THE FEASIBILITY OF ADOPTING INFLATION TARGETING IN MALAWI: AN EMPIRICAL EXPLORATION

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Abstract

This study attempts to examine the minimum requirements for adopting an inflation targeting framework in Malawi. First, we examined four pre-requisites of an inflation targeting framework: a fairy long track record of low and stable inflation; a degree of independence; having a sole target; and the existence of a predictable and stable relationships between monetary policy and inflation outcomes.

The findings indicate that while the requirement of having a sole target has been satisfied, there are still problems associated with the Reserve Bank of Malawi's independence and the existence of stable and predictable relationship between monetary policy instruments and inflation in Malawi. Therefore, Malawi is yet to reach a stage where a fully-fledged inflation targeting framework could be incorporated into its overall strategy.

Keywords: Inflation targeting; central bank independence; vector autoregression
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Introduction

1.1 The Definition of Inflation Targeting

Inflation targeting is characterized by the public announcement of official target ranges or quantitative targets for the inflation rate at one or more time horizons and by explicit acknowledgement that low and stable inflation is the long-run primary objective of the monetary policy. According to Harizoran (1999), inflation targeting is not a method to reduce the current inflation but an anchor to monitor and control price stability in an economy after a thorough disinflation period.

The first basic element of the inflation targeting regime is the announcement to the public of an explicit quantitative target or range for some period of time. Second, the central bank must show clearly and unambiguously that it's most crucial aim is to provide an environment with stable prices. Third, the central bank should have powerful models to make inflation forecasts, which use some indicators and variables containing information on future inflation. Finally, the central bank must have a forward looking operative procedure in which the setting of policy instruments depends on the assessment of inflationary pressures and where inflation forecasts are used as the main intermediate target (Masson, Savaston and Sharma, 1997) These defining features of inflation targeting require that the country's monetary authorities have the technical and institutional capacity for modeling and forecasting domestic inflation and have some idea or prediction of the time it takes for the determinants of inflation to have their full effect on inflation rate. The inflation target provides full transparency in the implementation of

monetary policy that enables financial institutions in the market to foresee the future with less uncertainty and behave accordingly.

There are some prerequisites for an inflation targeting regime. The first requirement for a country to apply inflation targeting is that the central bank be able to conduct monetary policy with a degree of independence. The second requirement is the absence of another targeted variable such as the nominal exchange rate (Masson, Savaston and Sharma, 1997). The third requirement is the existence of stable and predictable relationship between the monetary instruments and inflation rate (Christoffersen, Slok and Wescot, 2001).

In 1990s, a number of industrialized countries adopted an inflation targeting framework to conduct monetary policy. In most of these countries, other monetary policies using an exchange rate peg or target for some monetary aggregate had come to be judged unsatisfactory. The main purpose of the new framework was to establish accountability and transparency of monetary policy, and improve inflation performance (Masson, Savaston and Sharma, 1997). Having seen its beneficial results in developed countries such as New Zealand, Canada, the United Kingdom, Sweden, Finland, Australia, and Spain, some of the developing countries such as Brazil, Chile, Czech Republic, Poland, and Israel, started to implement an inflation targeting regime. In these latter cases, inflation targeting has also proved to be quite successful. It has brought about desirable long run outcomes, due in part to its features of transparency and accountability. Inflation targeting has become preferable to other monetary policy regimes since transparency reduces the effects of distinct political, cultural and economic features of countries in policy implementation (Kadioglu, Ozdemir and Yilmaz, 2000).

In the majority of developing countries, it is difficult to assess the degree of compliance with the basic prerequisites of the regime, and the conditions for an inflation targeting regime are often not satisfied. Although some developing countries have had successful results from the implementation of inflation targeting, it may be too early for others to implement this framework to improve monetary and inflation performance.

1.2 Objectives of the Study

The objective of this study is to analyze the prerequisites and evaluate its applicability in Malawi. The main focus will be on the assessment of whether the preconditions of inflation targeting are satisfied in Malawi:

- Central bank independence,
- Having a sole target,
- Existence of a stable relationship between monetary policy instruments and inflation.

There are studies questioning the position of the Reserve Bank of Malawi in terms of independence and analyzing the effects of fiscal dominance and fiscal burden on inflationary expectations. However, they do not pay much attention to the relationship between monetary policy instruments and inflation. This study will try to fill this gap by making an empirical exploration between the monetary policy instruments and inflation in Malawi.

1.3 Outline of the Study

Chapter 2 discusses Malawi's current monetary policy framework. Chapter 3 provides an empirical analysis of the relationship between monetary policy instruments and inflation in Malawi. It contains a description of the data used in the study. Chapter 4 provides conclusions.

2.0 The Advantages and Disadvantages of Inflation Targeting

2.1 The Advantages of Inflation Targeting

What are the advantages of inflation targeting for Malawi? Firstly, inflation targeting can improve the co-ordination between monetary policy and other macroeconomic policies depending on the way the target is set and whether the target is consistent with other policy objectives (Jasson, 1999). The setting of the inflation targets should preferably (but not compulsory) be a joint effort between the government and the central bank and consultations should be done with all stockholders, including the public, private sector, and trade unions. A formalized coordinated approach between government and the central bank in terms of setting inflation targets should, however, ensure that inflation targeting works successfully and it should guarantee the instrumental independence of the central bank.

Secondly, the announcement of inflation targets clarifies the central banks intentions and reduces uncertainty about the future course of monetary policy. Inflation targets make policy transparent (Debelle and Lim, 1998). They make the central bank's intentions explicit in a way that should improve the planning of the private sector.

Thirdly, inflation targeting helps to discipline monetary policy and strengthens the central bank's accountability. If the targets are not met, the central bank has to explain what went wrong. This leads to better understanding on the part of the public on what basis monetary policy decisions were made.

Inflation targeting makes the objective of monetary policy clear and thereby improve planning in the private and public sectors; helps to focus monetary policy and enhances the accountability of the central bank to the public; it provides an anchor for expectations of future inflation which should influence price and wage setting; and it forms part of a formalized co-ordinated effort to contain inflation in pursuit of the broader economic objective of sustainable high economic growth and employment creation

2.2 The Disadvantages of Inflation Targeting

Despite the advantages discussed above, inflation targeting has some disadvantages. One of the limitations of inflation targeting is that it is a complicated approach to implement. Although all monetary policy frameworks should be forward looking, inflation targeting relies heavily on forecasts at various policy horizons. Where inaccurate forecasts are made public it can obscure the central bank's objectives and reduce its credibility.

Prices may vary because of non-monetary factors beyond the control of central bank, thereby damaging the credibility of a central bank committed to an inflation-targeting framework. The inflation forecasts can be regarded as the intermediate target within an inflation targeting

framework but forecasting the effects of a central bank's action on the inflation rate is subject to a large margin of error given the long policy lags and the often uncertain effects of monetary policy on inflation. In cases where inflation forecasts are inaccurate, publishing the forecast could obscure rather than clarify what the central bank's ultimate objective is.

2.3 Pre-requisites for Inflation Targeting

It is important that certain preconditions are met before a decision is taken to implement this framework.

2.3.1 The Independence of the Central Bank

The fundamental requirement of an inflation targeting framework is that the central bank must be given complete independence to adjust freely its instruments of monetary policy towards the attainment of the objective of low inflation. Even though it is not necessary for the central bank to have full legal independence, the monetary authorities must have freedom to gear the instruments of monetary policy towards some nominal objective. To meet this requirement, a country must not show any of the symptoms of 'fiscal dominance' – in other words, the conduct of monetary policy should not be dictated or constrained by purely fiscal considerations. This implies that public sector borrowing from the central bank and the banking system should be low or nonexistent; the government should have a broad revenue base and should not rely on the revenues from seigniorage generated by excessive currency issuance; domestic financial markets should have enough depth to absorb the placement of public and private debt instruments; and the accumulation of the public debt should be sustainable and not unduly constrain monetary policy.

