

**THE IMPACT OF FINANCIAL INCLUSION ON MONETARY POLICY. THE CASE  
OF EAST AFRICA**

**BY**

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**DECLARATION**

This research project is my original work and has not been presented to any other university.

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This research project has been submitted with my approval as the University supervisor.

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## ACRONYMS

**BLR:** Bank Lending rates

**CB:** Central Banks

**CBK:** Central Bank of Kenya

**CRB:** Credit Reference Bureau

**FI:** Financial inclusion

**GDP:** Gross Domestic Product

**IMF:** International Monetary Fund (IMF)

**IR:** Inflation rate

**LLC:** Levi Lechun

**MP:** Monetary policy

**MS:** Money supply

**WB:** World Bank

## ABSTRACT

The study examined the impact of financial inclusion on monetary policy in East Africa countries. Notably, the three countries included Kenya, Tanzania and Uganda. The specific objectives of the study were to examine the impact of financial inclusion, bank lending rates, GDP per capita growth and money supply on monetary policy. The study was based on public good theory, systems theory and Keynes's theory of monetary policy. The study used secondary data from IMF and World Bank. The study utilized a cross country panel design to get aggregate observations across the East Africa countries under the study. The descriptive statistics was tested before subjecting the data for regression analysis to provide an overview of the study variables. Based on the correlation result, it was found that financial inclusion, GDP per capita growth and money supply were negatively correlated with the Inflation rate. However, bank lending rates was positively associated with the inflation rate. The regression results showed that financial inclusion was negatively and significantly related to the inflation rate ( $\beta=-6.24367$ ,  $p=0.0000$ ). Further, GDP per capita growth was negatively and significantly related to the inflation rate ( $\beta=-0.66537$ ,  $p=0.044$ ). Likewise, money supply growth was negatively and insignificant related to inflation ( $\beta=-0.06984$ ,  $p=0.467$ ). Finally, the banks' lending rates had a positive relationship with the inflation rate ( $\beta=0.6129486$ ,  $p=0.006$ ). The study concluded that financial inclusion, GDP per capita growth and bank lending rates were significant in determining the monetary policy. The policy implications are that government needs to improve financial inclusion and GDP per capita growth. The expansion of formal financial services to reach millions of underserved and underserved adults will help Kenya achieve its goal of poverty reduction and continued dynamic growth, advancing to the vision of prosperity. Financial inclusion brings about more economic well-being to individuals and small and medium enterprises. There is a need to enhance consumer protection and financial literacy to help individuals be better equipped with modern financial services.



## CHAPTER ONE

### INTRODUCTION

#### 1.1 Background of the Study

Limitation to access formal financial systems is an imperative facet of several economies in Africa. According to Agoba, Sare, and Bugri-Anarfo (2017), there is a need for developing economies to emphasize financial inclusion on monetary policymaking with a primary objective of attaining economic growth. As such, there are presently high-level discussions and undertakings by policymakers to pursue financial inclusion. A study by Lenka and Bairwa (2016) has focused on the effects of financial exclusion for the bounds in the model stability and policy rule of central banks across the globe. Accordingly, the need to have inclusive financing is paramount for both developing and emerging economies in Africa since it enhances the efficiency of monetary policy and contributes to financial stability.

Financial inclusion entails an effort to making day-to-day financial services being available to more of the globe's population at a nominal cost. Grohmann, Klühs, and Menkhoff (2018) argue that the ability to access transaction account is a significant move towards wide-ranging financial inclusion because it enables individuals to keep money, receive payments, and more importantly send money. Therefore, a transaction account, in essence, promotes the concept of financial inclusion as it acts as an access to other fundamental financial services and products. Tersely, financial inclusion strives at eliminating noteworthy barriers, which exclude individuals and businesses from participating in the financial industry as well as using such services to enhance their standards of living. However, it is significant to point out that not many economies in the world that have been able to achieve inclusive finance. Naceur, Barajas, and Massara (2017) contend that at least 1.7 billion adults lack access to basic bank account worldwide. Nevertheless, with the technology development in the contemporary business world, financial inclusion has received a big boost from advances in Fintech, which facilitate digital transactions.

