A STUDY ON THE MONETARY POLICY FRAMEWORKS IN MEFMI COUNTRIES AND SOUTH AFRICA

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“A TECHNICAL PAPER SUBMITTED IN PARTIAL FULFILLMENT OF THE AWARD OF MEFMI FELLOWSHIP”
### LIST OF ABBREVIATIONS AND ACRONYMS

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>ADF</td>
<td>Augmented Dickey Filler</td>
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<tr>
<td>BoN</td>
<td>Bank of Namibia</td>
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<td>BoU</td>
<td>Bank of Uganda</td>
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<tr>
<td>CBR</td>
<td>Central Bank Rate</td>
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<td>CMA</td>
<td>Common Monetary Area</td>
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<td>CPI</td>
<td>Consumer Price Index</td>
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<td>DMBs</td>
<td>Deposit Money Banks</td>
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<td>EACB</td>
<td>East African Currency Board</td>
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<td>ESAP</td>
<td>Economic Structural Adjustment Program</td>
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<td>EXR</td>
<td>Exchange Rate</td>
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<td>GDP</td>
<td>Gross Domestic Product</td>
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<td>IFS</td>
<td>International Financial Statistics</td>
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<td>IMF</td>
<td>International Monetary Fund</td>
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<td>IR</td>
<td>Interest Rate</td>
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<td>IT</td>
<td>Inflation Targeting</td>
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<td>MPC</td>
<td>Monetary Policy Committee</td>
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<td>MEFMI</td>
<td>Macroeconomic and Financial Management Institute of Eastern and Southern Africa</td>
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<tr>
<td>NDA</td>
<td>Net Domestic Assets</td>
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<td>OMO</td>
<td>Open Market Operations</td>
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<td>PP</td>
<td>Phillips Perron</td>
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<tr>
<td>PIIGS</td>
<td>Portugal, Ireland, Italy, Greece, Spain</td>
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<td>REPOs</td>
<td>Repurchase Agreements</td>
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<td>RGDP</td>
<td>Real Gross Domestic Product</td>
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<td>RMP</td>
<td>Reserve Money Programme</td>
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<td>SA</td>
<td>South Africa</td>
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<td>SARB</td>
<td>South Africa Reserve Bank</td>
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<td>TB</td>
<td>Treasury Bills</td>
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<td>US</td>
<td>Unites States</td>
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<td>VAR</td>
<td>Vector Auto Regression</td>
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EXECUTIVE SUMMARY

The study reviews the monetary policy frameworks in MEFMI countries to ascertain their performance in achieving the primary objective of price stability. The study finds out that MEFMI countries that are currently implementing exchange rate targeting, particularly under the CMA arrangement have performed fairly well as compared to the monetary targeting countries. This is despite the fact that monetary targeting is still the predominant monetary policy framework in MEFMI countries.

IT, a more recent framework implemented, only by Uganda among the MEFMI countries since July 2011, has had a remarkable record of success in countries that have implemented the framework. It arouses interest among policy makers in MEFMI countries whether this strategy is the benchmark of best practice. Individual circumstances, such as the degree of openness of the economy, the extent of fiscal discipline and the level of financial development are important for the choice of a nominal anchor. Consequently, some MEFMI countries such as Mozambique and Zimbabwe, which trade a lot with South Africa, could consider gradually moving towards the monetary union.

The study also assesses the effectiveness of monetary policy in achieving price stability. The paper examined the impact of an exogenous and temporary shock to short term interest rate using VAR impulse response analysis on price level and other macroeconomic variables, which include exchange rate and real GDP. The study focuses on South Africa, as a model for inflation targeting and 2 MEFMI countries – Uganda and Botswana. The results show that by targeting interest rates South Africa and Uganda are able to influence price, whilst the dependence on interest rates to address inflationary pressures for Botswana is misguided.
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CHAPTER 1

1. INTRODUCTION

1.1. Background of the Study

Role of Monetary Policy in Macroeconomic Management

The proper role and conduct of monetary policy has been a matter of great debate over the years. Historically, monetary policy, across many countries focussed on a broad range of objectives which included, price stability, promoting economic growth, achieving full employment, smoothing the business cycle, preventing financial crises and stabilizing long term interest rates and the real exchange rate.

Policy makers, faced with multiple objectives that are equally desirable encountered challenges in assigning a policy instrument to an objective. Furthermore, while some objectives are consistent with each other, others are not, where the objective of price stability often conflicts with the objectives of interest stability and higher short run employment (Khan, 2010).

Consequently, there has been convergence and consensus responding to new insights in macroeconomic theory that monetary policy can best promote medium and long term growth by maintaining overall price stability. These widely accepted views are however not universal.
While prominent Central Banks such as the European Central Bank and the Bank of England have adopted price stability as the single objective of monetary policy, the US Federal Reserve Bank continues to pursue multiple objectives of employment, stable prices and moderate long term interest rates (Reedy, 2005). More importantly, some Small Open Economies\(^1\) prone to exchange rates risks have also placed exchange rate management as another key policy objective.

**Evolution of Monetary Policy**

In general, monetary policy is defined as “the set of procedures and measures taken by the monetary authorities to influence the quantity, cost and availability of liquidity to achieve certain economic objectives”. The pursuit of these objectives rests on a series of choices regarding the strategies, approaches and policy instruments implemented. Furthermore, in understanding the effectiveness of monetary policy it is critical to understand the monetary policy structure within the framework of its goals, instruments and objectives.

Monetary policy primarily indirectly influences economic activity, via the price and quantity of money. Prior to the 1970s, monetary policy was relatively inactive, with the use of direct instruments, such as credit control, interest rate ceilings and sometimes directed credit and regulation. Khan (2010) argued that direct instruments were becoming increasingly ineffective as money and financial markets developed. Furthermore, these instruments create distortions, financial repression, financial disintermediation and fiscal dominance.

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\(^1\) Small Open Economy is an economy that participates in international trade, but is small enough compared to its trading partners that its policies do not alter world prices such as interest rates and incomes
As such, in the late 1970s, industrial countries began phasing out direct instruments to market based instruments. Today, almost all economies have adopted indirect instruments, which primarily include Open Market Operations (OMO), statutory reserve requirements, foreign exchange market operations and repurchase agreements (repos).

The move to indirect instruments was largely underpinned by the need to permit greater flexibility in the implementation and conduct of monetary policy as well as enhance the role of price signals in the economy. Indirect instruments are used to influence money market liquidity and are a general indicator of the level of interest, ultimately influencing the behavior of economic agents in the economy. These indirect instruments influence the level of money supply, credit or interest rates, and ultimately affect the final goal of monetary policy, that is inflation.

**Monetary Policy Perspectives**

Issues relating to the conduct of monetary policy have increasingly come to the forefront of policy debates extending to small open economies. This reflects efforts by small open economies, like the rest of the world, in constantly reviewing their monetary policy frameworks and implementation strategies to ensure they remain relevant amid the dynamic changes in the financial and economic environment.

Approaches to monetary policy have suffered sharp swings over the years reflecting the wider debates between different macroeconomic schools of thought. Traditionally, policy makers have used such strategies as controlling the growth of money supply or pegging the exchange rate to a stable currency. In recent years, a promising new approach of publicly
announcing and pursuing specific inflation targets has emerged, with New Zealand as the pioneer of Inflation Targeting (IT) in 1990.

Since the early 1970s, some countries including developing economies have implemented exchange rate pegs to control inflation. Under this approach countries pegged their exchange rates to the currency of a low inflation country. The main drawback of this strategy is that it constraints the monetary authorities’ ability to respond to external macroeconomic shocks, a key challenge facing MEFMI countries. More importantly, conditions for maintaining fixed exchange rates have become more difficult as evidenced by various currency crises since the 1970s. Krugman (1979) acknowledged that under a fixed exchange rate system domestic credit creation in excess of money demand growth leads to a gradual but persistent loss of international reserves and ultimately to a speculative attack on currency.

Consequently, most advanced economies adopted flexible exchange rates. As such, there was need to implement a domestic anchor for price stability. From the mid-1970s, most advanced economies adopted monetary targeting, a policy framework premised on stability between monetary aggregates and inflation. From the 1990s, monetary targeting also extended to some MEFMI\(^2\) countries such as Zimbabwe, Kenya, Malawi, Tanzania, Zambia and Uganda.

Unfortunately, money demand has proved unstable in many countries limiting its usefulness as an indicator of the appropriate stance of monetary policy. The need to address these challenges prompted some advanced and emerging economies to adopt IT. Whilst there are benefits in adopting inflation targeting, this monetary policy strategy may not be appropriate

\(^2\) MEFMI countries include Angola, Botswana, Kenya, Lesotho, Malawi, Mozambique, Namibia, Rwanda, Swaziland, Tanzania, Uganda, Zambia and Zimbabwe
for all MEFMI countries, faced with the challenges of inefficient and shallow financial markets, limited fiscal discipline and external supply shocks.

1.2. Problem Statement

Following the increased world-wide emphasis on price stability in the early 1980s, MEFMI countries have also pursued this key monetary policy objective. This is viewed as the broader objective critical in attaining macroeconomic stability. Most MEFMI countries such as Tanzania, Mozambique, Rwanda, Kenya, Malawi and Zambia are targeting monetary aggregates. While inflationary pressures in these countries have generally declined, the level of inflation remained mostly higher than in countries with a fixed exchange rate regime.

During the period 2005 to 2011, average inflation for monetary targeting countries was in the range of 8.3% to 10.6%, as compared to the range of 6.2% and 7.6%, for the fixed exchange rate targeting countries under the Common Monetary Union (CMA). Furthermore, inflation in the monetary targeting countries has also remained volatile. This can be explained by the high standard deviation in the inflation levels for the monetary targeting countries over the period 2005 to 2011. Standard deviation for monetary targeting countries ranged from 4 to 7.1, while that for the exchange rate targeting countries was in the range of 2.5 to 3.7.

More importantly, the effects of exogenous shocks on some MEFMI countries resulted in policy makers choosing to rely on the exchange rate anchor. Use of the exchange rate as an intermediate target is most suitable for small open economies, where the exchange rate is set against a low inflation anchor country. MEFMI countries such as Namibia, Swaziland and Lesotho have adopted exchange rate targeting.
This monetary policy regime, however, presents challenges when economies are faced with fiscal indiscipline and low capacity to generate enough foreign exchange reserves. In addition, it may bring about loss of independence in steering domestic interest rates.

Under the monetary targeting framework a suitable monetary aggregate can be considered as an intermediate target based on the relationship between money, output and prices. The framework requires monetary policy prudence and control of money supply growth – a challenge facing most small open economies. Whilst Zimbabwe pursued monetary targeting, the policy regime failed resulting in hyperinflation reaching a staggering 231 million percent by July 2008. This was largely due to fiscal indiscipline and the time inconsistency problem. The economy experienced excessive money printing to finance Government deficits and quasi fiscal activities over the period 2004-2008.

The failure to establish a stable relationship between the monetary aggregate and inflation has led to the wide abandonment of monetary targeting in most advanced and emerging economies to IT. Adoption of IT is increasingly seen as the best practice for Central Bank policy in most economies around the world, including a growing number of developing countries (Heintz and Ndikumana, 2010). To date, however, only Uganda among all the MEFMI countries has adopted IT since July 2011. The results of its success cannot be documented, as the policy framework is still in its infancy.

Successful implementation of IT is premised on institutional reforms, fiscal discipline, Central Bank independence, credible monetary policy framework and a developed financial market. The financial markets in most MEFMI countries are not sufficiently deep to be able to effectively influence the level of liquidity in the economy. A number of questions now
arise for most MEFMI countries whether IT is the optimal approach to monetary policy since most of the preconditions are not obtaining in these economies.

More importantly, a key challenge that MEFMI countries is faced with is a clear understanding of the effects of a monetary policy shock on the economy. A monetary policy shock can be defined as an unexpected change in monetary policy. This has adverse consequences for macroeconomic stability and growth. As such, a clear understanding of the propagation mechanism of a monetary policy shock to the economy is critical for policy makers to make an accurate assessment of the timing and effect of policy on economic activity and prices.

Most empirical studies have been carried out in developed economies, and whilst there seems to be consensus about the impacts of monetary policy shocks in these economies, the effects remain uncertain in small open economies. Chuku (2009) noted that most small open developing economies suffer from market imperfections in the goods, money and labour market. Consequently, monetary policy shocks may just pass quickly through to prices and have little or no effects on real variables such as output and employment.