2.3.2 Having a sole Target

The second requirement for adopting inflation targeting is that the authorities should refrain from targeting another variable such as the level or path of nominal exchange rate (Masson, Savastano and Sharma, 1997). For example, when a country chooses fixed exchange rate system, it will be unable to reach its inflation target and exchange rate target at the same time. On the other hand, having more than one target may destroy the credibility of both anchors and there might be conflicts among the objectives. However, other objectives can be achieved as long as they are consistent with the inflation target.

2.3.3 The Effectiveness of Monetary Policy

The third requirement for inflation targeting is the existence of a stable relationship between the inflation outcomes and monetary policy instruments. Jasson (1999) claims that in an inflation targeting regime, monetary authorities have to be able to model inflation dynamics in the country and to forecast the inflation to a reasonable degree. So, the monetary authorities should have access to policy instruments that are effective in influencing the macroeconomic variables. The policy instruments generally used by monetary authorities require effective money, capital and foreign exchange markets. If the financial markets do not react quickly to the instruments applied, it obviously reduces the effectiveness of monetary policy and leads to a delay in impacting on inflation.

2.3.4 Institutional and Technical Support

Inflation targeting requires that the monetary authorities have the technical and institutional capacity to model and forecast inflation, that they understand the monetary transmission mechanism, and that they are able to estimate the time lag between adjustment of monetary instruments and their effect on output and prices. The framework may consist of a set of models to support the monetary policy decision-making process, including a small-scale structural econometric model and short-term univariate forecasting models. These models are supplemented with surveys of market expectations of major macroeconomic variables. This in turn implies greater reliance on forward indicators of inflation than in other monetary policy regimes, together with continuous assessment of the relationship between the instruments of monetary policy and the inflation target.

2.4 Implementation of Inflation Targeting

There are some practical issues regarding the implementation of inflation targets. The main issues are the assignment of the target, the interaction of the target with other policy goals, the appropriate definition of the target, the role of the inflation forecasts and the degree of accountability of the central bank to achieve the target.

2.4.1 Assignment of the Target

The issue of who assigns the inflation target depends on the central bank's instrumental independence and the announcement of the inflation target has differed across countries. For example, in Australia, Finland and

Sweden, it was first announced by the central bank, initially without any explicit endorsement from the government. In Canada and New Zealand, it was determined as a result of a joint agreement between the minister of finance and the governor of the central bank. Even if the inflation target is originally announced by the central bank, the government should subsequently endorse it since this may promote the agreement between the two policy making institutions and increase the effectiveness and the credibility of the framework (Debelle, 1997).

2.4.2 Interaction with Other Policy Goals

In an inflation targeting regime, the primary objective of the monetary policy is to achieve the specified inflation target. No other goal can be pursued unless it is consistent with the inflation target. However, there may be some other goals, which are consistent with the inflation target. For example, a full employment level is not necessarily inconsistent with the inflation target. Although there may be trade-off between the two objectives in the short-run, the best contribution that monetary policy can make to the full employment goal is the achievement of the inflation target in the long-run.

The goal of financial stability is another goal that central banks often pursue. This goal is not inconsistent with an inflation targeting framework either. However, interest rate flexibility may decline due to the fragility in the banking sector. In the long run, there may be an undershooting of the inflation target resulting from the deflationary pressure from a banking sector in crisis. In the short run, if the central bank has to follow tight monetary policies to achieve the inflation target, some of the financial institutions may have some difficulties in surviving.

In an inflation targeting regime, the goals of monetary policy and fiscal policy implicitly interact with each other. The monetary policy should take into consideration the effects of fiscal policy on the inflation. In the same way, the fiscal policy should support the inflation target. For instance, a very large amount of public debt may cause expectations about future inflation to be higher and this may create some difficulties for the central bank to achieve the inflation target in the short run. In addition, the resulting higher interest rates may raise further the burden of debt for the government and add to the stock of debt leading to a circle of higher interest rates and higher debt.

2.4.3 Definition of the Target

There are certain steps that should be followed to implement inflation targeting regime. These steps involve determination of the time horizon over which the inflation target will depend, the central point of the target, whether the target is defined in terms of a point or a band, and determination of possible escape clauses or exemptions to the inflation target under specific conditions.

2.4.3.1 Time Horizon of the Target

Time horizon of the target is the longetivity of time period to achieve the pre-announced target and the time period that the target predominates. The time horizon of inflation target depends on the initial level of inflation rate when inflation targeting has been adopted. When there is a difference between the current rate of inflation and the targeted rate, the central bank sets an implementation period of around two years including lag periods of monetary policy to achieve the targeted rate (Hzirolan, 1999). The

horizon of the target is also affected by the ability of monetary policy to offset deviations from short-term shocks and the type of the inflation targeting regime implemented by the central bank, strict or flexible (Kadioglu, Ozdemir and Yilmaz, 2000)

2.4.3.2 Choice of the Price Index

Many countries use an underlying measure of inflation, which is based on the CPI that excludes the volatile food and energy sector, and mortgage interest payments instead of headline CPI inflation rate, which is based on all items index. The reason why underlying inflation is more preferred than the headline CPI inflation rate is that the former excludes the first round effects of the shocks that are accommodated by monetary policy. However, it does exclude the second round effects of the shocks on wages and prices (Debelle, 1997)

When the monetary authorities focus on underlying inflation, they may not take into consideration the first-round effects on prices and may only take into account whether it brings about an increase in inflation expectations or not. Another problem with focusing on underlying inflation is that if all the price and wage decisions in the economy are made on the basis of the headline index, their responses to movement in headline inflation rate will be captured by the underlying rate. However, this problem can be mitigated to some extent if the statistical office calculates it. In addition, the public should be well informed about the specification of the index (Kadioglu, Ozedemir and Yilmazz, 2000).

An underlying inflation rate may be a useful intermediate target in achieving the final goal of price stability. It should reflect the balance of

demand and supply factors in the economy in order to function appropriately (Debelle, 1997).

2.4.3.3 Level of the Target

The level of the target is another important aspect of the inflation targeting. In many countries, the center point of the inflation target is referred as their interpretation of the operational definition of price stability. While in theory, zero inflation appears to be equal to price stability, Debelle 1997 suggests that, in practice, the concept of price stability is influenced by some other issues like price level measurement and nominal rigidities.

Although the primary goal of the monetary authorities is to establish price stability, all inflation targeting countries have determined their target above the zero due to the upward biases in the calculation of the consumer price index (CPI) (Hazirolan, 1999). These biases are caused by the introduction of new goods, the adjustment of the consumers to the relative price changes by substituting similar goods with lower prices and quality bias.

Also, the precautionary behaviours of the central banks against some economic risks support the non-zero inflation target. First, the possibility of downward rigidity in the prices and wages may require a small positive inflation rate to provide the necessary relative price adjustment. Second, a zero inflation target may exclude the possibility of negative interest rate since nominal interest rates are bounded below by zero. This may prevent the central bank from decreasing interest rate in the case of a recession.

Debelle (1997) states that in general, inflation target have been set around 2 percent per annum. In many of the developing countries on the other hand, there is no empirical evidence for the optimal inflation rate. However, it is commonly argued that developing countries should aim at achieving a medium term rate of inflation, which is somewhat higher than that of industrial countries, that is, between 4 and 8 percent per year and is permitted to fluctuate within a somewhat wider band to accommodate larger supply shocks (Kadioglu, Ozdemir and Yilmaz, 2000).

2.4.3.4 Width of the Target Band

The next step in implementing the inflation target is to decide whether the target will be a numerical number or a band. For example, Finland and Australia determined a particular point target for the inflation rate while Canada, the United Kingdom, Sweden and New Zealand specified a band for the inflation target (Hazirolan, 1999).

