



Interbank Market and Effectiveness of Monetary Policy in Malawi

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July 2021 / No.745

Abstract

The study aimed at investigating how the interbank market affects the monetary policy transmission mechanism in Malawi. To achieve that, the study analyzed the nature of the relationship between excess reserves and the interbank market rate and tried to discuss other possible factors that affect the interbank market rates in Malawi and limit the effectiveness of the central bank's efforts that aim at influencing important interest rates in the economy. The study further analyzed the strength and speed at which the interbank market rate affects other money market rates, specifically the lending rate.

Using financial markets monthly data for the period 2010:1 to 2018:6, the study applied Ordinary Least Square methods for estimation using Error Correction Model. From the results of the study, it is concluded that the interbank market is the right platform through which the central bank can influence money market rates in the process of monetary policy implementation. Interbank market rates respond to levels of banking system liquidity at a speed that makes sense for monetary policy and they can send significant signals to other relevant market rates like lending rates.

Drawing from these outcomes, the study recommends continued forecasting and controlling of banking system liquidity by the central bank and establishment of additional factors that affect the interbank market rate and hence limit the central bank's efforts. For further improvement in the monetary policy transmission mechanism, the study recommends increased knowledge on interbank pricing models for individual commercial banks and research on the informal sector's reaction to central bank's policy actions.

Introduction

Interbank markets are markets where banks lend and borrow funds from each other to meet their daily liquidity needs. Discussions on interbank markets have attracted a lot of attention following the US subprime mortgage crisis of 2007 and the default of Lehman Brothers in 2008. The world macro-economic scenario has been dominated by the effects of these two events on global financial markets. Behaviour of interbank market rates after the global financial crisis has attracted attention of different economies, and interbank market has quickly become one of the key gauges of market tensions and expectation. This is so because interbank market rates underlie many derivative markets that are used quite often by financial intermediaries and policy makers to infer market expectations. Although most developing countries like Malawi did not have serious problems emanating from the results of the recent financial crisis, research on interbank markets in such countries remains important for several reasons. From a macro-economic point of view, interbank market rates do matter since they are a key part of the monetary policy transmission mechanism. In addition, since interbank market rates are somehow determined by the policy rates, interbank market rates give a good picture of the stance of a central bank's monetary policy. In a normal functioning market, variations in interbank market rates are rapidly transmitted to the entire interest rate structure and result into affecting borrowing conditions for economic agents. Therefore, interbank market rate spreads have been at the centre of debate, bringing out suggestions that such spreads should be incorporated into the formal macro-economic models (Angelini et al., 2011).

In recent years, the interest rate channel of monetary policy has become more important in many countries and has replaced the monetary aggregates route. In

the case of Malawi, the central bank, the Reserve Bank of Malawi (RBM) aims at formulating and implementing monetary sound and macro-prudential policies that are consistent with the agreed national strategies and the transition from monetary aggregate targeting in favour of interest rate targeting, has been treated with much attention since 2014. Generally, interest rate targeting involves choosing a short-term market interest rate as an operating target for monetary policy. In the case of Malawi, the overnight interbank market rate is being used for this purpose.

The choice of the interbank market rate as an operating target for monetary policy is based on the trust that changes in this short-term rate can send monetary policy signals and to significantly affect other money market rates at a speed that makes sense for monetary policy. It is further assumed that changes in the money market rates are consequently reflected in the overall economic performance of the economy since they reflect cost of funding. Generally, the effectiveness of monetary policy, regardless of what policy is in place, rests on its ability to affect the rate of inflation (De Angelis, 2005).

Monetary transmission mechanism refers to the process by which monetary policy decisions affect the real economy and inflation (CEPA, 2012). Although the transmission mechanism operates through several channels, from central banks' point of view, the onset of monetary policy dwells on banking system liquidity management. This is because the interbank market rate is quickly and directly influenced by liquidity levels in the banking system of which the central bank can easily influence through banking system liquidity injections and withdrawals.