It is critical that we examine how selected MEFMI countries respond to a monetary policy shock. The monetary policy shocks in this study will focus on a how changes in interest rates impact on macroeconomic variables. This is in view that, today there seems to be consensus among policy makers that the short term money market rate or the interbank rate is the appropriate operational target to achieve price stability. The results of the study will have implications for policy makers in MEFMI countries.
1.3. **Justification of the Study**

The study is motivated by the need to establish whether MEFMI countries need to review their current monetary policy strategies given the constraints facing these countries. Monetary policy makers in MEFMI countries are faced with multiple challenges in the design and implementation of monetary policy, emanating from external developments and macroeconomic shocks. It will be interesting to establish whether there can be a one size fits all monetary policy strategy for all the MEFMI countries.

More importantly, the dynamic effects of monetary policy shocks contribute to the volatility of various economic aggregates. Understanding how monetary policy affects output and prices is a critical issue for policy makers. The monetary policy framework of a central bank aims to attain the desired objectives of policy in terms of inflation and sustainable level of economic growth. Typically, central banks exercise control over the monetary base and/or short term interest rates. How these interest rate actions and liquidity operations of the central banks impact the end objectives of monetary policy depends on the structure of the economy.

Resultantly, meaningful policy recommendations require estimates of how a change in monetary policy can influence the rest of the economy. The effects and lags of change are not universal but lies predominantly on the nature of the economy, instruments and timing of the policy. Most MEFMI countries share similar structural constraints such as fiscal discipline issues, capital flows and commodity price shocks as well as low levels of financial development. As such, the results of the propagation and lag effects of monetary policy in selected countries will have critical policy implications within the MEFMI region.
Research has shown that monetary policy is a stabilization policy instrument, with the overriding objective of price stability. Investigating the impact of a monetary policy shock on macroeconomic variables will be critical in the conduct and implementation of monetary policy in MEFMI countries.

1.4. Objectives of the Study

Monetary policy implementation issues attract a lot of interest, while raising a number of critical questions. This has prompted the need to assess the effectiveness of monetary policy implementation in MEFMI countries, taking cognisance of the challenges and structural rigidities in these economies. The objectives of the study are therefore to:

i. Review the monetary policy frameworks prevailing in selected MEFMI countries.

ii. Estimate the effects of monetary policy shocks on selected macroeconomic aggregates using Vector Autoregression (VAR).

iii. Proffer recommendations on the optimal monetary policy strategy for some MEFMI countries.

1.5. Methodology

The study employed both quantitative and qualitative research techniques to ascertain the effectiveness of monetary policy implementation in MEFMI countries. Review of monetary policy strategies and framework will largely entail qualitative techniques. This is particularly useful for the purpose of conceptualization and description of the problem to be addressed. Quantitative analysis will be useful in estimating the propagation and effects of monetary policy shocks on MEFMI countries using VAR, impulse response analysis.
The research estimates monetary policy shocks for South Africa (SA) as a model for inflation targeting. The model is envisaged to provide the impulse response and quantify the speed of adjustment of a monetary policy shock defined as an exogenous and temporary change in short term interest rate. It is important to establish how macroeconomic variables such as output and prices react to a monetary policy shock.

1.6. **Expected Outcomes**

The study will provide an understanding of how fast and to what extent changes in monetary policy influences inflation and output in MEFMI countries. The research will also highlight the limitations and effectiveness of monetary policy in MEFMI countries given the structural rigidities inherent in these economies. More importantly, the paper will recommend an optimal monetary policy strategy for some MEFMI countries.

1.7. **Organization of the Study**

Chapter one is the introductory part, which mainly focuses on the problem statement and objectives of the study. It traces the evolution of monetary policy, its role as well as characterises the challenges that MEFMI countries face in effectively implementing monetary policy. Chapter two highlights the relevant literature in the design and implementation of monetary policy. The literature helps to explain how other countries have managed to effectively implement monetary policy in light of the evolving financial and economic episodes.
Chapter three focuses on the design and implementation of monetary policy in selected MEFMI countries and South Africa. Though South Africa is not a MEFMI country, the results will provide a useful case study based on the fact that the economy has long operated with a well-developed financial sector with innovative capital management policies (Pollin, Epstein and Heintz, 2008).

Chapter four dwells on the methodology of the VAR technique. The chapter will review the effects of monetary policy shocks on macroeconomic variables and estimate the dynamic effects. The results and findings of the possible interpretations of monetary policy shocks will be discussed in Chapter five.

Chapter six gives a summary of the findings and proffer recommendations on monetary policy strategies and implementation issues in MEFMI countries. This is with the view that monetary policy and its implementation is at the hub of macroeconomic policy making. As such, policy makers in MEFMI countries need to constantly review their monetary policy frameworks to ensure they remain relevant amid the dynamic changes in the financial and economic environment.
2. LITERATURE REVIEW

2.1 Monetary Policy Implementation Facets

In understanding how monetary policy must be implemented, Milton Freidman (1968) stated that monetary authorities should only target variables that they can control. Freidman postulated that Central Banks can not directly control inflation, however they can choose an operating target suitable to their economy and this will impact on the intermediate target and ultimately influence inflation, the final goal of monetary policy.

The popularity of the intermediate target concept has decreased since the late 1990s, particularly in advanced and emerging economies. The intermediate targets are now widely used as indicator variables useful in conveying critical information to Central Banks without being used as target variables.

Various research works have established that to understand the monetary policy framework it is critical that the concepts of monetary policy objectives or goals, intermediate targets, operational targets and design and utilisation of instruments are clearly understood. Figure 1 below shows the schematic framework for the conduct and implementation of monetary policy.
The monetary policy instrument is a tool available for use by the Central Bank to reach the operational target. Today, most central banks are using indirect instruments as opposed to the direct instruments due to challenges associated with these instruments. Direct controls such as interest rate controls and credit allocations are labelled as financial repression (Tarron Khemraj, 2006). These monetary policy instruments are used by the Central Bank to control the operational target.
The operational target is an economic variable that the central Bank can control with a reasonable time lag and with a relative degree of precision. The variable must be in a relatively stable or at least predictable relationship with the final target of monetary policy, of which the intermediate target is a leading indicator. The typical intermediate target is a monetary aggregate or an exchange rate.

Traditionally, it was assumed that the intermediate target could be influenced or controlled via its operational target. Whilst, IT the recent monetary policy framework is said to function without an explicit intermediate target some analysts have argued that the inflation forecast is the intermediate target used to influence the ultimate objective of monetary policy. A central feature of the monetary policy strategies is the use of some form of a nominal anchor. The anchor is a nominal variable that is the target for monetary policy.

2.2 Anchors of Monetary Policy

Nominal anchors of monetary policy can either be price or quantity based. The quantity based anchors targets money while the price based nominal anchors targets exchange rate or interest rates. Khan (2010) cited the different price anchors as exchange rate, price of gold, composite price of a basket of relevant commodities for a country and the inflation rate. The quantity anchors on the other hand focuses largely on monetary aggregates. The effectiveness of the anchor chosen will largely rely on renouncing all other anchors and adopting one anchor.

The role of a monetary policy framework is to provide a nominal anchor to the economy. Monetary Authorities can use the anchor to pin down expectations of private agents about the
nominal price level or its path or about what the central Bank might do with respect to achieving that path.

The nominal anchor provides conditions that make the price level uniquely determined which is obviously necessary for price stability. In addition, the nominal anchor can be thought of more broadly as a constraint on discretionary policy that helps weaken the time-inconsistency problem described by Kydland and Prescott (1977), Calvo (1978) and Barro and Gordon (1983) so that in the long run, price stability is more likely to be achieved. The time-inconsistency problem arises because there are incentives for a policymaker to pursue short-run objectives even though the result is poor long-run outcomes.

An institutional commitment to price stability goal provides a counter to time inconsistency because it makes it clear that the Central Bank must focus on the long run and thus resist the temptation to pursue short run expansionary policies that are inconsistent with the long run goal of price stability. Even if the source of time inconsistency is not within central banks, a nominal anchor is needed to limit political pressures to pursue overly expansionary, time-inconsistent monetary policies.

Fixed exchange rates were traditionally viewed as the most appropriate in small open economies in view of the larger impact of exchange rate fluctuations in these economies. Exchange rate targeting takes the form of fixing the value of the domestic currency to a commodity such as gold, currency of a large, normally low inflation country and a crawling peg, where currency is allowed to depreciate at a steady rate so that its inflation can be higher than that of the anchor country.
Exchange rate targeting needs to be fully supported by complimentary monetary and fiscal policy policies, otherwise the framework presents challenges. This regime limits the ability of the targeting country to use monetary policy to respond to domestic shocks that are independent of those of the anchor currency country and leaves countries open to speculative attacks on their currencies, particularly where foreign exchange reserves are limited – a challenge facing most MEFMI countries, with the exception of Botswana.

With the recent developments of market liberalization and globalization, fixed exchange rates have been rendered ineffective due to vulnerability to speculative pressures. In 1992, there were speculative attacks on a number of currencies in Europe including French franc and British pound. More importantly, the crisis in Mexico and Southeast Asia illustrates how dangerous exchange rate targeting can be for developing countries. Consequently, these speculative attacks have been very costly to sustain hence most small open economies now employ flexible exchange rate regimes.

The quantity based anchor, mainly pursued through the monetary targeting framework is based on the monetarist’ view that the variation in money supply has major influences on national output in the short run and price level in the long run. Consequently, the objectives of monetary policy are best met by targeting the growth rate of money supply. Analysts have argued that monetary targeting strategies, inflation targets or nominal income targets, all of which aim at nominal targets that are based on a desired growth of a nominal variable building on the inherited past are known as the moving nominal target. Flood and Mussa (1994) expounds that this type of monetary anchor comes from the monetary authority's attempt to hit a moving nominal target.
Most MEFMI countries have adopted monetary aggregate target as anchors for monetary policy. The underlying principle for using monetary aggregate as the intermediate target is premised on two assumptions that there exists a strong and reliable relationship between inflation and money supply and that the central bank can reliably control money supply.

The weaknesses of these assumptions are acknowledged by various economists. The Central Bank may have problems in selecting an appropriate monetary aggregate to target. The Central Bank cannot directly control the intermediate target such as broad money but can only control its balance sheet items, which it can then use as the operational target.

In Zimbabwe, Mabika (2001) highlighted that at the inception of economic reforms in 1991, monetary authorities adopted Net Domestic Assets (NDA) of the Central Bank as its operational target. The focus was on regulating the amount of credit advanced to Government and the banking sector. However, it was difficult to contain inflation due to lack of direct relationship between the NDA of the Central Bank and the domestic inflation. In the mid-1990s, the Central Bank shifted towards reserve money targeting. Most MEFMI countries such as Tanzania and Zambia using the monetary targeting framework have adopted reserve money as the operating target and broad money as the intermediate target.

Taylor (2000) highlighted that targeting monetary aggregates could be misleading largely due to the instabilities in money demand, money multiplier and velocity of money. Mishkin (2002) also shared the same views. The instability of the velocity of money emanating from the financial innovation, market computerisation and globalisation has resulted in difficulties in predicting the changes. Additionally, the Central Bank may fail to manage the selected monetary target with sufficient precision.
While a few central banks, particularly in emerging and developed markets still consider monetary aggregates as operationally meaningful, others focus on the interest rate. This recent approach ignores the intermediate targets and focuses on the final goal such as IT. The framework has become popular among emerging and advanced economies.

Inflation targeting is an economic policy in which a Central Bank estimates and makes public a projected or target inflation rate and then attempts to steer actual inflation towards the target through the use of interest rates changes and other monetary policy tools. In practice, the most common manifestation of an inflation target appears to be accompanied by some explicit or implicit interest rate rule designed to achieve such a target. As such, policy makers explicitly or implicitly set an inflation target and vary the interest rate with the aim of achieving the set target. When inflation targets are explicitly announced such policies have been referred to as inflation targeting.

The normative literature on IT in developing economies typically suggests that such an arrangement should be accompanied by freely floating exchange rates. Following the Asian financial crisis in 1991-98, South Africa like many emerging economies adopted inflation targeting as its monetary policy framework in 2000. Inflation has become the primary and sole mandate of the South African Reserve Bank (SARB) with a freely floating exchange rate.

