

# The Impact of Financial Inclusion on Monetary Policy Effectiveness in Eswatini

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## **Abstract**

*The paper uses quarterly data for Eswatini for the period between 2013 and 2022 to analyze the impact of financial inclusion on monetary policy effectiveness. Financial inclusion variables used in the study are deposit and loan balances held with commercial banks, used as a percentage of GDP while inflation is used as a variable that measures monetary policy effectiveness; money supply and T-bill rate are used as control variables. Granger causality results confirm a one-way causality from monetary policy effectiveness (Headline Inflation) to financial inclusion (Deposits). Using the Vector Autoregression Model (VAR), the results show that financial inclusion (as indicated by bank deposit balances) supports monetary policy effectiveness while that as indicated by bank loan balances renders monetary policy ineffective.*

**Key Words:** *Financial Inclusion, Monetary Policy, Inflation, VAR, Inflation*

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## 1. Introduction

The notable move towards financial inclusion in developing countries has raised questions on the impact on the impact on monetary policy. Financial inclusion is becoming a theme in economic development discussions, viewed as one of relevant indicators for economic development in developing countries such as Eswatini. Some researchers such as (Khan, 2011) have associated growth in financial inclusion with economic growth. As more previously excluded groups of population tap into the formal financial sector, a change in the behavior of monetary indicators is almost guaranteed because financial inclusion changes consumers' behavior (Yetman, 2017). This revolution has triggered interest in the effectiveness of monetary policy as more and more financial inclusion indicators show improvement.

While the definitions for financial inclusion may vary, they generally discuss financial inclusion as a practice that moves access and usage of financial services towards a behavior of a public good; Merhotra et al (2009) refers to it as a quasi-public good. De Koker and Jentzsch (2012) defines and elaborates further, bringing up that financial inclusion refers to affordable cost of financial services. Eliminating the cost factor allows for the lower-end population to be financially included. This makes financial inclusion as a process, aiming at reducing the number of financially excluded population by ensuring financial services for all people.

Given Eswatini's government's recognition of the financial sector's role in facilitating economic growth through their financial services, and the financial services institutions' appetite in enlarging their customer base, it would be relevant for the Central Bank of Eswatini to worry about the impact on its monetary policy mandate. Furthermore, as the financial inclusion net widens, the base for regulated financial

institutions expands, alleviating distortions in accountability and monitoring of monetary financial statistics which are in turn, key in monetary policy setting processes. Thus, investigating the impact of financial inclusion on monetary policy effectiveness will be valuable to the Central Bank achieving its objectives because, as opined by Yetman (2017) that, 'a change in the level of financial inclusion influences the trade-offs faced by monetary policy makers'. The effectiveness of monetary policy of a central bank can be measured by the country's price stability, and the ability of inflation to adjust to shocks.

In many countries price stability is the main objective of monetary policy as decided by the Central Bank. One of the monetary policy tools used by the Central Bank is the interest rate adjustments with the goal of ensuring stable inflation. Having an effective monetary policy is every central bank's ambition and this can be evidenced by the country's inflation rate. In Eswatini, inflation is measured as a year-on-year growth rate of the Consumer Price Index (CPI). The Central Bank responds to a rising inflation rate by increasing the discount rate, which then transmits to the economy through the credit channel regime with the expectation of a slower growth of the inflation.

A non-responsive inflation to monetary policy could suggest that the monetary policy is not effective. While available literature illustrates the effect of financial inclusion on monetary policy effectiveness in many countries, the impact in Eswatini has not been studied. The objective of this paper is to determine the impact of financial inclusion on the effectiveness of monetary policy in Eswatini. However, the study is limited by data availability in the desired period hence focusing only on financial inclusion usage indicators, including indicators that measure access and quality could improve the accuracy of the study.

The paper has the following structure: Section 2 discusses the financial inclusion and monetary policy in Eswatini and Section 3 cites reviewed literature while data and methodology are outlined in Section 4. In Section 5 and 6 the paper presents the results for the method and then gives a summary and policy recommendations.

