice. Regular consultation must, however, take place between the Minister of Finance and the Reserve Bank. This duty to consult should be regarded as a procedural safeguard of the law. The executive management of the Reserve Bank nevertheless remains the primary organ responsible for the achievement of the Bank's primary objective."

[140] Fully fledged inflation targeting, eclectic inflation targeting and inflation targeting lite.

[141] Van der Merwe noted that Carare and Stone (2003) identified Australia, Brazil, Canada, Chile, Columbia, Czech Republic, Hungary, Iceland, Israel, Korea, Mexico, New Zealand, Norway, Poland, South Africa, Sweden, Thailand and the United Kingdom as other countries also operating a fully-fledged inflation targeting strategy.

least since 1986[142]. Fully-fledged inflation targeting, he explained, involves the formal, public announcement of numerical inflation targets and institutional commitment to inflation targeting as the primary goal of monetary policy. It also specifically requires that a variety of information sources will be utilised to determine the risk of future inflation and thus the setting of policy instruments. It entails high levels of transparency and the accountability of the central bank to attaining its stated inflation targets. As van der Merwe (2004: 4) noted, in South Africa the Technical Committee on Inflation Targeting is a joint committee between the SARB and National Treasury which sets the numerical level of inflation targets, while the SARB is provided instrument independence in order to ensure insulation from political pressures[143].

Since we are interested in direct causal factors, our focus is on the operational procedures in which the SARB engages in the process of making the policy instruments effective. As noted by Brink and Kock (2010: 2), from a tactical point of view, the SARB implements an interest rate targeting policy. They note that within the current approach the SARB also utilises its balance sheet as a tool, although they note that this is only in order create a liquidity shortage in the money market, and so to make the policy interest rate effective (this will be covered in more detail below). They also note that from a strategic tactical perspective, the SARB also implements policies and procedures to ensure that when changes are made to the policy rate, the banks alter their own short term market lending rates (that is, to ensure interest rate pass-through to the domestic credit environment). This tactical strategy is the same as the interest rate targeting strategy implemented through borrowed reserves, described in the post Keynesian literature above.

At a more technical level, the banks in South Africa are required to maintain minimum reserve balances with the SARB and these reserve balances are required to reflect as a positive deposit

[142] As evidenced by the adoption of monetary aggregate targets, as noted by de Kock (1986b), the then governor of the SARB, the "main reason for introducing monetary targeting is to assist the monetary authorities in their policy of controlling the money supply with a view to curbing inflation."

[143] As suggested by Selody (2001: 44) for an eclectic and pragmatic approach to monetary analysis, van der Merwe (2004: 7) confirmed that the SARB utilises a wide variety of information indicators and several models for the purposes of generating inflation projections and expectations – "including the growth in money supply and bank credit extension, changes in nominal and real salaries and wages, labour productivity, nominal unit labour costs, the gap between potential and actual domestic output, developments in final demand, the balance of payments, exchange rate changes, short and long-term interest rates, the yield curve, government finances and producer and imported prices. Developments in exogenous factors which could have a bearing on inflationary pressures, such as global growth and inflation, international interest rates, international commodity prices, oil prices, domestic and international agricultural conditions, and administered prices are also taken into account."

balance in a special account with the SARB. The amount required for these special deposits is calculated as percentages of various bank liabilities, such as deposit securities as reflected on the balance sheets of banks at the close of settlement cycle day (SCD). As per section 10A of the South African Reserve Bank Act, No. 90 of 1989 (as amended by the South African Reserve Bank Amendment Act, No. 57 of 2000) (SARB Act), these *daily average credit balance* amounts are calculated monthly in arrears based on a daily data. The fact that this requirement is calculated in arrears suggests that it is not a pre-prescribed quantity, and also implies that the reserve balances are calculated *after* the level of deposits in existence is determined[144].

A key element of the functions of the SARB is that it is able to discount or re-discount various securities. In other words, the bank is empowered to lend money against various forms of collateral[145]. A vital point, from a monetary policy point of view, is that *the rate at which* the SARB will provide this lending is *determined administratively*[146]. The SARB holds the sole right to issue bank notes[147], however, no acts depict the nature of money creation or issue of legal tender in any other form than that of notes or coin[148]. No relevant acts make any reference to the creation of bank or central bank deposits[149]; however, from a practical perspective we know that short term interest rates will not be allowed to be determined by market forces (rather, they will be *decided*).

As noted by Brink and Kock (2010: 4), the SARB achieves its balance sheet objectives though active participation in the money markets. They explain that the SARB is empowered as the sole creator and destroyer of liquidity in the financial system, although a more accurate depiction would be the sole creator and destroyer of liquidity in the interbank high powered

---

[144] A detailed description of the daily clearing procedures of the South African interbank settlement system reveal that it is not possible for banks to know in advance their reserve deposit positions, at any stage in real time. This detailed description is included as an appendix for the interested reader.

[145] According to Section 10 (1) (g) of the SARB Act, the SARB is empowered to "buy, sell, discount or re-discount bills of exchange drawn or promissory notes issued for commercial, industrial or agricultural purposes, or exchequer bills of the Government of the Republic or of the government of any other country, or securities of a local authority in the Republic."

[146] According to section 10 (2) of the SARB Act, "The rates at which the Bank will discount or re-discount the various classes of bills, promissory notes and other securities, shall be determined and announced by the Bank from time to time."

[147] A right endowed initially by the Currency and Banking Act No. 31 of 1920, and most recently by the SARB Act.

[148] Acts reviewed include, the Currency and Banking Act No. 31 of 1920, the SARB Act, the National Credit Act, No. 34 of 2005. The Banks Amendment Act, No. 20 of 2007 (the Banks Act).

[149] The Banks Act defines a deposit as "an amount of money paid by one person to another person subject to an agreement" (i.e. the medium of exchange).

money markets. They explain that the "[SARB] creates (destroys) central bank liquidity by increasing (reducing) its assets or reducing (increasing) its liabilities and maintains such a shortage by ensuring that its liabilities always exceed its assets."[150]

The SARB creates a liquidity requirement (or money market shortage) through open market operations in the money markets and thus forces the settlement banks (collectively) into the discount window (to borrow at REPO). We also noted that the central bank operating an interest rate targeting strategy will typically minimise any disturbances to the domestic money market conditions in order to maintain the effectiveness of the key interest rate. This is part of the operational framework, and the results of these actions can be observed. This will be presented in the following section.

From a written policy perspective, it is clear that the SARB does not practice quantitative monetary controls, but rather focuses on the implementation of an interest rate targeting strategy, together with a stabilisation policy aimed at reducing external disturbances on domestic credit conditions.

4.2 The components of money

At this point we expand our description of money to a broad description of the underlying components thereof, as well as the component thereof that is of most interest to policy makers. Thus far we have simply defined money as bank notes and deposits created by banks on behalf of borrowers. In addition to this we must describe the broad categories of borrowers, as well as the owners of the deposit securities that have been created. This will provide clarity for the discussion which follows on the sources of change in money. Below we present the deposits owned by various resident and non-resident groups[151].

TABLE 4.2.1: COMPOSITION OF OWNERSHIP OF TOTAL DEPOSITS WITH BANKS: SOUTH AFRICA, 2013, Q4 (ZAR MILLIONS)

Deposit owners	ZAR (Billions)	As a percentage of total
Other companies and close corporations	R 1 450.57	52.09%

[150] They (Brink and Kock, 2010: 4) also explain that "In addition to levying a cash reserve requirement on private sector banks, money market liquidity draining operations include the issuance of SARB debentures, the conduct of longer-term reverse repo transactions, entering into foreign exchange swap transactions and withdrawing government funds from the commercial banks to put on deposit at the SARB."

[151] At an aggregate level, apart from for the level of government deposits, the deposits of the SARB, the CPD, the mutual banks, and the Land Bank have only a marginal impact on the level of M3, and as such we present only the compositional data of the banks.

Households	R	701.83	25.20%
Public enterprises / corporations	R	131.11	4.71%
Insurers and pension funds	R	126.40	4.54%
Total deposits owned by private residents (NBPS)	**R**	**2 409.92**	**86.54%**
Government deposits	R	125.29	4.50%
Local governments and regional services councils	R	46.17	1.66%
Total deposits owned by governmental residents	**R**	**171.46**	**6.16%**
Interbank and intragroup deposits	R	87.86	3.16%
Other monetary institutions	R	10.87	0.39%
Total deposits owned by banks and other monetary institutions	**R**	**98.72**	**3.55%**
Total deposits owned by residents	**R**	**2 680.10**	**96.25%**
Total deposits owned by non-residents	**R**	**104.51**	**3.75%**
Total deposits	**R**	**2 784.61**	**100.00%**
Foreign currency deposits included in total	**R**	**108.17**	**3.88%**

Source: SARB (2014b)

Of the deposits depicted in Table 4.2.1 above, only those deposits owned by private residents (NBPS) are included in the monetary aggregate M3. When discussing the monetary aggregate M3 it would thus be more accurate to speak of the money stock *in the hands of the private sector*, rather than the total money stock.

In Table 4.2.2 below we present a summarised version of the balance sheet of the MBS that is presented in full in table 3.3.4.3 and Table 3.3.4.4 above. As depicted below, the total level of deposits owned by the NBPS held at all MBS institutions was roughly R2431 billion. These deposit balances together with the level of notes and coin in circulation make up M3. As can be seen in Table 3.3.4.4 above, the total level of M3 for the fourth quarter of 2014 was roughly R2518 billion, which is significantly lower than the total level of deposits in South Africa, even when considering only those deposits held by banks, as in Table 4.2.1 above.

Another interesting point to note is that the total level of deposits in Table 4.2.1 above includes a portion that is denominated in foreign currency. This is not the case in the table 4.2.2 below.

TABLE 4.2.2: SUMMARISED BALANCE SHEET FOR THE MBS: SOUTH AFRICA, 2013, Q4 (ZAR MILLIONS)

Liabilities	ZAR (Billions)		Identity component
Banknotes and coin in circulation	R	87	M3
Total deposits of domestic private sector	R	2 431	M3
Government deposits	R	311	NLG
Total foreign liabilities	R	351	NFA
Total capital and reserves	R	274	NOA
Other liabilities	R	593	NOA
Total liabilities of the monetary sector	**R**	**4 047**	
Assets			
Total foreign assets	R	1 021	NFA
Total credit extended to the private sector	R	2 588	LNBPS
Gross claims on the government sector	R	338	NLG
Other assets of the monetary sector (Excluding foreign assets of government)	R	100	NOA
Total assets of the monetary sector	**R**	**4 047**	

Source: SARB (2014b)

The deposits of the government and those of the banks and monetary institutions are *explicitly excluded* from M3, as are deposits of foreign exchange held by domestic banks. These are quantitatively less prominent than the domestic currency deposits of the NBPS, but to the extent that these deposits are transferred between these groups and members of the NBPS they have the potential to change the level of M3. In the balance sheet analysis below, the deposits of government are included in the balance sheet identity component called net loans to government (NLG). Similarly, foreign exchange deposits are included in the identity component called net foreign assets (NFA), and those of the monetary banking institutions are included in the identity net other assets (NOA).

Our interest is money creation and to be fully inclusive we must include domestic currency deposits owned by all participants, and the mechanisms for the creation of those deposits. In this regard, the principles described in the preceding sections remain perfectly intact. All money (domestic currency deposits, together with notes and coins in circulation) is created as a counterpart to bank debt, with the exception of money created as the counterpart to the purchase of foreign exchange by a member of the MBS.

In the case of government deposits, the counterpart is new government debt issues purchased by members of the MBS[152] (in other words, government borrowing from banks). In the case of bank owned deposit securities, the only source of creation is debt extended by monetary banking institutions to one another[153]. The source of money creation in the foreign exchange market is the purchase of foreign exchange by a member of the MBS. When a domestic bank purchases foreign exchange, an equivalent value in domestic currency deposits are created in a domestic account of the party that demands foreign exchange. For our present purposes this could be described as the extension of a "loan" against foreign exchange to be repaid at an exchange rate to be determined in the future.

The foreign exchange deposits included in Table 4.2.1 above exist because a member of the MBS (including the SARB) engaged in the purchase of foreign exchange. Thereafter the MBS participant can make these foreign exchange deposits available to domestic parties, or sell them back into the international market. The aggregate level of foreign currency deposits held by the MBS fluctuates depending on the expected required level of foreign exchange. The members of the MBS assess domestic requirements in terms of foreign exchange, and there after either purchase or sell foreign currency in the international markets[154]. The nominal level of foreign exchange held by the domestic banks is thus a portfolio decision by the members of the MBS. A significant portion of the foreign exchange owned by the MBS in South Africa is owned by the SARB, this is partially as a result of the SARB's objective to accumulate foreign currency, and partially as a result of the SARB's participation in the foreign exchange market as an agent for National Treasury[155] (exchange rate stabilisation policy).

---

[152] It is particularly important to note that the total level of government debt recorded on the balance sheet of the MBS does not constitute all government debt. It includes only that portion of government debt *purchased by members of the MBS*. To the extent that the NBPS purchases newly issued government bonds there will be a transfer of deposits from NBPS to government. In the former case, banks create money on behalf of government which is immediately reflected in the level of government deposits – and has no impact on the level of M3. In the latter case, where the NBPS purchases government bonds, there will be a transfer of deposits from the NBPS to the government, resulting in a reduction in M3.

[153] This does not include overnight loans in the interbank market.

[154] As noted earlier, the purchase of foreign exchange by the members of the MBS results in an increase in the level of domestic currency deposits in the hands of the seller of the foreign currency. When the members of the MBS sell foreign currency deposits the reverse is true. Importantly, the member of the MBS can only purchase foreign currency from a willing seller. Stated otherwise, the MBS will only create domestic deposit money if a foreign participant demands it. Thus while in practice these transactions are portfolio decisions by members of the MBS, they must have a counterpart demand component in order to be possible.

[155] The SARB has in the more recent past engaged in the purchase of foreign exchange on behalf of national treasury in an attempt to mitigate the impact of large volumes of liquid capital inflows. The result of central bank foreign exchange purchase is the creation of domestic deposit securities, these deposit securities are immediately reflected as new money creation, and thus mitigate the potential impact of the foreign acquisition of domestic

The focus of the balance sheet analysis presented below, as noted by Van Staden (1963: xix), is to identify changes and sources of changes in the domestic liquid asset holdings of the NBPS. The reason for this focus, he explained, was that domestic money holdings in the hands of the NBPS represent potential aggregate demand. He went on to explain that "adequate liquid assets in the hands of the private sector may facilitate or maintain a business upswing, while an excess of money and near-money may even lead to inflation when the demand for goods and services cannot in the short run be met from production. A shortage of liquid assets may, on the other hand, contribute towards a recession or even deflation." From a monetary policy point of view, he emphasised that changes in M3 thus represent potential risks to price stability, and that information provided by such aggregate changes required a detailed disaggregate analysis in order to understand the real potential impact thereof on the economy.