In view of the fact that IT has had a remarkable record of success, it arouses interest among policymakers whether this is a benchmark of best practice. One barrier to empirically assessing inflation targeting is its short historical record, since New Zealand, the first formal inflation targeter, adopted the approach only in 1990. Roger (2010), however, analysed
inflation and output performance in inflation-targeting countries before and after they adopted inflation targeting with non-inflation-targeting countries. For inflation-targeting countries, the adoption date was the beginning of 2001, so the comparison periods for non-inflation-targeting countries are set at 1991–2000 and 2001–09.

The evidence shows that both inflation-targeting and non-inflation-targeting low-income economies experienced major reductions in inflation rates and improvements in average growth rates. However, those that adopted inflation targeting saw larger improvements in performance. Both inflation-targeting and non-inflation-targeting low-income economies also experienced large reductions in the volatility of inflation and output, with the countries that adopted inflation targeting registering bigger declines, especially in inflation volatility. Among high-income economies, inflation-targeting countries showed little change in performance, on average, between the two periods, whereas the non-inflation-targeting countries typically experienced a decline in growth.

Proponents of inflation targeting claim strongly that monetary policy has become more efficient under inflation targeting (Gurkaynak, Levin and Swanson, 2006). Roger and Stone (2005) and Epstein and Yeldan (2007), however, argue that the victory proclaimed by the proponents of IT is still to be tested. Their analysis reveals that industrial non-targeters, like targeters have also experienced low inflation and high output accompanied by a decline in volatility in prices and output over the same period. The question now arises whether to attribute the recent disinflation and growth in output solely to IT. Researchers have thus recommended that the success of IT be tested during the hostile periods of high inflation such as the 2008 global financial crisis – a period of high food and oil prices.
Whilst inflation targeting is viewed as instrumental in taming inflation and stabilising economies, this policy regime may not be suitable for all economies in view of the nature and economic structures of these economies. As such, only one MEFMI country, Uganda has implemented inflation targeting. The success of this monetary policy regime in Uganda is still to be ascertained since the policy was only adopted in July 2011.

Inflation targeting, however, cannot be solely advocated for or against in every economy in terms of its contribution to inflation and economic performance. There are other benefits in support of inflation targeting such as the political factors that are not measured. Targeting may also produce more open policymaking, aligning the role of the central bank with the principles of a democratic society.

Thus, the debate on the appropriate monetary policy regime aimed at ensuring the nominal anchorage of MEFMI countries, remains a central issue. The choice of a policy regime to provide a longer-term anchor for monetary policy is critical. Individual circumstances, such as the degree of openness of the economy, the extent of fiscal discipline, and the level of financial development, are important for the choice of anchor, making it unlikely that a single regime will dominate in all countries.

There is extensive empirical evidence suggesting that Central Bank Independence helps to reduce inflation. Although there is a strong rationale for price stability goal in MEFMI countries, the question is on who should make the institutional commitment. Should the Central Bank independently announce its commitment to the price stability goal or would it be better to have this commitment mandated by legislation. Debelle and Fischer (1994) made a distinction between goal independence and instrument independence.
Goal independence is the ability of the Central Bank to set its own goals for monetary policy, while instrument independence is the ability to independently set the instruments of monetary policy to achieve the goals. Henning (1994) defined Central Bank independence as the ability of the central bank to use the instruments of monetary control without instruction, guidance or interference from the government.

Consequently, the effectiveness of monetary policy is premised on the monetary policy instruments applied, the institutional framework as well as the parameters related to the financial sector and labour market structures (Siri Alain, 2009).

### 2.3 Monetary Policy Instruments

Traditionally, instruments that affect monetary policy operating targets are generally classified as direct and indirect instruments. The choice of monetary policy instruments differ from country to country and according to differences in political, economic, statutory and institutional procedures and level of financial markets development.

There are five monetary policy implementation tools widely used the world over. These instruments include OMO, bank rate, reserve requirements, standing facilities and moral suasion. The usage of each tool differs with each Central Bank depending on the intermediate targets and the monetary policy nominal anchor. The effectiveness of monetary policy, however, does not necessarily depend on the use of a wide range of instruments, but the coordinated use of various instruments is essential to the application of an optimal monetary policy.
**Open Market Operations** involves the buying and selling of securities by the Central Bank in a bid to control liquidity in the economy. When a Central Bank is faced with mounting inflationary pressures and low interest rates due to excess liquidity in the economy, it sells securities to mop up excess liquidity thereby curtailing money creation in the economy. The contractionary monetary policy, will lead to firming interest rates, reduction in money creation and spending in the economy. Through OMO, the Central Bank takes initiative to ease or tighten liquidity conditions depending on whether the objective is to stimulate or restrain aggregate expenditure.

**Central Bank Rate (CBR)** – It is the rate at which banks are accommodated through the discount window from the Central Bank in case of a reserve shortfall. The CBR is also used as the benchmark interest rate in the economy, which determines the level of other market interest rates. To reduce money supply growth and encourage interbank trading the Central Bank hikes the bank rate. This limit credit and loan creation by commercial banks since a hike in the CBR discourages Central Bank borrowing, which in turn signals the upward review in lending rates. In Botswana, the CBR is the key policy instrument used to signal the direction and magnitude by which the Central Bank wants market interest rates (deposit and lending rates) to change.

**Repurchase Agreements (Repos)** – It is the rate at which the central bank lends or discount eligible paper for Deposit Money Banks (DMBs). Repo is an OMO instrument in form of an agreement involving a simultaneous sale (or buy) and future repurchase (or resale) of assets, often government securities. Banks that borrow from the Central Bank to meet short term needs will have to sell securities to the central Bank with an agreement to repurchase the same at a predetermined rate and date. The repo rate is the main instrument for managing liquidity and acts as a key indicator for short-term interest rates in South Africa and the CMA.
money markets. When the central Bank sets the repo rate, it influences the interest rates that banks pass on to their customers for products such as mortgages, business and personal loans and savings.

**Reserve Ratio** is a statutory requirement imposed on deposit money banks, whereby a percentage is levied on deposits collected and sterilized as reserves at the Central Bank. The ratio is utilized by the Central Bank to control money creation by inhibiting bank’s ability to create credit.

**Moral suasion** is the least effective monetary policy tool because it is anchored on the banks’ perception of the Central Bank. Effectiveness of this tool is hinged on the working relationship between the banks and their respective Central Banks. The tool works when the banks respond to Central Bank requests but they are not forced to accept the requests. Therefore, if the banks have faith in the Central Bank, they will accept and follow the requests of the Central Banks.

**Selective Credit Control** is a tool designed to influence direction of bank credit in accordance with public economic priorities. In most countries selective controls are employed to encourage banks to lend more to designated productive sectors of the economy either by prescribing differential lending rates or by imposing higher or lower quantitative limits on credit to specified sectors.

The use of market based instruments brings about increased economic efficiency and growth. However, MEFMI countries with small economies and underdeveloped financial markets realise that a lack of competition in financial markets has complicated reliance on money market operations. A key component of financial liberalization in most MEFMI countries in the 1990s is the move to indirect monetary policy instruments.
2.4 Propagation of Monetary Policy Shocks

The issue of the effects of monetary policy on prices and real economic activity lies at the core of macroeconomic theory and at the heart of monetary policy. It is generally agreed that monetary policy, specifically unanticipated monetary shocks, have a significant effect on the economy, even if it is at least in the short run. To successfully conduct monetary policy therefore, policy makers must have an appreciation of the timing and effect of their policies on the economy.

Monetary policy shocks and its implications to the economy have been widely recognized in several empirical literatures to date. In the past decades, there has been a resurgence of interest in developing quantitative models that estimate the relationship between the effects of monetary policy shocks and the economy (Christiano, 1998). A monetary policy shock in this study is defined as the temporary and exogenous rise in short term interest rates. The study therefore seeks to understand how such a shock impacts on macroeconomic variables such as output, prices and exchange rates.

The efficacy of the monetary policy is premised on the ability of policy makers to make an accurate assessment of the timing and the effect of the policy on economic activities and prices. Raghavan and Silvapulle (2006) highlighted that to shove monetary policy with the appropriate force and in the right direction policy makers need to have a clear understanding of the propagation mechanism of monetary policy shocks.

The economy is constantly affected by unanticipated events. If the price of oil rises unexpectedly or the central bank sets an interest rate unforeseen by borrowers and lenders,
such unexpected occurrences are usually called shocks. The economy is also affected by more long-run changes, such as a shift in monetary policy towards stricter disinflationary measures or fiscal policy with more stringent budget rules. One of the main tasks of macroeconomic research is to comprehend how such shocks and systematic policy shifts affect macroeconomic variables in the short term and the long run.

Mainstream theory predicts that a monetary policy tightening through an increase in short term interest rate reduces prices and produces an immediate appreciation of the domestic currency. In developed economies such as the United States and other European countries there is substantial evidence of the effectiveness of monetary policy innovations on macroeconomic variables. According to a VAR analysis study done by Christiano, Eichenbaum and Evans (1999), on United States (US) data after an increase in interest rate, GDP falls continuously for several quarters and does not turn upwards until after six quarters. The price level, on the other hand, is hardly affected at all until after six quarters, when prices start to fall and the rate of inflation goes down.

These findings are in line with the central thesis of the classical monetarist school of thought based on the long run neutrality of money. If expectations are rational, then only unanticipated monetary policy shocks will affect output in the short run. In the long run, real variables will return to their long run level while nominal variables will change. Bernanke and Gertler (1995) argued that the debate on the transmission of monetary policy is centred on the temporal impact of monetary policy shocks on the economy and the means by which such shocks are propagated.
Some studies, however, in developing economies such as Nigeria shows that the evidence of a monetary policy innovation is weak and full of puzzles (Chuku, 2009). Few empirical studies have been conducted with regard to the effects of monetary shocks on macroeconomic variables such as output, money supply and prices in MEFMI countries.

A study carried by the IMF research department summarized studies on the propagation of monetary policy by Buigut (2009) on a study on Kenya, Tanzania and Uganda. The study focused on a three variable VAR approach with real output, inflation and a policy interest rate as endogenous variables. The study ordered output first and the policy rate last, on the assumption that the policy rate is based on contemporaneously observed output and inflation numbers, but does not affect output and inflation contemporaneously. The results established that changes in policy interest rates had small and statistically insignificant effects on output and inflation.

Cheng (2006) examined propagation of monetary policy in Kenya. The study used monthly data from 1997 to 2005. He estimated a five-variable VAR which included real output, the price level, the money stock, the central bank’s policy rate, and the nominal effective exchange rate, and used the recursive scheme and structural scheme. Under both schemes, the findings were that a rise in the Central Bank of Kenya’s repo tends to be followed by a decline in prices and an appreciation in the nominal effective. As such, a monetary policy shock has a significant and persistent impact on prices with effects culminating after 9 to 12 months. The impact on output, however, appeared to be sluggish and small.

According to Cheng (2006) the sluggish response of output to monetary policy shock can be explained by the weak and inefficient financial markets. The empirical findings suggest a
weak transmission from monetary policy to real variables. On the other hand the results show a strong link between monetary policy and nominal variables.

Cushman and Zha (1997) argued that some empirical studies on the effects of monetary policy shocks in small open economies have generated puzzling dynamic responses in various macroeconomic variables due to an identification of monetary policy that is inappropriate for such economies. The deregulation of financial markets and monetary policy more oriented towards market based operations in small open economies have seen an increased interest in understanding how economies respond to monetary shocks.

Sims (1992) established that contraction monetary policy through positive innovations in interest rates seem to lead to an increase (rather than a decrease) in prices, a result known as the prize puzzle. The common puzzle identified in the literature of open economies is the exchange rate puzzle, which is a finding that an increase in interest rate is associated with a depreciation (rather than appreciation) of the local currency.

A number of other researches following Bernanke and Blinder (1992) and Sims (1992), have employed VAR to trace out the effect of monetary policy innovations on the economy. The key insight of this approach is that identification of the effects of monetary policy shocks requires only a plausible identification of those shocks. The VAR approach to measuring the effects of monetary policy shocks appears to deliver a great deal of useful structural information, especially for such a simple method.