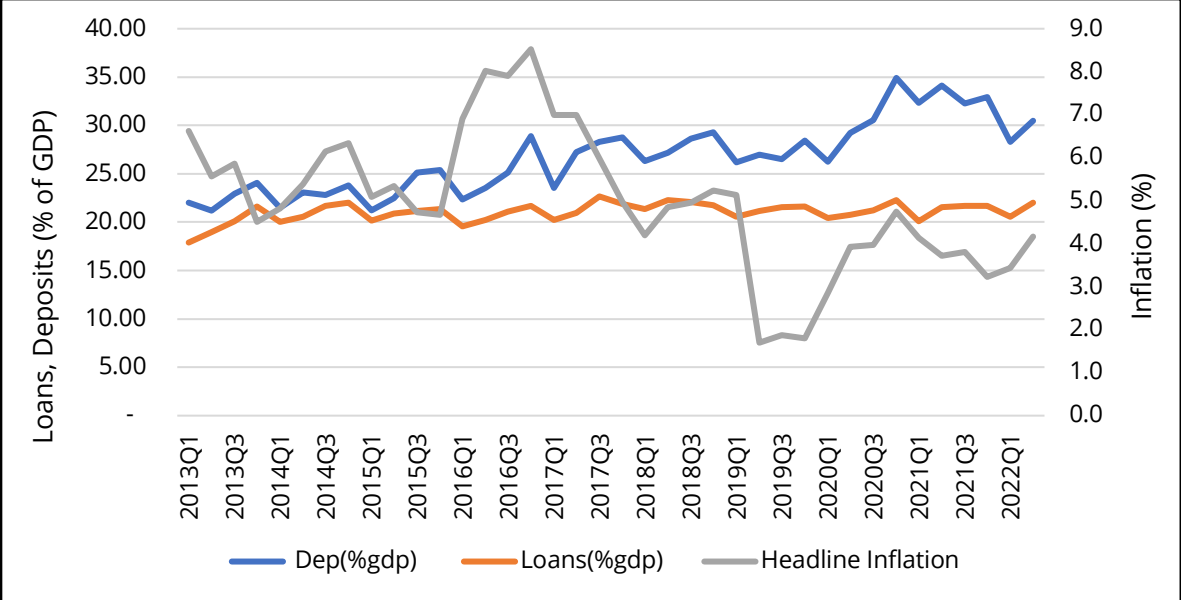
## **2. Financial Inclusion and Monetary Policy Effectiveness in Eswatini**

Financial inclusion in Eswatini is mainly characterized by Banking, Mobile Money, Savings, Savings and Credit and Insurance. Financial inclusion has generally been characterized by banking services, in form of deposits, withdrawals, remittances of funds and loan facilities. However, during the period of study we have seen the contribution of the other forms of financial inclusion in Eswatini. For example, according to the Finscope 2019 report, about 3 in every 4 adults use mobile money in the country. Apparently, the introduction of mobile money services provided by the mobile phone network companies in Eswatini and digital banking over the years, took financial inclusion to higher levels. According to the report, there has been a significant growth of a 30-percentage point in digital financing, coming both from bank and mobile money transactions. As a result, the financially excluded population decreased from 27 per cent in 2014 to 13 per cent in 2018, taking the financially included population to an estimated 85 per cent of the country's bankable population (Finscope, 2019).

As shown in Figure 1, from a bank deposits' (as a % of GDP) perspective, financial inclusion has been on a steady increase. Between the years 2013 and 2022, bank deposits as percentage of GDP have maintained an above 20 per cent ratio to GDP, although rising slowly when compared quarter-on-quarter. Loan balances held with commercial banks have remained somewhat muted as a ratio to GDP over the study period. This indicator recorded an average percentage of GDP of 21 per cent in the period, with the highest rate at 22 per cent. While this slow growth in loans and

deposits could be attributed to low economic activity over the years, the availability of other informal and non-bank loan and deposit facilities, such as mobile money, widely at the population’s disposal, is noted. The availability and popularity of such emphasizes the rising financial inclusion in the country.

**Figure 1: Financial Inclusion and Inflation Trends in Eswatini; 2013-2022**



Source: Central Bank of Eswatini

Between 2013 and 2022 the inflation trends in Eswatini remained in single digit over the period, averaging 5 per cent. As shown in Figure 1, the series is characterized by a significant peak of 8.5 per cent in the last quarter of 2016 and a dip of 1.7 per cent in the second quarter of 2019. While inflation is volatile in nature, the Central Bank took various monetary policy stance with the aim of keeping it stable. In periods before 2019, inflation (indicating monetary policy effectiveness in this study) seems to be growing at a faster pace than the Loans and Deposits share of GDP, but during the last two years of the study period, inflation seems to growing at a slower pace than the rest.