The focus on the money in the hands of the NBPS (M3) is directly linked to the SARB objective of price stability. As we have explained, the quantity of M3 is not an operational variable, however, the appropriate level of (or rate of growth of) M3 is of crucial importance, particularly for the continuation of productive activities that require access to liquid asset balances. As noted by Le Bourva, and above by Van Staden, excessive money creation is potentially very hazardous from an inflationary point of view (as is inadequate money creation from a deflationary or recessionary point of view). As can be seen from Table 4.2.1 above, the vast majority of deposit securities are in the hands of the NBPS, and as described above, these are created as the counterpart of loans to the NBPS (LNBPS). The risk described here is thus more accurately described as excessive or inadequate satisfaction of credit demand as a risk to price stability.

The SARB pays close attention to developments in (and utilisation rates of) the productive capacity of the economy, the rates and composition of money creation, the composition and behaviour of deposit holdings, the impacts on bank liquidity, and money market activity in an

deposit balances on the level of exchange rates (specifically mitigating excessive appreciation). These transactions should not be confused with the practice of bank liquidity management, but do have a major impact on this process. Due to the clearing and settlement practices in South Africa, the SARB purchases of foreign exchange simultaneously result in a large positive impact on the level of bank liquidity, and this is drained through the use of derivative instruments between the SARB and the commercial banks (both of which are members of the MBS). Since these latter transactions occur between members of the MBS there is no change in the net position of the MBS relative to external parties, and thus only affects the composition of various members' balance sheets.

attempt to determine the optimal conditions under which (price at which) credit can be acquired from the MBS. The logic of this is the mitigation of the risk of excessive or inadequate levels of credit extension to the NBPS. Somewhat ironically, the logic of excessive money chasing insufficient productive capacity (or goods) presented by the CMN schools of thought features as an element of this logic, albeit with a vastly different understanding of the causal processes that result in excessive money. The balance sheet analysis presented below is a relatively simple method of identification of the direct balance sheet causes of change in M3.

4.3 Balance sheet analysis: South Africa, 1994 - 2013

Here we present a very brief rendition of balance sheet analysis in order to demonstrate the counterpart components of the liquid assets (money) in South Africa. As noted by Van Staden (1963: xiv) "the assets and liabilities of the [monetary banking sector] form the basis of the monetary analysis" presented below. We group the various items of the balance sheet into categories that are logically consistent with reported central bank and banking practices. As noted in section 3.3.4 above, Van Staden (1963), and Faure (2013), identified that these can be grouped into net foreign assets (NFA), net loans to government (NLG) and loans to the non-bank private sector (LNBPS).

$$M3 = NFA + NLG + LNBPS$$

In the case of South Africa we must also include net other assets (NOA), since, as can be seen in the balance sheet presented in Table 3.3.4.2 in section 3.3.4 above, NOA represents a significant net liability position. The reason for the relatively large size of NOA, however, is directly linked to the positive NFA position, and the source of both is the extraordinary involvement of the SARB in the stabilisation the South African currency[156]. For all intents and purposes, the large liability component of NOA should be netted against the large asset

[156] A full explanation is more detailed than space will allow in this research, but a basic description is as follows. Due to excessive liquid capital inflows, the SARB was required to prevent the South African Rand (ZAR, or Rand) from appreciating for a variety of economic reasons. In order to accomplish this, the SARB engaged in extensive accumulation of foreign exchange assets. Since the Rand is not an international reserve currency, the liquidity effect of creating large quantities of Rand for the purchase of foreign exchange was entirely localised. In order to sterilise the liquidity effect locally, the SARB engaged the domestic settlement banks in foreign exchange swap transactions. These instruments are visible on the collective BA900 bank balance sheet returns as derivative investment instruments. This process is typically explained, as note by van der Merwe (2014: 10), by the SARB as a desire on their part to accumulate foreign exchange reserves after closing out the oversold forward book that existed prior to 2003. We will demonstrate the counterparts in the section below.

component of NFA, as this is the actual source of the net liability position. For South Africa then, the counterpart identity could be written as:

$$M3 = NFA + NLG + LNBPS + NOA$$

or, more accurately, as:

$$M3 = (NFA + NOA) + NLG + LNBPS$$

Note: NOA contains many items other than the NFA-related ones, but we have no way of identifying them, leaving us with the analysis as presented (NFA + NOA). We do so in the knowledge that it is not completely correct.

Since the general underlying influences have already been outlined in the post Keynesian discussion above, we will simply refer to the points raised in discussion where necessary. The sources of quarterly changes in money and near money (liquid assets) can be observed for 2012 and 2013 in the table below.

TABLE 4.3.1: CHANGES PER QUARTER IN LIQUID ASSETS AND COUNTERPARTS OF THE MBS: SOUTH AFRICA, 2012 TO 2013 (NOT ADJUSTED FOR SEASONALITY)

	2013				2012			
	Q4	**Q3**	**Q2**	**Q1**	**Q4**	**Q3**	**Q2**	**Q1**
Changes in liquid assets	(ZAR Billions)				(ZAR Billions)			
Money	9.8	19.1	54.5	13.5	29.4	51.5	-9.8	16.8
Near money	1.5	32.2	-1.8	17.2	0.0	41.9	35.6	-48.8
Change in M3	**11.2**	**51.3**	**52.7**	**30.7**	**29.4**	**93.5**	**25.8**	**-32.0**
Causes of change	(ZAR Billions)				(ZAR Billions)			
Net foreign assets: NFA	-3.0	48.9	45.1	51.5	-35.0	18.1	60.6	-43.9
Net loans to government: NLG	-12.6	12.0	-6.0	-22.4	6.2	34.5	-16.7	-4.8
Credit to the NBPS: Land Bank	1.9	-0.2	1.6	1.6	2.1	0.2	1.5	2.3
Credit to the NBPS: Other	33.4	46.6	36.0	28.8	60.7	74.2	10.5	71.2
Total credit to the NBPS: LNBPS	35.3	46.4	37.6	30.4	62.7	74.4	12.0	73.5
Net other assets: NOA	-8.5	-56.1	-23.9	-28.9	-4.6	-33.6	-30.1	-56.9
Change in counterparts	**11.2**	**51.3**	**52.7**	**30.7**	**29.4**	**93.5**	**25.8**	**-32.0**

Source: SARB (2014b)

As noted by Van Staden (1963: xxi), the changes in M3 can be identified from the counterparts, as represented above. The first thing to point out is that in all quarters, the cumulative variation in monetary counterparts is exactly equal to the net change in liquid assets. As noted in the post

Keynesian section above, this is precisely because the counterpart components *cause* the observable changes in liquid assets (M3).

From a policy analysis perspective this is very useful, as it provides a clear guide as to the sources of liquidity demand. For example, the net claims on government decline in the first two quarters of both 2012 and 2013, corresponding possibly with a concentration of tax collections or the retirement of government stock and a net shift in liquid assets from the private sector to the government sector. The net foreign asset position each quarter is offset by a roughly equal counterbalancing net other asset position, except for Q1 of 2012 where the net negative position of both resulted in a decline in M3, even with a substantial expansion in LNBPS. As can be seen, LNBPS makes up the bulk of the difference required to result in the continuous increase in liquid assets (M3).

These fluctuations are also influenced by seasonal factors, which do not represent a change in general economic conditions. Van Staden explained that seasonal patterns were observable due to a variety of underlying economic reasons, for example, agricultural spending needs, foreign trade patterns, and so on. As can be seen from the above table, each of the counterparts exert a significant influence on the aggregate level of liquidity in the short run. The SARB then has to distinguish which of the variations are seasonal (or transitory), and which represent a change in the underlying economic conditions of the economy. Assessment of patterns in the counterparts provides additional information with regards underlying economic conditions, and assists the SARB in its task of identifying real economic changes. According to Van Staden (1963: xxii), a real change in economic conditions is best assessed utilising the seasonally adjusted counterpart figures of the SARB.

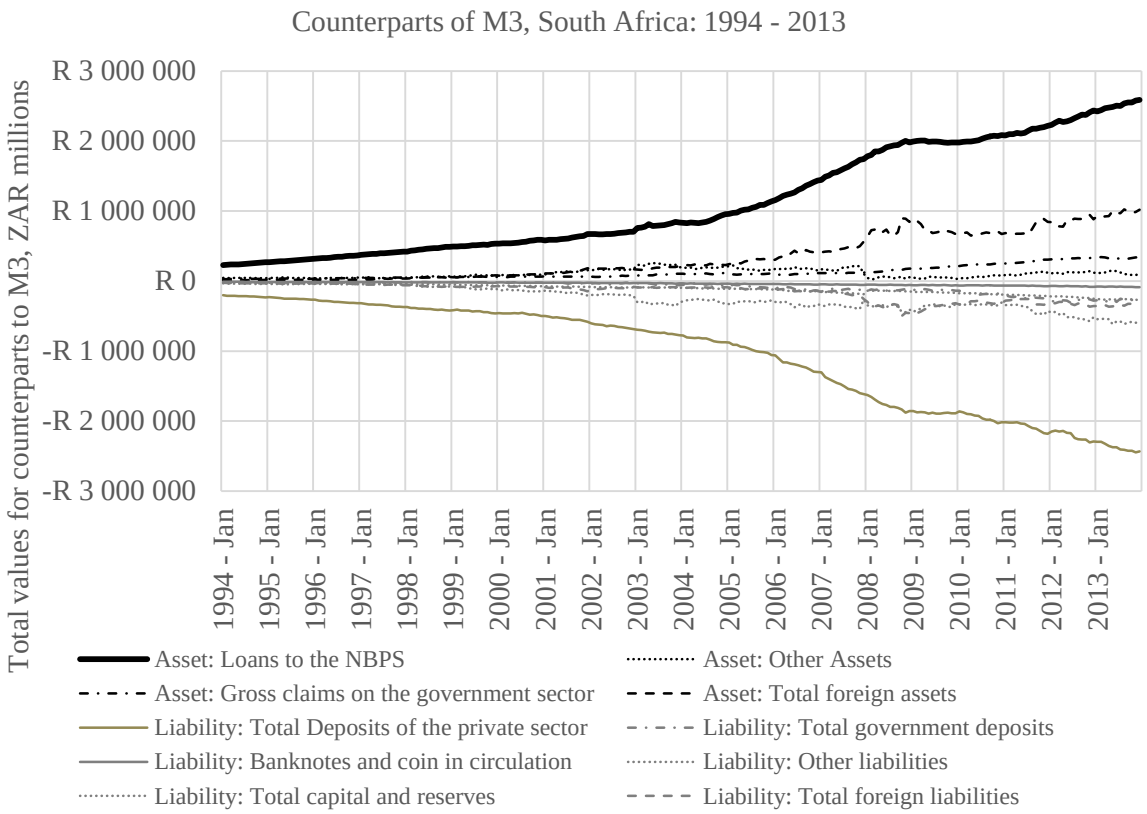
As noted by Van Staden (1963: xx), "[t]he liquid assets of the private sector are directly connected with the liquidity of the banking sector, i.e. with the money and credit creating potential of the banking sector. An increase in the liquid assets of the private sector, due, for example, to a favourable balance of payments, will also increase the liquidity of the banking sector", and the SARB endeavours to understand and control for these impacts to domestic liquidity. As one can imagine, this approach requires a detailed understanding of the behaviour of underlying balance sheet components, general economic behaviours and trends, domestic liquidity cycles, the foreign trade environment and government financial behaviour. In that way

the balance sheet analysis is not a stand-alone tool for the purpose of implementing monetary policy. It can however serve very well for flagging extreme, or uncharacteristic shifts or changes in both the composition of the liquid assets of the economy, and the various counterparts. In that way it serves very well as a tool for ongoing observations of economic conditions.

From the above discussion and table, it is hopefully obvious that the aggregate level of liquidity (or money) in the economy is actually caused by factors that are endogenous to general economic conditions and environment. As noted earlier, the SARB does not cause the changes that occur in the counterpart elements of the collective balance sheet of the MBS, although, as we have alluded in the discussion above, it is a very within their power to react to and attempt to neutralise certain influences where they see fit. The aggregate outcome of these liquidity management (balance sheet policy) changes by the SARB, practiced on the back of such balance sheet analyses, is observable in the nominal aggregate offset positions of balance sheet counterparts.

The long term nominal progression of the counterparts of M3 is best presented graphically. Initially we simply present the nominal values of all summarised components of the balance sheet, and thereafter we present them as per the expected off-setting components as described above. For visual clarity, the assets are presented above the horizontal axis as positive values, by the various black lines, and the liabilities are represented below, by various grey lines. From this chart it is not easy to identify any components that represent suitable counterparts, except, starkly, LNBPS and total deposits of the NBPS. In order to provide some order to the chart, we have selected the line dash types (solid lines, dashed lines, dotted lines, etc.) to represent the counterparts as per the identity described in the section above.

FIGURE 4.3.1: NOMINAL COMPONENTS OF THE BALANCE SHEET OF THE MONETARY BANKING SECTOR FOR SOUTH AFRICA, 1994 TO 2013

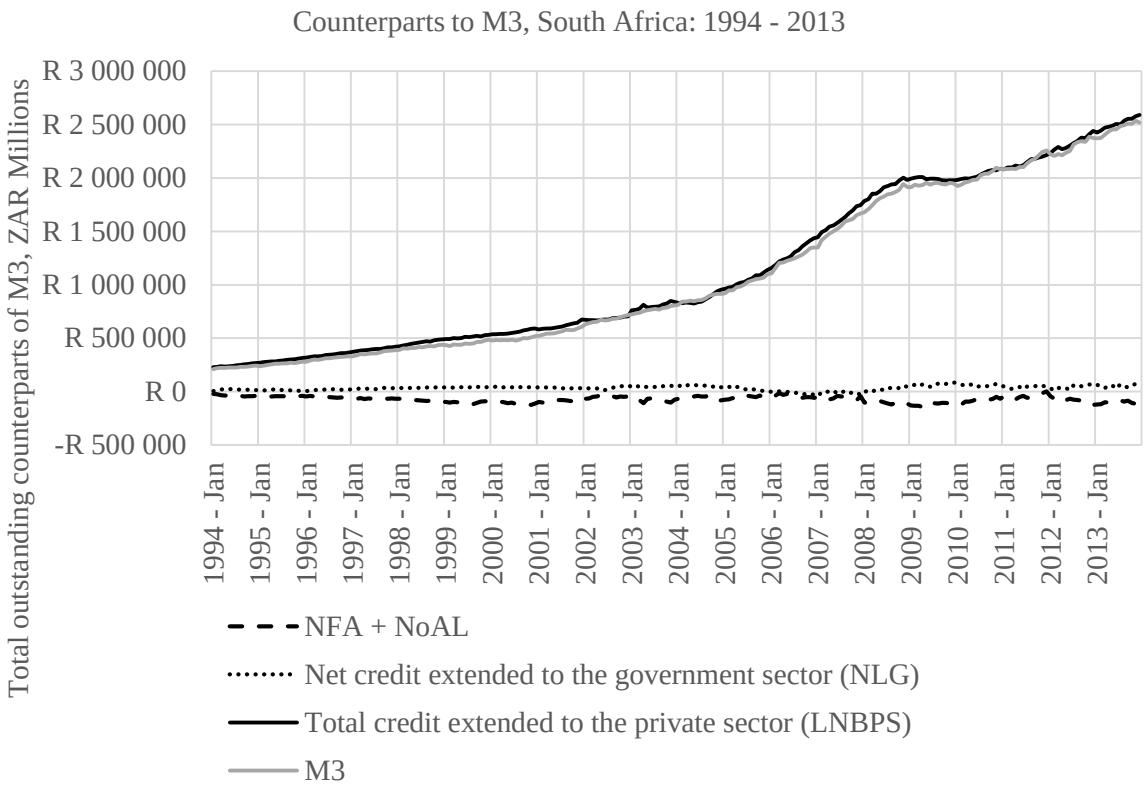


Source: SARB (2014b)

Although the above chart provides some information regarding comparative nominal levels of the various counterpart relationships, it is quite messy and confusing. As described in the post Keynesian literature, with the implementation of an interest rate policy focused on the management of credit demand, we would expect that the net effect of all influences on the level of money, except for domestic credit extension, will have been completely neutralised by the SARB. In the following chart, the (liability) value of M3 has been placed above the horizontal axis in order to provide a better visual reference of the relationship that money has with credit extended to the private sector (LNBPS). We have netted the counterparts of M3, as per the identity:

$$M3 = (NFA + NOA) + NLG + LNBPS$$

FIGURE 4.3.2: NOMINAL OFFSET VALUES OF THE COUNTERPARTS TO LIQUID ASSETS IN SOUTH AFRICA, 1994 TO 2013



Source: SARB (2014b)

Unlike the confusing chart of all balance sheet components above, the long term presentation of the offset counterparts of money reveals clear and definite relationships. As expected, if money in the hands of the NBPS was in fact created through the extension of credit, then M3 should be almost exactly counterbalanced by outstanding debt. As is demonstrated in Figure 4.2.2 above the nominal value of LNBPS (black solid line) has been almost exactly mirrored by the progression of M3 (grey solid line)[157]. As was also expected from the post Keynesian literature, the nominal net balance sheet values of NFA with NOA and those of NLG are close to zero.