Many controversies surround the question of how and to what extent monetary policy innovations can affect the economy. It is generally accepted that monetary policy has deep
effects on the economy as such it has become clear how important it is to acquire the necessary amount of information on them. One of the key assertions of classical macroeconomics is the long run neutrality of money proposition, which states that monetary policy innovation has no permanent effect on real variables such as employment and employment.

Sims (1980) seminal work on VAR models has become a predominant econometric tool in this field of monetary policy research. VARs have become a popular approach in estimating the long run effects of monetary policy innovation on real variables. While there is debate about the effects of monetary policy innovation in the short run, the proposition that monetary policy has no impact on real variables in the long run is a view which most economists subscribe to.

It is important, therefore to investigate the effects of monetary policy shocks on macro-economic variables in MEFMI countries. More importantly, understanding the profound inter-relationships of macroeconomic factors and how they respond to a monetary policy shock is critical for policy making.
CHAPTER 3

3. MONETARY POLICY FRAMEWORKS IN SELECTED MEFMI COUNTRIES AND SOUTH AFRICA

3.1 Analysis of Monetary Policy Frameworks

The role of a monetary policy framework is to provide a nominal anchor to the economy. In view of the growing consensus that price stability is the overriding goal of monetary policy, a central feature of monetary policy strategies is the use of some form of nominal anchor. The nominal anchor can be a nominal variable that monetary policy makers use to tie down price levels. A strong nominal anchor assists policy makers to circumvent the time inconsistency trap of pursuing short run expansionary policies that are inconsistent with long run objectives.

There are three main types of monetary policy frameworks which include exchange rate targeting, monetary targeting and inflation targeting which use different nominal anchors. In addition, there is another monetary policy framework known as the “eclectic or just do it” approach with an explicit goal but not an explicit nominal anchor.

Traditional approaches of monetary policy anchored the money supply under the monetary targeting framework. Whilst the framework served most countries well as a nominal anchor, the breakdown in the relationship between money and inflation led to the abandonment of the framework in most countries. Uganda, a MEFMI country recently abandoned monetary targeting in July 2011, largely due to the challenges in forecasting reserve money.
Tables 1 and 2 below show the performance of inflation and real GDP growth for MEFMI countries that have pursued monetary targeting. Inflation has been volatile in most of the countries as reflected by a standard deviation in the range of 4% to 7%. Furthermore, the impact of the global financial crisis during the period 2007 to 2009 also exacerbated the challenge.

Table 1: Inflation Rates for Monetary Targeting Countries (2005 – 2011)

<table>
<thead>
<tr>
<th></th>
<th>Kenya</th>
<th>Malawi</th>
<th>Mozambique</th>
<th>Rwanda</th>
<th>Tanzania</th>
<th>Uganda</th>
<th>Zambia</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>9.9</td>
<td>16.6</td>
<td>11.1</td>
<td>5.6</td>
<td>4.9</td>
<td>8.6</td>
<td>15.9</td>
</tr>
<tr>
<td>2006</td>
<td>6.4</td>
<td>10.1</td>
<td>9.4</td>
<td>12.1</td>
<td>6.7</td>
<td>7.2</td>
<td>8.2</td>
</tr>
<tr>
<td>2007</td>
<td>4.3</td>
<td>7.5</td>
<td>10.3</td>
<td>6.5</td>
<td>6.4</td>
<td>6.1</td>
<td>8.9</td>
</tr>
<tr>
<td>2008</td>
<td>16.2</td>
<td>9.9</td>
<td>6.2</td>
<td>22.3</td>
<td>13.5</td>
<td>12.0</td>
<td>16.6</td>
</tr>
<tr>
<td>2009</td>
<td>10.5</td>
<td>7.5</td>
<td>4.2</td>
<td>5.7</td>
<td>12.2</td>
<td>13.0</td>
<td>9.9</td>
</tr>
<tr>
<td>2010</td>
<td>4.5</td>
<td>6.3</td>
<td>16.6</td>
<td>0.2</td>
<td>5.6</td>
<td>4.0</td>
<td>7.9</td>
</tr>
<tr>
<td>2011</td>
<td>6.7</td>
<td>7.0</td>
<td>5.5</td>
<td>6.0</td>
<td>19.8</td>
<td>18.7</td>
<td>7.2</td>
</tr>
<tr>
<td>Mean</td>
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<td>9.0</td>
<td>8.3</td>
<td>9.9</td>
<td>9.9</td>
<td>10.7</td>
</tr>
<tr>
<td>STD Deviation</td>
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<td>3.5</td>
<td>4.2</td>
<td>7.1</td>
<td>5.5</td>
<td>5.0</td>
<td>3.9</td>
</tr>
</tbody>
</table>

Table 2: Real GDP Growth Rates for Monetary Targeting Countries (2005 – 2011)

<table>
<thead>
<tr>
<th></th>
<th>Kenya</th>
<th>Malawi</th>
<th>Mozambique</th>
<th>Rwanda</th>
<th>Tanzania</th>
<th>Uganda</th>
<th>Zambia</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>5.8</td>
<td>2.5</td>
<td>8.3</td>
<td>9.3</td>
<td>7.4</td>
<td>6.5</td>
<td>5.3</td>
</tr>
<tr>
<td>2006</td>
<td>6.4</td>
<td>7.7</td>
<td>8.6</td>
<td>9.2</td>
<td>6.7</td>
<td>3.6</td>
<td>6.2</td>
</tr>
<tr>
<td>2007</td>
<td>7.1</td>
<td>5.7</td>
<td>7.2</td>
<td>5.5</td>
<td>7.1</td>
<td>4.4</td>
<td>6.2</td>
</tr>
<tr>
<td>2008</td>
<td>1.6</td>
<td>8.6</td>
<td>6.8</td>
<td>11.1</td>
<td>7.8</td>
<td>6.6</td>
<td>5.7</td>
</tr>
<tr>
<td>2009</td>
<td>2.6</td>
<td>7.5</td>
<td>6.3</td>
<td>4.1</td>
<td>6.0</td>
<td>0.3</td>
<td>6.4</td>
</tr>
<tr>
<td>2010</td>
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<td>6.6</td>
<td>7.0</td>
<td>6.5</td>
<td>7.0</td>
<td>1.9</td>
<td>7.6</td>
</tr>
<tr>
<td>2011</td>
<td>4.5</td>
<td>6.1</td>
<td>7.5</td>
<td>6.4</td>
<td>6.5</td>
<td>6.0</td>
<td>6.8</td>
</tr>
<tr>
<td>Mean</td>
<td>4.8</td>
<td>6.4</td>
<td>7.4</td>
<td>7.4</td>
<td>6.9</td>
<td>4.2</td>
<td>6.3</td>
</tr>
<tr>
<td>STD Deviation</td>
<td>2.0</td>
<td>2.0</td>
<td>0.8</td>
<td>2.5</td>
<td>0.6</td>
<td>2.4</td>
<td>0.8</td>
</tr>
</tbody>
</table>

Other monetary policy frameworks have anchored the exchange rate under the exchange rate targeting regime. Exchange rate targeting comes in two basic forms being the soft pegs, in which the commitment to the peg is not institutionalized and hard pegs where there is institutional commitment in the form of a currency board or dollarization. In MEFMI countries Botswana is pursuing a crawling peg, where the currency is pegged to a basket of
currencies (Rand, Euro and US Dollar). On the other hand, Lesotho, Namibia and Swaziland are pursuing a hard peg to the South African Rand under the Common Monetary Area (CMA).

Tables 3 and 4 below show the inflation profiles and Real Gross Domestic Product (RGDP) growth rates for the exchange rate targeting countries. Inflation has registered single digit level for the CMA countries, with the exception of the double digit inflation level recorded during the global financial crisis period. Inflation has averaged between 6.2% and 7.7% for the CMA countries. In addition, inflation has been less volatile with a low standard deviation between 2.6 and 3.7 over the period 2005 to 2011.

Table 3: Inflation Rate for Exchange Rate Targeting Countries (2005 – 2011)

<table>
<thead>
<tr>
<th></th>
<th>Lesotho</th>
<th>Namibia</th>
<th>Swaziland</th>
<th>Botswana</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>3.5</td>
<td>6.3</td>
<td>6.3</td>
<td>11.2</td>
</tr>
<tr>
<td>2006</td>
<td>6.4</td>
<td>5.4</td>
<td>5.4</td>
<td>8.5</td>
</tr>
<tr>
<td>2007</td>
<td>10.4</td>
<td>12.6</td>
<td>12.6</td>
<td>8.1</td>
</tr>
<tr>
<td>2008</td>
<td>10.6</td>
<td>12.9</td>
<td>12.9</td>
<td>13.7</td>
</tr>
<tr>
<td>2009</td>
<td>4.1</td>
<td>4.49</td>
<td>4.49</td>
<td>5.8</td>
</tr>
<tr>
<td>2010</td>
<td>3.1</td>
<td>4.5</td>
<td>4.5</td>
<td>7.4</td>
</tr>
<tr>
<td>2011</td>
<td>5.6</td>
<td>7.3</td>
<td>7.3</td>
<td>9.2</td>
</tr>
<tr>
<td>Mean</td>
<td>6.24</td>
<td>7.64</td>
<td>7.64</td>
<td>9.13</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>3.13</td>
<td>3.63</td>
<td>3.63</td>
<td>2.60</td>
</tr>
</tbody>
</table>

Table 4: Real GDP Growth Rates for Exchange Rate Targeting Countries (2005 –2011)

<table>
<thead>
<tr>
<th></th>
<th>Lesotho</th>
<th>Namibia</th>
<th>Swaziland</th>
<th>Botswana</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>2.4</td>
<td>2.4</td>
<td>2.1</td>
<td>5.6</td>
</tr>
<tr>
<td>2006</td>
<td>4.7</td>
<td>7.1</td>
<td>2.9</td>
<td>8.5</td>
</tr>
<tr>
<td>2007</td>
<td>4.5</td>
<td>5.3</td>
<td>2.8</td>
<td>-3.6</td>
</tr>
<tr>
<td>2008</td>
<td>4.6</td>
<td>4.3</td>
<td>3.1</td>
<td>3.1</td>
</tr>
<tr>
<td>2009</td>
<td>3.0</td>
<td>-0.8</td>
<td>1.1</td>
<td>4.8</td>
</tr>
<tr>
<td>2010</td>
<td>2.4</td>
<td>4.4</td>
<td>1.9</td>
<td>5.1</td>
</tr>
<tr>
<td>2011</td>
<td>3.1</td>
<td>4.8</td>
<td>0.5</td>
<td>1.6</td>
</tr>
<tr>
<td>Mean</td>
<td>3.5</td>
<td>3.9</td>
<td>2.1</td>
<td>3.6</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>1.0</td>
<td>2.5</td>
<td>1.0</td>
<td>3.8</td>
</tr>
</tbody>
</table>
Exchange rate targeting, particularly in the CMA countries has been critical in containing inflation. The limitation, however is “loss of independent monetary policy” implying shocks to the anchor country are transmitted to the targeting country because domestic interest rates are determined in the anchor country” Frederic Mishkin (2002). Under this framework, the domestic policy is being set by the monetary policy of the anchor country.

Hard pegs may be desirable particularly in countries with weak political and monetary institutions. Hard pegs can then be thought of as the stabilization policy of last resort, leaving little or no discretion to the monetary authorities as is the case for Zimbabwe since the adoption of dollarization under a multiple currency framework in February 2009.

Under inflation targeting the focus is to anchor the expected rate of price increase and not the price level by committing to a given level of inflation. By making the inflation target explicit not only provides a nominal anchor but also a focal point that may anchor inflation expectations. Inflation targeting provides a device to coordinate expectations due to the public announcement of the numerical target and it also acts as a good mechanism for communicating with the public. Inflation expectations for the next year or two influence current and future pricing decisions, therefore anchoring inflation expectations of economic agents is a critical precondition for the stability of actual inflation.

Martinez (2008) highlights that the main features of inflation targeting that distinguishes it from other frameworks is Central Bank commitment to a numerical target level or range of annual inflation and the important role for transparency, accountability and communication to the public. In addition, inflation targeting reduces uncertainty and improves the coordination between monetary policy and other macroeconomic policies.
Inflation targeting spells out the intentions of a central bank by making known the target level of inflation in an economy. The inflation target can be set by the government and implemented by the central bank or alternatively agreed by both parties. As one of its critical elements, inflation targeting requires an independent central bank to implement monetary policy effectively.

