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Challenges for monetary and stability policy in developing countries. A case of Rwanda

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CHALLENGES FOR MONETARY AND STABILITY POLICY IN DEVELOPING COUNTRIES.

A CASE OF RWANDA

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Abbreviations

BNR: National Bank of Rwanda

GDP: Gross Domestic Product

NISR: National Statistics of Rwanda

Rwf: Rwandan Franc

SVAR: Structural Vector Auto regression

VAR: Vector Auto regression

MTM: Monetary Transmission Mechanism

MPC: Monetary Policy Committee

OMO: Open Market Operations

CPI: Consumer Price Index

SACCO: Saving and Credit Cooperative

ATM: Automated Teller machines

MINECOFIN: Ministry of Finance and Economic Planning

HIPC: Highly Indebted Poor Countries

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May God bless you all.

I. GENERAL INTRODUCTION

I.1. Introduction

The monetary policy is an economic policy which refers to the combination of measures designed to control supply of money and credit condition in an economy for the purposes of achieving macro-economic goals such as economic growth and price stability. The central bank is responsible for the conduct of monetary policy to pursue these objectives. However central banks faced a numerous challenges which constrain them to achieve these objectives.

In East African Countries challenges for monetary policy are linked particularly to the weak monetary policy transmission mechanism ingrained in the monetary targeting regime, and the level of development of financial market.

For a variety of reasons, the link between monetary policy instruments and aggregate demand – the monetary transmission mechanism – may be significantly weaker in low-income countries than it is in advanced and emerging economies. In particular, the financial structure of such countries suggests that the bank lending channel is likely to be the dominant channel of monetary transmission, but its effectiveness, which depends on the domestic institutional context, the structure of the banking system, and the intrinsic stability of the domestic macroeconomic environment, is problematic (Mishra P. and Montiel P. 2012). In developed countries, financing generally flows both from the banking system and the capital markets, while in most developing and transition economies the capital markets lag behind, which shifts the burden of financing to the banking system (Dehesa et al., 2007).

The effectiveness of monetary policy implies that a Central Bank can regulate the amount of liquidity to affect the real economy (i.e. inflation and output). The effectiveness of monetary policy in Africa has often been hampered in the past by large pools of banking system liquidity in excess of required reserves (or required liquidity). The larger the liquid reserves on commercial bank balance sheets, the less sensitive the banks are to interest rate or reserve ratio increases and the stronger any central bank tightening measure must be to have the desired effect. (Benedicte V. C. 2011).

In choosing how best to regulate the money supply, the Central Bank makes use of monetary policy instruments to influence certain variables to achieve some intermediate goals, which would eventually lead to the ultimate objectives. Among those instruments we can mention the open market operations, rediscount policy, changes in reserve requirements, foreign exchange intervention, etc. The central bank adopts an expansionary or a contractionary monetary policy using those instruments in order to manage the liquidity in the economy and hence to impact to the real economy. Monetary policy is said to be an expansionary or a monetary ease policy when the monetary authorities decide to increase the supply of money in the economy while monetary policy is said to be contractionary or tight when the monetary authorities embark on policies that will reduce the supply of money in the economy. Changes in money supply through financial system will affect the inflation and economic growth.

Another challenge faced by the central banks in East African countries in implementation of monetary policy is the stability of money multiplier. The central banks have been using the money multiplier approach in controlling the money supply via manipulation of the base money (Hauner and Di Bella, 2005). Since mid1980s, the financial liberalization has led to noticeable mutations and development in the macroeconomic environment notably in the financial sector and payment system. These developments affect the variables in the money multiplier (Russell. 1975 cited in Christian N. 2014). The money multiplier approach has been subjected to several criticisms especially concerning the stability and predictability of the money multiplier which is the key element for the central bank to exert full control on money supply when it is committed to monetary targeting.

I.2. Objectives of the study

The main objective of this study is to examine the challenges for monetary and stability policy in Rwanda,

More specifically, the study seeks:

1. Assess the effectiveness of the transmission mechanism of monetary policy instruments on economic growth and inflation.
2. To examine the effect of financial development on the effectiveness of monetary policy.

I.3. Organization of the study

This study is structured as follows: the following chapter examines the literature review. Chapter three analyzes the challenges encountered in implementation of monetary policy in Rwanda. It discusses the challenges of the effectiveness of monetary transmission mechanism in Rwanda; the

I.4. Monetary policy transmission mechanism

The process by which monetary policy decisions affect the output and the price level is known as the transmission mechanism of monetary policy. There are several channels through which a monetary authority can influence output or prices namely the interest rate channel, the exchange rate channel, the portfolio/assets channel, the credit channel and the expectations channel.

I.4.1. Interest rate channel

According to the interest channel, an increase in the money supply leads to a decrease in the real interest rate due to the assumption of sticky prices. Changes in the real interest rates induce economic agents to change their investment and consumption expenditure and thereby changing economic activity. This channel assumes that the central bank is can affect long-term real interest rates through manipulation of short-term real interest rates.

I.4.2. Exchange Rate Channel

The change in exchange rate as a result of monetary policy action affects both aggregate demand and aggregate supply. On the demand side, expansionary monetary policy which reduces interest rates makes the local currency to depreciate as investors divest from the local market to invest in foreign markets. The real depreciation of the currency makes the country's exports cheaper compared to foreign produced goods. This results into an increase in the net exports and hence stronger aggregate demand leading to an increase in output.