4.4 Open market operations and the control of interest rates

Up to this point we have glossed over the specific nature in which the SARB participates in the money markets of South Africa. As we have discussed, the SARB creates a liquidity shortage, against which the banks must borrow at the administered rate[158]. The reason why the SARB

[157] Due to interactions between the NBPS, government and the foreign sector there are marginal misalignments between the offsetting elements of each of the balance sheet identities, however the broad relationships are clearly visible.
[158] The full detailed explanation of this process is included in Appendix A2.

engages is such a complicated process is just as important as how they do so. Finally we are interested in understanding how this might be observed, and the impact that this process has. It is important to bear in mind that the liquidity management process occurs between the banks and the SARB, and thus is a process that is internal to the MBS, and while the liquidity conditions faced by banks are influenced by the actions of non-MBS parties, the liquidity management process does not directly affect non-MBS participants.

In terms of how the SARB implements liquidity management, we have discussed above that the SARB maintains a liquidity shortage (LS), but have not yet explained what this means. Faure (2013e: 65) provides a succinct explanation of the core elements of the process. As he explains, the banks are required to hold a particular level of required reserves[159] (RR), and the clearing and settlement process affects the actual level of reserves in these accounts. We assume that each bank holds the exact level of RR they need, plus or minus an excess reserve (ER) position as determined by the settlement process. He notes that at the end of any given day, they may thus result in either a positive or negative excess reserves position (ER). The combination of any balances in their reserve accounts is called their total reserves (TR). Banks total reserves held on deposit with the SARB can thus be represented by the identity:

$$TR = RR + ER$$

Individually, at the close of business each day, banks net their RR and ER positions and thus come to an excess reserve (ER) position. Where banks find themselves in a positive ER position, they endeavour to lend these balances out. Where banks find themselves in a negative ER position, they endeavour to borrow these funds from other banks (which are in a positive ER position). Those banks that cannot find the required funds in the interbank market must

[159] An important distinction that is often neglected, and is wholly misrepresented through the money multiplier approach, is that the reserve requirement does not come out of the deposits of the clients of the banks. The reserve requirement comes out of deposits owned by the commercial banks. A point which helps to understand this is that the commercial banks do not bank with themselves, income received in the form of interest payments is transferred as deposits at another bank, and recorded as deposit assets (the banks are thus all necessarily clients of one another). Thus a transfer of deposits to and from a bank's own reserve account, by themselves, affects the total level of deposits held by another bank. For example, if Bank A banks with (keep the deposits they own with) Bank B, and they decide to transfer some of their own deposits to their reserve account at the central bank. Then the total level of deposits against which Bank B must maintain a reserve declines by the same amount. The source of these balances is the profit (or income) earned by the Bank A in the course of doing business, but kept at Bank B.

borrow their shortfall from the central bank, and this is charged at the key interest rate (REPO rate).

Collectively, as we have noted, the SARB also forces the banks to borrow a portion of their required reserves, which Faure (2013e: 62) calls borrowed reserves (BR). In practice the SARB imposes the shortage of liquidity through open market operations (OMOs) in a number of different instruments, as explained in Appendix A2, the most prominent of which are foreign exchange swaps[160]. This shortfall is then supplied back to the banks via the REPO auction once a week, as BR. As noted by Faure, the deposits of banks with the central bank (in their reserve accounts) are not remunerated (do not earn interest), and, as a result, banks will endeavour to make sure that the level of liquidity held in their reserve accounts is as close to the required level as possible[161]. The level of ER, he explains, is thus normally zero or very close to zero at all times. As Faure explains, the liquidity shortage can also be represented on a net basis. Collectively, the banks are indebted to the extent that the BR exceed ER. This can more clearly be represented by the following identity:

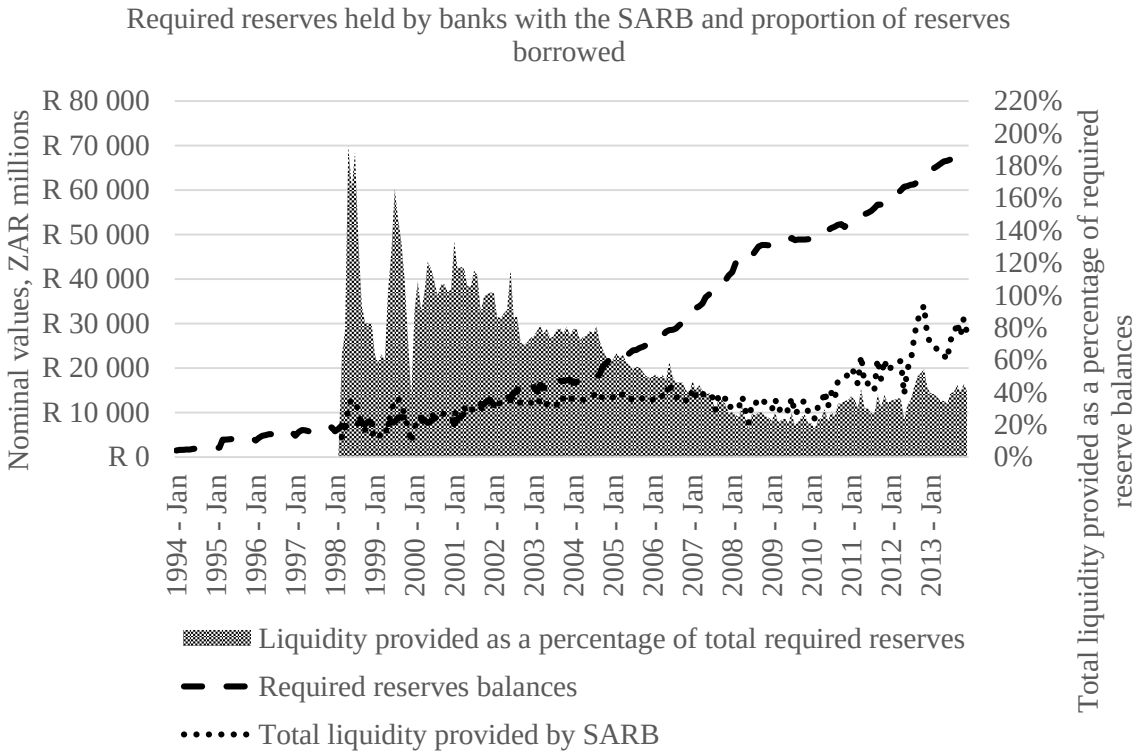
$$LS = net\ excess\ reserves\ (NER) = ER - BR$$

As explained by Faure, net excess reserves (NER) is thus a balance sheet identity, observable on the balance sheet of the SARB, which provides information about the liquidity shortage. As can be gathered from the above identity, an increase in NER will result in an increase in (ER – BR) and thus in a reduction of the LS. Similarly a decrease in NER will result in an increase in the LS.

As can be seen in the Figure 4.3.1 below, the nominal quantity of bank reserves (RR) continues to rise, and is currently in the region of R70 billion. The introduction of the repurchase refinancing system can clearly be seen in 1998. The level of accommodation (LS) at month end as a percentage of the required reserve balances (RR) fluctuated to levels in excess of 100 per cent prior to 2006; however since 2007 this has moderated to between 20 per cent and 60 per cent, closing at just over 44 per cent at the end of December 2013.

[160] A substantial portion of the outstanding swaps, according to SARB (2014d: 61) are on behalf of National treasury, as an agreed exchange rate control directive.
[161] There are also additional penalties which accrue each day against the banks if the level of deposits in their reserve accounts is less than the level of RR.

FIGURE 4.4.1: REQUIRED RESERVES HELD BY BANKS WITH THE SARB AND PROPORTION OF RESERVES BORROWED: SOUTH AFRICA, 1994 TO 2013



Source: SARB (2014b)

As at the end of December 2013, it can be seen in Figure 4.3.1 above, TR (black dashed line) = R69.3bn, BR (black dotted line) = 28bn, ER = 0[162]. The NER identity can then be written as

$$NER\ (LS)\ =\ ER\ -\ BR\ =\ 0\ -\ R27.9\ billion\ =\ -R27.9\ billion$$

As explained by Faure, the level of the LS is maintained by the SARB through the use of open market operations (OMOs), essentially, because all OMO's of the balance sheet settle across the reserve accounts, any OMO that results in a change in the structure of the SARB balance sheet will also directly affect the liquidity position of the banks. Thus, as explained by Brink and Kock (2010: 7), an increase in assets[163] (or decrease in liabilities) of the SARB will lead

[162] In practice the ER positions are not exactly equal to zero, however, for simplicity of explanation we assume that they are for this example. Details regarding the daily position of ER in South Africa are included in Appendix A2.

[163] A useful way to think of this is that for the SARB to acquire an asset they must release funds for that purchase.

to an increase in NER of the banks, and a decrease in the LS. Similarly a decrease in assets[164] (or an increase in liabilities) of the SARB will lead to a decrease in the NER of the banks and an increase in the LS. Thus, any alterations made by the SARB to the structure of its balance sheet results in a change in the NER position of the banks.

In the balance sheet analysis above, Faure denoted the expected changes in M3 by the following counterpart identity:

$$\Delta M3 = \Delta NFA + \Delta NLG + \Delta LNBPS$$

As we have shown, the SARB utilises its balance sheet to directly affect the liquidity position of the banks. As in the case of the monetary banking sector as a whole, the principles of double entry accounting, as well as the associated balance sheet identity and analysis can once again be applied.

As noted by Faure (2014: 91), a similar analysis to the one conducted for M3 above can be conducted to calculate the liquidity shortage from the balance sheet of the SARB (as opposed to the balance sheet of the MBS), and so the balance sheet sources of change in bank liquidity (LS) can be identified. This renders the identity described by Faure (2014: 92):

$$\Delta NER = \Delta NFA_{CB} + \Delta NLG_{CB} - \Delta N\&C_{CB} - \Delta RR + \Delta NOA_{CB} \quad [165]$$

The SARB balance sheet unsurprisingly is comprised of similar components to those of the monetary banking sector (MBS). As he explains, this analysis, when conducted in practice is called the *bank liquidity analysis* (or money market analysis).

This is presented in Table 4.3.1 below. As can be seen, an increase in the level of liquidity provided is exactly equal to a decrease in NER from quarter to quarter[166]. As can be observed an increase in NFA, NLG or NOA results in a reduction of the liquidity shortage (provision of liquidity), and an increase in N&C in circulation or RR results in a reduction of NER, and

[164] A useful way to understand this is that if the SARB sells an asset they will absorb liquidity in return for the sale.
[165] As in the previous section NOA is included to account for the extraordinary use of derivative instruments in the SARB portfolio, particularly foreign exchange swaps.
[166] The detailed composition of the causes of change can be observed in Appendix A4.

drainage of liquidity. The composition of these changes is also provided, however, a detailed discussion thereof will simply clutter the core of the argument. The inclusion here is for validation of the identity, rather than a detailed investigation of the underlying components.