Whilst Central Banks share similar goals of monetary policy, most notably price stability, the monetary authorities implement monetary policy in different ways. Understanding the differences and the costs and benefits to each approach is useful for policy makers.

3.2 Analysis of Monetary Policy Frameworks in MEFMI Countries and South Africa

i. Namibia – Currency Board with a Fixed Peg to the Rand;
ii. Zimbabwe - Dollarization under the Multicurrency Regime;
iii. Tanzania - Monetary Targeting Framework
iv. Uganda - Inflation Targeting Lite
v. South Africa - Inflation Targeting

3.2.1 Namibia – Currency Board with a Fixed Peg to the Rand

Namibia is part of the CMA comprising Lesotho, Swaziland and South Africa. Both the South African rand and the Namibian dollar are legal tender in Namibia, but the Namibian dollar is not accepted in South Africa. The ultimate objective of monetary policy in Namibia is to ensure price stability in the interest of sustainable economic growth. The BoN enjoys
operational autonomy on monetary policy issues where there is no Government interference in decision making.

The monetary policy framework is underpinned by a fixed exchange rate peg to the South African rand. The intermediate target of Namibia is maintenance of the fixed peg that will ensure that the parity between the Namibia Dollar and the South Africa Rand is not in any way threatened. The fixed peg may be threatened for instance when the interest rates deviates from each other leading to undue capital inflows or outflows and/or divergent macroeconomic developments between the two countries.

Namibia does not have a formal operational target, however the Bank monitors the level of international reserves as the fixed peg requires that Namibia’s currency in circulation be fully backed by prescribed rand assets so as to import stable prices from the anchor country. In cases where the international reserves are viewed as inadequate the Bank submits a report with recommendations to the Minister of Finance on ways to remedy the situation.

A fixed peg limits the scope for an independent monetary policy. Al-Raisi, Al-Raisi and Pattanaik (2006), argued that no country can afford to enjoy the luxury of fixed exchange rate, monetary policy independence and open capital account at the same time a situation styled the impossibility trinity theorem. A country operating under such a fixed exchange rate peg could use sterilisation operations, capital controls and regulatory barriers to influence short term interest rates, money supply and credit to the private sector to influence domestically induced inflation through expectations and aggregate demand.
The Bank of Namibia (BoN) regularly follows actions taken by the SARB, however in some cases the stance of monetary policy can deviate from that of the anchor currency by using capital controls and prudential requirements imposed on financial institutions. BoN can vary its repo rate from the repo rate of the SARB when required so and gives the policy makers discretion to control domestic money supply and ultimately achieve price stability. Alweendo (2008) highlighted that the discretion enables the BoN to control domestically induced inflation, which is estimated to contribute about 35% to the overall inflation in Namibia.

The inflation pattern of the CMA countries mirrors the development in the South African as shown in figure 2 below.

**Figure 2: Inflation Profile for South Africa, Namibia and Lesotho (2005-2011)**

The main instrument of monetary policy is the repo rate, which is maintained close to the SARB’s repo rate. It is the interest rate at which commercial banks borrow overnight from the BoN. This rate therefore influences other interest rates in the economy. The repo rate can,
however, be varied on the basis of changes of SARB’s decision on its repo rate, domestic economic developments, international economic conditions and the future outlook.

The BoN also introduced the seven day repo in 2008, as the main instrument of accommodating banks, with the aim of ensuring that the refinancing operation is administered in a timely and effective manner. It helps in encouraging active and efficient interbank lending among the banking institutions. All banking institutions that participate in the Namibian interbank settlement system are accommodated through the seven day repo, the overnight repo or the intraday repo. The overnight repo is only used to manage daily positions if the funds which commercial banks have accessed from the seven day repo are insufficient during the seven day cycle.

The BoN also uses OMO to withdraw surplus liquidity conditions or inject liquidity in the economy in case of a shortage. The Bank buys and sells debt securities in the market in an attempt to influence liquidity conditions in the market (Namibian Monetary Policy Framework, 2008).

The monetary authorities also use the call account both as a standing facility and a discretionary facility at the BoN’s request. This is a facility where banking institutions can place their funds with the BoN at an interest rate on a daily basis. According to the Namibian Monetary policy Framework (2008), the Bank introduced BoN bills in April 2007. These bills were used to assist banks meet their statutory liquidity requirements following a shortage in available Government securities in both the primary and secondary market. The bills were benchmarked on the 91 days TBs and were issued on a fortnight basis only to banking institutions.
3.2.2 Zimbabwe - Dollarization under a Multiple Currency Regime

Monetary policy in Zimbabwe, during the period 1980 to early 1990s was characterized by direct controls on interest rates and credit. Under this environment monetary policy was relatively inactive. The economic liberalization programme initiated in the 1990s saw a marked shift in the conduct of monetary policy in terms of strategies, approaches and instruments.

In the 1990s, following the Economic Structural Adjustment Program (ESAP) reforms, monetary policy was more active with the use of indirect monetary policy instruments, which saw the Central Bank adopting a monetary policy strategy based on targeting intermediate monetary aggregates. The money supply aggregate (M2), which excluded the deposits of building societies, finance houses and the POSB, was the main intermediate policy variable up to 1997. Thereafter, further financial liberalization and innovation, greater importance was placed on a broader measure of money supply (M3) which included deposits of other banking institutions (Mabika, 2001). Monetary policy assisted in reducing inflation pressures, with inflation averaging 18% in the late 1990s.

Inflationary pressures emanated, to a greater extent from the currency crash of November 1997 and the fixed exchange rate regime maintained from 2000 to 2003. The exchange rate was fixed at ZWD$55 per USD from 2000 to 2002. The fixed exchange rate impacted negatively in exporter viability. Resultantly, an export support rate of ZWD$824 per USD was introduced in February 2003 in an effort to restore exporter viability. The foreign exchange controls resulted in the development of parallel market exchange rate, which exacerbated inflationary pressures in the economy.
Consequently, inflation soared reaching 622% in January 2004. The assumed stable relationship between reserve money and money supply collapsed. Changes in statutory reserves and currency to deposit ratio combined to generate variability in the money multiplier.

Over the period 2004 to 2008, the conduct of monetary policy was based on an eclectic approach, where a cocktail of measures were applied as monetary policy initiatives. The Central Bank adopted a developmental approach intended primarily to reduce inflation through generating supply response to achieve economic stabilization, recovery and growth. The Central Bank adopted a dual interest rate framework, which sought to achieve the twin objectives of economic growth and inflation reduction. Market determined interest rates were applied on non-productive and consumptive activities, while concessional rates were charged on productive sectors. This approach only amplified distortions and speculative activities.

Market determined interest rates were expected to be influenced by the overnight rate, which was the prevailing policy rate. The overnight rate was aligned, in compounded effective yield terms at 10-20 percentage points above the prevailing inflation levels. The periodic review of interest rates typically took account of inflation, domestic demand and external conditions. Until August 2005, lending rates for commercial and merchant banks trended upwards in line with the adjustments in the overnight rates. The effectiveness of adjusting the overnight rate as the key policy rate was being undermined by the existence of concessional facilities. As a result, the overnight rate was not effective in influencing other interest rates and reducing inflation.
There was excessive money printing to finance Government deficits and quasi fiscal activities, resulting in an upsurge of inflationary pressures, creating challenges in establishing an effective monetary policy. Beyond 2005, the rapid expansion in broad money underpinned by the Central Bank’s quasi-fiscal activities rendered ineffective the use of ordinary monetary policy tools even though they were frequently adjusted in line with inflation developments. Resultantly, money supply became the major driver of inflation. The expansion in money supply stoked adverse inflation expectations and the build-up in inflation expectations sustained the hyperinflation.

Table 5 below shows the inflation profiles and Real GDP growth for Zimbabwe at the height of hyperinflation and during the period of dollarisation.

<table>
<thead>
<tr>
<th>Year</th>
<th>Inflation (%)</th>
<th>RGDP Growth Rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>586</td>
<td>-4.0</td>
</tr>
<tr>
<td>2006</td>
<td>12,811</td>
<td>-3.6</td>
</tr>
<tr>
<td>2007</td>
<td>66,212</td>
<td>-3.3</td>
</tr>
<tr>
<td>2008</td>
<td>231,150,889 (est as at Jul 2008)</td>
<td>-14.8</td>
</tr>
<tr>
<td>2009</td>
<td>(7.7)</td>
<td>5.7</td>
</tr>
<tr>
<td>2010</td>
<td>3.2</td>
<td>9.6</td>
</tr>
<tr>
<td>2011</td>
<td>4.9</td>
<td>9.3</td>
</tr>
</tbody>
</table>

2005-2008 (Hyperinflation Period) 2009-2011(Dollarization Period)

The hyperinflation era resulted in the marginalization of the local currency by economic agents and Government adopted the multiple currency system in February 2009, signalling the end of the domestic monetary policy autonomy. Under the new monetary system, multiple currencies such as the US Dollar, South African Rand, Euro, British Pound Sterling, are being used for day to day business transactions.
The dollarization framework as is the case under a currency board effectively limits the scope of monetary policy. The efficacy of monetary policy has been compromised by the unavailability of both the exchange rate and interest rate as policy instruments to adjust in response to exogenous shocks. Dollarization has however assisted in arresting the inflationary pressures in the economy.

### 3.2.3 Tanzania – Monetary Targeting

The conduct of monetary policy in Tanzania has passed through various stages. Prior to the establishment of the Bank of Tanzania in 1966, the country’s monetary policy was governed by the arrangements under the East African Currency Board (EACB). After the establishment of the Bank of Tanzania, direct controls through the provision of cheap finance to the public sector were introduced and credit to private sector was kept at a ceiling not exceeding 10% of total Government budget. This period was characterised by high inflation emanating from the monetization of fiscal deficits.

Liberation of the market started after 1986, with elimination of controls in the markets for financial resources and foreign exchange. The role of the Bank shifted from being a quasi development finance institution to that of a proper monetary authority. The primary role of monetary policy in Tanzania is to maintain price stability conducive to a balanced and sustained growth of the national economy. The implementation of monetary policy in Tanzania entails setting of targets and choice of the appropriate instruments. The three targets include the operational, intermediate and final target. Monetary policy in Tanzania is based on the quantity anchor through reserve money targeting.
The Bank of Tanzania uses indirect instruments following the adoption of the market based system of economic management in the mid 1990s. These include OMO, reserve requirements, discount policy, foreign exchange market repurchase agreements, moral suasion and gentleman’s agreements (Masawe, 2001).

OMO is the principal tool for monetary policy and is implemented with the aim of attaining a particular level of reserve money while allowing the interest rates to fluctuate freely. The Central Bank also uses foreign exchange market operations when it buys and sells foreign exchange to commercial banks through the interbank foreign exchange market. The exchange rate is market determined and the Central Bank only intervenes to smoothen any fluctuations and maintain the appropriate level of external reserves.

Central Bank of Tanzania does not normally use the reserve requirements as a policy instrument. This is in view of the arguments that the instrument is a direct levy on the quantity of assets that banks can hold, thus impacting negatively on the availability and cost of credit to private sector.

The greatest risk to economic growth in the short and medium term is the growing fiscal deficit and the implied potential need to raise bridging funds. In turn, this could translate into an even greater reliance on foreign grants and investment or the government’s need to raise such funds from non-concessional borrowing. Any significant disruption to either of these sources of funding would have negative ramifications for price stability.
3.2.4 Uganda – A Shift from Monetary Targeting to Inflation Targeting Lite

Since the early 1990s, Uganda was classified as one of the most consistently successful countries in controlling inflation in Africa. This impressive record has been anchored on a relentless adherence to a tight Reserve Money Programme (RMP), heavily buttressed by the cash-budget fiscal rule. The RMP was introduced in 1993 as the monetary policy operating framework. Since then, BOU exercised its autonomy in the formulation and implementation of monetary and exchange rate policy.

Under this framework the ultimate macroeconomic objectives were defined in terms of quantitative targets for real GDP growth rate, inflation and import cover. The monetary policy framework of Uganda was based on broad money (M2), as an intermediate target. Broad money growth for M2 and other components of the monetary survey were projected, consistent with the macroeconomic objectives with assumptions for velocity. The growth of base money was then projected to be in line with the broader monetary aggregates and inflation. The annual growth target was converted into monthly targets that reflect seasonality in the money demand. Thus, the RMP was applied to guide monetary policy.