The reason why some countries construct an inflation band is the possibility of imperfect control of monetary policy over the inflation rate. Due to the long and variable lags of monetary policy and its imperfect ability to forecast future inflation, it is not possible to make a precise prediction about the future inflation rate. So the inflation rate will display variability (Debelle, 1997). Under these circumstances, the adoption of wider bandwidth will ensure some scope for output stabilization. However, as the time passes and the public realizes the beneficial effects of the regime, the inflation targeting regime may reduce the variability of the output (Kadioglu, Ozdemir and Yilmaz, 2000). Specifying a band is needed to maintain some flexibility in responding to some short-term shocks.

Another issue related with the inflation band, suggested by Debelle ((1997) is the choice of bandwidth that reflects a tradeoff between announcing a tight band and breaching it occasionally, and announcing a wide band, which may be seen as softness on the part of the central bank. A narrower band indicates a stronger commitment to the inflation target but it is riskier than a wider band due to the difficulties in remaining inside the band, as frequent breaches may occur and these can undermine any credibility gain. In addition, with a narrower band, in the case of short-term shocks, the central banks are not as flexible as they would with a wider band. However, it is much easier to observe the performance of central banks with a narrower band since it emphasizes the short run accountability of the central bank to achieve the inflation target. The central bank has to make an explanation for the reasons for any breach of the band.

Debelle (1997) argues that an important consideration in determining the bandwidth of the target is that adopting a narrow band may induce instability in the instrument of monetary policy. He also states that to achieve a given movement in the inflation rate, the shorter the time horizon, the larger the change in the instrument of monetary policy. The change in interest rate may be higher within the narrow band than the wider band. Such fluctuations within the narrow band may lead to instability in the financial markets even though inflation target is met.

The adoption of the point target introduces credibility o the implementation. However, because of the existence of the unpredicted events and the nature of the inflation, the achievement of the point target becomes difficult. Overall, implementation of a band decreases credibility but increases flexibility (Kadioglu, Ozdemir and Yimaz, 2000).

2.4.4 Accountability

Inflation targeting regime increases the accountability of the policy makers by increasing transparency. In order to make monetary policy more effective in the inflation targeting framework, it is necessary to announce policy changes and to make explicit the reasons for the policy changes. In this way, it becomes more apparent whether any breach of the inflation target resulted from an error of the central bank or whether the breach was predictable at the time of the policy decision (Debelle, 1997).

The increased accountability of the inflation targeting enables the monetary authority to monitor and enhance the understanding of expectations. It also decreases the possibility of time inconsistency trap, which leads to deviations from monetary authority's long objective. Moreover, it provides a good benchmark that can easily be observed by the agents in the economy (Haziron, 1999).

2.4.5 Inflation Forecasts

Inflation targeting dynamically uses forecasts due to its forward-looking nature. Monetary authorities have to change the instruments of monetary policy before the inflation begins to increase. When the expected and targeted rate differs from each other, monetary authorities take pre-emptive actions to eliminate the difference. As a result, the central bank's forecasts of inflation have special roles in the inflation targeting regime (Debelle, 1997).

2.5 Review of Literature

A number of studies have investigated both the difference. As a result, the central bank's forecasts of inflation targeting framework as a monetary policy regime.

There are some studies analyzing the relevance of inflation targeting regime for developing countries. Masson, Savastano, and Sharma (1997) examine the applicability of inflation targeting to developing countries. They argue that in most developing countries the requirements of inflation targeting are absent due to the seigniorages's being an important source of financing or due to lack of consensus on low inflation as a primary objective.

Jonas (1998) summarizes the reasons why many countries including developing countries switch to inflation targeting by using cases of Czech Republic and Poland as a reference. The reasons are the inadequacy of exchange rate targeting due to the increasing capital mobility in the 1990s and of monetary targeting due to financial innovations, and the desire of some of the transition economies to join the European Monetary Union (EMU), which requires a clear target for disinflation.

Kadioglu, Ozdermir and Yilmaz discuss the applicability and pre-requisites of inflation targeting in developing countries. They analyze the general aspects of inflation targeting regime in developed countries and study the scope for inflation targeting in developing countries by giving some examples of country experiences. They come up with the result that in many developing countries, the preconditions of inflation targeting are not satisfied and that they do not have powerful models to enable them

make successful inflation forecasts. Although they claim it is too early for some developing countries to apply inflation targeting regime, they provide some country cases where they show that the regime has some successful results in developing countries. They relate the success in Chile to absence of fiscal deficit, the rigorous regulations and supervision of financial system and substantial hardening of the targets, in Israel, to the credibility obtained by preemptive actions taken by the monetary authorities when a deviation from the target is foreseen.

Mishkin (2000) explains what inflation targeting involves for emerging market economies by discussing the advantages and disadvantages of this regime and making reference to Chile's experience of inflation targeting. He claims that inflation targeting may not be appropriate for many emerging countries because weak central bank accountability is a serious problem, which results from long lags from monetary policy instruments to the inflation outcome, and also, because financial instability caused by flexible exchange rate required by inflation targeting is a relevant fact for these countries. Moreover, he reveals that fiscal dominance and high degree of dollarization, which may create severe problems for inflation targeting regime, are common features of emerging market economies.

There are many studies that judge whether or not inflation targeting is feasible in particular countries by offering theoretical or empirical evidence. Thenuwara (1998) evaluates the feasibility of inflation targeting in Sri Lanka as an alternative to the existing monetary policy. He investigates causal relationships associated with the monetary transmission mechanism in Sri Lanka. This is a four-stage mechanism that involves the effects of central bank actions on very short-term interest rates via banking sector liquidity, then, the effects of very short-term

interest rates on the rest of interest rates on the rest of the interest rates and exchange rates, next, the effects of interest rates and exchange rate on aggregate demand and supply, and finally, the effects of aggregate demand and supply on inflation. He observes that the causal relationship from short-term interest rate to long-term interest rates is absent. So monetary transmission in Sri Lanka displays some deficiencies, which hinder the implementation of inflation targeting framework.

Jasson (1999) examines the implications and relative merits of targeting inflation for South Africa in a theoretical framework and concludes that although South Africa satisfies the main prerequisites of inflation targeting such as central bank independence, lack of commitment to macroeconomic objectives which might be in conflict with low inflation and relatively developed capital and money markets, a refinement of the inflation forecasting framework of the South Africa Reserve Bank and further experience with the operational aspects of the repurchase system are needed before the implementation of inflation targeting.

Woglom (2000) provides empirical evidence to judge whether South Africa is a good candidate for inflation targeting. He uses vector autoregression (VARs) to analyze the dynamic interaction of the variables of interest like a monetary instrument, the price level, the real GDP and nominal exchange rate. He makes comparisons between South Africa and pre-target periods of New Zealand and Canada and argues that South Africa is not a good candidate for CPI inflation targeting due to the loss in benefits provided by a fully flexible exchange rate. Because according to his model, a perfectly flexible exchange rate has the advantage of providing complete automatic stabilization of IS shocks. As a result, the

CPI inflation targeting partially remove some of the stabilization advantages of completely flexible exchange rates.

Gootschalk and Moore (2001) also make use of VARs in order to provide empirical evidence on the links between the monetary policy instruments and inflation in Poland. They examine the effects of an exchange rate shock and interest rate shock on the price level. The results show that although the exchange rate seems to be effective with respect to output and prices, the direct linkages between the interest rates and inflation do not appear to be very strong. This requires a better understanding of the links between monetary policy instruments and inflation target. Christoffersen and Wescott (2001) claim that Poland appears to be ready for inflation targeting. They too analyze the statistical linkages between monetary policy instruments and inflation, and also between leading indicators of inflation and inflation by itself by performing Granger causality tests. They observe that there are significant relationship between the CPI and various leading indicators of inflation. They also reveal that although there is a predictable linkage between the changes in the short-term interest rates and changes in inflation are weak. However, they argue that as the Polish economy matures and stabilization is completed, the relationship between the policy interest rates and inflation will be more regular.