### **3. Empirical Literature**

Evans (2016) took on a study with the aim to examine financial inclusion and monetary policy effectiveness in Africa. Employing a Panel VECM methodology across 15 selected African countries two of which-South Africa and Namibia, are CMA member states like Eswatini for the 2005-2014 period. The study reveals an existence of a long-run relationship between the variables of the two indicators under study. One of the noteworthy findings of the study suggests an insignificant reaction of policy to a positive shock of financial inclusion while asserting a one-way causality from inflation, a proxy for monetary policy effectiveness, to financial inclusion. Evans (2016) raises a point that in Africa, the effectiveness of monetary policy is the driver of financial inclusion, while financial inclusion is not the driver of monetary policy effectiveness.

Mbutor and Ubar (2013) employed a simple VAR model to assess the impact of financial inclusion on monetary policy effectiveness in Nigeria. With the aim to establish the role played by financial inclusion in monetary policy, the study submits that, pursuing financial inclusion is beneficial to the improvement of monetary policy effectiveness in Nigeria. The authors selected commercial banks' loans and deposits, each as a percentage of GDP as a measure of financial inclusion (usage) and inflation rate as a measure of monetary policy effectiveness; a strong negative relationship between these variables was established. Tracing theoretical link between the selected variables in the study, the research outlines that, the more population included in the formal financial sector, the amount of deposits will be such that commercial banks will be more resilient to shocks in the sector while expanding the loans pool.

Lapukeni (2015) suggests that financial inclusion is critical in monetary policy as it leads to its effectiveness. Economic theory states that there is a positive relationship

between money supply and inflation, but this particular study found a contradiction of this truth. The study was carried out for Malawi with the aim of analyzing the impact of financial inclusion on monetary policy effectiveness. The negative relationship between money supply and inflation in Malawi led to the realization that there are unaccounted for monetary aggregates resulting from financial exclusion in population. Hence the study's judgment on the results from the VAR model used is that, financial inclusion supports the coverage of unbanked population, while ensuring inclusion in monetary financial statistics. From Lapukeni (2015), we can conclude that the effectiveness of monetary policy can be enabled by an improved reach out of financial inclusion.

Recently, findings from a study on developing countries conducted by El Bourainy *et al* (2021) are consistent with other literature that, increased financial inclusion has an impact on decreasing inflation rate (monetary policy effectiveness) in developing countries. Covering a period of 10 years for 37 developing countries, in this piece of literature, as opposed to widely used methods such as VAR and VECM, the Generalized Method of Moment (GMM) was employed. Also unique about El Bourainy *et al* (2021) is the development of their own Financial Inclusion Index (FII) opposed to using already calculated index by IMF/World Bank or using selected indicators as proxy for financial inclusion. The index compounds the three dimensions of financial inclusion namely access, quality and usage, eliminating the limitation of partial findings due to data shortages. Identical with rest of the literature in the study is the use of inflation rate as an indicator for monetary policy effectiveness.

Effective monetary policy enhances financial inclusion in developed countries (Arshad *et al* ,2021). A sustainable study on developed and underdeveloped countries with regards to financial inclusion and monetary policy effectiveness was

conducted by Arshad et al (2021). Focusing on 30 countries over the period 2004 and 2018, the study chose to use the Structural VAR to investigate the relationship between financial inclusion and monetary policy inclusion. Opposed to findings on developing countries, findings from the study suggest that in developed and underdeveloped countries, financial inclusion and monetary policy effectiveness have no contemporaneous impact on each other. The study concluded that, inflation (used a measure of monetary policy effectiveness) is lowered by financial inclusion thus making monetary policy effective. In underdeveloped countries, Arshad et al (2021) found a one-way causality between the variables under study, running from monetary policy effectiveness to financial inclusion.

#### **4. Data And Methodology**

##### **Variables and Data Transformation**

The paper uses quarterly data spreading over the period 2013Q1 and 2022Q2 sourced from the Central Bank of Eswatini. Monetary policy effectiveness is set as a dependent variable and financial inclusion indicators as independent variables.