On the supply side a real depreciation of the currency raises the domestic prices of imported goods, which directly increases domestic inflationary. The higher prices of imported inputs contracts output and increases prices. Hence overall inflation, depends on the level of the country's dependence on imported consumer and intermediate goods, the magnitude and timing of the appreciation, as well as macroeconomic environmental.

I.4.3. Credit channel

Credit channels encompass a variety of mechanisms that highlight the role of asymmetric information in financial markets and its consequences for the transmission of monetary policy to the rest of the economy: the bank lending channel, the balance sheet channel and the cash flow channel. These three together postulate that changes in monetary policy will translate into changes in aggregate credit, aggregate demand and hence, inflation. According to the bank lending channel, as long as banks cannot perfectly substitute deposits with other sources of funds, changes in the monetary policy stance translate into changes in the amount of banks' reserves and deposits, altering their ability and willingness to lend. In this way, a tightening of monetary policy will translate into a lower availability of credit, slower aggregate demand and lower inflation.

The balance-sheet channel and the cash-flow channel work through the effects of monetary policy on the net worth of households and firms by altering the value of collateral that can be pledged to obtain credit. According to these, increases in interest rates translate into lower values of collateral and tighter access to credit, which in turn result in lower aggregate demand and inflation.

CHAPITER TWO. LITERATURE REVIEW

In Kenya, Maturu, Maana, and Kisinguh (2010 (cited in Hamid R.D et all (2013), applied both recursive and non-recursive structural vector autoregression (SVAR) to study MTM in Kenya using quarterly data from a period (2000–2010). They regard M3 as the monetary policy instrument and find that an exogenous shock to M3, an expansionary monetary policy, has no effect on real output, but leads to rising prices for almost 18 months.

Cheng (2006) used the VAR Model to examine the impact of a monetary policy shock on output, prices, and the nominal effective exchange rate in Kenya using data covering the period 1997-2005. The main results suggest that an exogenous increase in the short-term interest rate tends to be followed by a decline in prices and appreciation of the nominal exchange rate, but has insignificant impact on output.

In Nigeria, Okoro (2013) examined the impact of monetary policy on Nigerian economic growth using data from 1970-2010 and the results show that there is a long-run equilibrium relationship between the instruments of monetary policy and economic growth. The interest rate and inflation rate were found to be negatively correlated with GDP, while money supply, exchange rate, and credit to the economy were positively related to GDP.

In Zambia the study of Zgambo and Chileshe (2014) using Autoregressive distributed lag (ARDL) approach examined the effectiveness of monetary policy in Zambia came to a conclusion that exchange rate and Treasury bill rate are important channels of monetary policy. They found no significant impact of interest rate on output and prices.

It arises from the above empirical literature that in most of the studies in Africa have find weak or insignificant effects of monetary policy on output. This may be the results of different techniques used in the analysis or the result of different periods of studies.

Empirical review related to the monetary policy in Rwanda.

Previews studies on the monetary policy in Rwanda have shown that monetary policy face various problems related to the monetary regime framework. The study of Kigabo R. and Mutuyimana J.

P. (2016), assessed the impacts of financial innovations on the conduct of monetary policy in Rwanda. The study focused on the stability of money multiplier and velocity of money as financial innovation may lead to instability of the two economic variables. Their empirical results indicate that every quarter the velocity of circulation declined by 0.01% on average while the money multiplier increased by 0.03% on average. They found out that, the instability in money multiplier and in money demand breaks the link between the operating target (base money) and intermediate target (M3) on one side, and, between the intermediate target and the final objective of monetary policy (inflation).

The study of Pascal M.et al (2008), examined the relationship between monetary aggregate (M2) and monetary base in Rwanda. The empirical analysis identified a long-run relation between M2 and monetary base. The study find that the money multiplier is not stable. In this case, modest fluctuations in the money multiplier can generate large fluctuations in the aggregates and hamper the conduct of a monetary base policy.

Different studies have studied the effectiveness of monetary policy in Rwanda and have led to different results.

The study of Iradukunda J. (2014), analysis the relationships between monetary policy variables and both output and prices in Rwanda. The results from the impulse response test have shown that the impact of the change in lending rate on output is not significant. A change in monetary aggregate M3 starts to impact on output after two quarters and this impact dies after seven quarters. A change in nominal exchange rate starts to have an impact on output after one quarter and this impact last for a long period. There is no impact of the lending rate on price change.

The study of Kigabo T. (2016), based on the estimated VAR model examined the effect of a one standard deviation shock to interest rates, monetary aggregates and the exchange rate on both output and prices. The study estimated the interest rate pass-through from money market rates (repo rates, the interbank rate and the T-bill rates with different maturities: 91, 182 and 364 days) to deposit and lending rates. The results indicate that (1) a one standard deviation shock to T-bill rates is associated with a drop in output and inflation. However, the results indicate that the effect is not statistically significant. (2) The results also indicate that the exchange rate channel is not

active. He also find out that a shock to M3 appears to have a very rapid, significant and persistent effect on output. This result indicates that changes in M3 resulting from changes in the monetary policy stance have an impact on output and inflation.

The study of Ruhara C. et al. (2016), assessed the effect of monetary policy on economic growth of Rwanda. The study uses quarterly data from 2000Q1 to 2015Q4 to estimate the dynamic influence of interest rate channel, the effect of exchange rate channel and the effect of credit channel of monetary transmission mechanism on economic growth. The results revealed that in long run the credit channel is more effective than other channels of monetary transmission mechanism by affecting RGDP with a shock of 52.15% in long- run at the 64th period followed by interest rate channel and exchange rate channel respectively. In the short- run interest rate channel affects the economic growth of Rwanda than other channels.