This provided a solid anchor for monetary policy in attaining low average inflation of just over 6%, during the early 2000s (L Kasekende, 2010). In the mid 2000s, there was a surge in foreign aid and private capital flows, which also contributed to the exacerbation of exchange rate and interest rate volatility. This created challenges for the monetary authorities to correctly forecast reserve money under the monetary targeting framework. Recently, there have been concerns that the monetary targeting framework that had for long served the
country well was now proving less successful in attaining low and stable inflation, given a more open capital account.

Inflation and exchange rate began to surge despite the tight monetary policy stance that was in operation. The country experienced heightened uncertainty resulting from both domestic and external shocks. As a short term measure, the BoU had to revise the monetary policy operating procedures to address the challenges. The Bank would review the monetary targets on a monthly basis taking into account the latest available macroeconomic and financial statistics. In addition, the Bank would intervene more proactively in the money market, often on a daily basis with repos and reverse repos to dampen any short run volatility in liquidity and interbank interest rates.

The current inflationary scenario that exists in Uganda is not unique. A significant number of developing countries are struggling to come to grips with rising inflation. Currently, inflation has probably become the number one enemy for the BoU that some analysts have highlighted that bringing it down could cost economic growth significantly, although in the past BoU had managed to bring down inflation without compromising economic growth as shown on figure 3 below.
Consequently, in an effort to address the challenges of rising inflation, the BoU reformed its monetary policy framework to inflation targeting lite in July 2011. This move was aimed at meeting the challenges of macroeconomic management generated by the transformation of the economy in particular the rapid growth and diversification of the financial system. The operating target is the Central Bank rate (CBR), which is critical in guiding the 7 day interbank interest rate. By varying the CBR, Mugume (2011), the Bank influences the entire spectrum of market interest rates. Monetary policy is implemented by influencing interest rates in the money market through targeting the range for the 7-day interbank.

Consistent with the tight monetary policy stance, the CBR was raised from 13 percent in July 2011, to 23 percent in November and commercial bank lending rates consequently hedged up with most banks increasing their prime lending rates to between 22% and 30%. In addition, BoU issued Treasury securities to keep structural liquidity in line with the tight program levels. The repos and reverse repos are used to influence daily liquidity in the interbank and to keep the interbank rate within the tolerable bands of the CBR.
The strategy of raising the CBR is to curb growth in bank credit in order to dampen the growth of aggregate demand. However, dampening aggregate demand will not directly prevent inflation emanating from supply side shocks, such as drought, but it will prevent inflation from spilling over and becoming entrenched in prices throughout the economy. Economists have argued that monetary tightening has almost reached a plateau in Uganda whereby any further tightening could severely undermine economic growth.

The option for inflation targeting means that Uganda has chosen to have an independent monetary policy, free capital flows and a floating exchange rate. However, the exchange rate is an important determinant of inflation in Uganda as the change in the domestic price of tradable goods in Uganda is generally determined by foreign inflation and exchange rate variations. Resultantly, taming inflation in Uganda might entail adopting exchange rate targeting, however this option might be constrained by declining foreign exchange reserves, which are critical in defending exchange rate depreciations.

3.2.5 South Africa – Inflation Targeting

South Africa implemented quantitative controls on interest rates and credit like most developing economies, until the early 1980s. Prior to 1989, the country implemented monetary targeting, which is predominant in MEFMI countries. The money supply targets were set annually using a three month moving average of broad money growth. The aim of setting the target was both to accommodate projected real GDP growth and to contain inflation. As acknowledged in most researches that monetary targeting was premised on a stable and predictable money demand function, this stable relationship however, broke down due to financial liberalization.
Between the early 1990s and 1999, the SARB set formal targets for money supply (M3) growth albeit in practice monetary policy was ‘eclectic’ with the nominal exchange rate sometimes implicitly targeted, as well. The focus was on a broad range of intermediate targets, with broad money as the key intermediate target. The target was however missed in most of the cases largely due to financial innovation in the financial markets. SARB was pursuing a monetary policy that stressed financial stability over economic growth. In particular, high interest rates were maintained in order to avoid capital flight, excessive pressure on the exchange rate and high inflation. The high interest rates had a stifling effect on economic growth.

The eclectic approach had its own short comings, which included, undefined policy objectives, lack of accountability and high degree of real interest variability. As such, the country adopted inflation targeting in 2000, with the aim of enhancing policy transparency, accountability and predictability. The implication of this framework is that the monetary authorities are now targeting the rate of inflation directly after switching from the previously applied “eclectic” monetary policy approach where intermediate objectives had an important role.

The primary goal of monetary policy is maintaining price stability under a freely floating exchange rate. To achieve the targeted rate of inflation SARB varies its main policy instrument, the repo rate. The SARB uses various market oriented instruments to effect monetary policy in South Africa. The focus of these instruments is to guide or encourage financial institutions to take certain actions on a voluntary basis. The repo rate is the main policy instrument used by SARB.
The repo rate is the rate that commercial banks are charged for borrowing from the SARB overnight. It is the rate at which the Reserve Bank grants assistance to the banking sector and therefore represents the cost of credit to the banking sector. When the repo rate is changed, the interest rates on overdrafts and other loans extended by banks also change. This implies the Reserve Bank indirectly influences the cost of borrowing in the market.

The repo rate is used by the SARB to directly control liquidity in the market. When the Central Bank wants to reduce excess liquidity in the market it increases the repo rate to create shortages and resultantly, the commercial banks increase their lending rates, and the public reacts by reducing money demand and consequently aggregate demand. When aggregate demand falls, the price level also tends to fall.

The Bank also uses OMO to influence the desired price and quantity of money. OMO policy is based on the inverse relationship between interest rates and bond prices. When SARB wants to increase the quantity of money in the economy it buys securities on the open market. To persuade the market participants to sell the paper the prices of bonds have to be raised and this leads to lower effective interest rates.

Van der Merwe (2004), highlighted that the inflation targeting framework assisted in improving the credibility and effectiveness of macro-economic policy. Adherence to inflation targeting has reinforced the SARB independence. Figure 4 below shows the profile of inflation and real GDP growth rates over the period 2005 to 2011. Developments over the period 2007 to 2009 reflect the impact of the global financial crisis on South Africa. The global financial crisis impacted negatively on both inflation and real GDP.
Critics of inflation targeting in South Africa have, however argued that the monetary policy framework has resulted in high real interest rates, with consequent cost in growth and high unemployment. Consequently, there has been a debate evolving around the impact of monetary policy on domestic growth and employment creation under inflation targeting. Veigi (2009) argued that inflation targeting is the best alternative because it gives a lot of flexibility that other monetary policy regimes do not have. Exchange rate targeting, the only viable alternative is very risky in view of external shocks and openness to speculative attacks and currency crisis.

Economists have argued that the most important tool at the disposal of Central Banks to control inflation is interest rates. Others have argued that the surge in inflation emanating from exogenous factors such as international commodity prices cannot be controlled by raising interest rates on the domestic economy. Domestic interest rates are reviewed upwards with the intention of controlling the second round effect of inflation expectations. Rising inflation has the effect of creating an expectation of continued rising inflation, which
automatically build into future pricing structures (Davis, 2009). The focus is to prevent the relative rise in prices from becoming entrenched in people’s expectations of inflation.

3.3 Future Monetary Policy Options for MEFMI Countries

Most Central Banks in the advanced and emerging economies have abandoned the use of intermediate monetary targets to guide monetary policy due to the instability of the money demand function. This approach remains dominant in MEFMI countries. Other countries in the MEFMI region are pursuing exchange rate targeting as an alternative intermediate target. Uganda on the other end has followed other developed and emerging markets and adopted a direct final target of inflation.

Intellectual perspectives on the conduct of monetary policy in Africa are changing, with some countries actively considering anchoring their monetary policy on explicit IT regimes, following the lead of South Africa and Ghana. It does not follow, however, that IT can or should be implemented either quickly or in the same form as in emerging and developed economies.

In this new approach to monetary policy, transparency and credibility are recognized as paramount in economic policy to avoid problems associated with time-inconsistency. The commitment by the central bank to an inflation target gives monetary policy more transparency and credibility. The fact that the central bank is accountable for target achievement contributes to transparency. Transparency, in turn promotes credibility. These are the key pillars of IT, which are lacking in some monetary policy frameworks prevailing in MEFMI countries. More importantly, some MEFMI countries fall into the time-inconsistency trap and lack central bank independence. As such, the Central Banks give in to
political pressures, a situation that resulted in Zimbabwe experiencing hyperinflation over the period 2004-2008.

Most MEFMI countries lack Central Bank independence as would be required and may thus not be in a position to implement IT credibly. The influence of government activities may result in the inflation targets being missed. Critics of inflation targeting have argued that the policy framework is too rigid, has potential to increase unemployment and lower economic growth, a critical area of concern in South Africa. Such challenges create difficulties for MEFMI countries to easily adopt this framework. Some countries experiencing economic decline would require a framework which aims at stabilizing the economy. A hypothesis that needs to be explored is on the relationship between inflation targeting and economic growth.

Experience in countries, which successfully implemented monetary targeting such as Germany and Switzerland shows that the policy framework requires clear communication. There is need to clearly spell out the long run strategy to anchor down inflation using the money growth targets. Any deviations from the target should also be explained for credibility purposes, as is the case in inflation targeting. In view of the above, some MEFMI countries can however, continue to pursue monetary targeting successfully if monetary authorities exercise good communication, transparency and accountability.

Some MEFMI countries such as those under the CMA and Botswana have successfully implemented exchange rate targeting. Zimbabwe has also followed suit and successfully implemented dollarization in February 2009. The only limitation of exchange rate targeting is that the framework does not focus on domestic considerations as the targeting country experience loss of an independent monetary policy.
CHAPTER 4

4. PROPAGATION OF MONETARY POLICY SHOCKS

4.1 Introduction

In most MEFMI countries, monetary policy is conducted through monetary programming with broad money as the intermediate target and reserve money as the operating target. Whilst monetary aggregates have increasingly fallen out of favour as intermediate targets, the relationship between monetary policy and macroeconomic variables is unquestionably at the heart of the study of monetary policy.

Economists and policy makers have argued that the ultimate goal of monetary policy is to maintain price stability and achieve sustainable levels of economic growth. Central Banks aim at attaining the ultimate objective of price stability by setting the short term interest rate. Today there seems to be consensus among policy makers that the short term money market rate/ interbank rate is the appropriate operational target to achieve price stability. It affects financial conditions in the economy and in turn influences aggregate demand.

This study therefore seeks to investigate the impact of a monetary policy shock on macroeconomic variables using the unrestricted VAR methodology. The monetary policy shock is defined as a temporary or exogenous shock on the short term interest rate to macroeconomic variables.
Coibon (2011) highlighted that much of the evidence on the quantitative effects of interest rate changes has come from the VAR literature, most commonly relying on the identifying assumption that policy innovations have no contemporaneous effects on macroeconomic variables.

It is assumed that the Central Bank controls the domestic short term interest rate and that it adjusts this instrument either to change a stance of monetary policy or in response to an impact emanating from a foreign variable like changes in international oil prices. It will be interesting to examine the monetary policy stance in light of examining the responses of some pivotal macroeconomic variables to policy actions conducted by monetary authorities.

Whilst it is widely accepted that the overriding role of monetary policy is price stability, the impact of this policy is felt throughout the economy, particularly in the short run on monetary aggregates, interest rates, which eventually affects the financial markets, economic activities and price levels in the economy (Raghavan and Silvapulle, 2006).

Following liberalisation of financial and money markets, starting from the mid 1990s in MEFMI countries, these economies have continuously been reviewing their monetary policy implementation procedures and strategies. As such, an understanding of the impact of monetary shocks on macroeconomic variables is critical in the appropriate design and implementation of monetary policy. Furthermore, to conduct monetary policy effectively, policy makers must have an appreciation of the timing and effect of their policies on the economy.
This study estimates the effects of the monetary policy shocks on South Africa, as a model for inflation targeting and two MEFMI countries – Botswana and Uganda. South Africa has well developed financial markets and the results will form a basis for policy makers in the conduct and implementation of monetary policy.