TABLE 4.4.1: BANK LIQUIDITY ANALYSIS: CHANGES PER QUARTER IN LIQUIDITY PROVIDED AND COUNTERPARTS SARB BALANCE SHEET: SOUTH AFRICA, 2012 TO 2013

	2013				2012			
	Q4	**Q3**	**Q2**	**Q1**	**Q4**	**Q3**	**Q2**	**Q1**
Changes in liquidity provided	(ZAR Billions)				(ZAR Billions)			
Δ Contra-account Dr	-3.9	5.3	1.3	-2.7	2.2	0.5	-0.3	-1.7
Δ REPOs	1.6	3.6	-4.1	-0.5	-1.8	6.7	-0.5	3.1
Δ SAMOS REPOs	0.0	-0.5	0.5	0.0	-3.7	3.7	-1.0	1.0
Δ Liquidity provided	**-2.3**	**8.5**	**-2.3**	**-3.2**	**-3.3**	**10.9**	**-1.8**	**2.3**
Causes of change	(ZAR Billions)				(ZAR Billions)			
$+ \Delta NFA_{CB}$	17.6	33.1	9.6	29.1	7.4	19.1	15.4	-8.9
$+ \Delta NLG_{CB}$	0.6	-17.2	15.0	-11.8	-2.9	-3.8	6.1	-5.6
$+ \Delta NOA_{CB}$	-3.3	-18.0	-22.1	-20.9	15.6	-20.4	-20.3	7.5
$- \Delta N\&C_{CB}$	13.5	2.8	-0.3	-9.0	15.1	5.1	1.9	-11.2
– Δ RR	-0.8	3.6	0.5	2.2	1.8	0.7	-2.4	6.6
Δ NER	**2.3**	**-8.5**	**2.3**	**3.2**	**3.3**	**-10.9**	**1.8**	**-2.3**

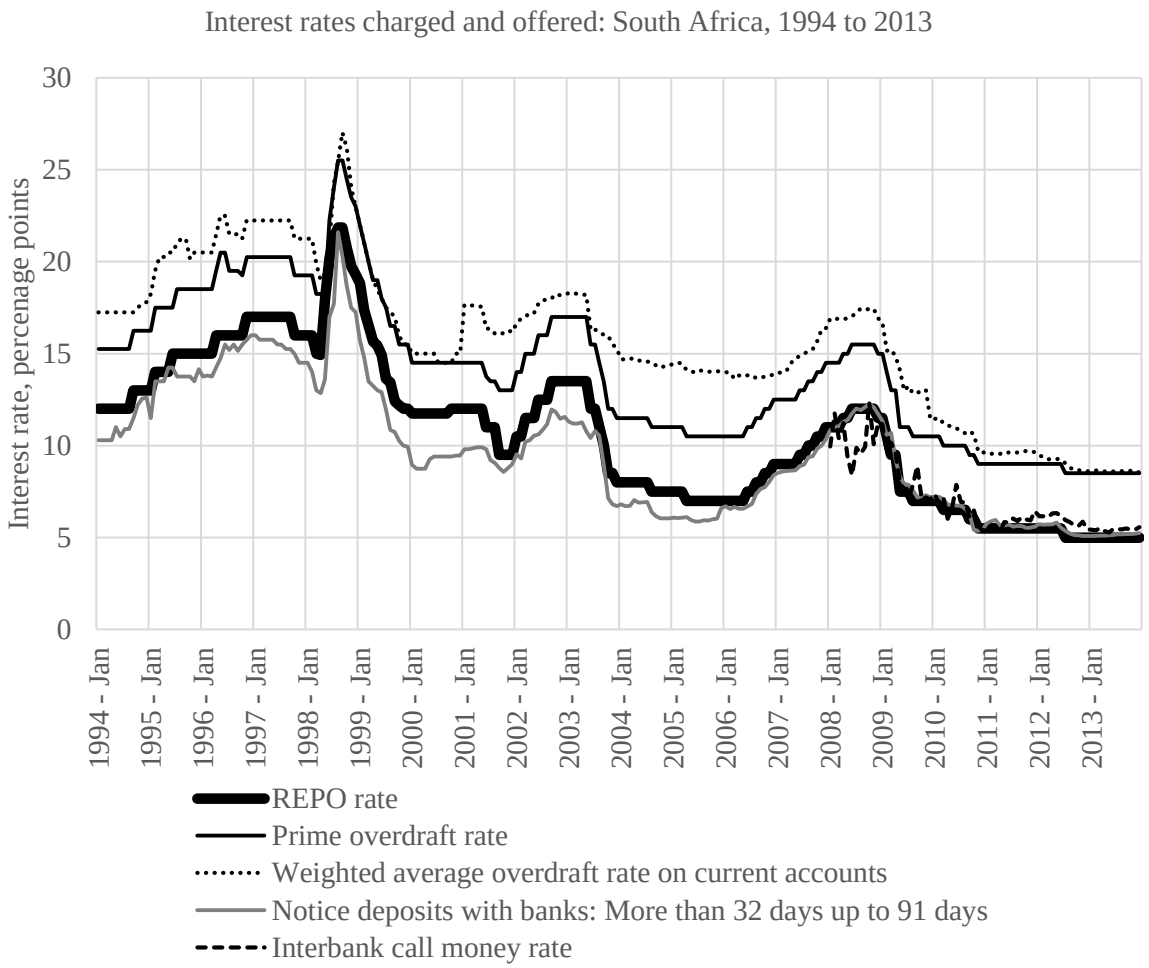
Source: SARB (2014b)

We turn now to the reason why the SARB engages in this process and the impact that successful application of liquidity management has. As we know, the SARB sets the REPO rate and, as we have suggested, this influences the borrowing and deposits rates available from the banks, and of a range of other assets through an arbitrage process. We have explained (and demonstrated) that the balance sheet operations of the SARB are used exclusively to maintain the liquidity shortage in the money market, and thus the effectiveness of the SARB interest rate policy[167].

[167] The SARB, may also from time to time perform actions on behalf of National Treasury, the case in point here being the engagement in foreign exchange swaps, and the associated increase in the deposit balances of the CPD with the SARB. In this case, it is likely that the transactions in the foreign exchange market would have had an impact on liquidity conditions in the absence of SARB intervention – one option may have been to transfer government deposits from the commercial banks to the SARB via the CPD deposit account.

As emphasised by Faure (2013e: 66), the primary function of the repo process is to ensure the stability of domestic credit conditions, and the effective transmission of interest rate changes, and this occurs through what is commonly known as the interest rate transmission mechanism[168]. He notes that when banks are chronically kept in a liquidity shortage position, the key interest rate comes to directly affect the interbank lending rates, and other bank rates come to be priced off of these rates. As noted in section 3.3.4 above, the banks in South Africa have, since roughly 2002, maintained a constant mark-up of 3.5 percentage points on top of the REPO rate in setting their prime lending rates. We recreate the chart here, and include the end of month rates charged on a variety of money market, deposit and commercial lending securities.

FIGURE 4.4.2: INTEREST RATES CHARGED AND OFFERED: SOUTH AFRICA, 1994 TO 2013



Source: SARB (2014b)

[168] A full exposition of the interest rate transmission mechanism is beyond what space will allow in this research, however the interested reader is referred to Angelis, Aziakpono and Faure (2005) for a detailed description of this process for South Africa, and to Faure (2014: 99) and Faure (2013e: 70) for stylized discussions.

As can be seen from Figure 4.3.2 above, changes in lending rates and deposit interest rates at the short end of the yield curve track the changes in the REPO rate (thick black line) exceptionally closely. As we expected from an established banking system, such as South Africa's, this was the case even prior to the implementation of the repurchase refinancing system in 1998. These are of course monthly figures, and an observation of these relationships on a daily basis, or over shorter periods, as presented by SARB (2014d: 56), reveals that there is significantly greater variation around the levels depicted above over shorter time periods, but that the rates converge towards the month end figures depicted in the chart above. These monthly figures thus provide an excellent illustration of the direct links referred to by Faure.

Changes in the REPO rate can clearly be seen to influence a variety of other rates. Unfortunately data on the interbank call money rate was only available from January 2008, and, as can be seen in figure 4.3.2 above, the interbank call money rate (thin black dashed line) initially fluctuated fairly widely, and has in the past three years, since 2011, settled just above the key interest rate. Faure (2013e: 67) attributes this to strong competition between banks with the goal to avoid borrowing from the SARB.

Importantly, as noted earlier, from a money creation perspective, the changes in the REPO rate directly affect the lending rates of banks. This is most clearly seen in the relationship between the REPO rate and the prime overdraft rate (thin black line) in Figure 4.3.2. [169]

In summary, the SARB imposes a liquidity shortage (LS), and then re-finances that shortage through the provision of liquidity (BR) that is charged at an administered interest rate, the repo rate. The SARB thus does create money (deposit securities); however these deposits effectively never leave the settlement system, and are necessarily the counterparts to the imposed liquidity shortage[170]. The liquidity shortage and refinancing system results in strong competition in the interbank market and a convergence between the interbank call money rate and the key interest

[169] The prime overdraft rate is, however, a quoted rate (only indicative), and the weighted average overdraft rate on current accounts probably provides a more realistic indication of the extent to which banks allow the interest rates to pass-through. The gap which opened up around August 2003 between the weighted average overdraft rate on current accounts and the prime overdraft rate is a demonstration of 'sticky' bank lending rates, where banks continued to extract fairly high levels of rent from overdraft holders in spite of a significant reduction in the REPO rate. The SARB appears to have corrected this behaviour in the banks since 2009. Interest rate pass-through was investigated in detail up until the middle of 2005 by Angelis, Aziakpono and Faure (2005: 661).
[170] This too is explained in Appendix A2.

rate (REPO rate), and the changes made to the REPO rate can be seen clearly to transmit to other short term deposit and overdraft rates. As we noted earlier, this will also result in an adjustment of the prices of a much broader range of financial assets through a process of arbitrage[171].

4.5 Closing thoughts on money creation in South Africa

It appears, from observation, that money (at least in the form of bank deposits) is initially created through the extension of loans, and thereafter accommodated at an aggregate level. As noted in the historical development section, and again in the post Keynesian discussion above, money (in the present example bank notes and coins plus bank deposits) can and does only exist as the residue of the credit extension process. As stated by Brink and Kock (2010: 21) "in practice … the banking system expands the scope of fiat money by extending credit through loans based on risk assessment and demand, which in turn translates into deposits. Credit provided by one bank, becomes a deposit at the same bank or another bank as soon as the borrower enters into a transaction. This credit extension is not constrained by deposit funding or cash reserves as any shortfall is borrowed from the central bank that provides liquidity."

As can be gathered from both the analysis presented, and from the policy framework of the SARB, the satisfaction of credit demand is the primary and overriding factor with regard the determination of the quantity of money in circulation. To the extent that external short term innovations in the quantity of money are neutralised, it is through control over credit markets that the SARB influences the nominal quantity of money created and retired within the South African economy, and also influences inflation. This can also be clearly observed with the relatively simple presentation of the nominal values of the counterparts to money creation.

As we have explained, the repurchase refinancing system effectively enables the SARB to control both deposit and lending rates of the commercial banking sector, and it is through the influence over lending rates that the SARB exerts the greatest influence over the credit market.

[171] As noted by van der Merwe (2004: 10), this impact on asset prices, however, is considered a risk factor for additional consideration when managing interest rates, rather than an exploitable tool for monetary policy.

CHAPTER 5: CONCLUSIONS

It is the hope that this research has contributed to the ongoing debate regarding the nature of money creation, by combining theoretical, historical and practical perspectives and observations. It is the conclusion of this research that of the two major paradigms assessed the post Keynesian paradigm more accurately depicts the nature of money creation, although not without caveat.

It would appear that post Keynesians (explicitly) and monetarists (implicitly) acknowledge that the quantity of money in existence is, and can only be, the residual outcome of bank lending to the private sector. While it is obvious that at a direct causal level, money is and can only be created through bank lending, it is by no means clear what the exact actual causal forces behind changes in the lending behaviour of banks, or the credit demand behaviour of borrowers within the economy are.

Where the two paradigms appear to differ significantly is in terms of attribution of causal sources of money creation – both in the broader and direct senses. All the same, the conclusions of each paradigm are surprisingly not as far apart as one might imagine. Monetarists presented a deeply flawed direct causal relationship between the nominal reserves of banks with the central bank and the nominal level of commercial bank deposits; however, the general assumption that central banks could control the rate of money creation in the long run is not qualitatively different from the conclusion of post Keynesians, that the central bank, through interest rate policy, could influence the rate of money creation. Both paradigms also conclude that excessive money creation in the absence of productive capacity (or flexibility thereof) would be likely to result in inflationary pressures.

The divergence in policy recommendations, however, reveals a significant difference in theoretical understanding of the roles of economic participants, banks and the economic world in general. These differences can be traced to deeper methodological and philosophical roots, and, although intuitively appealing, theories derived within the Cartesian and Euclidian philosophical frameworks must necessarily neglect institutional and structural context and changes to a large degree. The risk of this neglect is that economic policies developed within

these frameworks (such as those of monetarism) could be wholly inappropriate for the complex practical reality that they are designed.

The post Keynesian paradigm suffers from a very different condition. Although clearly more in line with reality, the multiplicity of methods and methodological foundations (structured pluralism), ensures that an assessment of the validity of theoretical propositions remains a complex, labour and intellectually intensive task. To the extent that a simple, generally applicable model does not yet exist for the post Keynesian paradigm, the practicality of teaching it as a simplified set of principles remains limited. We hope that the balance sheet analysis presented in this research might contribute to the development of such a structure.

To that end there are several principles, which form a part of regular macroeconomic text book learning, which we conclude, from the analysis and discussions above, to be not only misleading but potentially detrimental to economic progress. These include the presentation of money as an exogenously determined component in the economy, the money multiplier approach to monetary policy implementation, and the presentation of nominal quantities of money as causal in the inflationary process. We will elucidate each in turn.

Money creation should, according to the analysis above, be defined according to the actual source of creation, that is, credit extension. The implications of which begin with the acknowledgement that the world is essentially non-ergodic. Within this framework, changes in the stock of money (through credit extension) take on a causal role with regard the initiation of productive processes. Banks create (and retire) money on behalf of creditworthy borrowers at the cost of interest and this money facilitates the mobilisation of resources that would otherwise have remained dormant. The consequence of which is a reversal of the causal depiction of the relationship between savings and investment from the orthodox view that hoarded liquid capital could be transformed by banks into productive assets. The exact opposite of which appears to be true in reality. Productive development results in the distribution of factor payments, which facilitates the savings process. Risks and breakdowns to the circuit flow of money through hoarding (or profit retention or isolation of wealth in the case of household debt) highlight savings as a risk enhancing, rather than mitigating factor.

In addition, money, and thus credit, creation should occupy a central role in the presentation of potential economic growth. To the extent that the constituents of on economy are competent, capable and motivated enough to produce goods that meet the effective demand of domestic and foreign consumers there is essentially an unlimited quantity of monetary resources available for the facilitation of this process. This might act as a motivating factor, and also emphasises the importance of effective fiscal development of institutions and systems aimed at improving the effectiveness of the domestic labour force (and human capital in general).

The presentation of the money multiplier, as well as the depiction of monetary authorities to be able to directly influence the nominal quantity of money in circulation in the economy is simply false. Any depiction of an exogenous supply function of money is to grossly misrepresent the nature of money as a concept. Money exists as the residue of internal debt relationships, created by economic agents against the remainder of society. To the extent that monetary authorities can influence the price of new money creation, they can alter the relative ease or difficulty with which households or firms can acquire access to credit; however, they do not directly influence the aggregate quantity of money in existence (except to the extent that external influences are neutralised). This has important implications for both economic growth, as explained above, and for inflation, as described below.

A noted above, in terms of the control of inflationary pressures, we explained that inflation (or pricing patterns in general) are the result of *decisions* taken by economic agents, and the general price level or expected changes therein are more likely to cause changes in the quantity of money than vice versa. General price increases can be accommodated by the central bank, however a clear distinction exists between a once off price increase and accommodation of an inflationary process (as driven by expectations). It appears that the credibility of central banks is crucial in controlling the inflationary expectations of economic agents, particularly for the purpose of the distributive conflict between firms and households – primarily for the purpose of pegging expectations rather than through direct influence. To suggest that this inflationary process is caused by an exogenous decision making process is to misdirect the attribution of accountability away from the distributive conflict between firms and labour – where we believe it should rightly lie. Money, as we know, cannot be causal, as it is residual by its very existence. Effective control of inflation can thus only occur through the collaborative efforts of all economic agents, a responsibility that should be assumed by all economic agents.