##### *Financial Inclusion Indicators*

The selection of financial inclusion indicators is widely based on the indicators that were developed and adopted in the IMF Financial Access Survey (FAS) that outlined various indicators across the three main measures of financial inclusion namely; quality, access and usage. While the IMF FAS is comprehensive, it comes in as annual frequency data while covering a short period. Moreover, some indicators for Eswatini in the FAS are missing thus limiting the coverage of financial inclusion in Eswatini. Data shortage is a limitation in this study as it allowed for development of indicators that only measure usage of financial inclusion. Another option would be to develop the country's Financial Inclusion Index (FII) like El Bourainy *et al* (2021), but data



shortages limited this study. Instead, the study uses secondary data to develop indicators of interest. The selected usage financial inclusion indicators in this study are outstanding loans from commercial banks (as % of GDP) and deposit from commercial banks (as a % of GDP).

### *Monetary Policy Indicators*

As a proxy for monetary policy effectiveness and following Lapukeni (2015) and Evans (2016), the study uses inflation. With price stability being the Central Bank’s ultimate objective of monetary policy, the selection of inflation as a proxy for monetary policy effectiveness is one of the closest indicators. Other additional monetary policy indicators used in this study are broad money (M2) and the Treasury bill rate (T-bill). The rationale is that, as financial inclusion improves, it is expected to affect monetary aggregates through deposits. Instead of using interest rates as a monetary policy tool, the T-bill rate is more active thus standing as a favourable indicator for monetary policy direction. A table of variable description is presented in Table 1.

**Table 1: Variable Description**

<b>Variable Name</b>	<b>Description</b>	<b>Abbreviation</b>
<b>Financial Inclusion (Loans)</b>	Total amount outstanding loans with commercial banks as a % of GDP	Loans_gdp
<b>Financial Inclusion (Deposits)</b>	Total amount deposits with commercial banks as a % of GDP	Dep_gdp
<b>Monetary Policy Effectiveness</b>	Growth rate of headline CPI (Inflation)	Headline
<b>Broad Money Supply</b>	Log of M2	lm2
<b>Monetary Policy Treasury Bill rate</b>	Treasury Bill rate	T-bill

### **Unit Root Testing**

The variables Loans\_gdp, Dep\_gdp, Headline and T-bills are already in percentages; M2 is the only variable expressed in log terms. Applying formal unit root tests, the

Augmented Dickey-Fuller (ADF) test was used. Table 2 presents the results of the ADF test at levels and first difference for all the variables. The results from the table indicate that all the variables are stationary after first difference hence all integrated of order one I(1).

**Table 2: Stationarity Test Results**

Variable	Augmented Dickey-Fuller		
	Level	$\Delta$	Oder of Integration
<b>Loans (%GDP)</b>	-1.902967	-3.397169**	I(1)
<b>Dep(%GDP)</b>	0.324130	-4.890847*	I(1)
<b>Headline</b>	-1.954099	-5.518772*	I(1)
<b>LM2</b>	-1.491767	-8.992252*	I(1)
<b>T-bill</b>	-1.930547	-3.592925**	I(1)

*Note: \*, and \*\* represent stationary variable at 1% and 5% level of significance respectively.  $\Delta$  represent the first difference of the series.*

## Methodology and Model Specification

### *Methodology*

In literature, studies on the same research topic use other methodologies such as GMM (El Bourainy et al, 2021), VECM (Evans, 2016), this study employs the vector autoregression VAR(q) model to test the impact of financial inclusion on monetary policy effectiveness. A highlight about VAR methods is that they consider the interaction between variables over the selected period. The chance to also analyze further adjustment rate to equilibrium for the variables as suggested Engle and Granger (1987) adds on the advantages of VARs methods. For the objective of this study, the recursive VAR method will be used to derive the impulse response functions and variance decomposition. Where q represents the most appropriate number of lags selected to ensure the most adequate VAR model. Given that 'there

is a need to balance between selecting a lag length that will ‘capture the nature of relationship and eliminate serial correlation’ without reducing degrees of freedom (Lapukeni, 2015), a VAR lag selection criterion will be used.

The Granger causality test will be used to test whether present values of financial inclusion variables can help predict values of monetary policy effectiveness variables.