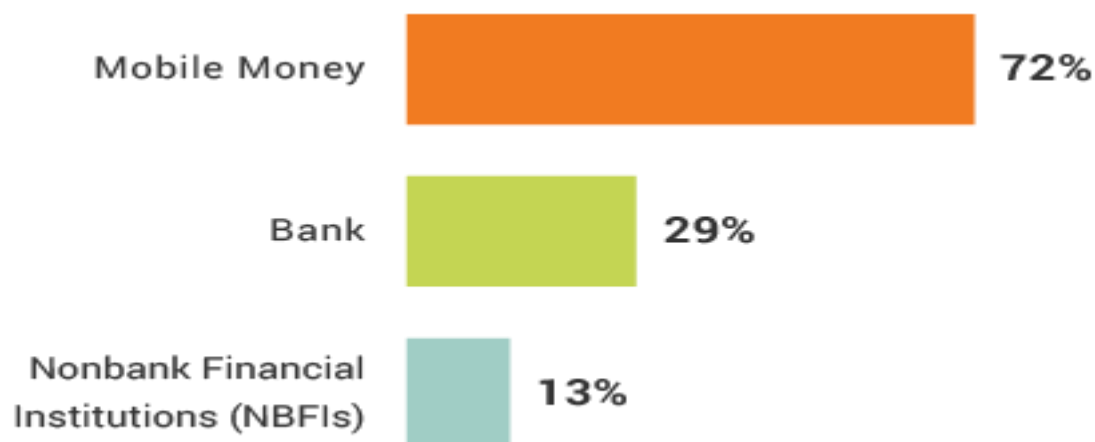
Financial inclusion is vital as it improves efficiency and reach of monetary policy. According to Lapukeni (2015), it implies that individuals and firms can access formal financial products and

services which include insurance, credit, and savings opportunities. Thus, financial inclusion in an economy has multiplier effects in the form of relatively more deposits and savings base for financial service providers besides increased disposable income per capita in rural households. Muriu (2020) argues that financial inclusion ensures various units of the society are engaged in formal financial industry. In that way, financial inclusion tends to increase the reach and efficiency of the monetary policy. Consequently, aggregate demand and investment is enhanced by access to financial products and services, which becomes sensitive to monetary policy through the augmented lending rate elasticity. Additionally, Grohmann, Klühs, and Menkhoff (2018) demonstrate the relationship between monetary policy and financial inclusion by contending that increasing financial inclusion is likely to provide a strong pool of deposits, and thus, affording increased resilience to commercial banks regarding financial shocks. Tersely, financial inclusion influences the lending rates of commercial banks intending to stimulate monetary policy.

A change in financial inclusion level impacts the trade-offs experienced by monetary policymakers. Yetman (2018) contends that influence of financial inclusion on monetary policy trade-offs is enhanced by consumer behavior. When consumers are financially included, they align their consumption in attempt to respond to shocks relatively more effectively compared to financially excluded consumers. The capability of included consumers to smooth consumption is essential for central banks since monetary policy alternatives reflect a trade-off amongst dissimilar objectives. Additionally, Yetman (2018) maintains that the ability to smooth consumption by consumers attributed to financial inclusion is critical in changing consumer behavior, which influences costs, as well as societal benefits, which are gotten from policy decisions.