3.0 Alternative Monetary Policy Regimes

3.1 Exchange Rate Targeting

Exchange rate targeting is a monetary policy regime under which the central bank tries to establish exchange rate stability via interest rate changes and direct foreign exchange interventions designed to import low inflation from the anchor country. Maintaining the exchange rate has some prerequisites such as an appropriate macroeconomic policy mix ensures low inflation differential vis-à-vis the anchor currency, a sufficient level of international reserves, and maintaining the country's competitiveness and overall credibility with regards to its institutional and legislative framework and political stability (The Czech National Bank).

Exchange rate targeting may be in the form of fixing the value of the domestic currency to a commodity like gold, which is the key feature of gold standard (Mishkin, 1999). More recently, for small countries fixed exchange rate regimes have involved fixing the exchange rate of domestic currency to that of a large, low inflation country whose inflation is lower than in the domestic economy and which has a substantial share in a small country's trade. N this case, the exchange rate is pegged implying that the inflation rate will eventually gravitate to that of the anchor country. There are also other variants of exchange rate targeting. For example, a band can be specified for the nominal exchange rate. The rate is allowed to float within this band and the central bank intervenes when there are deviations from the band. In the case of an exchange rate band, speculative capital flows are restricted due to the increased uncertainties of the exchange rate, and this leads to an increase of the monetary policy's

autonomy. As alternative, some countries have adopted a crawling peg in which the targeted nominal rate is shifted by being devalued in a controlled fashion by less than the inflation differential in the relevant period.

The exchange rate targeting regime has several advantages, the most important of which is serving as a mechanism for bringing down inflation by fixing the nominal exchange rate to that of a low inflation country. If the exchange rate is credible, it ties inflationary expectations to the inflation rate of the anchor country to whose currency the domestic currency is fixed (Mishkin, 1999).

Second, exchange rate targeting avoids the time inconsistency by providing an automatic rule for the conduct of monetary policy. When there is a possibility of depreciation of domestic currency, tight monetary policy will be implemented. When there is a tendency for domestic currency to appreciate, loose monetary policy will be implemented. Finally, the nominal anchor of an exchange is understandable to the public due to its simplicity and clarity.

Although inflation targeting has been successful in controlling inflation in both industrialized and developing countries, there are several disadvantages of the regime.

First, exchange rate targeting may render weaker the accountability of policy makers, especially in developing countries, because it removes an important signal that can help in keeping monetary policy from becoming too expansionary. In many of these countries, the daily fluctuations of the exchange rate can provide an early warning signal when monetary policy

is overly expansionary. Therefore, the foreign exchange market can prevent policy from being too expansionary and fear of exchange rate depreciations can make overly expansionary policy less likely. Targeting exchange rate eliminates this early warning signal and enables the central banks to pursue overly expansionary policies (Mishkin, 1999).

Secondly, exchange rate targeting brings about financial fragility in developing countries if the exchange rate target fails. Financial fragility is a situation in which very small shocks can hit the economy over the edge into a full-blown crisis. Due to the uncertainty about the future value of the domestic currency, it is much easier for non-financial firms, banks and governments in those countries to issue debt in terms of foreign currency and exchange rate targeting may further encourage this tendency. In that case, when there is a devaluation of the domestic currency, the debt burden of domestic firms rises because assets are denominated in terms of the domestic currency and there is no simultaneous rise in the value of firm's assets. As a result, devaluation leads to a deterioration of the firm's balance sheets, which causes a decline in economic growth (Mishkin, 1999).

Finally, exchange rate targeting prevents the central bank from using monetary policy to respond to domestic shocks (Petursson, 2000). With liberalized capital flows, an exchange rate target causes domestic interest rates to be closely related to those of the anchor country. Therefore, the targeting country becomes unable to use monetary policy to respond to domestic shocks, which are independent of those occurring in the anchor country. In addition, shocks occurring in the anchor country are directly transferred into the targeting country since changes in interest rates in the

anchor country bring about a corresponding change in the targeting country.

3.2 Monetary Targeting

Monetary targeting is based on the fact that, in the long term, the price level is influenced by money supply growth. The primary aim of a monetary targeting policy is to ensure an appropriate growth rate of the chosen monetary aggregate. The most crucial features of this regime are the choice of monetary aggregate, the type of corridor for the target, and the manner of management of the chosen aggregate (The Czech National Bank).

A major advantage of monetary targeting is that it enables the monetary authorities to pursue an independent monetary policy and to respond accordingly to shocks to the domestic economy. The central bank's choice of inflation targets may be different from those of other countries. In addition, information about achievement of the target by the central bank is known almost immediately because announced values for monetary aggregates are reported periodically with very short time lags. Therefore, monetary targets send immediate signals to both the public and markets about the stance of monetary policy and the intensions of policymakers to keep inflation under control. These signals can avoid increases in inflationary expectations and lead to lower inflation. Another advantage of monetary targeting is that it may prevent policymakers from falling into the time inconsistency trap because it is capable of promoting almost immediate accountability for monetary policy to keep inflation low (Mishkin, 1999).

These advantages of monetary targeting depend on two preconditions. The first is that there is a strong and reliable relationship between the global variable, which may be inflation or national income, and the targeted monetary aggregate. Otherwise achieving the monetary target will not produce the desired outcome on the global variable; as a result, the monetary aggregate will no longer provide a satisfactory signal about the stance of monetary policy. In that case, monetary targeting may not avoid increases in inflationary expectations. Moreover, an unreliable relationship between monetary aggregates and goal variables creates some doubts about the ability of monetary targeting to serve as a communication device that both increases the transparency of monetary policy and makes the central bank accountable to the public (Mishkin, 1999). Second, the targeted monetary aggregate must be under the control of the central bank so that the monetary aggregate can provide signals about the intensions of policymakers, thereby rendering them accountable.

Policy management through money targeting is suitable for an economy with a stable, reliable and predictable link the targeted monetary aggregate and inflation. For example, Orden and Fisher 1993) finds the evidence of possibility of modeling stable relationships among money, prices, and output under financial deregulation in Australia and New Zealand providing support to the possibility of monetary targeting. However, due to financial innovations and liberalized capital flows, the stability of this link is decreasing in many countries. By the early 1980s, it became obvious that the relationship between monetary aggregates and inflation and nominal income had broken down in countries such as the United States and the United Kingdom. These countries abandoned monetary targeting (Kadioglu, Ozdemir, and Yilmaz, 2000).

3.2.3 Malawi's Current Monetary Policy Framework

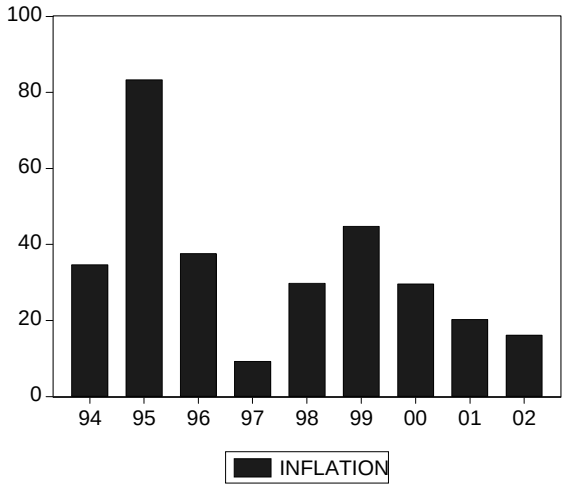
The Monetary Policy Committee at its meeting of 10th November 2000 resolved to target reserve money as an anchor of monetary policy and to publicly announce quarterly targets to enable determine the stance of monetary policy. Reserve money is the sum of currency in circulation and deposits of commercial banks held with the Reserve Bank of Malawi. RBM has better control over this target. Indirect instruments, chiefly treasury bills and RBM bills for budgetary financing and liquidity management, respectively, are used.