From time to time, the RBM through its Monetary Policy Committee (MPC) sets the Monetary Policy Rate (MPR), an interest rate that is used to determine the levels of the rest of the interest rates in the economy. In the case of Malawi, the Lombard Rate is the rate at which banks borrow money from the central bank and is set at a specified percentage points above the monetary policy rate. Thus, to a certain extent, banks offer financial products to their clients at an interest rate that is based on the ruling monetary policy rate. Following that, the choice of the interbank market rate as an operating target for monetary policy is based on the understanding that changes to the MPR, to which the central bank has control, directly and quickly affect the interbank market rate.

It is further assumed that changes to the interbank market rate affect all other relevant interest rates in the market. Although there are other relevant market and demand factors that affect the determination of bank rates such as banking competition, size of banks, level of development of financial markets, aspects affecting each single customer or credit transaction, interbank interest rates remain the main drivers of the rates charged by banks on loans (Aristei & Gallo, 2014). Importantly, the MPR affects the interbank market rates, which are the basis of the process of defining the cost of

money lent by banks to their customers, and hence have effects on the behaviour of borrowers and consequently on the real economy. As pointed out by Kovanen (2011), the transmission of interest rate changes through the interest rate channel should ideally take place over a relatively short period of time since a faster transmission would strengthen the impact of monetary policy on the real economy. Practically, however, due to different factors, the short-run interest rate pass-through may be less than complete and interest rates may not adjust in tandem with the rising and falling of policy interest rates. Consequently, the speed of interest rate adjustment differs across countries, financial institutions, and financial products. This is true even in countries with deep and well-developed financial markets like the U.S. and the Euro region.

The research issue

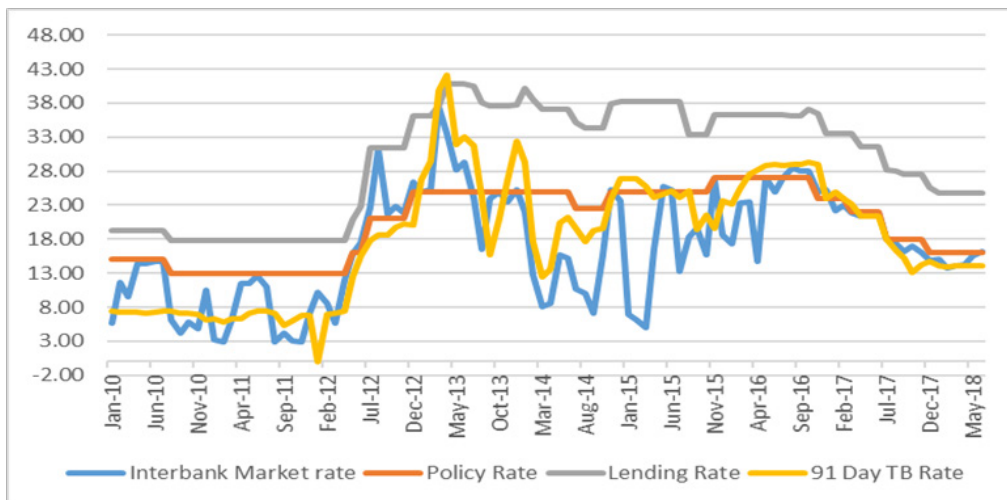
In Malawi, the Reserve Bank of Malawi is mandated by the country's Constitution to maintain price stability in the economy. The mandate is achieved through implementation of monetary policy. To carry out that role, RBM has in place a Monetary Policy Committee which extensively deliberates on macroeconomic developments and projections to decide on the monetary policy stance. To do this, the RBM sets a medium-term inflation rate objective¹, such that all efforts are geared towards attaining the prescribed specific target. Subject to meeting the inflation objective, the MPC is also required to support government's economic policy, particularly its objectives for economic growth and employment. Monetary policy decisions are currently based on a Forecasting and Policy Analysis System (FPAS) which is an information-intensive forward-looking framework for structured and evidence based monetary policy decision making.