A study of Kabanda R. (2016), examined the channels of transmission of monetary policy, based on whether the monetary policy variable has an impact on real output and/or CPI inflation, how fast the impact is felt and the magnitude of the impact. The results show that real GDP positively responds to an unexpected rise in bank credit to the private sector. The effect is felt in four quarters after the shock occurs and remains significant up to the 8th quarter, and positive in the subsequent period, though not significant. Inflation responds immediately and negatively to a shock in bank credit to private sector although the effect is not significant.

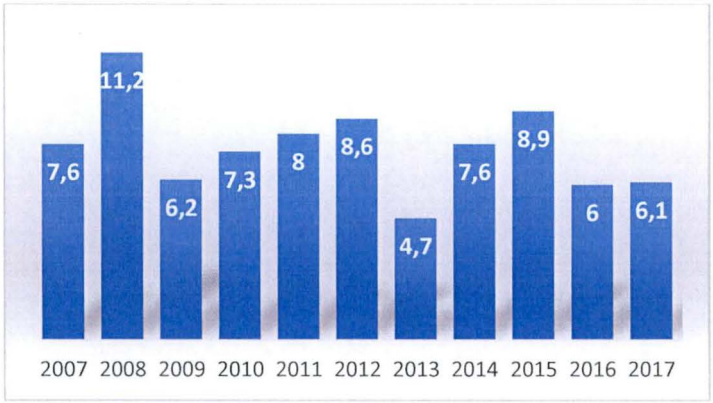
CHAPITER III. MONETARY POLICY IN RWANDA

III.1. Current Rwandan economic environment

III.1.1. Economic growth

Rwandan economy has been fluctuating over the time. In 2008, the economic growth has registered an appreciable performance, reaching 11.25% of real GDP growth, following 7.9% recorded in 2007. This growth was mainly due to a strong recovery in the agriculture sector which registered a growth rate of 15% compared to 0.7% in 2007 and a noticeable improvement both in industry and service sectors which increased by 10.7% and 7.9% respectively. In 2009, Rwanda as other developing countries was also affected by the global economic recession and the Real GDP growth rate declined to 6.2%. This situation was due mainly to the fall in global demand and tightened banking system credit conditions, following the liquidity crunch experienced by banks at the beginning of 2009. After that period the economy continued to register a stable growth until 2013. In 2013, the economy has slowed down with a real GDP growth estimated at 4.7%, an extensively slower pace compared to last three years. Low economic growth in 2013 was a lagged negative impact of low increase in public spending as required fiscal adjustments following cuts and delays in external budget support. After a slowdown in 2013, due to the increase in financing of the private sector by the banking sector the economy grew by 7.6% in 2014. Bank financing to the private sector increased where new authorized loans rose by 38.2% in 2014 from a decline of 5.3% in 2013 and outstanding loans increased by 19.5% from 11.1% in 2013.

Figure 1. Evolution of Real GDP growth rate



Source: NISR (2018)

Table 1. Evolution of Real GDP by kind of activity

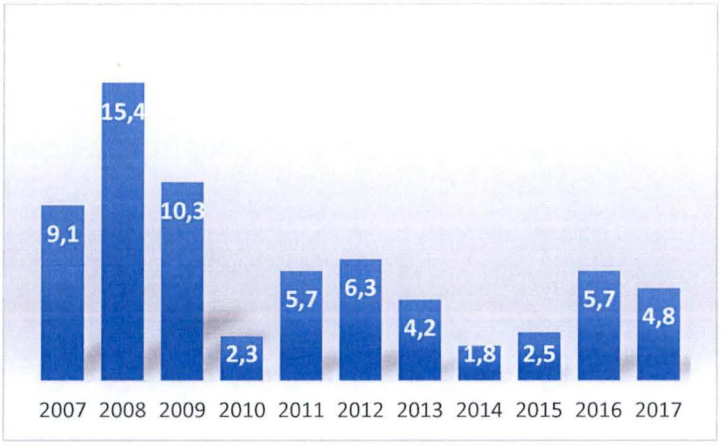
Activity description	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
GROSS DOMESTIC PRODUCT (GDP)	**7.6%**	**11.2%**	**6.2%**	**7.3%**	**8.0%**	**8.6%**	**4.7%**	**7.6%**	**8.9%**	**6.0%**
AGRICULTURE, FORESTRY & FISHING	**3%**	**6%**	**8%**	**5%**	**4%**	**7%**	**3%**	**7%**	**5%**	**4%**
Food crops	4%	6%	9%	5%	4%	8%	4%	9%	4%	3%
Export crops	-29%	29%	-15%	14%	3%	9%	-5%	-2%	14%	2%
Livestock & livestock products	2%	3%	3%	5%	3%	6%	7%	8%	9%	10%
Forestry	3%	4%	2%	3%	3%	4%	3%	3%	4%	4%
Fishing	3%	3%	3%	3%	3%	-2%	5%	4%	3%	3%
INDUSTRY	**9%**	**15%**	**1%**	**8%**	**18%**	**8%**	**9%**	**11%**	**9%**	**7%**
SERVICES	**12%**	**14%**	**6%**	**9%**	**8%**	**12%**	**5%**	**7%**	**10%**	**7%**
TRADE &TRANSPORT	**15%**	**21%**	**5%**	**9%**	**7%**	**15%**	**6%**	**7%**	**11%**	**7%**
OTHER SERVICES	**11%**	**10%**	**7%**	**9%**	**9%**	**10%**	**5%**	**7%**	**10%**	**7%**
TAXES LESS SUBSIDIES ON PRODUCTS	**4%**	**11%**	**10%**	**5%**	**2%**	**2%**	**-3%**	**8%**	**14%**	**4%**