Developments in reserve money are monitored on weekly basis and if it becomes apparent that the targets may not be attainable, monetary measures are reviewed accordingly. Depending on the average number of times that money changes hands, reserve money (currency in circulation plus banks' deposits with Reserve Bank of Malawi) determines the total money supply in the economy.

Despite fairly sophisticated tools for the management of monetary policy, lowering inflation on a sustained basis has proved elusive due to a large government borrowing requirement, which for the most part was accommodated by monetary policy. With the move to reserve money (which involves monitoring mainly changes in central bank credit to government and foreign market operations) as the operational target in 2000, the RBM has better able to control money supply and pursue tight monetary policy. Average inflation moderated from 30% in 2000 to 20% in 2001 (see fig. 2.1) and in that year was affected by higher food prices due to maize harvest shortfall. In 2002 inflation moderated further owing to

continued tight monetary policy[1] improvement in fiscal discipline and low maize prices. Inflation went down to 11.5% at the end of 2002, its lowest level since 1997. Tight monetary policy is expected to continue.

Figure 2.1 INFLATION



4.0 An Empirical Analysis of the Relationship Between Monetary Policy Instruments and Inflation In Malawi

4.1 Empirical Method to Analyze the Relationship between the Monetary Policy Instruments and Inflation

One of the preconditions of a successful inflation targeting framework is the existence of a stable and predictable relationship between the monetary policy instruments and inflation. In this section, the statistical linkages between monetary policy instruments and inflation in Malawi are analyzed in order to assess the predictive content of some financial variables. The econometric model is built upon Gottschalk and Moore's

[1] The reserve money growth target was less than 8% in 2002 from 20% in 2001.

paper that makes use of the VAR methodology to find the relations between the instruments of monetary policy, especially between the short-term interest rate, and inflation outcomes in Malawi. That analysis is extended in two ways: 1) real GDP series are added to the estimation; 2) four different VAR models are estimated starting from a two variable model including money supply and prices, and then, adding some financial variables such as nominal exchange rates or interest rates in order to see their contribution o a VAR system for Malawi.

The models are applied to quarterly Malawian data comprising the 1993:1 – 2001:4 periods. The variables included in the models are money supply (M2), consumer price index (CPI), nominal exchange rate (EXCH), real gross domestic product (RGDP), interest rates on three months' deposit rates (DRATES). The investigation is conducted using unit root and cointegration tests, and the multi-equation VAR framework. Impulse response functions (IRF) and variance decompositions (VDC) are also used in order to explore the dynamic structure of the system. The IRF represent the expected responses of each variable in a system to one standard deviation shock in one of the system variables. The VDC shows the percentage of the expected k-step ahead squared prediction of a variable induced by innovations in each variable.

A VAR model is a reduced form of an unidentified structural model, which gives information about the dynamic behaviour of the economy (Woglom, 2000). A structural VAR model can be written as:

$$A_0 yt = A(L)y_t + u_t \qquad (1)$$

Where y_t is a vector of variables of interest, A_0 is a matrix of impact multipliers, L is the lag operator, A(L) includes structural polynomials, and u_t represents the structural disturbances with the covariance matrix Σu, which is the identify matrix where structural shocks are not correlated (Gottschalk and Moore, 2001).

The structural VAR in (1) can be transformed into the following reduced form:

$$Y_t = \beta(L)\, y_t + e_t \qquad (2)$$

Where $\beta(L) = A_0^{-1} A(L)$ and $et = A_0^{-1} u_t$ (Fung and Gupta, 1994)

In a VAR model, none of the variables is exogenous, that is, each variable potentially influences all the other variables. Each variable's current value is expressed as a function of the lagged values of the selected variables (Orden, 1986)

The economic importance of a variable in a VAR model can be measured by looking at the size of the sum of the estimated coefficients, by means of the forecast error variance decomposition and by the impulse response function. . For instance, the forecast error variance decomposition of the CPI measures the response of the CPI over time in response to a VAR shock to the variables in the model. If most of the variation in the CPI can be explained by the lagged values of the CPI itself, one can conclude that lagged variables such as M1, GDP or NER are not important in explaining the variations in CPI. Besides this, the CPI equation in the VAR is useful for measuring the strength and predictability of monetary policy linkage and changes in inflation outcomes. If there is a strong and predictable

relationship between the monetary policy instruments and future CPI inflation, then it can be said that the lagged changes in the monetary policy instruments and future CPI inflation, are economically important and statistically significant in explaining CPI.

4.2 Data and Diagnostics

Data on the CPI, the real GDP, the nominal exchange rate, M2 and interest rate on 3 months' time deposits were gathered from Research and Statistics Data base. To estimate the autoregressive parameters of the models, quarterly data from 1993:1 through 2001:4 were used. All the variables other than the interest rates are in logarithm form.

Unit root tests are conducted for the full sample period in order to determine the stationarity characteristics of the individual series. These tests are summarized in table 3.1. The null hypothesis is that an autoregressive representation is stationary around a linear time trend. Using Phillips Person's tests by including a constant and a trend, the null hypothesis of a unit root cannot be rejected at 0.05 significance level for any of the series. These results suggest that the macroeconomic variables have a stochastic trend. Since all the series have a unit root at 5% significance level, the next step is to test if the series have a second unit root by examining stationarity of the first differenced series. As can be seen from table 3.1 the results reject the null hypothesis of a unit root for all variables at the 0.05 significance levels. When the first differences of the variables are taken, the null hypothesis of a unit root is rejected.

Table 3.1 Phillips Peron Tests for Unit Roots

Variable	PP	Order of Integration
M2	-3.666315	
	(-3.5614)	
ΔM2	-7.485343*	I(1)
	(-3.5670)	
CPI	-1.802164	
	(-3.5614)	
ΔCPI	-3.903710*	I(1)
	(-3.5670)	
RGDP	-2.499937	
	(-3.5614)	
ΔRGDP	-6.462713*	I(1)
	(-3.5670)	
EXCH	-2.104367	
	(-3.5614)	
ΔEXCH	-6.462713*	I(1)
	(-3.5670)	
DRATES	-1.558115	
	(-3.5614)	
ΔDRATES	-3.889778*	I(1)
	(-3.5670)	

Notes:

1. Critical values are from Mackinnon
2. An asterisk indicates rejection of null hypothesis at the 0.05 levels.

4.3 VAR Model

In this section, four different models are estimated starting from a two-variable model including money supply and prices, and adding some financial variables such as nominal exchange rate, interest rates, and real GDP.

4.3.1 Two-Variable Models including M2 and CPI

In order to provide an empirical insight into the relationship between money and prices, two variable models are specified. The models include M2 and CPI that enter in logarithmic forms. Tests for cointegration between money and prices are undertaken conditional on the hypothesis of a unit root. The results of the cointegration tests are given in the table 3.2. For each test, the null hypothesis is no cointegration between M2 and CPI. The results suggest the rejection of the null hypothesis of no cointegration between M2 and CPI at 1% level.

Table 3.2 Johansen Cointegration Test for M2 and CPI

Eigenvalue	Likelihood Ratio	5 Percent Critical Value	1 Percent Critical Value	Hypothesized No. of CE(s)
0.816641	52.14180	15.41	20.04	None**
0.040892	1.252539	3.76	6.65	At most 1

Notes:

Test Assumption: Linear deterministic trend in the data

1. *(**) denote rejection of the hypothesis at 5%(1%) significance

Cointegrating equation:

CPI – 1.005756M2 – 2.312182 *(3)*

(0.01465)

Given the strong evidence that the series are non-stationary and cointegrate, we can conclude that a relationship exists between money supply and the price level is stable in Malawi.