In trying to improve the framework for conduct of monetary policy, one of the RBM's efforts, in the transition from monetary aggregate targeting to interest rate targeting, has been to influence banking system liquidity levels (the supply/demand side) as a way of influencing the interbank market rate (the price side). This implies that, effective monetary policy, the ability of the RBM to influence the overall demand conditions in the economy, rests on the Central Bank's ability to influence the interbank market rate. It further entails that the central bank should manage liquidity in such a way that the interbank market rate stays near the level of the MPR. However, until recently, the interbank market rate in Malawi has not been moving close to the policy rate (Figure 1), giving doubts as to whether the monetary policy stance of the central bank is indeed reflected in the interbank market rate and hence questioning the effectiveness on monetary policy.

1 The target was 5% at the time this paper was written.

It has also been the case that some money market interest rates like the Treasury Bill rate have not been giving a clear picture of the stance of monetary policy, again leaving doubts as to whether market rates reflect the stance of monetary policy. On the other hand, for quite a long time, average posted bank lending rates in Malawi have, to a large extent, generally been mimicking the monetary policy rate although adjustments of lending rates by commercial banks following revisions to the policy rate have not always been a uniform action.

Figure 1: Movements in money market rates (2001-2018)



Source: Author's computation from RBM data.

As can be observed from the chart in Figure 1, given the trends of money market rates in Malawi, it is not conclusive if changes in banking system liquidity automatically affect the IBR, and consequently affect the other market interest rates that are relevant for monetary policy. While the shallowness of financial markets in Malawi could be one of the factors affecting the strength of the transmission channel of monetary policy, just like any interbank market, the pricing of liquidity is also influenced by the perceived riskiness of the borrowers as well as the relationships between the interbank market participants. Thus, there is need to empirically establish this strength of the transmission mechanisms given that interbank market prices both liquidity and risk. This is because the difference between the impact of liquidity and the impact of risk on the aggregate cost of interbank loan is difficult to differentiate by mere observation since there is just a single rate for each loan.

Despite the theoretical knowledge that excess reserves affect the interbank market rates, there is still need to test this relationship for different specific data sets and using different methodologies. In addition, there is need to test the strength of the transmission mechanism from the interbank market rate to other market rates for specific economies. This study provides empirical discussion on whether central bank's

liquidity forecasting, and liquidity management efforts are adequate and establishes whether there are shortcomings in the central bank's efforts that contribute to the interbank market rate's deviations from the desired levels. The approach has been in twofold; first, the study has attempted to establish the strength of relationship between excess reserves and the interbank market rate and further tried to explain other possible factors that can affect the interbank market rates. Secondly, the study attempted to establish the strength of relationship between the interbank market rate and other money market rates.

The results of the study are very relevant in establishing the effectiveness of the interest rate targeting strategy in the conduct of monetary policy in Malawi and other economies of similar characteristics. The results are further useful in coming up with ways through which the effectiveness of monetary policy can be improved in countries like Malawi. Specifically, the findings of the study inform the RBM and other central banks whether the commonly used liquidity management efforts are enough for attainment of the desired monetary policy stance.

The results further indicate whether there is need for extra tools to align interbank market rate with excess reserves. The results therefore guide monetary policy makers on the need for additional efforts in aligning the interbank market rate with other market rates and hence influence the real sector of the economy as much as desired. The findings of the study contribute to literature on the interest rate targeting way of implementing monetary policy in economies with shallow markets, especially in establishing the determinants of the strength of the transmission mechanism in such economies. The study indirectly recommends to policy makers on what needs to be put in place when switching to the interest targeting way of monetary policy.

The main objective of the study was to investigate the relationship between the interbank market and the monetary policy transmission mechanism in Malawi. This motivation is built on the understanding that the more reliable the central bank's model of overnight interest rates, the greater its ability to set interest rates that makes sense for monetary transmission. The study therefore analyzed the relationship between excess reserves and the interbank market rates and the relationship between the interbank rates and lending rates in Malawi.