Source: NISR (2018)

III.1.2. Evolution of Inflation

Inflation in Rwanda has been volatile over the past. The high volatility of inflation is mostly explained by the high share of food items in the overall CPI. The inflation in Rwanda has reached the peak in 2008 with annual average rate of 15.4%. This inflationary pressure has resulted particularly from the international fuel and food prices. In 2009, the annual average inflation has dropped to 10.3% due to decline in import prices, good performance of agricultural production and the stable exchange rate. In 2010, the average inflation declined considerably to 2.3%, due to the better performance in food production, a decline in import prices, and stable Rwandan Francs (RWF) against the US dollar (USD). After a decline in inflation in 2012, Rwanda continued has registered a low and stable inflation in 2013 and 2014 as a result of a deceleration in international oil prices. However, the inflation has picked up in 2016 due to the movements in the exchange rate that pushed up inflation of vehicles.

Figure 2. Evolution of inflation rate (2007-2017)

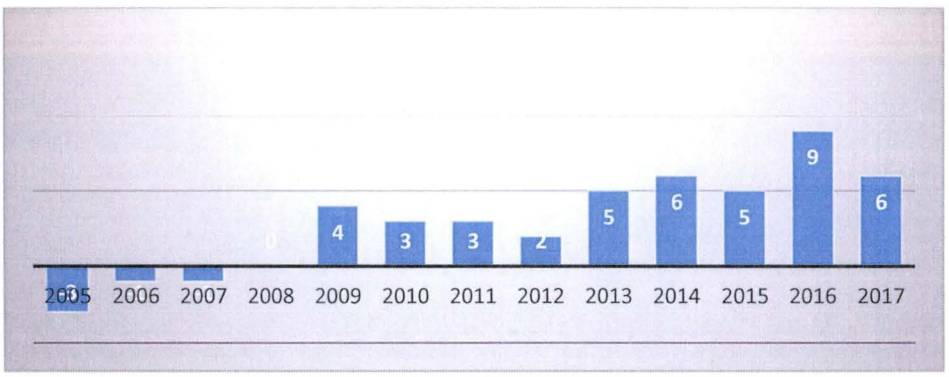


Source: NISR (2018)

III.1.3. Evolution of Exchange rate

Since 2005 until 2013, the Rwf was stable, with annual average depreciation below 5%, as a result of high foreign inflows and a comparatively moderate trade deficit. In 2014, the Rwandan Franc has been under some pressure resulting from high demand for forex demand to finance imports and this led to a depreciation of 6%. As a result of a mismatch between imports and exports as well as a decline in commodity prices, the Rwandan franc has depreciated again in 2016 by 9% from 5% in 2015. Figure 3 below shows the evolution of exchange rate in Rwanda.

Figure 3. Exchange rate growth rate



Source: NISR (2018)

III.2. Monetary policy framework

The National Bank of Rwanda is operating its monetary policy under a monetary targeting regime. In this monetary aggregates target framework, the monetary transmission mechanism is set out from the quantity of reserve money and moves towards inflation. The broad money (M3) is determined in line with targets on inflation and economic growth assuming a stable money velocity. Reserve money target is defined compatible with the estimated M3 assuming stability of money multiplier. Broad money M3 is defined as the aggregation of currency out of the banking system and monetary deposits. As for the reserve money, it is defined as the aggregation of currency outside the central bank, banks reserves held at the central bank and nonbank deposits.

The level of broad money compatible with the desired economic growth for stable prices is derived by the relationship between money supply and nominal GDP as follows: $Y=V*M3$

$M3=Y/V$

Whereby Y stands for nominal GDP, M3 stands for broad money supply and V stands for velocity. From this level is derived the reserve money that will be targeted during the implementation of the monetary policy, based on the relationship between broad money and reserve money illustrated as follows: $M3=m*MB$, Whereby M3 stands for broad money supply; MB stands for monetary base or reserve money, and m for money multiplier.

For the case of Rwanda, broad money (M3) is the intermediate target for regulating the money supply and reserve money is the operating target. In implementing this framework, the BNR continuously monitors on a daily basis the Reserve Money (which must be kept below a specified ceiling) and the net foreign assets (which must be maintained above a designated floor). The authorities signal the policy stance by announcing the policy rate (key repo rate) during the quarterly meetings of the MPC.

III.2.1. Monetary policy instruments

The National Bank of Rwanda implements the monetary policy through three tools: Open market operations; the reserve requirement, discount window facility and foreign exchange intervention.

i. Open market operations

Open market operations consists of the central bank intervention on the money market to mop up or to inject liquidity in the banking system and keep the reserve money on the desired path. These open market operations include notably repos or reverse repos operations, treasury bills issuance, standing deposits facility, standing lending facility and refinancing window.

- **Repos operations**

Repo rate is the interest rate that the central bank pays on the banks' investments in the short-term security called "repurchase agreements operations" of 7 days maturity. This monetary policy instrument serves for mopping the liquidity up from the banking system.