A VAR is then applied to the first differences of the data to examine the strength of the relationship between money supply and the price level. The results are presented in table 3.3.

Table 3.3 Variance Decomposition for the VAR Models of M2 and CPI

Variance Decomposition

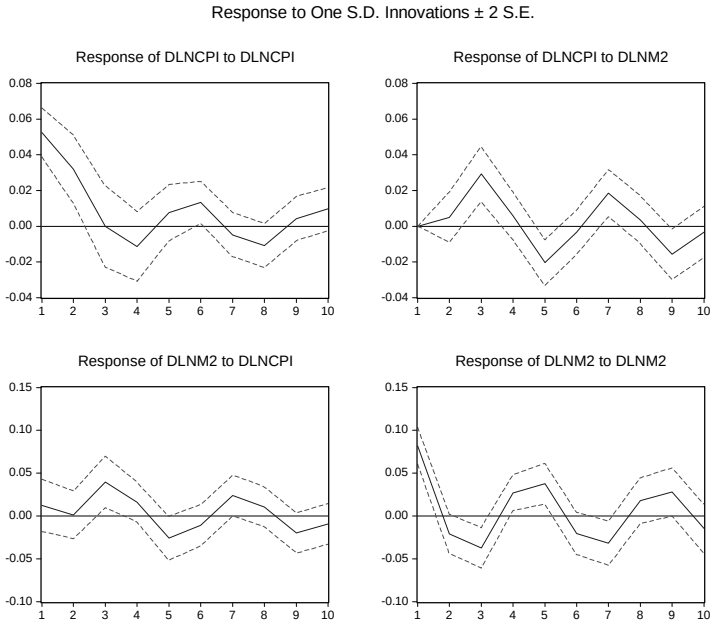
of DLNCPI:

Period	S.E.	DLNCPI	DLNM2
1	0.052452	100.0000	0.000000
2	0.061592	99.33817	0.661829
3	0.068145	81.15369	18.84631
4	0.069342	81.09523	18.90477
5	0.072665	74.92750	25.07250
6	0.073952	75.59237	24.40763
7	0.076369	71.28004	28.71996
8	0.077228	71.70261	28.29739
9	0.078920	68.95467	31.04533
10	0.079572	69.29405	30.70595

The variance decomposition results for 10 quarter ahead, show that innovations to money explain a very small percentage of the variance of the prices, that is they explain 1 to 30 percent of the forecast error variances. On the other hand, the prices have over 69 percent of their forecast-error variance explained by own innovations at all time horizons indicating the inertia. From all these results, we can conclude that money does have little predictive information on prices, and inflation seems to have a strong inertial phenomenon that might be caused by expectations, relative price adjustments or institutional arrangements.

The qualitative features of the model are captured in the impulse response functions, which help in assessing whether money supply contains information about price level sufficiently far into the future to be operationally meaningful. Figure 3.1 shows the responses to one–standard deviation positive shocks over an expanse of 10 quarters.

Figure 3.1 Impulse Responses for the VAR Models of M2 and CPI



The impulse response functions displayed in figure 3.1 support the variance decomposition results in table 3.3. The most noticeable characteristic of the impulse responses shown in figure 3.1 is that inflation is to some extent an inertial phenomenon, especially in the short run. Shocks to the prices result in a major price decline in the short-run before the prices asymptote to zero. A positive shock to the prices results in money supply asymptoting to zero both in short run and long run. However, responses of M2 to its own innovations have a temporary negative effect but have an inconsistent effect in the long run. Money supply shows some inconsistencies in their effect on the prices.

4.3.2. Three Variable VAR Models Including M2, CPI and DRATES

Three variable models including M2, CPI and DRATES are estimated in order to examine whether the two-variable models' implied responses to innovations change. Deposit rates are added into the previous models in percentages without taking their logarithms. Test for cointegration of money, prices, and deposit rates are undertaken. Table 3.4 displays the results of the cointegration tests. The tests' results imply that the null hypothesis of no cointegration is rejected at 1% significance level.

Table 3.4 Johansen Cointegration Test for M2, CPI and DRATES

Eigenvalue	Likelihood Ratio	5 Percent Critical Value	1 Percent Critical Value	Hypothesized No. of CE(s)
0.836335	61.23850	29.68	35.65	None**
0.152794	6.940494	15.41	20.04	At most 1
0.063437	1.966150	3.76	6.65	At most 2

Cointegrating Equation:

CPI -1.001689M2 -1.002249DRATES + 2.327389 *(3)*

(0.001382) (0.001073)

The strong evidence of cointegration of the series M2, CPI and DRATES implies a relationship among money supply, the price level and interest rates. A VAR in differences is the estimated estimated.

The variance decomposition results that are shown in table 3.5 shed further light on the relationships among the price level, interest rate, and

money supply. At the 10-quarter horizon, which is typically relevant for inflation targeting, about 0 to 28% of the variances in prices is accounted for by monetary shocks and only about 1% is due to interest rate shocks at the end of the forecast horizon. On the other hand more than 70% of the variance in prices is accounted for by price shocks themselves. The results are consistent with the evidences from the impulse response functions showing the link between both money and interest rates and prices are not strong. The highest predictive information about the prices comes from the prices themselves. The results do not change a lot even if we include interest rates into the model because money supply still does not have a strong predictive power on prices and the price level is still the main determinant of the inflation.

Table 3.5 Variance Decomposition for the VAR Models M2, CPI and DRATES

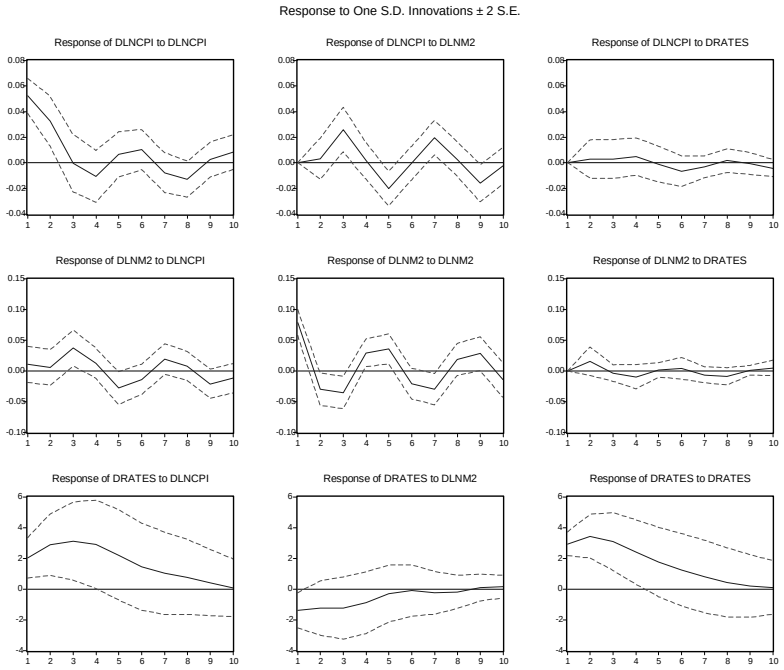
Variance Decomposition of DLNCPI:

Period	S.E.	DLNCPI	DLNM2	DRATES
1	0.052298	100.0000	0.000000	0.000000
2	0.061720	99.53305	0.245276	0.221670
3	0.067040	84.36434	15.25961	0.376048
4	0.068081	84.26037	14.87037	0.869262
5	0.071286	77.71047	21.47395	0.815579
6	0.072319	77.52039	20.86522	1.614392
7	0.075390	72.38123	25.96416	1.654604
8	0.076552	73.04283	25.30442	1.652753

9	0.078220	70.06655	28.34346	1.589990
10	0.078807	70.13820	28.00805	1.853747

The impulse response functions displayed in figure 3.2 support the variance decomposition results in table 3.5. As in the case of the first model, inflation is to some extent an inertial phenomenon, especially in the short run. Shocks to the prices result in a major price decline in the short-run before the prices asymptote to zero. Money supply shows some inconsistencies in their effect on the prices. The response of prices to interest shocks is significantly not different from zero.