Central Bank activities and liquidity management

As defined by authors such as Saxegaard (2006) and Agénor et al. (2004) in general terms, liquidity refers to the quantity of reserves deposited with the central bank by commercial banks more than the statutory liquidity requirements in relation to time and demand liabilities of the banks. The specific calculation of excess reserves varies

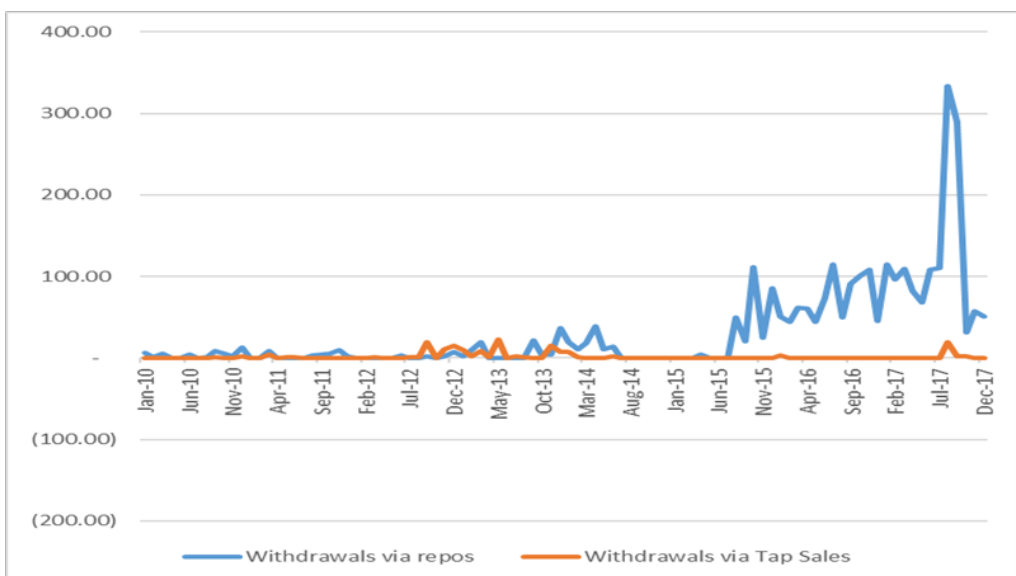
from time to time and from country to country depending on the monetary policy objectives of a country at a given time. Other authors like Mohanty et al. (2006) argue that, if commercial banks hold substantial government securities, bank reserves with the central bank only capture a part of the total holdings of liquid asset and therefore are less reliable as a measure of liquidity holdings.

Since the definition of liquidity varies, in this study, we take liquidity to be specifically associated with high-powered securities owned by banks that are eligible for statutory liquidity requirements. Thus, the description of excess reserves in this study is the quantity of bank reserves deposited with the central bank more than the statutory liquidity requirements specified at a given period. The RBM, like most central banks, influences excess reserves, as defined above, in several ways in trying to implement monetary policy goals.

Open market operations

Monetary policy in Malawi is formulated and implemented by the RBM and is generally directed at achieving and maintaining stability in the general level of prices. The MPC is responsible for formulating monetary policy which is implemented through various Open Market Operation (OMO) tools. The main OMO instruments frequently used by the RBM to withdraw liquidity from the banking system include Repurchase Agreements (repos) and tap sales of Treasury Bills. However, repos are used more than tap sales (Figure 2), probably due to their flexibility in maturity.

Figure 2: Withdrawals via repos and tap sales (MK billion)



Source: Author's computation from RBM data

The use of these instruments, and hence the success of monetary policy implementation, is dependent on a well-functioning interbank market. The daily operations of the central bank aim at influencing the liquidity levels in the banking system and consequently affect the rate at which commercial banks trade liquidity on daily basis. To achieve that, the RBM has put in place a liquidity forecasting framework that guides on the daily operations in terms of whether to inject or withdraw liquidity from the banking system.