From an information and policy analysis perspective we conclude that the composition of both credit and money (both hoarded and working balances) can have important implications for real economic conditions – particularly to the extent that variations in these could signal structural or behavioural shifts that monetary authorities should be aware of. As such we would advocate, as does Selody (2001: 44), the use of a wide variety of information variables and analysis techniques. If anything, this study has helped to highlight the fallibility of theoretical constructs, and the importance of a variety of perspectives in the development of knowledge. In the spirit of post Keynesian enquiry, we believe that in time the conclusions of this research will equally be found to be inappropriate. It must also be noted that this research has identified the broad causes of change in the money stock, and as discussed above, the nominal quantity of money in existence is primarily determined by changes in the aggregate level of loans extended to the non-banking private sector. The underlying (actual) causes of changes in the levels of credit demanded and satisfied are necessarily the subject of a more extensive study, and one that could potentially build upon this one in the South African context. As noted by Le Bourva (1992: 448) "[s]uch a study would mean examining individual cash balance needs for different categories of economic units, and the aggregation of these needs, in order to establish the overall demand for new money. Finally, an in-depth study would mean analysing what credit procedures satisfy this demand for new money, and the influence of bankers in this field."

At present, however, we believe that this research represents an accurate description of the theoretical positions of the two major monetary paradigms as presented in recent history (namely the neoclassical, represented by monetarism, and post Keynesian), a brief but comprehensive history of the development of money, and an accurate portrayal of the reality of money creation in a modern monetised economy, as represented by South Africa.

LIST OF REFERENCES

ALLEN, W.A., 2012. Government debt management and monetary policy in Britain since 1919. **Papers of the Bank for International Settlements**. No 65b.

ANGELIS, C., AZIAKPONO, M.J. and FAURE, A.P., 2005. The transmission of monetary policy under the repo system in South Africa: An empirical analysis. **South African Journal of Economics**. 73, 4: 657-673.

ARESTIS, P. and EICHNER, A.S., 1988. The post Keynesian and institutionalist theory of money and credit. **Journal of Economic Issues**. 22, 4: 1003-1021.

ARNON, A., 2010. **Monetary theory and policy from Hume and Smith to Wicksell: Money, credit, and the economy.** London: Cambridge University Press.

ASENSIO, A., LANG, D. and CHARLES, S., 2012. Post Keynesian modelling: Where are we, and where are we going to? **Journal of Post Keynesian Economics**. 34, 3: 393-412.

BANKS AMENDMENT ACT, No. 20 of 2007. 2007. **Government Gazette**. 30474. 15 November. Government notice no. 1080. Cape Town: Government Printer.

BERNANKE, B.S. and GERTLER, M., 1995. Inside the black box: The credit channel of monetary policy transmission. **Working papers of the National Bureau of Economic Research**. No. 5146.

BERNANKE, B.S., 2007. The financial accelerator and the credit channel. **Speeches of the Chairman of the Federal Reserve Banks of America**. 15 June 2007. [Online] Available: http://www.federalreserve.gov/newsevents/speech/bernanke20070615a.htm (Accessed: 13 November 2014)

BESTER, M.C. and VAN DER MERWE, E.J., 1991. South Africa's balance of payments: Sources, methods and reliability. **Occasional papers of the South African Reserve Bank**. No 3.

BORDO, M.D., 1981. The classical gold standard: Some lessons for today. **Federal Reserve Bank of St. Louis Review**. May 1981.

BORIO, C.E.V. and DISYATAT, P., 2009. Unconventional monetary policies: an appraisal. **Working papers of the Bank for International Settlements**. No. 292.

BOSSONE, B., 2001. Circuit theory of banking and finance. Journal of Banking & Finance. 25, 5: 857-890.

BRINK, N. and KOCK, M., 2009. Central bank balance sheet policy in South Africa and its implications for money-market liquidity. **Working papers of the South African Reserve Bank**. No. 10.

CARPENTER, S. and DEMIRALP, S., 2012. Money, reserves, and the transmission of monetary policy: Does the money multiplier exist? **Journal of Macroeconomics**. 3, 34: 59-75.

CHICK, V. and DOW, S., 2002. Monetary policy with endogenous money and liquidity preference: A non-dualistic treatment. **Journal of Post Keynesian Economics**. 24, 4: 587-607.

CHICK, V. and DOW, S., 2005. The meaning of open systems. **Journal of Economic Methodology**. 12, 3: 363-381.

CHICK, V. and DOW, S.C., 2001. Formalism, logic and reality: A Keynesian analysis. **Cambridge Journal of Economics**. 25, 6: 705-721.

CHICK, V., 1993. The evolution of the banking system and the theory of monetary policy. In: S.F. FROWEN (ed.), 1993. **Monetary theory and monetary policy: new tracks for the 1990s**. New York: St. Martin's Press.

CHICK, V., 2003. Theory, method and mode of thought in Keynes's General Theory. **Journal of Economic Methodology**. 10, 3: 307-327.

CURRENCY AND BANKING ACT, No. 31 of 1920. 1920. Available: https://www.google.co.za/url?sa=t&rct=j&q=&esrc=s&source=web&cd=3&ved=0CCIQFjAC&url=https%3A%2F%2Fwww.resbank.co.za%2FBanknotesandCoin%2FCurrencyManagement%2FDocuments%2FCurrency%2520and%2520Banking%2520Act%252031%2520of%25201920.pdf&ei=hCZkVMWAKMWqPLf2gNgI&usg=AFQjCNF72sJSaqzid2Ctp562_lkrvDAI0w&bvm=bv.79189006,d.ZWU&cad=rja. (Accessed: 11 November 2014)

DE KOCK, G.P.C., 1986a. Market-oriented economic policy versus quantitative controls. **South African Reserve Bank Quarterly Bulletin**. 1986, December.

DE KOCK, G.P.C., 1986b. Money supply targets for 1986. **South African Reserve Bank Quarterly Bulletin**. 1986, March.

DE KOCK, M.H., 1954. **Central banking: Third edition**. London: Staples Press Limited.

DELEPLACE, G., 2014. Book review of: ARNON, A., 2010. Monetary theory and policy from Hume and Smith to Wicksell: Money, credit, and the economy. **The European Journal of the History of Economic Thought**. 21, 1: 158-166.

DISYATAT, P., 2011. The bank lending channel revisited. **Journal of Money, Credit and Banking**. 43, 4, 711-734.

DOS SANTOS, A.L.M.D., 2011. Inflation targeting in a post Keynesian economy. **Journal of Post Keynesian Economics**. 34, 2: 295-318.

DOW, S.C., 1985. **Macroeconomic thought: A methodological approach**. England: Blackwell Oxford.

DOW, S.C., 1999. Post Keynesianism and critical realism: What is the connection? **Journal of Post Keynesian Economics**. 22, 1: 15-33.

DOW, S.C., 2001. Post Keynesian methodology. In: HOLT, R.P.F., and PRESSMAN, S. (eds.), 2001. **A New Guide to Post Keynesian Economics**. London: Routledge.

DOW, S.C., 2006. Endogenous money: Structuralist. In: P. ARESTIS and M. SAWYER (eds.), 2006. **A handbook of alternative monetary economics**. Massachusetts, USA: Edward Elgar Publishing Limited.

DOW, S.C., 2007. Variety of methodological approach in economics. **Journal of Economic Surveys**. 21, 3: 447-465.

DOW, S.C., 2008. A future for schools of thought and pluralism in heterodox economics. In: HARVEY, J.T., and GARNETT, R.F., (eds.), 2008. **Future directions for heterodox economics**. USA: University of Michigan Press.

DOW, S.C., 2010. Keynes on knowledge, expectations and rationality. **Center on Capitalism and Society Conference on Microfoundations for Modern Macroeconomics**. New York, 2010.

FAURE, A.P., 2008. **Money market: Interbank market**. Cape Town: The Quoin Institute (Pty) Ltd.

FAURE, A.P., 2013a. **Banking: An introduction**. London: Bookboon Limited.

FAURE, A.P., 2013b. **Central banking and monetary policy: An introduction**. London: Bookboon Limited.

FAURE, A.P., 2013c. **The financial system: An introduction**. London: Bookboon Limited.

FAURE, A.P., 2013d. **Money creation: An introduction**. London: Bookboon Limited.

FAURE, A.P., 2013e. **Money market: An introduction.** London: Bookboon Limited.

FAURE, A.P., 2014. **Money creation: Advanced readings**. London: Bookboon Limited.

FLEETWOOD, S., 1999. **Critical realism in economics: Development and debate**. London: Routledge.

FONTANA, G., 2000. Post Keynesians and circuitists on money and uncertainty: An attempt at generality. **Journal of Post Keynesian Economics**. 23, 1: 27-48.

FRIEDMAN, M. and SCHWARTZ, A.J., 1963. **A monetary history of the United States, 1867–1960**. Princeton, NJ: Princeton University Press.

FRIEDMAN, M., 1970. A theoretical framework for monetary analysis. **The Journal of Political Economy**. 78, 2: 193-238.

FRIEDMAN, M., 1986. The resource cost of irredeemable paper money. **The Journal of Political Economy**. 94, 3: 642-647.

GNOS, C., 2006. French circuit theory. In: P. ARESTIS and M. SAWYER (eds.), 2006. **A handbook of alternative monetary economics**. Massachusetts, USA: Edward Elgar Publishing Limited.

GODLEY, W., 1999. Money and credit in a Keynesian model of income determination. **Cambridge Journal of Economics**. 23, 4: 393-411.

GODLEY, W.C., and CRIPPS, F., 1983. **Macroeconomics**. London: Oxford University Press.

GODLEY, W.C., and LAVOIE, M., 2001. Kaleckian models of growth in a coherent stock-flow monetary framework: A Kaldorian view. **Journal of Post Keynesian Economics**. 24, 2: 277-311.

GODLEY, W.C., and LAVOIE, M., 2003. Two-country stock-flow-consistent macroeconomics using a closed model within a dollar exchange regime. **Working papers of the Cambridge Endowment for Research in Finance**. No. 10.

GODLEY, W.C., and LAVOIE, M., 2006. Comprehensive accounting in simple open economy macroeconomics with endogenous sterilization or flexible exchange rates. **Journal of Post Keynesian Economics**. 28, 2: 241-276.

GODLEY, W.C., and LAVOIE, M., 2007. **Monetary economics**. Basingstoke: Palgrave Macmillan.

GOODHART, C.A.E., 1989. Has Moore become too horizontal? **Journal of Post Keynesian Economics**. 12, 1: 29-34.

GOODHART, C.A.E., 1992. Alternative monetary standards. In: GOODHART, C.A.E. (ed.), 1995. **The central bank and the financial system**. Massachusetts: MIT Press.

GOODHART, C.A.E., 1994. What should central banks do? What should be their macroeconomic objectives and operations? **The Economic Journal**. 104, 427: 1424-1436.

HOWELLS, P., 2006. The endogeneity of money: empirical evidence. In: P. ARESTIS and M. SAWYER (eds.), 2006. **A handbook of alternative monetary economics**. Massachusetts, USA: Edward Elgar Publishing Limited.

ISENBERG, D., 2006. Deregulation. In: P. ARESTIS and M. SAWYER (eds.), 2006. **A handbook of alternative monetary economics**. Massachusetts, USA: Edward Elgar Publishing Limited.

JOHNSON, H.G., 1962. Monetary theory and policy. **The American Economic Review**. 52, 3: 335-384.

KALDOR, N., 1970. The new monetarism. **Lloyds Bank Review**. 97, 1: 1-18.

KALDOR, N., 1985. How monetarism failed. **Challenge**. 28, 2: 4-13.

KELLY, M.V., 1993. **Financial institutions in South Africa: Financial, investment and risk management.** Ndabeni: Juta & Company Ltd.

KEYNES, J.M., 1937. The general theory of employment. The Quarterly Journal of Economics, vol. 51, no. 2, pp. 209-223.

KIDWELL, D.S., BLACKWELL, D.W., WHIDBEE, D.A. and PETERSON, R.L., 2009. **Financial institutions, markets, and money: 10th edition for Lasalle University**. Canada: John Wiley & Sons Canada Limited.

LAVOIE, M., 1984. The endogenous flow of credit and the post Keynesian theory of money. **Journal of Economic Issues**. 18, 3: 771-797.

LAVOIE, M., 1992. Jacques Le Bourva's theory of endogenous credit-money. **Review of Political Economy**. 4, 4: 436-446.

LAVOIE, M., 2006. Endogenous money: Accommodationist. In: P. ARESTIS and M. SAWYER (eds.), 2006. **A handbook of alternative monetary economics**. Massachusetts, USA: Edward Elgar Publishing Limited.

LAWSON, T., 1997. **Economics and reality**. London: Routledge.

LE BOURVA, J.L., 1959. La théorie de l'inflation, le rapport des experts et l'opération de décembre 1958. **Revue Économique**. 10, 5: 713-754.

LE BOURVA, J.L., 1962. Création de la monnaie et multiplicateur du crédit. **Revue Économique**. 13, 1: 29-56.

LE BOURVA, J.L., 1992. Money creation and credit multipliers. **Review of Political Economy**, 4, 4: 447-466.

LE BOURVA, J.L., 1992. Money creation and credit multipliers∗. Review of Political Economy. 4, 4: 447-466.

LEONTIEF, W.W., 1936. The fundamental assumption of Mr Keynes' monetary theory of unemployment. **The Quarterly Journal of Economics**. 51, 1: 192-197.

MADURA, J., 2010. **Financial markets and institutions**. Mason, OH: South Western Cengage Learning.

MCLEAY, M., RADIA, A., and THOMAS, R., 2014. Money creation in the modern economy. **Bank of England Quarterly Bulletin**. 54, 1: 14-27.

MISHKIN, F.S., 2007. **The economics of money, banking, and financial markets**. Boston: Pearson Addison-Wesley.

MOHR, P., 2008. On inflation. **South African Journal of Economics**. 76, 1: 1-15.

MOORE, B.J., 1983a. A monument to monetarism. **Journal of Post Keynesian Economics**. 6, 1: 118-121.

MOORE, B.J., 1983b. Unpacking the post Keynesian black box: Bank lending and the money supply. **Journal of Post Keynesian Economics**. 5, 4: 537-556.

MOORE, B.J., 1988. **Horizontalists and verticalists: The macroeconomics of credit money**. Cambridge: Cambridge University Press.

MOORE, B.J., 1989. On the endogeneity of money once more. **Journal of Post Keynesian Economics**. 11, 3: 479-487.

MOORE, B.J., 1991a. Has the demand for money been mislaid? A reply to" Has Moore become too horizontal?". **Journal of Post Keynesian Economics**. 14, 1: 125-133.

MOORE, B.J., 1991b. Money supply endogeneity: "reserve price setting" or "reserve quantity setting"? **Journal of Post Keynesian Economics**. 13, 3: 404-413.

MOORE, B.J., 2001. Some reflections on endogenous money. In: L.P. ROCHON and M. VERNENGO (eds.). **Credit, interest rates and the open economy: Essays on horizontalism**. Cheltenham, UK: Edward Elgar.

NATIONAL CREDIT ACT, No. 34 of 2005. 2005. **Government Gazette**. 28619. 6 December. Government notice no. 230. Cape Town: Government Printer.

PALLEY, T.I., 1991. The endogenous money supply: Consensus and disagreement. **Journal of Post Keynesian Economics**. 13, 3: 397-403.

PALLEY, T.I., 2002. Endogenous money: What it is and why it matters. **Metroeconomica**. 53, 2: 152-180.