- **Treasury bills issuance**

Treasury Bills (T-bills Treasury Bills (T-bills): Are short term debt securities (one year or less) issued as a primary instrument for regulating money supply or raising funds via open market operations to finance the budget gap. T-bills are always issued through the country's central bank, and commonly pay no explicit interest but are sold at a discount, their yield being the difference between price and the par-value also called redemption value.

T-Bills are issued by auction on weekly basis with maturity dates of 28 days, 91 days, 182 days and 364 days. T-Bills market is announced via BNR website, each Monday for auction on Thursday (T), and settlements take place on Friday (T+1). The minimum purchase is Frw 100.000. T-bills market is open for all investors (Banks, non Banks, Insurance companies, Pension Fund, individuals, etc

In conjunction with the Ministry of Finance and Economic Planning, monetary authorities determine the public debt to issue and, before the beginning of every quarter, the Bank publishes for the Treasury a schedule indicating planned issues, the approximate amounts, dates, categories of bills and their maturities. Some issues are made to finance temporary Treasury deficits occurring when government expenditures exceed revenues.

- **Treasury bonds**

A Treasury Bond/Government bond is a debt instrument issued by a national government through the Central Bank in its capacity of Government agent, generally with a promise to pay periodic interest and to repay the face value on the maturity date.

The bonds are initially sold through auction in which the competitive bidder sets up the price. A competitive bid states the rate that the bidder is willing to accept; it will be accepted depending on how it compares to the set rate of the bond. A non-competitive bid ensures that the bidder will get the bond but he or she will have to accept the set rate. After the auction, the bonds can be sold in the secondary market.

Table 2. Evolution of money market interest rate

Designation	Mars 2013	Jun-13	Sep-13	Dec-13	Mars 2014	Jun-14	Sep-14	Dec-14	Mars 2015	Jun-15	Sep-15	Dec-15	Mars 2016	Jun-16	Sep-16	Dec-16
Key repo rate	7.5	7	7	7	7	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.25
Repo rate	6.995	6.678	5.447	3.986	3.324	3.682	4.236	2.765	1.954	2.012	1.902	2.36	3.088	3.617	4.728	5.023
Discount rate	11	11.5	11.5	11	11	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.25
Reserve requirement	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
T-Bill market:																
28 dats	11.001	9.999	6.834	4.991	4.904	4.297	7.195	3.662	3.208	2.824	3.364	4.431	4.661	5.456	6.792	8.154
91 days	12.142	10.702	6.893	5.305	5.529	4.993	4.49	4.079	3.604	3.385	3.679	4.661	5.754	6.172	7.061	8.965
182 days	12.566	11.337	7.339	5.944	6.572	5.669	5.165	4.964	4.61	4.222	4.473	5.366	6.126	6.563	7.407	9.183
364 days	12.8	11.65	7.793	6.41	7.997	6.572	6.528	6.156	5.31	5.53	6.401	8.1	8320	8.85	9.636	9.654

Source: National Bank of Rwanda (BNR)

ii. Reserve requirement

Reserve requirement are the minimum reserve the commercial banks are obliged to hold against their liabilities, predominantly in the form of balances at the central bank. There are three reasons for imposition of reserve requirements (RR): monetary control, liquidity management and prudential. Changes in reserve requirements affect the liquidity of the banking system and its capacity to create loans. The current reserve requirement ratio is 5%.

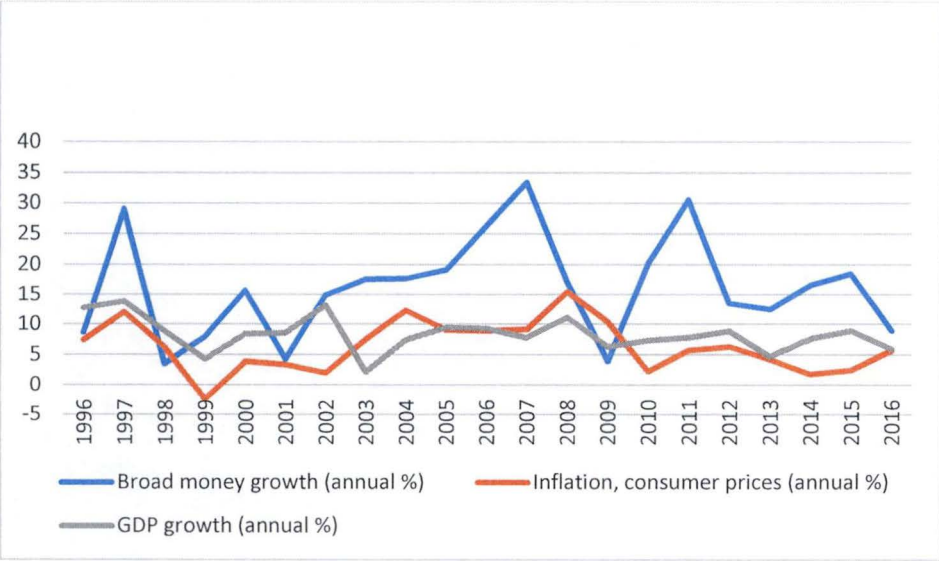
ii. Foreign exchange intervention

This consists of the central bank intervention in the foreign exchange market, in order to defend the exchange rate and to achieve a desired amount of international reserves. The intervention in the foreign exchange market directly affects reserve money and hence has a direct impact on overall liquidity in the economy and the stance of monetary policy.