The model seeks to investigate if the results support theory that a monetary policy innovation affects real variables such as real economic activity only in the short run, with permanent effects on nominal variables, such as prices. A monetary policy shock does not have a long lasting contemporaneous impact on the real economy. A contractionary monetary policy shock through positive innovations on interest rates is known to result in a decrease in prices and an appreciation of the nominal exchange rate. Kabundi and Ngwenya, (2011) highlighted that a rise in the short-term interest rate causes prices to decline.

Investigating the response of macroeconomic variables to a monetary policy shock is critical in understanding what monetary policy can do and the profound relationships of macroeconomic variables. Policy makers need to have an appreciation of how long these effects take to fully materialize.

Estimating a VAR model on the impact of a monetary policy shock on MEFMI countries on the basis of macroeconomic variables aggregated across countries faces a number of peculiar issues. The first issue stems from the differences in the economic structure, and hence in the effects of a monetary policy shock across countries. Such asymmetries are sizable implying the effects and propagation of macroeconomic shocks could be different. This justifies the need to run the VAR for each country separately as opposed to using panel data.
4.2 VAR Model for Selected MEFMI Countries

The research uses time series data and the research will be estimated and analyzed using the VAR methodology. VARs are a standard tool of macroeconomic analysis as they capture unrestricted interactions between variables and provide a broad representation of the economy (Sousa and Zaghini, 2004). VARs have been widely used to measure and understand the effects of monetary policy innovations on the aggregate economy.

A VAR analysis can be described in simple terms as a method for extracting structural macroeconomic shocks, such as unexpected exogenous shocks to the central bank’s main policy instrument and then analyzing their impact on the economy.

The methodology is built on a study done for Kenya by Cheng and published by the IMF in 2006. The paper examined the impact of a monetary policy shock defined as a temporary and exogenous shock on the Central Bank repo rate on output, prices and the exchange rate using monthly data from 1997 to 2005. This study will, however, focus on the period 1995 to 2010, using quarterly data. The choice of the period focuses on the time that most MEFMI countries had liberalised their financial and money markets.

4.2.1 Data Measurements and Justification

The choice of variables is similar to those used by Cheng (2006), Cushman and Zha (1997) and Raghavan and Sil vapulle (2006). The data set and the measurement of variables used in the VAR model include short term interest rate (IR), Real Gross Domestic Product (RGDP)
the exchange rate (EXR), the monetary aggregate (M3)\textsuperscript{3} and the Consumer Price Index (CPI). The variables RGDP, CPI, M3 and EXR are incorporated into the model in natural logs. This is to enable us index all the variables and to aid interpretation of the results. IR is captured in percentages.

All the variables included in the model are well known in the business cycle literature and in monetary policy matters. The chosen variables are entered in the model as endogenous variables. RGDP and CPI are non-policy variables and are taken as the target variables of monetary policy. It is widely accepted that the main macroeconomic variables that reflect the effects of monetary policy are level of economic activity as measured by RGDP and price as measured by the CPI. Monetary aggregates are included in the model as these are critical economic variables in the monetary policy framework. The exchange rate acts as a market information variable.

The monetary policy indicator is represented by the interest rate. As a policy indicator, the interest rate, which in some economies is represented by the bank rate or repo rate, is used as a measure of policy stance although some researchers have argued that this may be problematic if the historical interest rates have been relatively constant. Nonetheless, we measure the stance of monetary policy in African countries using this variable (Lungu, 2007). Furthermore, monetary policy has consistently placed a strong emphasis on short-term interest rates.

To increase the number of observations and to fully ascertain the impact of monetary policy shocks on variables during the year, data was collected on a quarterly basis. End period data

\textsuperscript{3} Money supply is measured by M3 for South Africa and Botswana and M2 for Uganda.
was used for quarterly statistics on interest rates, monetary aggregates, exchange rates and prices. Where RGDP data was sourced on an annual basis, the data was interpolated using the quarterly ratios of revenues collected for that country. The data was collected from the Central Bank websites and supplemented by other statistics from the International Financial Statistics (IFS), World Economic Outlook and the Economic Watch.

4.2.2 Model Specification

The VAR model can be expressed in the following form:

\[ Z_t = A_1 Z_{t-1} + A_2 Z_{t-2} + \ldots + A_p Z_{t-p} + u_t \]  

(i)

Where \( Z_t \) is a vector of endogenous variables at time \( t \), \( A_i \) (\( i = 1, \ldots \)) are coefficient vectors, \( p \) is the number of lags included in the system, and \( u_t \) is a vector of residuals. The residuals \( u_t \) represent the unexplained movements in the variables, reflecting the influence of exogenous shocks (shocks that arise outside the assumed model). The residuals represent a composite of the various exogenous shocks affecting the endogenous variables in the underlying structural model.

The endogenous variables in the model include M3, CPI RGDP, IR and EXR and are captured in the VAR model in that order. All the variables are captured in logarithms except for the interest rates, which is expressed in percentages. The lag length is determined in the econometric model for each country. The actual model to be estimated for the selected MEFMI countries and South Africa is specified in the equation 2 below.
\[ R_t = \alpha + \sum_{j=1}^{p} \beta_j R_{t-j} + \sum_{j=1}^{p} \gamma_j M_{t-j} + \sum_{j=1}^{p} \gamma_j P_{t-j} + \sum_{j=1}^{p} \gamma_j Q_{t-j} + \sum_{j=1}^{p} \gamma_j E_{t-j} + u_t \]  

(ii)

Where the \( u \)'s are the stochastic error terms, called impulses or innovations in the VAR methodology and \( p \) is the lag length. The VAR approach treats every variable in the system as a function of the lagged values of all the endogenous variables.

The VAR model assists in investigating the impulse response by tracing out the dynamic impact of these shocks on subsequent movements in all of the macroeconomic variables. More importantly, the benefit of using VAR stems from the fact that the contemporaneous relationships that may exist between the variables in a single equation model can be captured in a VAR framework.

Technically, a VAR is typically a linear system that describes how each variable in a set of macroeconomic variables depends on its own past values, the past values of the remaining variables and some exogenous shocks. Sims insight was that, when properly structured and interpreted, VARs may be of great potential value not only for forecasting, but also for interpreting macroeconomic time series and conducting monetary policy analysis.

### 4.2.3 Analysis of Time Series Data

When discussing the statistical properties of an econometric model it is important to test the presence of a unit root in order to avoid the problem of spurious regression, where the series can falsely imply the existence of a meaningful economic relationship. Time series data may exhibit a trend or unit roots over time hence the need to test for stationarity.
Whilst there are several ways of testing the presence of a unit root such as correlograms, the Augumented Dickey Fuller Tests (ADF) and the Phillips Perron (PP), among others, this study will focus on the ADF test and the PP to identify unit roots. Nominal values of the variables in the model were first transformed to natural logs before they were tested for stationarity. The results of the stationary tests are shown in tables 6 to 8, below.

### Table 6: Stationarity Tests Results for Uganda Statistics

<table>
<thead>
<tr>
<th>Variable</th>
<th>ADF Results</th>
<th>PP Results</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Level</td>
<td>1st Difference</td>
</tr>
<tr>
<td>utbr</td>
<td>-0.31</td>
<td>-10.98*</td>
</tr>
<tr>
<td>lucpi</td>
<td>2.50</td>
<td>-6.78*</td>
</tr>
<tr>
<td>luexr</td>
<td>-1.52</td>
<td>-7.01*</td>
</tr>
<tr>
<td>lum2</td>
<td>0.41</td>
<td>-9.87*</td>
</tr>
<tr>
<td>lurgdp</td>
<td>0.58</td>
<td>-3.24**</td>
</tr>
</tbody>
</table>

Test Critical Values: 1% Level (*), 5% Level (**)

### Table 7: Stationarity Tests Results for Botswana Statistics

<table>
<thead>
<tr>
<th>Variable</th>
<th>ADF Results</th>
<th>PP Results</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Level</td>
<td>1st Difference</td>
</tr>
<tr>
<td>bbr</td>
<td>-0.89</td>
<td>-5.79*</td>
</tr>
<tr>
<td>lbcpi</td>
<td>-0.03</td>
<td>-7.66*</td>
</tr>
<tr>
<td>lbexr</td>
<td>-1.96</td>
<td>-6.56*</td>
</tr>
<tr>
<td>lbm3</td>
<td>-0.72</td>
<td>-7.11*</td>
</tr>
<tr>
<td>lbrgdgp</td>
<td>-1.61</td>
<td>-3.19**</td>
</tr>
</tbody>
</table>

Test Critical Values: 1% Level (*), 5% Level (**)

58
Table 8: Stationarity Tests Results for South Africa Statistics

<table>
<thead>
<tr>
<th>Variable</th>
<th>ADF Results</th>
<th>PP Results</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Level</td>
<td>1st Difference</td>
</tr>
<tr>
<td>sarr</td>
<td>-1.28</td>
<td>-5.72*</td>
</tr>
<tr>
<td>lsacpi</td>
<td>-0.78</td>
<td>-2.89**</td>
</tr>
<tr>
<td>lsaxr</td>
<td>-2.20</td>
<td>-6.69*</td>
</tr>
<tr>
<td>lsam3</td>
<td>-1.03</td>
<td>-5.79*</td>
</tr>
<tr>
<td>lsargdp</td>
<td>0.70</td>
<td>-5.15*</td>
</tr>
</tbody>
</table>

Test Critical Values: 1% Level (*), 5% Level (**) 

The results show that all the variables were integrated of order 1, with the exception of ucpi for Uganda, which was found to be stationary in levels using the PP test. It can therefore be concluded that all the variables are integrated of order 1 using the ADF test. Based on the fact that the variables have been tested and confirm that all the variables in question are endogenous I(1) variables, it is possible to proceed to a VAR model.

4.3 Concluding Summary

Today, VAR models are indispensable tools for policy makers in their analysis of the impact of various shocks on the economy and how the economy is affected by different policy measures. A change in interest rates affects the macro economy in several ways and there are time lags involved. The research findings are expected to provide valuable insights into understanding how a monetary policy shocks explained by a change in the short term interest rate affects macroeconomic variables and ultimately the final goal of monetary policy in MEFMI countries.
CHAPTER 5

5. DATA ANALYSIS AND DISCUSSION

5.1 Introduction

The objective of this paper is to increase our understanding on the role and impact of monetary policy innovations in MEFMI countries. While it is generally agreed that monetary policy can significantly affect both real economic activity and prices in the short run and only prices in the long run, considerable debate remains about how monetary policy shocks are transmitted. The effects of policy innovations on macroeconomic variables vary and are distributed through time varying lags.

Monetary policy uses a variety of tools to influence outcomes like economic growth and prices. A monetary policy shock can be seen as an unanticipated change in the level of money supply or interest rate to influence the final goal of monetary policy. An interest rate policy is an indirect instrument, firstly affecting financial market prices, expectations and asset prices, which in turn influence spending and saving behaviour leading to changes in aggregate demand and finally impacts on price formation.

In examining the intricacies of price formation in the economy, it is important to view the economy as responding differently to monetary policy in different time horizons. Notably, policies that could work to reduce inflation in the short run may not be sufficient to achieve the same objective in the medium and long run.
VARs have arguably been most important in monetary economics. In particular, VARs have been used to establish a set of facts regarding the effects of monetary policy. More importantly, the impulse response analysis allows us to trace the dynamic effects of unexpected changes in the interest rate engineered by the monetary authority.

To understand the impact of monetary policy innovations on macroeconomic variables the following presentation shows the impulse response analysis results of an interest rate shock for Uganda, Botswana and South Africa, using quarterly data from 1995 to 2010.

5.2 Estimation Results for Uganda

Monetary policy is seen as the prime tool for managing nominal demand. This can be done through the use of interest rates which are viewed as a flexible tool that can be changed instantaneously, through the transmission lags to demand. Muwonge (2003) highlighted that the TB was used as the main instrument of monetary policy for Uganda.

A positive shock to interest rates causes the money demand to fall from the second quarter, with the effect peaking after 7 quarters. The reduction in money demand is also reflected by the decline in prices from the second quarter with the effect peaking at six quarters after the shock.

The effect of a monetary policy shock on the exchange rate results in an appreciation of the currency, from the second quarter. The effect is washed away in the eighth quarter. This supports economic theory that a higher interest rate induces a greater demand for local currency as foreigners seek to take advantage of the higher interest rate. As such, the supply of local currency falls and people are less likely to purchase foreign interest earning assets.
now that the local assets are paying higher. These changes lead to an appreciation of the exchange rate as shown in figure 5 below.