PALLEY, T.I., 2013. Horizontalists, verticalists, and structuralists: The theory of endogenous money reassessed. **Review of Keynesian Economics**. 1, 4: 406-424.

PILBEAM, K., 2010. **Finance and financial markets**. Basingstoke, Hampshire: Palgrave Macmillan.

POLLIN, R., 1991. Two theories of money supply endogeneity: Some empirical evidence. **Journal of Post Keynesian Economics**. 13, 3: 366-396.

RITTER, L.S., and SILBER, W.L., 1983. **Principles of money, banking, and financial markets.** New York: Basic Books.

ROCHON, L. and LANG, D., 2012. Growth and money in post Keynesian models. **Journal of Post Keynesian Economics**. 34, 3.

ROCHON, L., 2001. Cambridge's contribution to endogenous money: Robinson and Kahn on credit and money. **Review of Political Economy**. 13, 3: 287-307.

ROCHON, L., and ROSSI, S., 2006. Endogenous money: The evolutionary versus revolutionary views. **Working papers of Centro di studi bancari Villa Negroni - Research Laboratory of Monetary Economics**. No. 14.

SANDELOWSKI, M., 2000. Focus on research methods-whatever happened to qualitative description? **Research in Nursing and Health**. 23, 4. 334-340.

SARB, 2007a. Same day square-off in the South African Multiple Option Settlement (SAMOS) system. **Information papers of the National Payments System Department of the South African Reserve Bank**. NPS 05.

SARB, 2007b. South Africa's participation in the continuous linked settlement system. **Information papers of the National Payments System Department of the South African Reserve Bank**. NPS 04.

SARB, 2011. Position paper on access to the national payment system. **Position papers of the National Payments System Department of the South African Reserve Bank**. NPS 02/2011.

SARB, 2014a. **Data derived from: 'Bank supervision data: BA900'**. Available at: South African Reserve Bank. [Online] Available: https://www.resbank.co.za/RegulationAndSupervision/BankSupervision/Banking%20sector%20data/Pages/default.aspx. (Accessed: 01 November 2014)

SARB, 2014b. **Data derived from: 'Quarterly Bulletin: Zipped data'**. Available at: South African Reserve Bank. [Online] Available: https://www.resbank.co.za/Lists/News%20and%20Publications/Attachments/6407/01Kbp1%20%E2%80%93%20Money%20and%20Banking%20%E2%80%93%20September%202014.zip (Accessed: 05 May 2014)

SARB, 2014c. Position paper on interbank settlement application interfaces. **Position Papers of the National Payments System Department of the South African Reserve Bank**. NPS 01/2014.

SARB, 2014d. **South African Reserve Bank Quarterly Bulletin**. 2014, September.

SAY, J.B., 1836. **A treatise on political economy: On the production, distribution, and consumption of wealth**. Translated by PRINSEP, C.R., and BIDDLE, C.C., 1880. Ontario, Canada: Batoche Books, Kitchener.

SECCARECCIA, M., 2012. Financialization and the transformation of commercial banking: Understanding the recent Canadian experience before and during the international financial crisis. **Journal of Post Keynesian Economics**. 35, 2: 277-300.

SELODY, J., 2001. Uncertainty and multiple perspectives. In: KLÖCKERS, H., AND WILLEKE, C., 2006. **Monetary Analysis: Tools and Application**. Frankfurt: Druckhaus Thomas Müntzer GmbH.

SOUTH AFRICAN RESERVE BANK AMENDMENT ACT, NO. 57 of 2000. 2000. **Government Gazette**. 21847. 6 December. Government notice no. 1319. Cape Town: Government Printer.

TOBIN, J., 1963. Commercial banks as creators of "money". In: D. CARSON (ed.), 1963. **Banking and monetary studies**. Homewood, Illinois: Richard D. Irwin, Inc.

VAN DER MERWE, E.J., 2004. Inflation targeting in South Africa. **Occasional papers of the South African Reserve Bank**. No 19.

VAN STADEN, B., 1963. A monetary analysis for South Africa. **South African Reserve Bank Quarterly Bulletin.** 1963, March: xiv-lii.

VON MISES, L., 1928. Monetary stabilization and cyclical policy. In: P.L. GREAVES (ed.), 2006. **The causes of the economic crisis: And other essays before and after the great Depression**. Auburn, Alabama: Ludwig von Mises Institute.

WHITE, W.R., 2006. Is price stability enough? **Working papers of the Bank for International Settlements**. No. 205.

WICKSELL, K., 1935. **Lectures on political economy: Vol. 2 Money**. Translated by Claseen, T.E. L. ROBBINS (eds.). London: Routledge.

APPENDIX A1: ADDITIONAL DETAIL REGARDING THE CLEARING AND SETTLEMENT PROCEDURES OF THE SOUTH AFRICAN BANKING INDUSTRY

As noted by Faure (2008: 7), the transactions in the South African economy are initially netted by clearing banks and other payment clearing participants[172], and thereafter wholesale settlement transactions take place in the interbank market via South Africa's real time gross settlement (RTGS) system, the South African Multiple Option Settlement (SAMOS) system[173]. The daily clearing and settlement process is explained by SARB (2007a: 5).

As noted by SARB (2007a: 5), the settlement cycle day (SCD), runs from 00:00am through until 24:00pm. On any regular weekday[174] (as in the schedule below) general economic activity continues twenty four hours a day, and the transactions are continuously captured by the operational clearing systems. In practice, the banks have access to the interbank settlement system (and their own reserve accounts with the SARB) via the SAMOS system only up until the end of the 'position window'. During the 'finalise window' all clearing systems and wholesale call money market participants finalise their net positions with the settlement banks. The settlement banks then participate in the interbank borrowing market during the position window, during which time they are expected to acquire sufficient deposits in their reserve accounts with the SARB – both to settle any automated clearing during the night window, and to satisfy the statutory reserve requirements. Those settlement banks that cannot acquire these from other banks must borrow their shortfall from the SARB at the REPO rate[175].

---

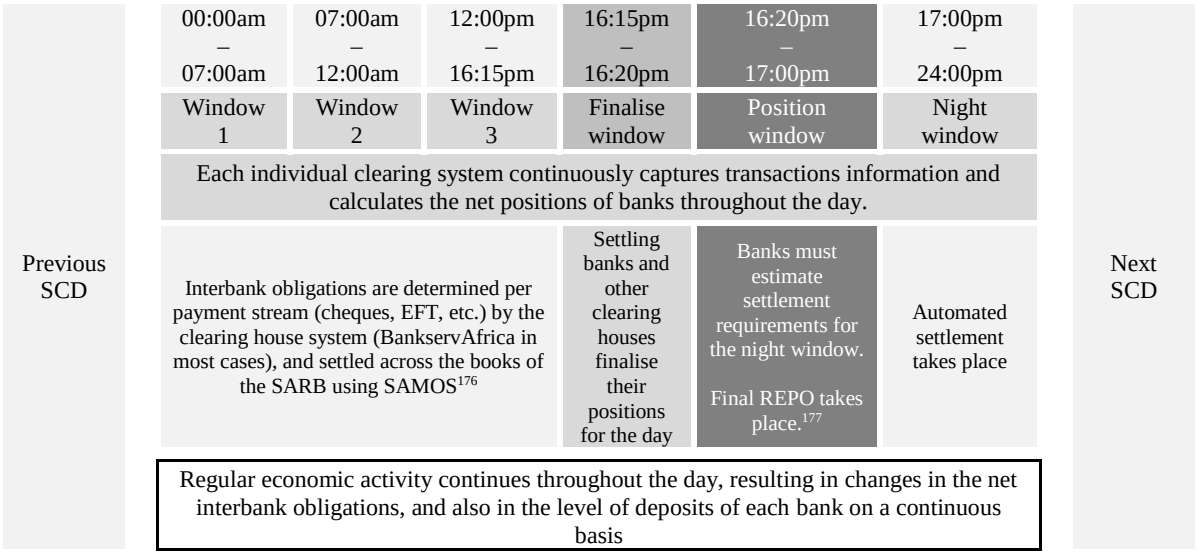
[172] According to SARB (2011b: 6) the clearing networks and payments networks in South Africa clear through a combination of the internal clearing functions of settlement banks, private clearing houses, and STRATE (abbreviated from share transactions totally electronic). These clearing houses are connected to the BankservAfrica clearing system, which determines interbank settlement obligations.

[173] As noted by SARB (2007b: 3) South Africa also participates in the Continuous Linked Settlement (CLS) system for the simultaneous clearing and settlement of net foreign exchange transactions in real time. As noted by SARB (2007b: 7), the Continuous Linked Settlement Bank (CLSB), is based in New York, and holds a settlement account on the South African RTGS system, SAMOS. The CLS system, like SAMOS, is a bulk settlement system and does not engage in netting procedures. According to SARB (2014: 5), all participants (including, the central securities depository, the CLSB, the participating members of SIRESS (SADC Integrated Regional Electronic Settlement System), the securities clearing and settlement house, the clearing and settlement banks, and the payment clearing houses) connect to the SAMOS system via the SARB proprietary messaging system called SARB-Link.

[174] The timing of the process is different on Saturdays and Wednesday. Sundays and public holidays are not SCDs, and thus any transactions on those days carry forward to the next valid SCD.

[175] In fact this overnight accommodation is provided at REPO plus one percentage point, as a penalty for failing to effectively utilise the interbank market. Any excess balances are, on a daily basis, remunerated by the SARB at REPO minus one percentage point.

FIGURE A1.1: DAILY CLEARING AND SETTLEMENT PROCESSES IN THE SOUTH AFRICAN SETTLEMENT SYSTEM



Source: SARB (2007b)

Thus, for the commercial banking sector in South Africa, at no point during the day is any one bank certain of what their total deposits will be on balance sheet at the close of the SCD, as automated settlement continues to occur up until 24:00pm. This, together with the fact that economic activity (and thus transfers of deposits) continues unabated throughout the twenty-four hour cycle, means that it is neither logical nor practical that banks should be able to determine the level of loans provided on the basis of deposits held – especially considering the long term nature of loans and the highly volatile and short term nature of deposit holdings.

Banks would certainly not, for the purpose of loan extension, be able to determine that their deposit holdings would be sufficient on any given, let alone any day *in the future*. From a microstructural perspective then, the South African clearing system operates in a manner that prevents the practical implementation of the processes required by quantitative money creation principles - monetarist policies.

[176] Details of the messaging network can be found in SARB (2014c), while details of the daily clearing process can be found in SARB (2007a).
[177] As noted by Angelis, Aziakpono and Faure (2005: 661), the practice of providing accommodation on a daily basis was terminated by May 2005. Although the feature remains an option if the SARB chooses to utilise it to allow the banks to square off their positions.

APPENDIX A2: ADDITIONAL DETAIL REGARDING THE SARB OPEN MARKET OPERATIONS

In South Africa there are essentially two forms of liquidity creation (creation of deposit securities). The first is by commercial banks and constitutes the vast majority of deposits in existence. These deposits sit in two places, the first is on the balance sheets of various banks as liabilities to other parties (the money stock), and the second place is on the balance sheet of the SARB (bank liquidity). The second form of liquidity is the created by the SARB, and is an artefact of the implementation of a combination of required reserves, settlement (in nominal terms) via the reserve accounts of banks[178], and the imposed money market shortage. This SARB liquidity is typically only found on the balance sheet of the SARB[179]; in other words when one wishes to analyse the liquidity situation of banks, an analysis of the SARB's balance sheet is relevant.

Both forms of liquidity (money) are created through borrowing. Commercial banks lend to economic agents and thus create liquidity (money). The central bank lends to commercial banks, and thus creates liquidity (bank liquidity). The commercial banks charge interest on loans to economic agents, and thus extract a rent. This rent is accumulated as deposits owned by the commercial banks (themselves), and it is from those deposits that the commercial banks must deposit their reserve requirements, and it is across these deposit balances that settlement takes place[180]. The deposits on the SARB balance sheet, as deposited by the commercial banks,

---

[178] Banks are required to hold a proportional level of reserves relative to the total quantity of deposits held, however the receipt of deposits results in a nominal change to their reserve accounts. For example, with a reserve requirement of 10%, and required reserves balance of R8 million, a nominal receipt of R1 million in deposits would increase the level of reserves *required by the SARB* by (1000 000 x 10% =) R100 000. The settlement process however would happen in nominal terms, and thus the reserve deposits account balance would increase by the full R1 million, to (R8million, plus R1 million) R9 million. The same is true for outflows of money, this is known as payment risk, and features as a major risk for smaller banks, or in environments with a large number of banks.

[179] Theoretically these are deposits owned by the commercial banks, to which they have access on a daily basis via the SAMOS system, however the level of deposits created by the central bank relative to the total reserve deposits requirements rarely rises above 50 per cent, and is currently around 44 per cent (as shown below). One might say then that the deposits created by the SARB never actually leave the balance sheet of the SARB, as reflected by the clearing accounts held at the SARB by the banks.

[180] An important distinction that is often neglected, and is wholly misrepresented through the money multiplier approach, is that the reserve requirement does not come out of the deposits of the clients of the banks. The reserve requirement comes out of deposits owned by the commercial banks. A point which helps to understand this is that the commercial banks do not bank with themselves, income received in the form of interest payments is transferred as deposits at another bank, and recorded as deposit assets (the banks are thus all necessarily clients of one another). Thus a transfer of deposits to and from a bank's own reserve account, by themselves, affects the total level of deposits held by another bank. For example, if Bank A banks with (keep the deposits they own with) Bank B, and they decide to transfer some of their own deposits to their reserve account at the central bank. Then the

thus remain (an important) part in the liquidity system[181]. These reserve account balances fluctuate as a result of three possible general sources of change: firstly through transfers in and out, as conducted by each bank on its own account; secondly through net settlements of payments and obligations with other banks[182]; and thirdly as a result of SARB actions.

The first two are self-explanatory, the third, however, is quite complex. The SARB can impose changes on these accounts in a variety of ways. The three broad categories are; firstly, loans to banks (made by REPO); secondly, interactions with the financial markets (open market operations) that result in transfers of money; and thirdly, through transfers of government deposits between the commercial banks and itself.

In the first case, when the SARB makes a loan to a commercial bank, the deposits that are created are deposited in the same accounts in which the banks deposit their required reserves[183]. This results in an increase in the liquidity position of the commercial banks, as per their reserve account balances. These loans take the form of REPO transactions[184].

In the second case, when the SARB interacts in financial markets these actions also directly impact the required reserve accounts. Importantly, because all bank deposits must be held at a commercial bank (regardless of who owns them), when the SARB engages with any market participant in a transaction involving money, it results in a transfer of funds either to or from the commercial banking system, and all of these transactions must be settled through the payments system, and thus across the reserve deposit accounts of the banks[185]. The SARB engages predominantly in derivative market operations in this regard.

---

total level of deposits against which Bank B must maintain a reserve declines by the same amount. The source of these balances is the profit (or income) earned by the Bank A in the course of doing business, but kept at Bank B.