Treasury bills and Treasury Bonds market dominate the money market in Rwanda. Treasury bills can be mobilised for government financing or for monetary purposes for absorbing excess liquidity for long duration.

Figure 4 shows the positive comovement between the broad money M3 and the two variables of real economy (Real Gross Domestic Product growth rate and Inflation rate).

Figure 4. Evolution of Broad money, Inflation rate and Real GDP growth



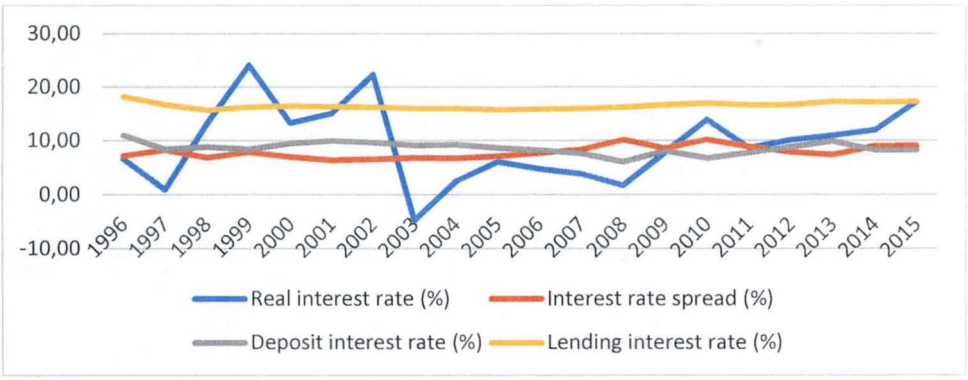
Source: World Development Indicator

III.3. Monetary policy transmission mechanism in Rwanda

III.3.1. Interest rate channel

There has been a weakness in interest channel, particularly due to the rigidity of lending rate. In order to encourage banks to lend to the private sector at lower rates, the National Bank of Rwanda (BNR) has decided to cut the key lending rate from 9 per cent in 2005 to 8 percent in 2008; from 8 per cent to 7 per cent in 2012, and then to the current 6.5 per cent in 2016. However, this has not been the case with lending rates fluctuating from an average of 15.85 per cent in August 2005 to 15.93 per cent in August 2008, and then upwards to 17.520 per cent in August 2016. The reduction in the Key repo rate has not had any impact on lending rates of commercial banks. Figure 4 shows the development of interest rates.

Figure 5. Development in market interest rate (% Average)

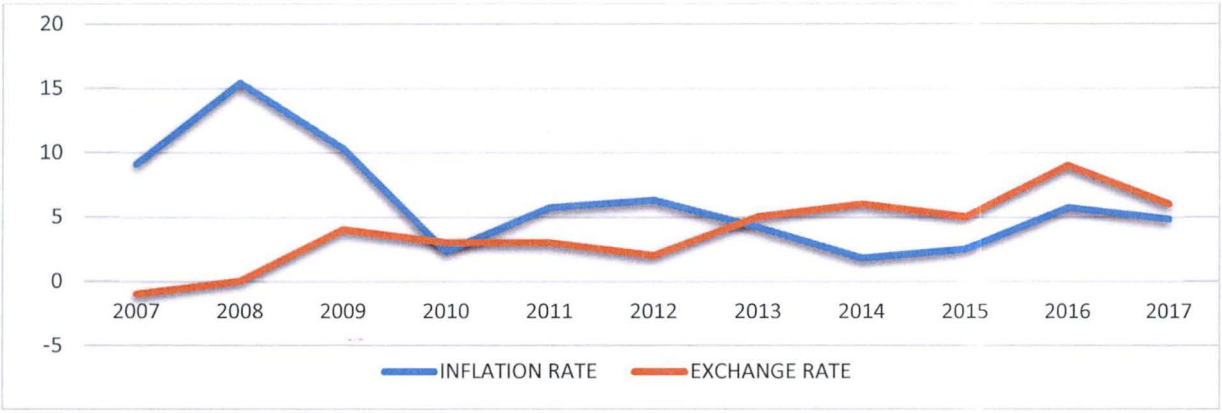


Source: World Development Indicator

Figure 4 shows that lending rates have been rigid and quite high over the period 1995-2016, supporting the weak impact of the central bank policy rate to the commercial bank lending rates. This could be explained by the structural problems in the banking sector such as high operating costs and high non-performing loans. For example in 2009, the lending rate has increased to 17.6% as a result of an increase of non-performing loan.

III.3.2. Exchange rate channel

Figure 6. Correlation between exchange rate and inflation



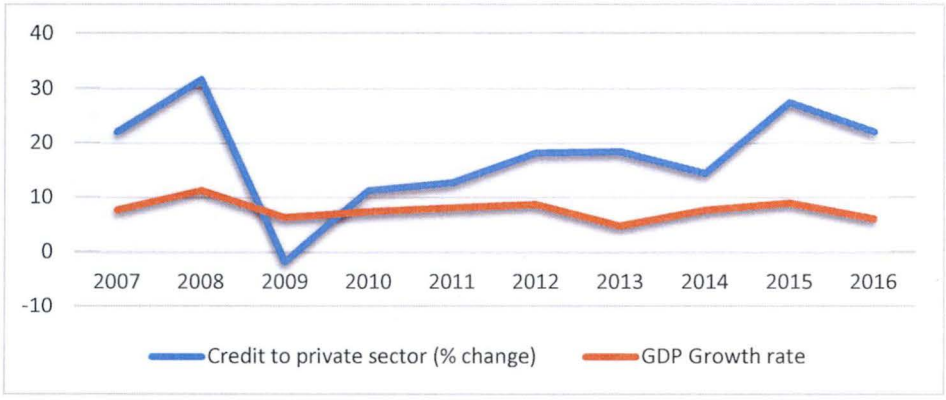
Source: NISR

Figure 5 shows the negative relationship between inflation rate and exchange rate. Inflation rate and exchange rate are negatively and strongly correlated (correlation coefficient of -0.57), implying that an increase in exchange rate leads to a proportionate increase in the inflation rate in Rwanda.