Figure 5: Uganda – Impulse Response of a monetary policy shock (Increase in TB Rate)

The effect of an unexpected increase in interest rate on output appears to be insignificant due to the distributed lag effects. GDP starts to decline in the 3rd quarter after an interest rate shock and output assumes a lower long-run equilibrium. As such output could be influenced by other non-monetary factors in Uganda.
The findings are that a monetary policy shock results in a reduction in prices from the second quarter and an appreciation in the exchange rates with a sluggish effect on real GDP.

5.3 Estimation Results for Botswana

The Bank of Botswana’s monetary policy stance is signalled through the Bank Rate, which is the rate at which the Bank lends to commercial banks through its discount window. It is the key policy instrument used to signal the stance of monetary policy. Banks operating in Botswana typically set their own reference rates (prime lending rate) in relation to Bank Rate.

Figure 6: Botswana – Impulse Response of a monetary policy shock (Increase in Bank Rate)

Response to Nonfactorized One S.D. Innovations ± 2 S.E.
The results of an exogenous shock to the CBR on output, money, prices and exchange rate are summarised above. An interest rate shock, which reflects an increase in the CBR results in an increase in the money demand before declining from the third quarter. Reflecting this, prices also increase in the first three quarters before they start to decline gradually. This result is commonly found in the empirical literature on the monetary transmission mechanism in the United States and has been dubbed the ‘price puzzle’.

This effect is not entirely unexpected for Botswana on the understanding that most of the goods and services traded in Botswana are imported and therefore price formation is largely a factor of external developments. An increase in interest rate as a policy measure to effect price formation may be affected by other external developments beyond the control of monetary policy.

Whilst Botswana has performed fairly well due to endowment in diamond resources the objective of achieving and maintaining price stability has proved a challenging assignment. These findings support other studies, by Chibba (2007) and Ikhide (2012), which indicate that short term interest rates do not directly result in price reduction. Shocks to the CBR in Botswana directly translate to the prime lending rate in the economy.

Chibba (2007) argued that the statistics for interest and inflation rates for the period 1993 to 2006 shows that there is no discernible relationship between interest rates and inflation, thus challenging the accepted wisdom that interest rates can be used to bring down inflation. Thus even when monetary policy shocks have real effects, they may not be able to induce a reduction in inflation. Therefore a prolonged period of monetary tightening may only succeed
at increasing the spread without a concomitant fall in the inflation rate (Ikhide and Yanusa (2012).

The exchange rate also depreciates in the first three quarters before it starts to appreciate. The movement in exchange rate could also be explained by the nature of the economy. This justifies the country’s long history of using exchange rate adjustments as a policy tool to promote external competitiveness and export diversification. Botswana adhered to a fixed peg for many years, before adopting the crawling peg exchange rate in May 2005.

The pula was devalued whenever the authorities considered it to have appreciated beyond what they regarded to be consistent with the competitiveness of the non-mining sector. The benefit of this exchange rate arrangement was to mitigate the danger of domestic currency appreciation, especially during periods of unusually high export earnings from the diamonds sector, which was foreseen to erode competitiveness in the other sectors (Bank of Botswana, Annual Report, 2008). This also impacted on the inflation rate.

The increase in the interest rate results in a marginal increase in RGDP. Output starts to decline from the fourth quarter assuming new lower long run equilibrium.

5.4 Estimation Results for South Africa

The year 2000 was marked by the adoption of an inflation targeting framework as the anchor of monetary policy in South Africa. The SARB has used the repo rate as the policy instrument to control the level of inflation and contain it within the chosen interval of 3% to 6%. Whilst other analysts have criticized the use of this monetary policy instrument to
influence prices, the aim of this analysis is to assess the extent to which the repo rate, influences macroeconomic variables in South Africa.

The results are broadly in line with economic theory where a 1 standard deviation increase in the repo rate reduces money demand and results in a decline in prices. The decline in prices is significant from the second quarter and the impact is washed away in the 9th quarter. The increase in the repo rate also results in the appreciation of the exchange rate.

Figure 7: SA – Impulse Response of a monetary policy shock (Increase in Repo Rate)
Resultantly, it is becoming common for central banks with inflation targets to adjust the interest rate in order to reach their goal over a horizon of one to two years. More importantly the level of financial markets development in South Africa plays a critical role in effectively implementing monetary policy. Changes in monetary policy are quickly passed on to the financial markets, which influences aggregate demand and ultimately price formation in the economy. On the other hand the increase in the repo rate marginally reduces real GDP with maximum effects over 6 quarters.

5.5 Conclusion

The effects of an increase in interest rate on money demand, prices and the exchange rate for South Africa and Uganda broadly support economic theory where an increase in the short term interest rate, results in a reduction in money demand, a decline in prices and an appreciation of the exchange rate. The effect on prices is however more pronounced extending for a longer horizon for South Africa than it is for Uganda.

South Africa has performed fairly well in terms of achieving its inflation targets. This reflects the level of financial development in the country where a monetary policy innovation as explained by the change in the repo rate is passed through to prices.

In Botswana, however, monetary policy innovation is associated with a price puzzle. An increase in the interest rate results in an increase in prices in the first three quarters before declining marginally. This shows that monetary policy implementation is influenced by other exogenous factors as Botswana largely relies on the importation of finished products. As such, the dependence on interest rates to address inflationary pressures in Botswana is misguided.
The appreciation of the exchange rate following a monetary tightening in South Africa and Uganda could be explained by capital inflows associated with higher interest differentials viz a viz other countries. This exerts pressure on the exchange rate thereby making imports cheaper and easing inflation. This could also explain the effects of a monetary policy shock in South Africa to prices.
CHAPTER 6

6. CONCLUSIONS AND RECOMMENDATIONS

6.1 Summary and Conclusion

The main objective of this study was to review the monetary policy frameworks in MEFMI countries and assess their performance in terms of achieving the key monetary policy objectives of price stability. Monetary policy strategies for MEFMI countries are implemented within three main frameworks, which include exchange rate targeting, monetary targeting and inflation targeting.

Exchange rate targeting has mainly been implemented in the context of the CMA in Southern Africa and the crawling peg to a basket of currencies for Botswana. Targeting of monetary aggregates such as broad money as intermediate target and reserve money as the operational target is the predominant policy strategy in MEFMI countries. Only one MEFMI country, Uganda has implemented inflation targeting, since July 2011.

MEFMI countries that are still implementing monetary targeting include Kenya, Malawi, Mozambique, Rwanda, Tanzania and Zambia. This framework is, however, slowly becoming less effective. In Zimbabwe, monetary targeting failed mainly due to excessive money printing to finance Government deficits and quasi fiscal activities. This resulted in the country adopting dollarization, in 2009. Monetary targeting was implemented in Uganda since 1993. Whilst the framework served the country well for a long time, it was proving less
successful due to the challenges of correctly forecasting reserve money. As such, inflation began to surge from single digit level to double digit levels, reaching a high of 30.5%, by October 2011. The surge in inflation resulted in Uganda abandoning monetary targeting to inflation targeting.

Whilst monetary targeting is the predominant policy framework in MEFMI countries, the study established that the fixed exchange rate regime particularly for the CMA countries, which include Namibia, Lesotho and Swaziland, has resulted in relatively low and stable inflation compared to the results of the monetary targeting countries. During the period 2005 to 2011, average inflation for monetary targeting countries was in the range of 8.3% to 10.6%, while that for the CMA countries was in the range of 6.2% to 7.6%, mimicking the inflation developments of South Africa. Furthermore, inflation was more volatile in monetary targeting countries ranging from 4 to 7.1 as compared to levels of 2.5 to 3.7 for the CMA countries.

Whilst it is generally agreed that the ultimate goal of monetary policy is price stability, it is important to understand the extent to which monetary policy determines nominal prices and shapes real economic outcomes. Resultantly, the study also examined the impact of a monetary policy shock on selected macroeconomic variables, which include price level, RGDP and exchange rates. The evidence on the effects of interest rate changes is quantified from the VAR approach. The study analyzed the impact of an exogenous and temporary shock to short term interest rate using VAR impulse response analysis.
Empirical evidence from the standard VAR approach are well known that monetary policy shocks appear to account for very little of the fluctuations in real variables such as employment and RGDP with long lasting effects on nominal variables.

The estimation results for South Africa and Uganda show that an increase in short term interest rate results in the appreciation of the exchange rate and a decline in prices. In Uganda, prices start to peak in the 6th month. The decline in prices is significant and lasting at least for 24 months. Prices start to decline from the second quarter before they start to peak gradually in the 9th quarter.

In Botswana, however, an increase in the bank rate results in an increase in prices before they start to decline marginally from the 3rd quarter. This largely reflects the impact of other exogenous factors that influence price formation in the country. This creates challenges in effectively implementing monetary policy.

Monetary policy has progressive effects on the economy, which build up overtime and they are varying time lags. These lags vary from time to time reflecting changing economic and financial conditions and expectations. Monetary Policy is therefore characterized by much uncertainty. Accordingly, the planning horizon for Monetary Policy must cover at least 24 months, implying that Authorities must be forward looking.

6.2 Recommendations

To effectively implement monetary policy in the MEFMI region a critical issue that arises is the appropriate monetary policy framework that achieves the desired outcomes taking into
cognizance the nature of these economies. Whilst the predominant monetary policy framework in the MEFMI region is monetary targeting, inflation has been relatively high and volatile in these countries in comparison to the exchange rate targeting countries.

It is recommended therefore that other MEFMI countries, such as Zimbabwe and Mozambique could consider gradually moving towards a monetary union. This is premised on the view that the bulk of Mozambique and Zimbabwe’s trade is mainly with South Africa. The economic shocks affecting South Africa to which monetary policy responds, is likely to have some similarities with those affecting Zimbabwe and Mozambique and hence the stance of South African monetary policy is more likely to be suitable for these economies.

Under the CMA member countries will continue to have their own Central Banks and all member countries will meet regularly to facilitate compliance and reconcile different interests in the formulation and implementation of monetary policy. Individual Banks and the regional central bank will effectively formulate monetary policy. The free movement of capital within the CMA is beneficial for smaller states when they join the membership. This will also contribute to regional economic development and integration as there are currently no restrictions on cross border investments. It must, however, be acknowledged that there are benefits and costs of joining a monetary union.

Some policy makers have, thus advocated for the adoption of IT. This is in view of the remarkable record of success of the policy framework among countries that have implemented the strategy. The experience with IT shows that inflation targets provide an effective nominal anchor for monetary policy, and that they can make an important contribution to the reduction of inflation and then to its maintenance at a low level. However,
this does not mean that inflation targets are necessary for achieving and maintaining low inflation.

MEFMI countries are faced with limitations in adopting inflation targeting. Despite a general trend toward greater reliance on indirect instruments of monetary policy, increased access to international capital markets and financial sector reform, the financial markets are not yet fully developed. Furthermore, some of these economies lack central bank independence, which is a prerequisite for IT.

Resultantly, it is extremely difficult to evaluate the benefits of adopting inflation targeting in MEFMI countries. IT cannot be solely advocated for or against in terms of its contribution to inflation and economic performance. More importantly, the success of this monetary policy regime in MEFMI countries is still to be ascertained since implementation in Uganda is still in its infancy.

The best monetary policy framework for a particular country should ultimately be chosen in relation to the macroeconomic fundamentals of that country. Whilst MEFMI countries are still operating under different monetary policy strategies it is critical that these countries become more transparent and accountable.

6.3 Areas for Future Research

The study can also use other econometric techniques to assess the impact of monetary policy innovations on macroeconomic variables. Whilst VARs are widely used to trace out the effects of monetary policy innovations on the economy, the impulse response
observed only pertains to a minimal number of the selected variables. This is in view that VAR models generally constitute a small subset of the macroeconomic variables. The research could combine the standard VAR with factor analysis which incorporates large data sets. The results will provide a comprehensive and coherent picture of the effect of monetary policy innovations on macroeconomic variables. More importantly, the research could also extend to cover all the MEFMI countries.
7. REFERENCES


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### Annexure 1: Inflation Rates For MEFMI countries and SA

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### Annexure 2: Real GDP Growth Rates for MEFMI Countries and SA

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