[181] Although they have been transferred to the balance sheet of the SARB, they remain part of the clearing system, as it is over these deposits that settlement takes place.

[182] We must include here the impact of actions taken in the foreign exchange markets and actions taken by government authorities – both of which we explained in the previous section to be actively managed by the SARB.

[183] In the same way as commercial banks do, the SARB charges interest on loans to the commercial banks, and thus extracts rent from the commercial banks. With the use of this rent-income the SARB has been able to purchase and accumulate a variety of financial assets in the open market – this is the source of a fairly large portion of the assets on the balance sheet of the SARB.

[184] As noted by Brink and Kock (2010: 6) a repurchase is the simultaneous sale and repurchase of an asset, at an agreed rate. The assets in which the SARB conducts these transactions include "Treasury bills, Land Bank bills, central government bonds, SARB debentures and an approved list of parastatal bonds." This process is discussed in greater detail in appendix A2 for the interested reader.

[185] The SARB balance sheet, both on the asset and liability side, is predominantly made up of financial assets. As explained by Brink and Kock (2010: 7), any changes in the balance sheet of the SARB results in the monetisation

The imposition of required reserves, together with the settlement of payments via these reserve accounts, thus ensures that all banks will at some point be in a reserve shortfall position, while others are in a reserve surplus position[186]. In order to square off their positions, prior to the close of business on a bank work day, banks engage extensively with one another in the interbank borrowing market. In addition, the SARB utilises its balance sheet to engage in open market operations and so to ensure that the system as a whole is permanently in a position of liquidity shortage. Thus, collectively, banks are forced into a shortfall position. Banks are then required to finance this shortfall by borrowing from the SARB, and it is in the lending of liquidity back to banks that the SARB exercises an influence over interest rates – described above as loans by the SARB to the commercial banks.

A highly significant feature of the interbank overnight loan market is that lending in this market *does not create liquidity*. Unlike loans in either of the markets described above, loans in the interbank market are quantity constrained.

As we have discussed in the section on the history of money, the practice of consolidating reserves and the practice of lender of last resort emerged as a means to strengthen the collective position of banks, the outcome of which was to increase the capacity of individual banks to provide credit (together with the faith of economic participants in bank deposit money). In an established and consolidated baking environment, as can be found in South Africa, the balance sheets of the major individual banks are enormous, and this lender of last resort facility is thus a less prominent feature[187]. The primary purpose of central bank lending to the commercial banks in South Africa is thus less for the enhancement of credit capacity, and almost entirely for the purpose of implementation of monetary policy (control over interest rates).

As can be seen in the chart below, the nominal quantity of bank reserves continues to rise, and is currently in the region of R70 billion. The introduction of the repurchase refinancing system

---

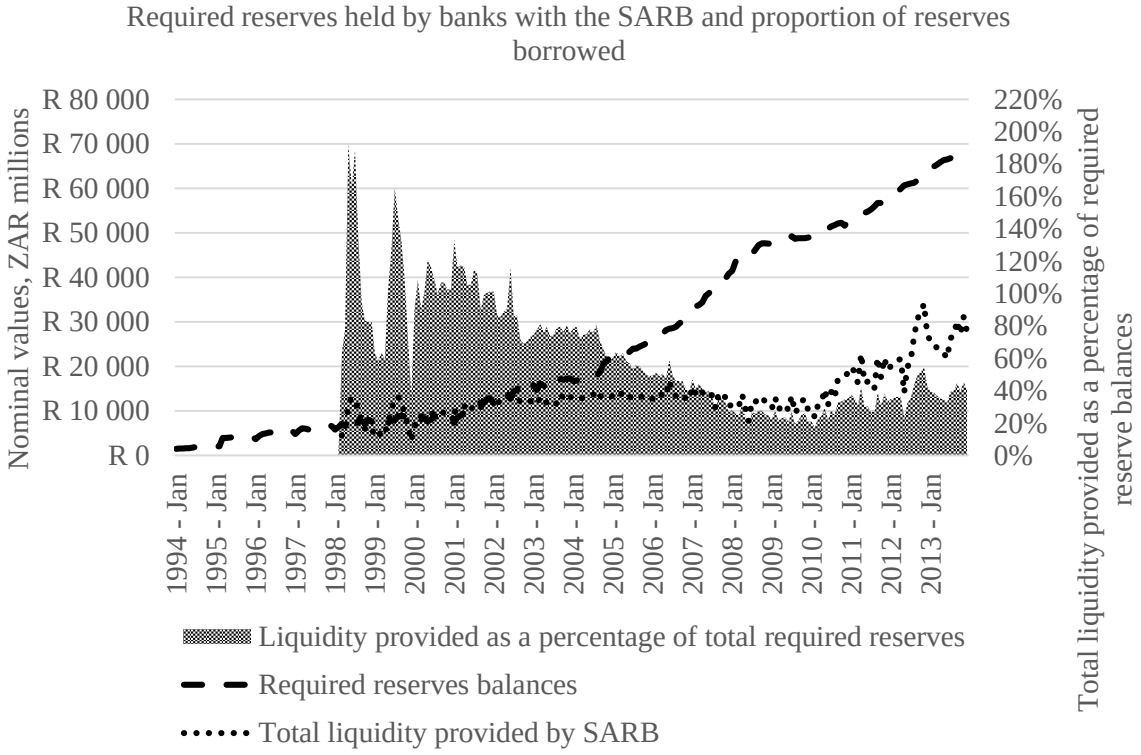
of an asset or liability, and either creates liquidity (increase in assets, or decrease in liabilities) or destroys liquidity (decrease in assets, or increase in liabilities) via the settlement process.

[186] In the absence of a liquidity shortage, such a situation could be solved via inter-bank lending, as Lavoie (2006: 20) has pointed out is done in Canada, although banks must maintain sufficient settlement balances. Failure to do so results in penalty payments.

[187] At least as a requirement for the larger banks. As has recently been seen, one South African bank with a particularly poor loan book, Africa Bank Limited, has recently required this feature.

can clearly be seen in 1998. The level of accommodation at month end as a percentage of the required reserve balances fluctuated to levels in excess of 100 per cent prior to 2006; however since 2007 this has moderated to between 20 per cent and 60 per cent, closing at just over 44 per cent at the end of December 2013.

FIGURE A2.1: REQUIRED RESERVES HELD BY BANKS WITH THE SARB AND PROPORTION OF RESERVES BORROWED: SOUTH AFRICA, 1994 TO 2013



Source: SARB (2014b)

In practice, according to Angelis, Aziakpono and Faure (2005: 660), the SARB implements a weekly REPO (repurchase tender), which it conducts, according to SARB (2007b), each week on a Wednesday. All settlement banks participate in the tender, however, this is purely a quantity tender, as the REPO rate (price) is pre-determined by the monetary policy committee. As Angelis et al. (2005: 660) explain, the SARB then announces the tender amount allotted to each bank shortly after the REPO auction[188]. This acts as the provision of required liquidity. The SARB then endeavours on a daily basis to ensure that a liquidity shortage of similar size

[188] As noted by Brink and Kock (2010: 6) there is no official limit on the amount of liquidity provided per bank, but this is kept within reasonable parameters.

remains in place for the duration after the following week, and does so through active participation in a variety of markets[189].

These arrangements are essentially short term derivative instruments, the collateral against which are specific securities (found on the asset side of the SARB balance sheet[190]). What this implies is that the REPO transactions (with a typical maturity of 7 days) will also have implications for the rates of the underlying assets – the REPO also acts to increase liquidity in these instruments.

With regard the tools utilised to impose a liquidity shortage, the SARB appears to separate their actions from the securities utilised in REPO auctions. As can be seen from the chart below, the SARB liquidity draining operations include the use of transfers from tax and loan accounts[191], reverse repo transactions[192], foreign currency swaps[193] and the issuance of SARB debentures[194]. Figure 4.3.1 below illustrates the month end outstanding balances of each of these.

[189] To the extent that the liquidity shortage is out of line with the level of liquidity available, banks are able to seek overnight accommodation via supplementary or standing facility REPOs. Excess overnight balances are remunerated at REPO less one percentage point, and shortfall balances are charged at REPO plus one percentage point. All standard required reserve deposit balances are not remunerated (do not earn any interest).

[190] The repurchase refinancing (REPO) system creates an additional balance sheet item on the balance sheets of both the banks and the SARB (the counterpart of which on the SARB balance sheet can be found as a part of the reserve deposits on the liability side).

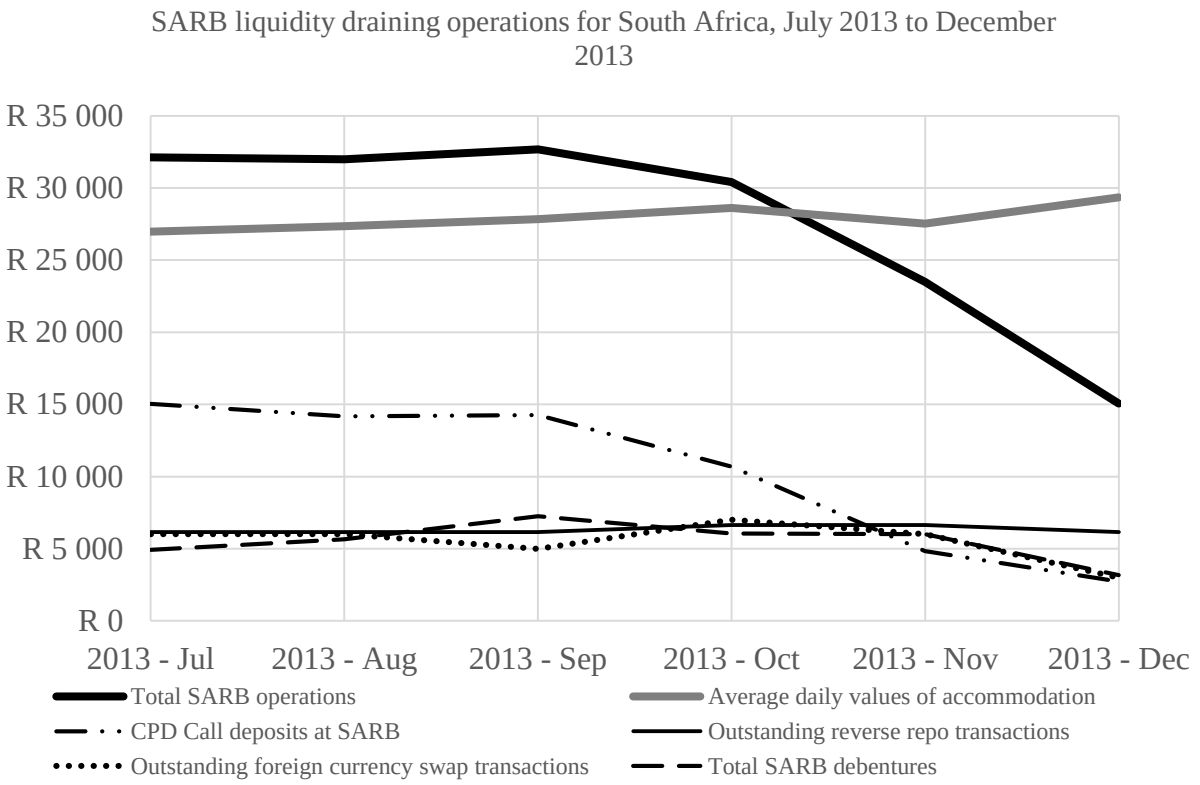
[191] The goal of such transactions is to transfer deposit balances away from the commercial banks to the SARB, in so doing reducing money market liquidity. In practice the Corporation for Public Deposits holds its balances with the commercial banks, and thus a transfer from the CPD to the SARB accomplishes the end goal.

[192] "Total outstanding amounts on 7- and 14-day reverse repurchase transactions (first issued 5 March 2012), 28-day reverse repurchase transactions (first issued 26 April 1999), 56-day reverse repurchase transactions (first issued 24 March 2005) and 91-day reverse repurchase transactions (first issued 17 June 2002) at month-ends." (SARB, 2014d: S-26)

[193] "Outstanding amounts at month-end. Money-market swaps with counter foreign-exchange deposits up to November 2003." (SARB, 2014d: S-26)

[194] "Total outstanding amounts on 7- and 14-day SARB debentures (first issued 5 March 2012), 28-day SARB debentures (first issued 16 September 1998), 56-day SARB debentures (first issued 1 December 2004) and 91-day SARB debentures (first issued on 14 August 2002) at month-ends." (SARB, 2014d: S-26)

FIGURE A2.2: MONTH END LIQUIDITY DRAINING POSITION OF THE SARB: SOUTH AFRICA, JULY 2013 TO DECEMBER 2013



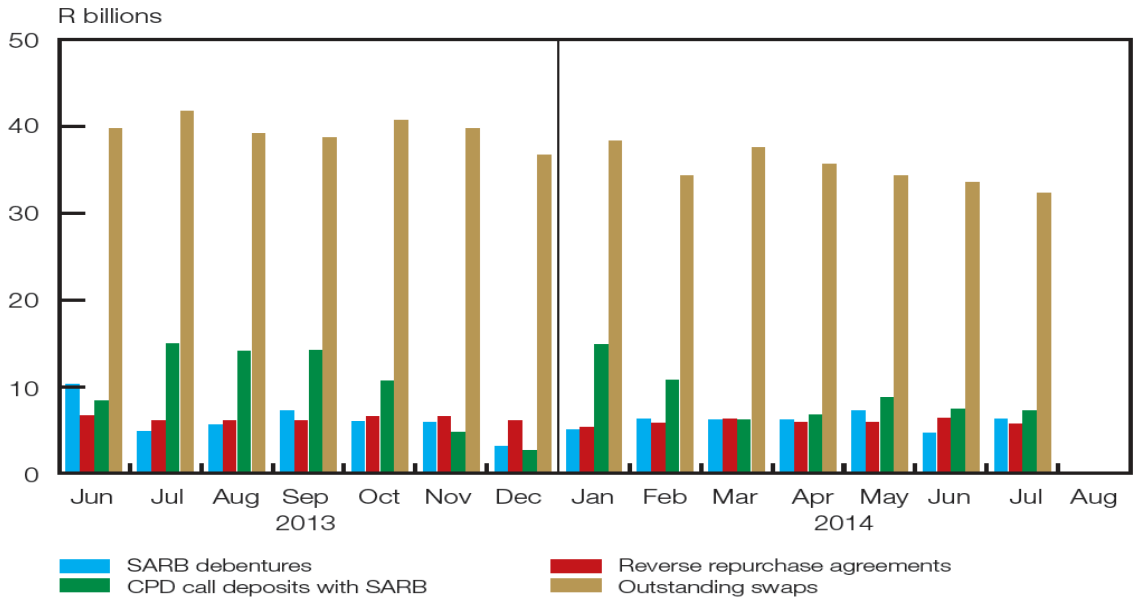
Source: SARB (2014b)

The average daily accommodation values are an indication of the extent to which the SARB has successfully implemented the liquidity shortage. The sharp decline in *total SARB liquidity draining operations* (the thick black line) appears to simply be a data anomaly linked the fact that, apart from *average daily values of accommodation* (thick grey line), these are month end figures[195].