## **1.2 Financial Inclusion in East African Countries**

To contextualize the current study, financial inclusion in East African Countries – Kenya, Tanzania and Uganda is gaining popularity thanks to digital money transfer and mobile money lending and payment applications. According to Johnson (2016), Kenya leads to advancing mobile money payment platforms and widespread usage. Johnson (2016) further argues that at least 73% of adults in Kenya are financially included, and of these transaction account holders, 98% have mobile money accounts. As such, approximately two-thirds of Kenya lives in rural areas, and inclusive finance is aiding citizens' lives by enabling customers to receive, pay, and send money across the country. In addition, 56% and 46% of adults in Tanzania and Uganda are financially included according to the Intermedia's Financial Inclusion Insights. Studies by Masciandaro and Romelli (2019) indicate that investors, economists, financial experts, and analysts worldwide eagerly await the implications of financial inclusion on monetary policy decision-making outcomes. Lenka and Bairwa (2016) maintain that the effort made by a country's financial system towards superior economic competence is facilitated by financial innovation. The development of mobile money systems is a fundamental financial innovation attributable to the increased financial inclusion in East African Countries, which has in turn, affected monetary policies made by the Central Banks of the EAC. Therefore, making popular new financial technologies in East African Countries has tremendously contributed to the efficiency and stability of economic growth as far as financial inclusivity is concerned.



**Figure 2: Financial Inclusion Breakdown by Accounts in Kenya (Waweru and Kamau, (2017)**

According to Van Hove and Dubus (2019), the retail electronic payments systems are increasingly changing financial landscape. These payment platforms, such as M-Pesa, have promoted financial innovation and enhanced financial inclusion instruments, making the financial market more accessible. Subsequently, the access to the financial market has rapidly changed the monetary policy terrain. Financial development due to financial innovation has dramatically facilitated the evolution and efficiency of monetary policy in East African Countries because it (monetary policy) works more proficiently when financial markets are developed. Thus, financial market development and financial inclusion have impacted the evolution and efficiency of the monetary policy environment in East African Countries.

### **1.3 Conduct of Monetary Policy in East African Countries**

Central Bank plays a critical role of planning and implementing monetary policy decisions, managing a country's foreign exchange reserves, and handling the government's domestic debt. Conduct of monetary policy in East African Countries has been fundamentally successful. According to Nyaga and Ombui (2018), the success of conduct of monetary policy can be measured using two sets of indicators. Firstly, the success can be assessed by looking at the achievements of the Central Bank in ensuring price stability (maintenance of a stable and low

inflation). Secondly, the ability to manage major shocks with an objective of enabling the economy to progress on a path of sustained economic growth after disruptions such as 2008 global financial crisis.

Accordingly, over the last decade the Central Banks of East African Countries have designed and effected a forward-looking monetary policy framework. The evidence to show for the success of the monetary policy framework adopted by the CBK in 2003 is attributed to significant economic growth, a stable and low inflation regime, and more importantly, the reduced volatility in the interbank rate (Mbutor and Uba, 2013). Financial deepening and financial innovation such as remittance technology and mobile banking technology played a crucial role in influencing these changes. Decline in velocity of money in East African Countries reflected the instability of money demand and increased financial inclusion. Nyaga and Ombui (2018) argue that unstable money demand has had significant implications on the monetary policy framework adopted by the CBK. For example, in cases of unstable money demand attributed to unanticipated changes in the income velocity of money, the CBK monetary policy framework must focus on analyzing money demand function, which is the correlation between money stocks and macroeconomic variables such as interest rates and aggregate income.

#### **1.4 Problem Statement**

Financial exclusion disrupts families, hurts individuals, and burdens societies. Financial exclusion in East African Countries has made a living on low income relatively more expensive, stressful, and unstable than it otherwise would be, and acts as a hindrance to economic progress. According to Johnson and Nino-Zarazua (2011), a fundamental driver of financial exclusion is increased poverty levels, augmented unemployment rates, and poor economic growth. These are leading problems to East African Countries' economy today.

As a result, it is necessary for East African Countries to attain a greater financial inclusion to enhance monetary stability in the economy through increase of its savings, investment and consumption decisions. From a policy standpoint, increased participation expands the overall financial system's value, promoting the efficiency and effectiveness of monetary policy.

Masciandaro and Romelli (2019) allude that, monetary policy efficiency upsurges as financial inclusivity share increases. Bigger financial inclusion yields a vital positive externality, which makes monetary policy effective. Financial inclusion in East African Countries will keep monetary authorities more informed, which predicts monetary aggregates better.