Figure 3.2 Impulse Responses for the VAR Models of M2, CPI and DRATES



4.3.3 Three-Variable VAR Models Including M2, CPI and EXCHRT

In this section, another three-variable VAR model including M2, CPI and EXCH is estimated in order to analyze the responses of the prices to nominal exchange rate and whether there is a change in the responses of prices to money innovations when we exclude interest rates and include nominal exchange rates as monetary policy instruments. To determine if there is a stable relationship among M2, CPI and EXCH, again cointegration analysis is applied as shown in table 3.6. The results indicate presence of two cointegrating equations at 1% significance level.

Table 3.6 Johansen Cointegration Test for M2, CPI and EXCH

Eigenvalue	Likelihood Ratio	5 Percent Critical Value	1 Percent Critical Value	Hypothesized No. of CE(s)
0.827862	79.35653	29.68	35.65	None **
0.582502	26.57279	15.41	20.04	At most 1 **
0.012208	0.368506	3.76	6.65	At most 2

Cointegrating Equation:

CPI – 1.203904M2 + 0.170051EXCH + 3.514856 *(4)*

(0.09035) (0.07926)

The variance decomposition results that are shown in table 3.7 shed further light on the relationships among the price level, interest rate, and money supply. The results show that at all horizons, more than 62% of the variance in prices is explained by their own innovations while money supply explains less than 26% and exchange rate explains less than 13%.

The results are consistent with the evidence from previous sections indicating that the link between money supply and price level is not strong. The highest predictive information about prices comes from prices themselves. The results do not improve with the inclusion of nominal exchange rate.

Table 3.7 Variance Decomposition for the VAR Models of M2, CPI and EXCH

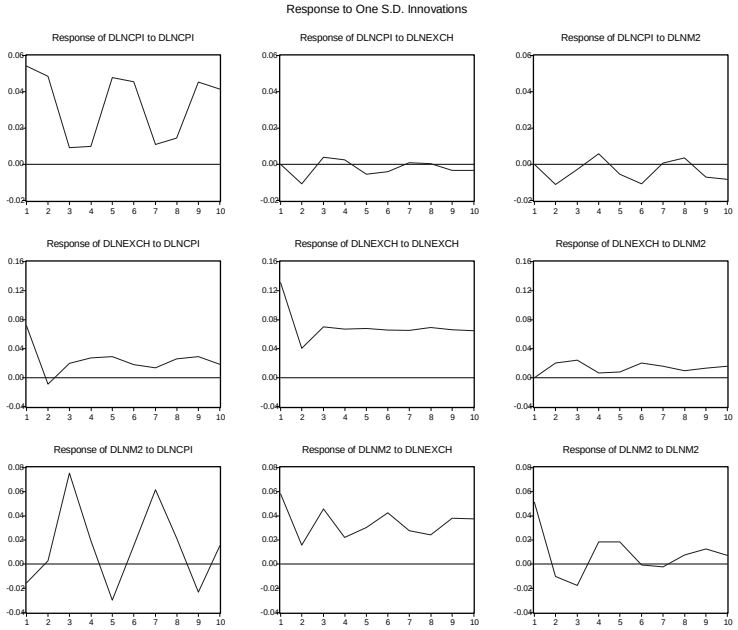
Variance Decomposition of DLNCPI:

Period	S.E.	DLNCPI	DLNM2	DLNEXCH
1	0.049258	100.0000	0.000000	0.000000
2	0.056475	96.90923	1.433924	1.656845
3	0.067184	69.73109	21.42153	8.847381
4	0.070963	69.07029	20.50462	10.42509
5	0.073885	64.60047	22.92951	12.47002
6	0.074858	64.66869	23.15633	12.17498
7	0.076713	63.07095	24.20446	12.72459
8	0.077513	63.58419	23.86684	12.54896
9	0.078849	62.52073	25.05800	12.42127
10	0.079478	62.95670	24.81783	12.22547

The impulse response functions displayed in figure 3.3 support the variance decomposition results in table 3.7. The impulse response functions indicate that exchange rates have some negative effects on prices during the first two quarters before asymptoting to zero in the long run.

Like in the previous cases, prices respond ambiguously to money stocks by initially having negative effects before flattening out. Furthermore, inertia again shows itself, as prices have a strong response to their own shocks. The inclusion of nominal exchange rates instead of interest rates into the model does not change the results. The results confirm the inertia and negative responses of prices to price shocks. The results also indicate that devaluations have lesser effects on prices compared to money supply.

Figure 3.3 Impulse Responses for the VAR Models of M2, CPI and EXCH



4.3.4 Four Variable Model Including M2, CPI, DRATES and GDP

In this section, four-variable models including M2, CPI, DRATES and RGDP are estimated in order to see the contribution of real output to the price level. All the variables are in logarithmic form except for interest rates, which enter in percentages. As in previous cases, cointegration tests are performed and the results can be seen in table 3.8.

4.3.5 Four Variable Model Including M2, CPI, DRATES and GDP

In this section, four-variable models including M2, CPI, DRATES and RGDP are estimated in order to see the contribution of real output to the price level. All the variables are in logarithmic form except for interest rates, which enter in percentages. As in previous cases, cointegration tests are performed and the results can be seen in table 3.8.

Table 3.8 Johansen Cointegration Test for M2, CPI, DRATES and RGDP

Eigenvalue	Likelihood Ratio	5 Percent Critical Value	1 Percent Critical Value	Hypothesized No. of CE(s)
0.874472	85.79580	47.21	54.46	None**
0.382863	23.53905	29.68	35.65	At most 1
0.221052	9.059105	15.41	20.04	At most 2
0.050822	1.564764	3.76	6.65	At most 3

Cointegrating equation:

CPI – 0.987349M2 – 0.002438DRATES + 0.016374RGDP +2.0824

(0.02099) (0.00094) (0.01756)

The results indicate that there is one cointegrating equation. Given the evidence of non-stationarity and cointegration of the variables, VAR models of the variables M2, CPI, DRATES and RGDP are estimated. Table 3.9 reports variance decomposition of the model.

The results indicate that interest rates and real output contain very little predictive information about prices. At the eighth quarter, around 74% of

the variance in prices is accounted for by price shocks while around about 24% results from money stock shocks. In the long run however, the contribution of price innovations to price variations declines to 70% whereas that of money stock innovations increase to 26%. These results again suggest that changes in prices largely result from inflationary expectations and are not significantly influenced by monetary policy instruments such as money supply or interest rates.