The component that is incorrect in the data available appears to be the nominal level of outstanding foreign exchange swaps. This is reflected differently in the quarterly bulletin published by the SARB (2014d: 62). An extract of the quarterly bulletin is included below for additional reference. As per our expectation in section 4.2, a significantly higher nominal value is attributed to foreign currency swaps. According to the discussion in the quarterly bulletin (SARB, 2014d: 61), a large portion of these are entered into on behalf of National Treasury for the purpose of exchange rate management.

[195] Unfortunately data on the internal balance sheet operations of the SARB is fairly limited, and as such we have presented the data that is available, together with the representation provided by the SARB (2014d: 62). This is primarily to make the reader aware that this discrepancy can and does exist between the data that is available and what is done in practice.

FIGURE A2.3: LIQUIDITY DRAINING OPERATIONS OF THE SARB: SOUTH AFRICA, JUNE 2013 TO JULY 2014



Source: SARB (2014d: 62)

In practice, as represented in the extracted chart presented above, the liquidity shortage imposed appears to be significantly larger than the available data suggested. According to discussions in the quarterly bulletin, a fairly large portion of the government deposits (represented by CPD call deposits with the SARB) are the result of the swap transactions entered into on behalf of the National Treasury, and as can be seen in Figure A2.2 above, they show similar patterns of decline between January 2014 and February 2014, and between May 2014 and July 2014. This, however, does not appear to be the case at other times.

Next we turn briefly to the interbank market. Each bank *work day* (in terms of the 08h00 to 17h00 working day) concludes with a short finalisation window, followed by a position window[196] (A detailed description of the daily clearance and settlement procedures is provided in appendix A1 above[197]). It is during this position window that interbank borrowing takes

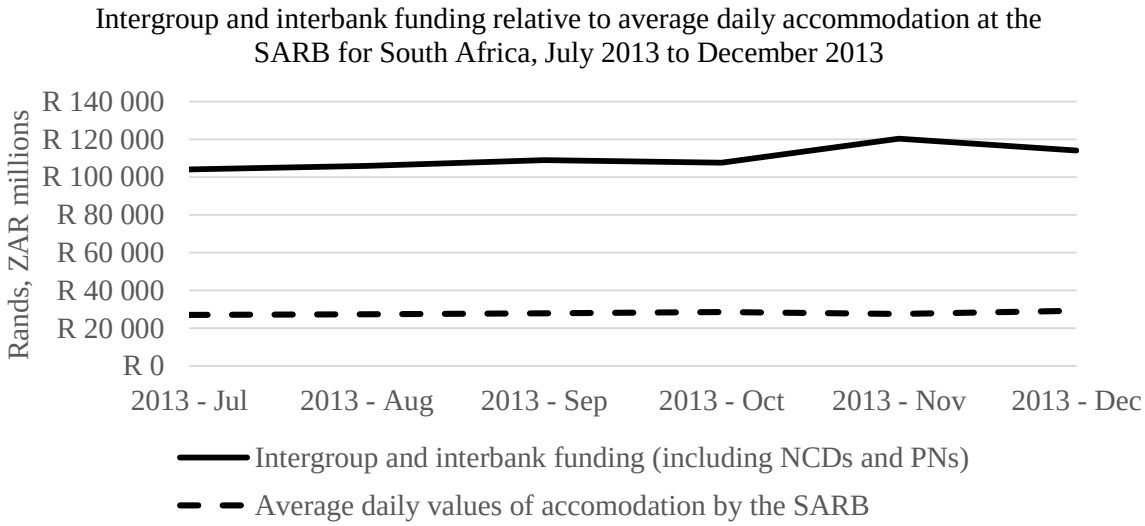
[196] The last *work day* window ends at 16h15, followed by the *finalise window* (five minutes) and the *position window* (forty minutes), after which the banks lose access to their reserve deposit balances. The settlement cycle day *required* reserve deposit positions of the banks are only calculated as at 24h00 midnight of each settlement cycle day, after automated settlement of any remaining or accruing batch settlements (typically from retail trade). Any excess reserve deposits are remunerated at the repo rate plus 1%, and shortfall in the required level of deposits as at midnight is charged are the repo rate less 1%.

[197] To summarise the salient features of the process, the clearance participants provide net obligation figures applicable to the various settlement banks, these obligations are then collated and total net obligations are determined between the settlement banks. The payments system is available to the general public twenty-four hours a day, and thus obligations are continuously changing in practice. Bulk and batch settlements occur

place. According to Faure (2013e: 42) interbank borrowing occurs on an overnight basis. Interbank overnight funding in South Africa occurs on a bilateral overnight loan basis with the rate determined via telephonic discussion between the two counterparties. The goal of the banks is to predict as accurately as possible what their reserve deposit requirements will be at the end of the day, and thereafter to either acquire any shortfall from, or place any excess balances with, other banks.

The level of month end interbank funding relative to the average daily liquidity shortage (as represented by the average daily accommodation requirements from the SARB) is depicted below.

FIGURE A2.3: INTERGROUP AND INTERBANK FUNDING RELATIVE TO AVERAGE DAILY ACCOMMODATION: SOUTH AFRICA, JULY 2013 TO DECEMBER 2013



Source: SARB (2014b)

As can be seen from the chart above, the outstanding positions of banks with one another[198] is normally significantly higher than the imposed liquidity shortage. The size and liquidity of the interbank market are important characteristics for the effective transmission of interest rate decisions.

continuously during the first three windows of the day, and after the position window, settlements take place as batches only.

[198] According to the collective BA900 return for banks in South Africa for December 2013 (SARB, 2014a), the total quantity of NCDs (negotiable certificates of deposit) and PNs (promissory notes) issued amounted to R 48 530 million, which, if this amount is created purely for the purpose of interbank funding would amount to roughly 42.56% of interbank and intergroup funding.

APPENDIX A3: SHORT TERM BALANCE SHEET ANALYSIS EXAMPLE: SOUTH AFRICA, SEPTEMBER 2013 TO DECEMBER 2013

TABLE A3.1: BALANCE SHEET ANALYSIS OF CHANGE FOR THE MONETARY BANKING SECTOR: SOUTH AFRICA, SEPTEMBER 2013 TO DECEMBER 2013 – ASSETS

BALANCE SHEET CHANGES OF THE MBS: SOUTH AFRICA, FINAL QUARTER 2013, (ZAR MILLIONS)				Final quarter: Dec 2013 - Sept 2013		Impact on M3
Assets	Foreign Assets	Gold and foreign exchange	SARB A: Total gold and other foreign reserves	R 17 580		
			MBS A: Other banks' gold and foreign exchange(excluding SARB and government)	R 4 377		
			MBS A: Total gold and foreign exchange (excluding government)		R 21 957	
			MBS A: Long-term foreign assets		R 2 070	
			MBS A: Total foreign assets			**R 24 027**	R 24 027
	Claims on the private sector		MBS A: Claims on the private sector - SARB		R -8	
			MBS A: Claims on the private sector - CPD		R -1 650	
			MBS A: Claims on the private sector - Land Bank		R 1 918	
			MBS A: Claims on the private sector - Other monetary institutions		R 35 050	
			MBS: Total credit extended to the private sector			**R 35 310**	R 35 310
			MBS: Claims on local authorities		R -1 357	
	Claims on the governm ent sector	Credit	MBS A: Claims on the government sector - SARB	R 13		
			MBS A: Claims on the government sector - CPD	R -1 020		
			MBS A: Claims on the government sector - Other monetary institutions	R 20 079		
			MBS A: Claims on the government sector - Total credit		R 19 072	
			MBS A: Gross claims on the government sector			**R 19 072**	R 19 072
			Other assets of the monetary sector (Excluding foreign assets of government)			**R 4 731**	R 4 731
			Total assets of the monetary sector			**R 83 140**	

Source: SARB (2014b)

TABLE A3.2 BALANCE SHEET IDENTITY COUNTERPARTS

Monetary identity	Net foreign assets	NFA = Total foreign assets - Total foreign liabilities
	Net loans to government	NLG = Gross claims on the government sector - Government deposits
	Loans to the non-bank private sector	LNBPS = Total credit extended to the private sector
	Net other assets	NOA = Other assets of the monetary sector - Total capital and reserves - Other liabilities
	Net Value	
	M3	M3 = Banknotes and coin in circulation + Total deposits of domestic private sector

TABLE A3.3: BALANCE SHEET ANALYSIS OF CHANGE FOR THE MONETARY BANKING SECTOR: SOUTH AFRICA, SEPTEMBER 2013 TO DECEMBER 2013 – LIABILITIES

		BALANCE SHEET CHANGES OF THE MBS: SOUTH AFRICA, FINAL QUARTER 2013, (ZAR MILLIONS)	Final quarter Dec 2013 - Sept 2013		Impact on M3
Liabilities	Deposits of domestic private sector, local authorities and public enterprises and/or corporations	**MBS L: Banknotes and coin in circulation**		**R 4 481**	
		MBS L: Cheque and transmission deposits of domestic private sector	R 20 417		
		MBS L: Other demand deposits of domestic private sector	R -15 137		
		MBS L: Savings deposits of domestic private sector	R 11 312		
		MBS L: Short-term deposits of domestic private sector	R -7 608		
		MBS L: Medium-term deposits of domestic private sector	R 28 544		
		MBS L: Long-term deposits of domestic private sector	R -30 765		
		MBS L: Total deposits of domestic private sector		**R 6 764**	
		MBS L: Government deposits		**R 31 626**	R -31 626
	Foreign liabilities	Foreign liabilities of the Reserve Bank and Corporation for Public Deposits (CPD)	R 3 180		
		MBS L: Other (depository corporations') foreign liabilities (SARB & CPD excluded)	R 23 893		
		MBS L: Total foreign liabilities		**R 27 073**	R -27 073
	Capital and reserves	MBS L: Domestic capital and reserves	R 14 199		
		MBS L: Foreign capital and reserves	R 644		
		MBS L: Total capital and reserves		**R 14 843**	
		MBS L: Other liabilities		**R -1 647**	R -13 196
		Total liabilities of the monetary sector		**R 83 140**	

Source: SARB (2014b)

TABLE A3.4: BALANCE SHEET ANALYSIS IDENTITY FOR THE MONETARY BANKING SECTOR: SOUTH AFRICA, SEPTEMBER 2013 TO DECEMBER 2013

Monetary identity	Net foreign assets	Change in **NFA**	=	R 24 027	-	R 27 073	=	R -3 046
	Net loans to government	Change in **NLG**	=	R 19 072	-	R 31 626	=	R -12 554
	Loans to the non-bank private sector	Change in **LNBPS**	=	R 35 310			=	R 35 310
	Net other assets and liabilities	Change in **NOA**	=	R 4 731	-	R 13 196	=	R -8 465
								R 11 245
	Net Value							
	M3	**Change in M3**	=	**R 4 481**	+	**R 6 764**	=	**R 11 245**

APPENDIX A4: SHORT TERM BANK LIQUIDITY ANALYSIS EXAMPLE: SOUTH AFRICA, SEPTEMBER 2013 TO DECEMBER 2013

TABLE A4.1: BANK LIQUIDITY ANALYSIS: CHANGES PER QUARTER IN LIQUIDITY PROVIDED AND COUNTERPARTS SARB BALANCE SHEET: SOUTH AFRICA, SEPTEMBER 2013 TO DECEMBER 2013 – ASSETS

CHANGES IN THE BALANCE SHEET OF THE SARB: SOUTH AFRICA, 2013, Q4 (ZAR MILLIONS)				**Final quarter**			**Impact on identity components**
				Dec 2013 - Sept 2013			
				(ZAR Millions)			
Assets	Foreign Assets		SARB A: Gold coin and bullion		R -3 236		
			SARB A: Total gold and other foreign reserves			**R 17 580**	NFA +
	Liquidity Provided	Loans granted to banks under:	SARB A: Utilisation of cash reserves deficit (contra account debits)	R -3 899			
			SARB A: Resale agreements	R 1 609			
			SARB A: South African Multiple Option Settlement facility (SAMOS)	R -			
			SARB A: Total liquidity provided		R -2 291		**NER**
	Advances and Investments	Advances	SARB A: Advances to banking institutions		R -8		NOA +
			SARB A: Other advances		R 27		NOA +
		Investments	SARB A: Investments in government stock		R 13		NLG +
			SARB A: Other investments		R -		NOA +
			SARB A: Total discounts, advancesand investments			**R -2 258**	
			SARB A: Other			**R 128**	NOA +
			SARB A: Total Assets			**R 15 449**	

Source: SARB (2014b)

TABLE A4.2: BANK LIQUIDITY ANALYSIS: CHANGES PER QUARTER IN LIQUIDITY PROVIDED AND COUNTERPARTS SARB BALANCE SHEET: SOUTH AFRICA, SEPTEMBER 2013 TO DECEMBER 2013 – LIABILITIES

	Final quarter	
CHANGES IN THE BALANCE SHEET OF THE SARB: SOUTH AFRICA, 2013, Q4 (ZAR MILLIONS)	**Dec 2013 - Sept 2013**	**Impact on identity components**
	(ZAR Millions)	
SARB L: : Notes and coin in circulation	**R 13 453**	N&C
SARB L: Deposits by Central Government: Rand denominated	R 820	NLG -
SARB L: Deposits by Central Government: Foreign currency denominated	R -1 386	NLG -
SARB L: Deposits: Required reserve balances	R 1 626	RR +
SARB L: Cash reserve contra account (surplus)	R -2 475	RR +
SARB L: Deposits: Other balances	R 4 865	NOA -
SARB L: Other domestic deposits	R -11 572	NOA -
SARB L: Other foreign deposits	R -345	NOA -
SARB L: Total deposits	**R -8 466**	
SARB L: Securities of SARB (including SARB debentures)	**R -4 086**	NOA -
SARB L: Foreign loans	**R -41**	NFA -
SARB L: Capital and reserves	**R -**	NOA -
SARB L: Other liabilities	**R 14 590**	NOA -
SARB L: Total liabilities	**R 15 449**	

Liabilities
- Deposits
  - Central Government
  - Banks and mutual banks
  - Other

Source: SARB (2014b)

TABLE A4.3: BANK LIQUIDITY ANALYSIS: CHANGES PER QUARTER IN LIQUIDITY PROVIDED AND COUNTERPARTS SARB BALANCE SHEET: SOUTH AFRICA, SEPTEMBER 2013 TO DECEMBER 2013 – NER IDENTITY

CHANGES IN NER AND LIQUIDITY PROVIDED BY THE SARB: SOUTH AFRICA, 2013, Q4 (ZAR MILLIONS)				
	+	NFA	R	17 621
	+	NLG	R	579
	+	NOA	R	-3 305
	-	N&C	R	13 453
	-	RR	R	- 849
Change in NER			**R**	**2291**
		Contra-account Dr	R	-3899
		REPOs	R	1 609
		SAMOS REPOs		R 0
Liquidity Provided			**R**	**-2 291**

Source: SARB (2014b)