Standing facilities

The Reserve Bank of Malawi has two main standing facilities that are utilized in relation to liquidity management. In line with section 4 (g) and section 46² of the Reserve Bank of Malawi (RBM) Act 1989, the central bank provides a uniform set of rules to financial institutions registered under the Banking Act 1989 in accessing Standing Facilities for the purposes of addressing very short-term liquidity shortages. One of the facilities is called the Lombard Facility and is intended to primarily cover banks' temporary liquidity deficits that arise because of the daily settlement of payments.

The facility provides collateralized overnight loans at a predetermined interest rate³. The interest rate charged on these overnight loans acts as a penalty rate to discourage banks' over-reliance on the central bank. Because the rate charged by the central bank is punitive, in an ideal situation, banks are supposed to borrow overnight from the Reserve Bank if and only if funding possibilities are not available in the interbank market to meet their payment obligations at end-of-day settlement and avoid being penalized for not meeting their respective Liquidity Reserve Requirements (LRR). However, experience has shown that this has not always been the case in Malawi.

The Lombard Facility, in some cases, is still accessed even when there are un-borrowed funds in the interbank market (Figure 2). This may reflect how banks treat each other on this type of market. This violates the central bank's role of being the lender of last resort and hence interferes with the pricing of liquidity. The current framework is different from the old one where banks could be accommodated on the Discount Window only after the central bank's approval. With the introduction

2 As updated and revised.

3 The Lombard rate is currently set at 2 percentage points above the monetary policy rate.

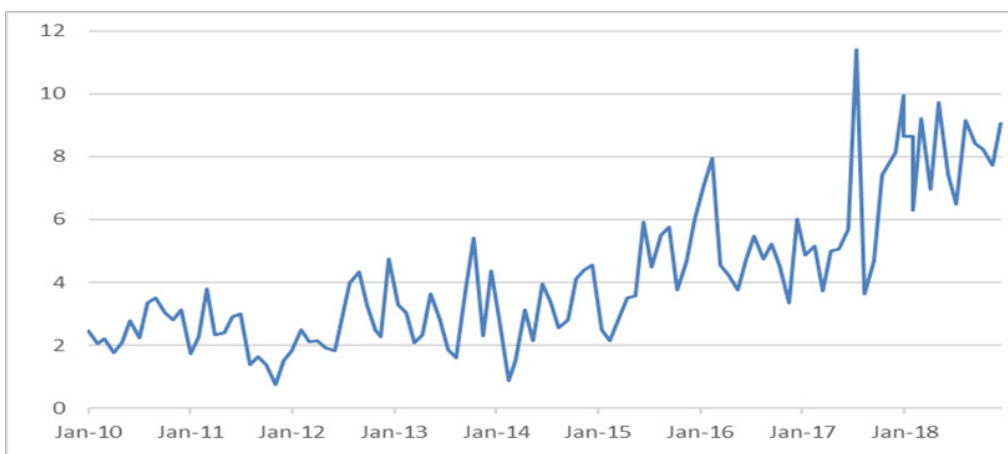
of the Central Security Depository, banks can always access the Lombard Facility if they have the required collateral. This, to a certain extent, limits the ability of the interbank market to communicate real liquidity situations through pricing of liquidity.

The other standing facility is called the Standing Deposit Facility (SDF)⁴ and allows banks to place excess reserves for remuneration. The interest rate on the facility reflects the monetary policy stance of the RBM. Unlike the Lombard Facility, which is readily available, the deposit facility is revoked whenever RBM feels the need to withdraw liquidity from the banking system in addition to using other instruments, for monetary policy purposes. Since its introduction, the SDF has not been used much as RBM favours use of OMO repos for liquidity withdrawal due to their diversified maturity periods.

The interbank market

The interbank market in Malawi opened its doors in 2001. Since its inception, trading (in terms of volumes) has generally been increasing (Figure 3).