Following (Mbutor and Uba, 2013) the study presents the function of monetary policy effectiveness as Equation (1):

$$r = \alpha + \beta_1 (Y)_t + \beta_2 (X)_t + \varepsilon_t \quad (1)$$

Where  $r$  is the inflation rate as a proxy for monetary policy effectiveness,  $Y$  is the vector of financial inclusion indicators namely in this paper, the total amount of loans and advances held with commercial banks (as a % of GDP) and total amount of deposits held with commercial banks (as a % of GDP). Lastly,  $X$  is a vector of control variables which in this study are broad money (M2) and average T-bill rate (t-bill). Based on the variables’ stationarity test outcome, the VAR uses them in their stationary transformation state i.e. in their first difference.

The VAR (p) model is specified as in Equation (2)

$$\Delta Y_t = \sum_{i=1}^p \Gamma_i \Delta Y_{t-i} + \varepsilon_t \quad (2)$$

Where  $Y_t$  are  $k$  endogenous variables that include (loan balances with commercial banks as a percentage of GDP, deposit balances with commercial banks as a percentage of GDP, inflation, T-bill rate and money supply M2) for time  $t$  sample period, and  $p$  being the optimal lag length.  $\Gamma_i$  are the  $k \times k$  coefficient matrices while  $\varepsilon_t$  is a  $k$ -dimensional vector of error terms.

## 5. Estimation Of Results And Discussions

### Lag Selection

To avoid over-fitting a VAR (p) model and to ensure misspecification is reduced a standard lag length selection criterion is encouraged (Duma, 2008). This study employs the Akaike Information Criterion (AIC), the Hannan-Quin Information Criterion (HQ) and Bayesian Information Criterion (BIC) was employed and the results are presented in Table 3. The SC and HQ both select zero lags for the VAR model, but the AIC selects 3 lags, the study chose the AIC lag selection and estimated a VAR(3) on its advantage of, as Liew, Venus Khim-Sen (2004) opines that, the AIC lag selection criteria should be a better choice for a small sample.

**Table 3: VAR Lag Order Selection Criterion**

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-78.04993	NA*	0.000164*	5.473525	6.146920*	5.703172*
1	-57.53642	31.37361	0.000223	5.737436	7.533155	6.349828
2	-35.66379	27.01913	0.000315	5.921400	8.839442	6.916535
3	-1.299171	32.34317	0.000269	5.370539*	9.410906	6.748420

\* indicates lag order selected by the criterion

LR: sequential modified LR test statistic (each test at 5% level)

FPE: Final prediction error

AIC: Akaike information criterion

SC: Schwarz information criterion

HQ: Hannan-Quinn information criterion

The suitability of the selected VAR(3) is tested by subjecting the residuals from the model to some statistical tests.

### *Autocorrelation*

A residual serial correlation Lagrange Multiplier (LM) test was conducted and the results are presented in Table 3. Testing the null hypotheses, the results suggest we

cannot reject the null hypotheses of no serial correlation at lag 3 and conclude that there is no autocorrelation in the series.

**Table 4: Serial Correlation Langrange Multiplier (LM)**

Lag	LRE* stat	df	Prob.	Rao F-stat	df	Prob.
1	22.27732	25	0.6197	0.882049	(25, 79.5)	0.6271
2	25.37076	25	0.4418	1.022505	(25, 79.5)	0.4503
3	29.15272	25	0.2576	1.200837	(25, 79.5)	0.2655

**Table 5: Normality Test Results**

Component	Jarque-Bera	df	Prob.
1	0.074818	2	0.9633
2	2.871441	2	0.2379
3	0.585349	2	0.7463
4	1.218990	2	0.5436
5	4.093467	2	0.1292
Joint	8.844064	10	0.5470

The study conducted a normality test on the residuals using the Jaque-Bera normality test and the results are presented in Table 5. The results show a joint p-value of 0.5470 leading to the conclusion that the residuals are normally distributed at a 5 per cent level of significance.