III.3.3. Credit channel

Credit growth in Rwanda has generally been commoving with the growth in real GDP since 2007. For example, the decline of outstanding credit to private sector by 1.7% in 2009 as a consequence of the liquidity problem experienced by the banking system has been followed by a decline in real GDP growth by 5%.

Figure 7. Co-movement between credit to private sector and real GDP growth



Source: BNR Annual reports (2007-2016)

Figure 6 depicts the positive relationship between credit to private sector and economic growth in Rwanda. Credit to private sector and GDP growth are positively and strongly correlated (correlation coefficient of 0.54).

Conclusion

It arises from the assessment of monetary transmission mechanism that, the interest rate channel is not efficient since the lending rate is not responding to the central bank policy rate. Hence any action of the change on the monetary policy with the purpose of increasing the output by attracting the investment through the interest rate channel will not have any significant effect.

The change in exchange rate is transmitted to inflation. Exchange rate and Inflation rate are negatively and strongly correlated with a correlation coefficient of -0.57.

The credit channel is also active. The Credit to private sector and GDP growth are positively and strongly correlated (correlation coefficient of 0.54).

III.4. Financial market development in Rwanda

The Rwanda financial sector is largely dominated by banking sector which hold around 66.9 percent of the total financial sector assets. The pension sub-sector comes second, with 17.1 percent

of the total financial sector assets. Insurance institutions hold 9.7 percent of the total financial sector's assets. Microfinance institutions account for 6.3 percent of total financial sector assets.

The National Bank of Rwanda (BNR) is the sole regulator of the above mentioned financial sector. Other integral components of the financial sector in Rwanda are: forex bureaus; capital market and; payment system (BNR, 2016).

In the last decade, different innovations were introduced in the banking system in Rwanda such as the creation of new financial institutions, extension of the banking sector network and the introduction of new financial products. The establishment of UMURENGE SACCOs in 2009 was one of the key recent innovations in the financial sector in Rwanda. By enabling the establishment of least one financial institution in each sector (UMURENGE) country-wide, this helped to bring financial services closer to the population and thus leading to more financial inclusion. Before the establishment of UMURENGE SACCOs, around 52% of sectors were without any financial institution (BNR, 2016).

In addition, the modernization in the financial supervisory framework, high growth in economic activities as well as conducive business environment in Rwanda have facilitated the entry of regional banks in Rwanda as well as the extension of the banking sector network across the country, with the creation of bank branches and agent banking.

Table 3: Development in banks branches and outlets

	2011	**2012**	**2013**	**2014**	**2015**
Total branches & outlets	408	438	471	515	530
Banks' Agents	0	844	2,047	2,499	2,555
Total Network	408	1,282	2,518	3,014	3,085

Source: BNR, 2016

Technological innovation has also contributed to the financial sector development with the introduction of Automated Teller machines (ATM), mobile banking and internet banking. The

number of ATMs increased from 167 machines in 2011to 280 in 2015 while the number of transactions using ATM and POs merchants increased from 1.9 million to 7.5 million and from 373,029 to 38,440 respectively from 2011 and 2015. In the same period, the number of transactions using mobile payments, mobile banking and internet banking increased to 168.6 million, 5.6 million and 556,152 respectively from 4.3 million, 527,300 and 1,493.

Table 4: Mobile Financial services and Internet Banking

	2011	2012	2013	2014	2015
Mobile payment					
Number of subscribers	639,673	1,440,541	2,538,651	6,480,449	7,663,199
Number of Transactions	4,323,490	22,191,674	57,147,777	104,773,115	168,612,455
Value (Frw million)	51,024	161,808	330,378	691,477	1,093,497
Mobile banking					
Number of subscribers	155,986	297,537	412,007	656,712	828,799
Number of Transactions	527,300	1,458,063	2,538,820	4,637,849	5,617,368
Value (Frw million)	5,215	3,926	17,459	41,281	48,309
Internet banking					
Number of subscribers	NA	3,411	8,869	29,840	36,597
Number of Transactions	1,493	10,036	89,260	312,264	556,152
Value (Frw million)	708	12,746	117,147	332,959	581,163

Source: BNR (2016)

These developments have contributed to deepen the banking sector in Rwanda. Currency in circulation as percentage of M3 has significantly dropped from 21.1% in 2015 to 12.3% in 2017 which contributed to have more deposits in the banking sector and to the increase in commercial banks loans to the private sector.

Another important change in the financial system in Rwanda was the creation of capital market in 2008. While the market remains nascent, it is becoming progressively active since 2014 after BNR and MINECOFIN decided to issue treasury bonds on quarterly basis. This offered an alternative way of saving for non-bank savers. The share of retail investors in Government bonds has increased from almost 0% in 2013 to 15% in May 2016. During the same period, the ratio for

institutional investors increased from 10% to 50.34% while the share of commercial banks declined from 90% to 35% (BNR, 2016).