Figure 3: Daily average interbank traded volume (MK billion)

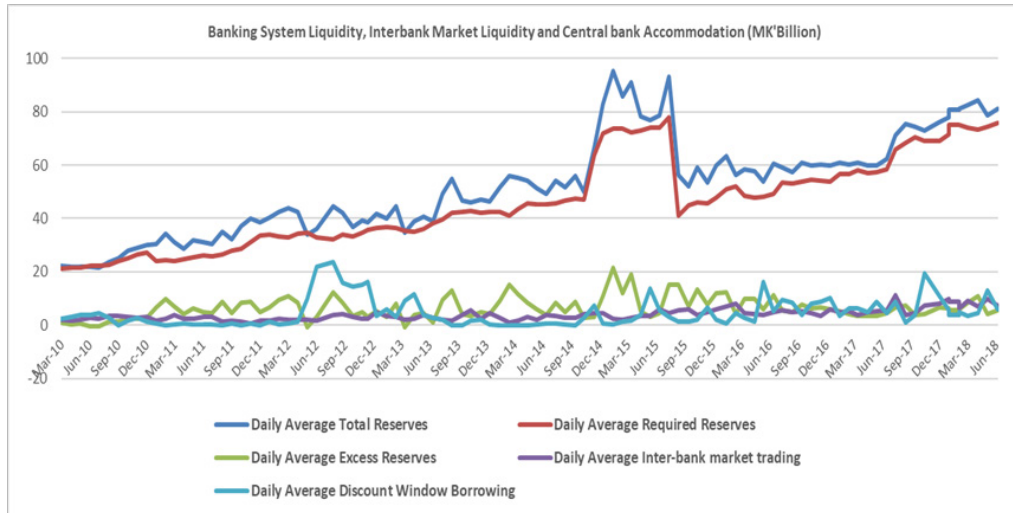


Source: RBM data

4 A chart for this facility is not produced because RBM has just used this for just a few times.

Trading in the Malawi interbank market has, to a large extent, been depicting the liquidity conditions in the country's banking system and the monetary policy stance (Figure 4).

Figure 4: Banking system liquidity 2010–2017 (MK billion)



Source: Author's computation from RBM data

As at 31st August 2018, there were nine commercial banks and one discount house participating in the interbank market in Malawi. The institutions participate in the interbank market mainly for LRR complying purposes. The list of interbank market participating institutions is shown in Table 1.

These ten LRR complying institutions use the interbank market mainly for the purpose of meeting their LRR. RBM recognizes the central role that the interbank market plays about monetary policy implementation, especially in the transmission of its monetary policy actions. Developments in overnight interest rates are therefore expected to influence short-term interest rates, which are the operating target of monetary policy in Malawi.

The RBM recognizes the need to have a clear understanding of the interbank operations, especially on the factors that drive interbank rates for effective monetary policy implementation. To a certain extent, the three critical roles of the interbank market (liquidity redistribution, conduit of monetary policy transmission, and facilitation of price discovery) are evident in Malawi. However, the RBM intervenes in the interbank market mainly for liquidity management (market based) and monetary policy purposes. Although the interbank market in Malawi is characterized by different maturity profiles, over 95% of trading (in terms of both volumes and number of trades) mature overnight and funds are on both collateralized and uncollateralized bases.

The tracked transactions in the interbank market are those carried in local currency (Malawi kwacha) since foreign exchange interbank lending and borrowing have not been common.