### Granger Causality

**Table 6: Granger Causality Test Results**

Null Hypothesis	Chi-Sq.	df	Prob.
<i>Headline does not &gt; Loans</i>	1.85	3	0.6041
<i>Loans does not &gt; Headline</i>	6.14	3	0.1052
<i>M2 does not &gt; Loans</i>	7.45	3	0.0589
<i>Loans does not &gt; M2</i>	1.66	3	0.6455
<i>T-bill does not &gt; Loans</i>	4.03	3	0.2581

<i>Loans does not › Tbill</i>	5.58	3	0.1341
<i>Headline does not › Deposits</i>	0.87	3	0.8316
<i>Deposits does not › Headline</i>	8.27*	3	0.0408
<i>M2 does not › Deposits</i>	5.11	3	0.1639
<i>Deposits does not › M2</i>	7.78	3	0.0509
<i>T-bill does not › Deposits</i>	8.72*	3	0.0332
<i>Deposits does not › Tbill</i>	6.78	3	0.0792

\*less than 0.05 and significant at 5% level of significance

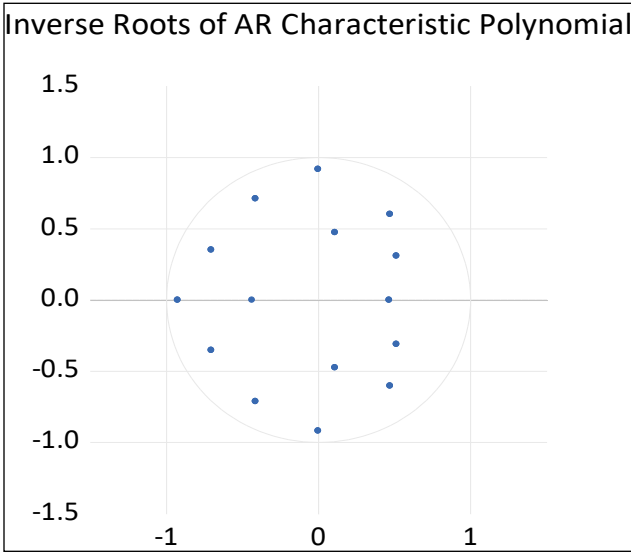
Table 6 shows the results of the Granger Causality test conducted between the financial inclusion indicator variables (Loans and Deposits) against the monetary policy effectiveness variable (headline inflation) and the other monetary policy control variables; T-bill rate and M2. If the test result is greater than 0.05, we fail to reject the null hypothesis and conclude that the variable does not granger cause the other. From the results presented in Table 4, the study finds that there exists a one-way causality between monetary policy effectiveness (Headline Inflation) and financial inclusion (Deposits). Where the null hypothesis is rejected at 5 per cent level of significance and conclude that financial inclusion granger causes monetary policy effectiveness, thus financial inclusion can help predict monetary policy effectiveness. This can be interpreted as that; financial inclusion is key in the effectiveness of monetary policy in Eswatini.

Another significant one-way causality at 5 per cent level of significance is seen from monetary policy (T-bill) to financial inclusion (Deposits). This brings us to the conclusion that in Eswatini, T-bill rate granger causes financial inclusion, suggesting that, monetary policy through interest rate adjustment causes financial inclusion and not the other way.

### **Stability Test for VAR(3)**

In order to confirm reliability of the model results (impulse response functions and variance decomposition), the study subjected the VAR(3) model to a stability test, an inverse roots of the AR characteristic polynomial test. The VAR(3) is stable if none of the roots lie outside the circle. As presented in Figure 2 we confirm the stability of the model as none of the roots are outside the circle; the VAR(3) results are not spurious. A reliable analysis of the impact of financial inclusion on monetary policy can therefore be drawn from the results.

*Figure 2: Inverse Roots of Characteristic Polynomials*



**Interpretation of Results**

*Impulse Response Function (IRF)*

The function of the IRF in this study is to help determine the extent of impact on a monetary policy effectiveness variable resulting from a shock of any financial inclusion variable. Figure 3 shows the estimated IRFs for the monetary policy effectiveness (headline inflation, money supply and T-bill rate) to a one standard

deviation innovation in financial inclusion (deposits with commercial banks, and loan balances with commercial banks).