Conclusion

The developments presented above indicate that financial development in Rwanda particularly the financial innovation has progressively affected the financial behavior of economic agents as well as the financial environment in which BNR conducts its monetary operations. Thus, effects of monetary actions on aggregate demand are limited.

CONCLUSION AND RECOMMENDATION

Conclusion

The general objective of the study was to investigate the challenges of monetary and stability policy in Rwanda. This objective was translated in to two specific objectives. The first specific objective was to assess the effectiveness of the transmission mechanism of monetary policy instruments on economic growth and inflation. The findings show that the interest rate channel is not efficient since the lending rate is not responding to the central bank policy rate. Hence any action of the change on the monetary policy with the purpose of increasing the output by attracting the investment through the interest rate channel will not have any significant effect.

The change in exchange rate is transmitted to inflation. Exchange rate and Inflation rate are negatively and strongly correlated with a correlation coefficient of -0.57. The credit channel is also active. The Credit to private sector and GDP growth are positively and strongly correlated (correlation coefficient of 0.54). These results are consistent with the one of Ruhara (2016), whose results suggested that the effect of credit channel of monetary transmission mechanism on economic growth is more effective than the interest rate channel in Rwanda.

The second specific objective was to examine the effect of financial development on the effectiveness of monetary policy. The findings show that financial development in Rwanda particularly the financial innovation has progressively affected the financial behavior of economic agents as well as the financial environment in which BNR conducts its monetary operations. Thus,

effects of monetary actions on aggregate demand are limited. The results are consistent with the one of Kigabo (2016), whose results suggested that the financial innovation has made the money multiplier instable and that instability weakens the monetary transmission mechanism in Rwanda.

Recommendation

Central bank should improve the policy rate in order to impact the interest rate, particularly the lending rate. A successfully use of the interest rate channel will requires further development of the financial markets. Therefore, the central bank should increase the competition in the banking sector by diversifying financial products in the sector; extend the formal financial sector services to agriculture sector.

REFERENCES

Andrew B. et al. (2013). *The monetary transmission mechanism in the tropics: a narrative approach* (Working paper). International Monetary Fund

Benedicte, V. C (2011). *Central banking in Africa: prospects in a changing world*, (Economic paper). Bank for International Settlements.

Bernanke, B. and M. Gertler (1995). *Inside the Black Box: The Credit Channel of Monetary Policy Transmission* (Working Paper No. 5146). National Bureau of Economic research, Massachusetts, Cambridge.

Cheng, K. C. (2006). A *VAR analysis of Kenya's Monetary Policy Transmission Mechanism: How does the Central Bank Repo rate affect the economy?* (Working Paper WP/06/300). International Monetary Fund.

Hamid, R. D. et al (2013). *Monetary Transmission Mechanism in the East African Community: An Empirical Investigation* (Working paper, WP/13/39). International Monetary Fund.

Hauner D. and Di Bella G. (2005). *How useful is Money Econometrics in Lower Income countries? The case of money demand and the multipliers in Rwanda* (Working paper, WP/05/178). International Monetary Fund.

Iradukunda J. (2014). *Effectiveness of monetary policy in Rwanda* (Working paper), COMESA Monetary Institute.

Kigabo T. and Mutuyimana J.P (2016), *Financial Innovation and Monetary policy in Rwanda*, (BNR Economic Review Vol. 9). National Bank of Rwanda.

Kigabo, T. et al (2016). *Interest rate Pass-through in Rwanda* (BNR Economic Review, Vol.8). National Bank of Rwanda.

Kabanda R. (2016). *Effectiveness of monetary and fiscal policies in development of macroeconomic stabilization of in developing and post conflict economy. The case of Rwanda* (Doctor's thesis). University of Nairobi.

Mishra, P. and Montiel, P. (2012). *How Effective Is Monetary Transmission in Low-Income Countries? A Survey of the Empirical Evidence* (Working Paper, WP/12/143). IMF

Mugume, A. (2011). *Monetary Transmission Mechanisms in Uganda* (Working paper). Bank of Uganda.

Mutuku C. and Koech E. (2014). *Monetary and Fiscal Policy Shocks and Economic Growth in Kenya: VAR Econometric Approach* (Journal of World Economic Research).

National Bank of Rwanda (2018). *Monetary policy and financial stability statement.* March 2018.

National Bank of Rwanda, (2015). *Quarterly Economic and Financial Report: Development and Prospects.*

National Bank of Rwanda, (2015). *Annual Financial Stability Report, June 2015- June 2016*

Okoro, A.S. (2013). *Impact of Monetary Policy on Nigerian Economic Growth* (Prime Journal of Social Science).

Okech, T. C., and Mburu, P. G. (2011). *Analysis of responsiveness of tax revenue to changes in national income in Kenya between 1986 -2009* (International Journal of Business and social science).

Romer C. D. and Romer, D. H. (1990). *New Evidence on the Monetary Transmission Mechanism*, (Brooking Papers on Economic Activity).

Pascal, M. et al (2008). *The stability of money multiplier and money control in Rwanda* (BNR Economic Review Vol.4). National Bank of Rwanda.

Peter Zgambo Patrick M. Chileshe, 2014, *Empirical analysis of the effectiveness of monetary policy in Zambia* (Working paper). COMESA Monetary Institute.

Websites

www.bnr.rw

www.imf.org

www.statistics.gov.rw

www.worldbank.org