Table 1: Malawi's interbank market participants as at 31st December 2017

Name of Institution	Number of Branches	Number of Agencies, Kiosks and Mobile Vans	Largest Shareholders and Percentage of Shares Held
CDH Investment Bank Limited	3	1	Continental Holdings Limited (74.45)
Ecobank Malawi Limited	8	0	Ecobank Transnational Incorporated Company (96.00)
FDH Bank Malawi Limited	19	34	FDH Financial Holdings Limited (93.68)
First Discount House Limited	1	0	FDH Financial Holdings Limited
(100)			
FMB Limited	10	26	FMB Capital Holdings Plc (100)
National Bank of Malawi	15	16	Press Corporation Limited (51.49)
NBS Bank Limited	13	39	Nico Holdings Limited (50.10)
Nedbank Malawi Limited	9	2	NedGroup Investments Africa (99.29)
New Finance Bank Limited	6	0	1. MyBucks (50.00) 2. Finsbury Investments Limited (50.00)
Standard Bank Malawi Limited	7	22	Stanbic Africa Holdings Limited (60.18)

Source: Reserve Bank of Malawi

As earlier noted, the interbank market in Malawi is important for three main reasons. Firstly, this type of market facilitates a smooth functioning of the financial system by acting as a channel for redistributing liquidity in the event of intertemporal shocks/ imbalances. Where efficiency is attained in this kind of market, the market should restore equilibrium and close undesirable liquidity gaps without the intervention of the central bank. Secondly, the interbank market acts as a conduit for the transmission of monetary policy signals, mainly through the interest rate and credit channels. A well-functioning interbank market, therefore, provides an effective price discovery mechanism in the money market hence acts as an important guide for pricing loans, mortgages, futures, options, and swaps in the financial system. Thirdly, through its market disciplining role, the interbank market can potentially offer support to macro-prudential regulation, which continue to face challenges in the wake of growing sophistication in the banking industry, information asymmetry and weak legal frameworks (Andrievskaya & Semenova, 2013). The above important functions

of the interbank market call for examination of this market with a specific view to ascertaining the extent to which such a market can be relied upon in the monetary policy transmission process.

As pointed out by Tiriongo and Kanyumbu (2019), the interbank market in Malawi depicts some characteristics of segmented markets; lending and borrowing agreements in the interbank market are not open to all banks, but rather there are established lines of credit (created through a credit profiling process that banks conduct on each other). The credit profiling is mostly done based on, among other factors, bank size in terms of assets and ownership structure (considering parent company if it is a subsidiary). Among other things, the credit lines would guide prices charged on this type of market.

These features are therefore important in the determination of the interbank market rate and hence the extent to which the interbank market portrays the monetary policy stance of central bank. A quick observation of the interbank market data for Malawi reveals evidence of some form of market segmentation where large banks access funds at relatively lower interest rates when compared to what small banks are charged. The differentiated interest rates applied are based on some credit assessment that banks are argued to conduct on themselves.

Due to this, some banks are compelled to seek funds from the central bank at much higher cost than the existing interbank rate, even when some banks in the market are known to be holding excess funds. Although there is understanding that interbank market also prices risk, at times, the interbank market rate diverts a lot from the rate commensurate with liquidity levels. This could be a policy concern as it could limit the central bank's efforts that aim at influencing money market rates. Moreover, until recently, dealers in the interbank market could not have access to information on all the trades that have taken place in the market. Through the introduction of Reuters platform (market tracker), it is now mandatory that banks should disclose all trades done in the interbank market immediately a deal is concluded, and all market participants now have access to that information. The introduction of the platform is expected to assist market participants to improve their pricing of liquidity and is expected to improve the way the interbank market rate reflects liquidity conditions.

Monetary policy in Malawi

As highlighted by Ngalawa and Vieggi (2011), the monetary framework in Malawi can be categorized under three broad regimes: the repression period (1964-1986), the financial reform period (1987-1994) and post period of financial reform (1995-to date). Malawi's financial reform packages have brought about new financial innovation with growing banking system, removal of interest rate and credit controls, removal

of some controls on current and capital account and adoption of a managed and floating exchange rate regime, among other things.

All these policy changes and implementations have been happening at different time periods. The role of interest rate and credit channels in transmitting monetary policy impulses has become more important in the post period of financial reforms. Importantly, beginning mid-2000s, the monetary policy transmission performed consistently with predictions of economic theory and there is no evidence of a price puzzle as found in the previous literature on Malawi. However, the statistical significance of the private credit supply remains weak and this calls for more financial reforms targeting the credit market which can contribute to monetary transmission and promote further economic growth in Malawi.