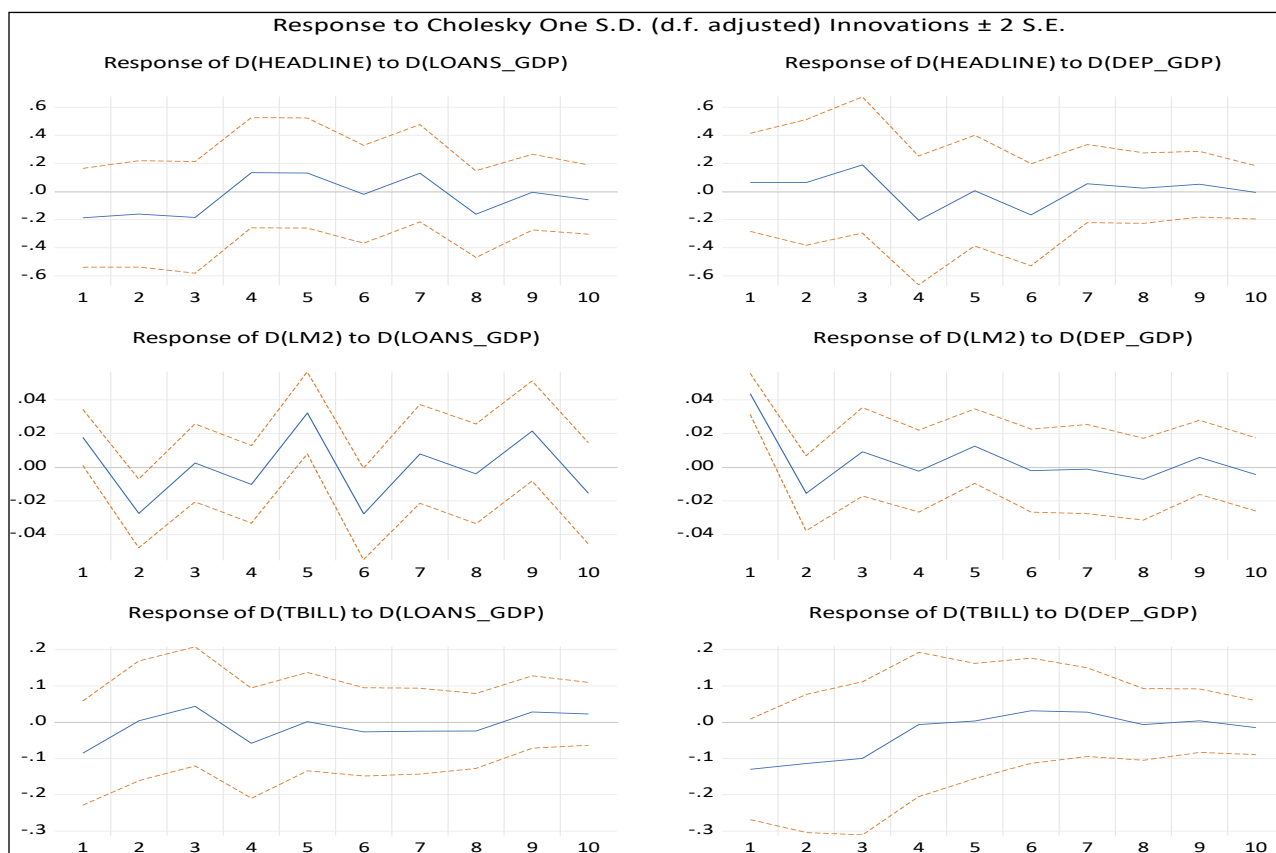
*j) Loans and Advances with Commercial Banks as a % to GDP*

The IRFs reveal that a positive shock on Loans has an initial negative impact on headline inflation, occurring in the first three quarters of the shock. The effects turn positive in the fourth quarter, falling back to negatives in the middle of the seventh quarter. This implies that whenever there is a positive shock or an increase in loans offered by commercial banks, inflation will decrease, especially in the first three quarters. Thus, this means that in Eswatini, financial inclusion (through Bank Loans) positively affects the effectiveness of monetary policy in the initiation stages, but becomes detrimental in the fourth quarter. Looking at the fact that the most active monetary policy regime is the credit channel, linking the monetary policy and bank loans. Increase in Loans balances held with commercial banks can be attributed to interest rate cuts whose objective is to reduce inflation.

The results show that financial inclusion affects the effectiveness of monetary policy positively. The results are consistent with Mbutor and Ubar (2013), El Sherif (2019) and El Bourainy et al (2021) who all found that financial inclusion positively affects monetary policy effectiveness. For the control variables, the results show that a positive shock on the Loans generally has a volatile effect on the Money supply, but a positive immediate effect is noted. Furthermore, a positive shock on Loans has immediate negative effect on the T-bill rate that is seen in the first two quarters, although turning positive in the third quarter. The effect on inflation seems generally mute from the fifth quarter till the end of the period.