Table 3.9 Variance Decomposition for the VAR Models of M2, CPI, DRATES and RGDP

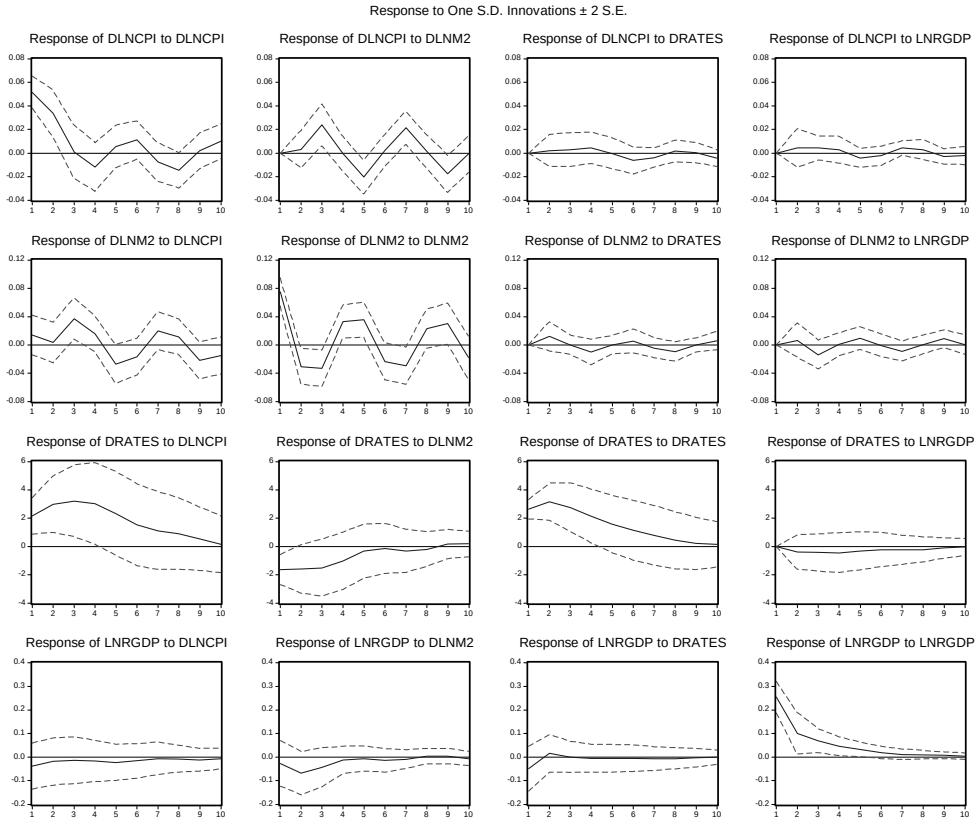
Variance Decomposition of DLNCPI:

Period	S.E.	DLNCPI	DLNM2	DLNRGDP	DRATES
1	0.052024	100.0000	0.000000	0.000000	0.000000
2	0.061759	99.42936	0.337473	0.023603	0.209562
3	0.066769	85.07769	14.12286	0.420870	0.378576
4	0.068087	84.75997	13.67638	0.822016	0.741628
5	0.071226	78.39259	20.14931	0.771778	0.686313
6	0.072483	78.06006	19.45731	1.150766	1.331865
7	0.075484	73.01645	24.43219	1.150160	1.401193
8	0.076794	73.58391	23.70910	1.319402	1.387590
9	0.078434	70.67482	26.67580	1.317342	1.332045
10	0.079106	70.74129	26.28490	1.445258	1.528552

The results of the impulse response analysis for 10 quarters ahead are displayed in figure 3.4 support the results from the variance

decomposition in table 3.9. As can be seen from the graph, the prices have almost no responses to interest rates and real output, but have little responses from money innovations. The responses of prices to their own shocks are strong as in previous models. As in the case of previous models, the response of money supply to price shocks is roughly inconsistent. The response of interest rates to price innovations is generally positive and gradual in the short run but in the long run the response is very small.

Figure 3.7 Impulse Responses for the VAR Models of M2, CPI, DRATES and RGDP



4.4 Comparison of the Models and Conclusions

In this chapter, the dynamic relationships among money, prices, output, short term interest rates and nominal exchange rates have been evaluated by making use of VAR models in order to assess the statistical readiness of Malawi to meet the requirements of inflation targeting. Unit root tests have been performed. The results show that the data for M2, CPI, EXCH, DRATES and RGDP are non-stationary, implying that these variables have a stochastic trend.

Then, four different VAR models are estimated. Staring a simple two-variable model including M2 and CPI only and adding some financial variables, the relationship between inflation and monetary policy instruments, such as interest rates and exchange rates, have been examined examined. In the two-variable model, VAR evidence suggests that inflation is an inertial phenomenon in Malawi, and money innovations are not economically and statistically important determinants of prices, but price shocks are. When the financial variables like interest and exchange rate added into the models, the results do not change. Variances in prices are mostly explained by their own shocks, the monetary policy instruments have little or no effect on prices. This means that policy linkage between inflation and monetary policy instruments is not strong and predictable. The inclusion of the real output into the models does not improve the performance of other variables especially interest rates. Moreover, especially in the short run, the inertia in prices still exists because the coefficient on CPI at the first lag is very high and statistically very significant. The effects of the real output on the prices are not high either. These results again suggest that inflation results from the

inflationary expectations and is not influenced by monetary policy instruments such as money supply or interest rates

On the basis of Johansen cointegration tests, we conclude that there is cointegration among these variables. This means that one can talk about a stable relationship among these variables. However, according to empirical results suggested by VAR evidence, the direct linkages between monetary policy and inflation do not appear to be strong. This may be cited as an argument against inflation targeting regime in Malawi because for a successful inflation targeting regime, monetary policy instruments such as money, interest rates and exchange rates must contain strong and predictable information about the future path of inflation.

5.0 Conclusion

This study has attempted to explain mainly the prerequisites of inflation targeting monetary policy framework and the issues concerning the adoption of inflation targeting and its applicability to the Malawian economy. It contributes to the broad literature about inflation targeting by evaluating the Malawian case.

Four prerequisites of an inflation targeting framework have been identified: a fairly long track record of low and stable inflation; a degree of independence of the central bank, which is concerned with freedom from fiscal dominance; having a sole target; and the existence of a predictable and stable relationship between monetary policy instruments and inflation outcomes. In many developing countries, these requirements are not satisfied due to the presence of seigniorage revenues as an important source of financing public debts and the absence of commitment to low

inflation as a primary objective of the monetary authorities. In addition, most of them do not have substantial operational independence of the central bank and powerful models that explain the dynamics of the economy well and that give successful inflation forecasts.

In order to assess the applicability of inflation targeting to the Malawian economy, the satisfaction of the preconditions has been analyzed. First, the Malawi has of late enjoyed fairly low and stable levels of inflation. Second, the Reserve Bank independence has been examined by means of the Reserve Bank of Malawi Act. It has been concluded that although the Reserve Bank of Malawi is instrumentally independent, with price stability as the primary goal, there are still problems associated with the appointment of the Governor. Third, the issue of having a sole target has been considered and it has been observed that price stability has been given the priority and any other objective has been supported if and only if it was consistent with price stability. Moreover, the exchange rate has been flexible since February 1994. Finally, it has been observed that inflation is not entirely under the full control of the Reserve Bank of Malawi. Food prices, for example, depend on weather while non-food prices are subject to external shocks via the exchange rate.

In the empirical part of this study, the relationship between monetary policy instruments and inflation outcomes has been analyzed by making use of vector autoregression (VAR) models. The results suggest that inflation is an inertial phenomenon in Malawi and money, interest rates and nominal exchange rates innovations are not economically and statistically important determinants of prices. Since inflationary expectations have been found to be the major causes of the high inflation in Malawi, the monetary authorities have to decrease the influences of

inflationary expectations by pursuing more transparent policies, that is, by informing the public frequently about changes in monetary policy, explaining the reasons for those changes, what the new policy's aim and the reasons of the deviations from the targets when they occur. In this way, the credibility of the monetary authorities might lead to decreases in inflationary expectations. In addition, problems associated with central bank independence have to be solved so that the central bank can freely adjust its monetary policy instruments by using desertion and conduct monetary policy in amore efficient way. Moreover, the central bank has to have powerful models to forecast domestic inflation. Since inflation in Malawi is mainly accelerated by inflationary expectations, these models should heavily focus on inflationary expectations.

By way of conclusion, it should be stated that, while the second requirement of the inflation targeting (having a sole target) has been satisfied, there are still problems associated with the Reserve Bank of Malawi's independence and the existence of stable and predictable relationship between monetary policy instruments and inflation in Malawi. The direct linkages between monetary policy instruments and inflation do not appear to be strong and predictable, in Malawi. Therefore, Malawi has yet to reach the stage where a fully-fledged inflation targeting framework could be incorporated into its overall macroeconomic strategy.

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