The Reserve Bank of Malawi has been going through the process of modernizing its monetary policy framework, aiming at moving from a framework that is based primarily on controlling monetary aggregates to an interest rate targeting framework with plans for eventual transition to an inflation targeting framework. Currently, the RBM uses an interest rate based monetary policy framework. Under this framework, a change in the central bank's policy stance is communicated by changing the policy rate.

The idea in implementing the monetary policy stance in an interest targeting framework is to bring short-term interest rates close to the policy rate that is announced by the central bank. In this framework, the interbank market rate (IBR) is of much importance since it is used as an operating target. RBM uses a corridor system, and the current rule is that IBR should not be allowed to deviate by more than 400 basis points below the policy rate, and not more than 200 basis points above the policy rate. To achieve that, RBM controls banking system liquidity conditions using its open market operations. RBM aims to keep excess reserves at very low positive levels⁵ because high excess reserves are associated with downward pressure on interbank market rates.

Successful implementation of monetary policy in the current framework assumes that a change in central bank interest rates is transmitted through interbank liquidity to lending and deposit rates. It is further assumed that changes in lending and deposit rates influences spending decisions of firms and households. The spending decisions

5 Excess reserves is calculated as the amount a bank has deposited with RBM minus the statutory required amount and can be positive or negative. Positive excess reserves imply that, in total, banks have deposited with RBM more than what is required for them to meet the Liquidity Reserve Requirement (LRR) while negative excess reserves imply that banks have deposited with RBM less than what is required for them to meet the LRR. Negative excess reserves imply that at least one bank has violated LRR and is penalized by the RBM.

of economic agents affect demand and supply of goods and services in an economy resulting into changes in the general price levels (inflation). The Reserve Bank of Malawi aims to always achieve a single-digit inflation figure.

Conclusions, policy implications and recommendations

From the results of the study, we conclude that the Central Bank's activity in influencing liquidity levels in the banking system works, and that the interbank market is a strong platform through which actions aimed at monetary policy implementation can be fulfilled. The study concludes, therefore, that the interbank market rate, being the operating target for monetary policy in Malawi, responds well to banking system liquidity. The Central Bank can therefore effectively affect the interbank market rate through its open market operations.

We further conclude that the interbank market rate is well linked to other money market interest rates, specifically the lending rate, since its movements affects the pricing of commercial banks' loans. From that point of view, we conclude that monetary policy transmission mechanism in Malawi is effective in as far as influencing the pricing of bank loans is concerned. We further conclude that the Central Bank's model of controlling interbank market rates could be reliable. Since the interbank market rate moves with the monetary policy rate that is set by the RBM from time to time, these results imply that the central bank can set interest rates that makes sense for monetary policy transmission. The interest rate targeting framework of monetary policy is therefore the right way for the Malawi economy.

From these findings, it is recommended that the RBM should continue controlling the level of liquidity as a way of achieving a desired level of interbank market rate. However, there is need to, empirically, establish other factors beyond banking system liquidity levels that affect pricing of liquidity in the interbank market in Malawi. Such knowledge is helpful to the Central Bank in deciding the magnitude of its operations to achieve desired levels of interest rates and hence inflation levels. Such may involve engagement of interbank market players and try to understand how each player prices liquidity on the interbank market. By doing so, the central bank can establish the limiting factors to movements in interbank market in some cases.

Future research should also attempt to study how the informal sector of the economy responds to Central Bank actions. Such research would review how the monetary policy transmission mechanism can be strengthened, given the significant size of the informal financial sector in countries like Malawi. Moreover, given that the Central Bank can influence interest rates in the financial market through its operations,

for monetary policy to be strengthened, there is need to consider coming up with incentives that would encourage economic agents to move from the informal financial sector into the formal financial sector. That calls for financial literacy initiatives that encourage people to take part in the formal financial sector.

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