**Figure 3: Impulse Response Functions (IRF)**



*ii) Deposits with Commercial Banks as a % to GDP*

From the graph, we note that a positive deposits shock has an immediate positive effect on headline inflation, seen improving in the third quarter of the shock. The positive effect is followed by a negative one around the fourth quarter to the seventh quarter. The effect seems to fall and die-off after the seventh quarter of the shock. This implies that a positive innovation in financial inclusion (through commercial bank deposits) will increase inflation, impacting negatively on the effectiveness of monetary policy in Eswatini. However, this finding is against the expectation of deposits to decreasing inflation. The finding is contrary to the findings in Mbutor and Ubar (2013), El Sherif (2019) and El Bourainy et al (2021). With regards to money supply, the results show that with a positive deposits shock, the effect on money supply is an immediate positive response although falling to a negative in the second

quarter. Overall, the effect on money supply seems generally subdued. This could be explained by financial excluded activities that are not captured in the monetary aggregates. Thus, monetary policy decisions based on the captured monetary aggregates do not affect the financially excluded, making the monetary policy ineffective. Lastly, the positive shock on loans appears to have a negative effect on T-bill rate, occurring in the first four quarters of the shock, after which the effect dies off.

### **Variance Decomposition**

In order to assess the extent of a shock on financial inclusion variables in explaining the variation in monetary policy effectiveness variables, the study produces variance decomposition from the VAR(3) model. From the results, the study notes that Loans seems to explain 3 per cent of the variation in monetary policy effectiveness, rising to about 10 per cent at the end of the 10<sup>th</sup> period. On the other hand, deposits held with commercial banks appear to account for 0.4 per cent of the variation in monetary policy effectiveness. This rate jumps in the second period leading to end the period contributing about 7 per cent to the variation in headline inflation.

## **6. Summary and Policy Recommendations**

The purpose of this study was to assess the impact of financial inclusion on monetary policy effectiveness in Eswatini. The study explores how monetary policy can remain successful amid financial inclusion expansion using quarterly data for the period 2013 and 2022. Basing on the Central Bank's monetary policy objective of price stability, the study uses inflation as a proxy of monetary policy effectiveness. Money supply and T-bill rate are also used as control variables for monetary policy effectiveness. As variables for financial inclusion, the study chose variables that measure financial inclusion usage; loan balances held with commercial banks and deposit balances held with commercial banks, both as a percentage of GDP. Applying

the Granger causality test, the study tested for the existence of causality between the financial inclusion variables and monetary policy effectiveness. A VAR model was also used for the purpose of estimate the impact of the financial inclusion on monetary policy effectiveness. The output of the model were Impulse Response Function and Variance Decomposition.

The study found a one-way causality between financial inclusion as measured by deposits (as percentage of GDP) and monetary policy effectiveness. We conclude that financial inclusion granger causes monetary policy effectiveness, and that it is significant in the effectiveness of monetary policy in Eswatini. From the VAR model, the two financial inclusion indicators gave two different results on their impact on monetary policy in Eswatini. The study found that financial inclusion as indicated by loan balances held with commercial bank, impacts positively on the effectiveness of the country's monetary policy. A positive shock in loans from commercial banks is likely to favour monetary policy possibly due to the credit channel that links the country's monetary policy with commercial bank loans.

Contrary to bank loan deposits, the study finds that financial inclusion when indicated by deposits held with commercial banks renders monetary policy ineffective. The reason could be the amount of non-bank deposit transactions, falling outside the recorded monetary aggregates. The monetary policy decisions taken by the central bank generally consider the monetary aggregates from formal financial activities, leaving out the financially excluded thus weighing negatively on the effectiveness of monetary policy.

Given the different results from the two financial inclusion indicators used in this study, a gap in the study regarding financial inclusion indicators, development of a financial inclusion index may help close it, as it can bring one conclusive outcome of

such study. Nonetheless, based on the findings, for improvement of monetary policy effectiveness in Eswatini, the expansion of financial inclusion is encouraged. It is also recommended to the central bank to attempt to incorporate non-bank financial activities, especially loans, in their formulation of monetary policy.

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