There is great need to understand the impact of financial inclusion on monetary policies in East African Countries, yet this subject has attracted dismal attention from scholars as evidenced by scarce information on impact of financial inclusion on monetary policies from East African Countries context. On the other hand, Tanaka (2019) stressed that digital finance brings a host of benefits but can create many problems to an economy. On one hand digital money brings the benefits of increased efficiency and possibility of new business opportunities. On the other hand, those benefits could be countered by potential problems of money laundering, foreign exchange rate instability and disturbance of money supply.

Specifically, central bank could find it a challenge to estimate the money to supply to generate the desired money multiplier effects in the economy. Additionally, assessment of the velocity of money is difficult with digital money because speed of money circulation is harder to determine. That is consistent with the findings of Evans (2016) who opine that the number of times an average unit of currency is used to purchase goods and services within a given time period is complex to determine with emergence of digital money. Therefore, central bank has to respond to those challenges with appropriate policies. This study seeks to fill the gap through analyzing the impact of financial inclusion on monetary policy in East African Countries.

Consistent with the research problem, the study will seek to address the below research questions

1. What is the impact of financial inclusion on monetary policy?
2. What is the impact of lending rate on monetary policy?
3. What is the impact of GDP growth on monetary policy?
4. What is the impact of money supply on monetary policy?

## **1.5 Research Objectives**

The main objective of this study is to investigate the impact of financial inclusion on monetary policy in East African Countries. Specifically, this study seeks to:

- To evaluate the impact of financial inclusion on monetary policy
- To analyze the impact of lending rate on monetary policy
- To examine the impact of GDP growth on monetary policy
- To explore the impact of money supply on monetary policy

## **1.6 Significance of the Study**

The outcomes of the current study will be significant to lending institutions since it can help such enterprises understand financial inclusion benefits to the financial sector. Sarma and Pais (2011) argue that financial inclusion creates a channel to bring savings from the sparse population to the formal financial intermediation system. These savings benefit commercial banks and other financial institutions such as SACCOs, who channel the same to investments and improving organizational profitability. Additionally, low-cost deposits in large numbers offers commercial banks a chance to minimize dependency on bulk deposits. Consequently, when the number of low-cost deposits is large it attributes to financial inclusion which helps financial institutions manage asset-liability imbalances and liquidity risks more effectively.

The study's findings will be of significance to monetary policy authorities in East African Countries because it can help to facilitate economic growth, eliminate poverty levels, and reduce unemployment rates. For instance, according to a report by Kenya National Bureau of Statistics (2020), unemployment rate in Kenya is at 4.9%. The unemployment rate in Uganda and Tanzania is at 2.899% and 1.981% respectively as per World Bank (2020). The Central Banks of East African Countries can lower interest rates through financial inclusion measures as part of the expansionary monetary policy, which influences spending among rural households. Consequently, the approach of enabling the unregulated segment of East African Countries' population to access financial products and services through financial inclusion will boost the country's investment activities. Because of increased investment, the country's unemployed population can engage in income-generating activities attributed to financial inclusion. Subsequently, the unemployment

rates in East African Countries can significantly go down while improving economic growth. The conclusions of the current study add to financial inclusion and monetary policy theories. Future researchers can borrow insights from the findings of the current research when developing their literature review. The study contributes to the theory, particularly by investigating how financial inclusion influences a country's monetary policy.



## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

The literature review scrutinizes books, scholarly journals and articles relevant to the impact of financial inclusion on monetary policy. Precisely, the chapter has two sections: theoretical literature and empirical literature. The theoretical literature part critically summarizes theories/schools of thought relevant to the current study. Additionally, the empirical literature subsection focuses on relevant studies.

#### **2.2 Theoretical Literature**

##### **2.2.1 Public Good Theory of Financial Inclusion**

Varying perspectives and ideologies exist on beneficiaries of financial inclusion results. Research findings by Ozili (2018) contend that individuals in society are the end beneficiaries of financial deepening. Other scholars, such as Ghosh and Vinod (2017), argue that financial inclusion outcomes have provided significant advantages to women. However, there are various groups in our societies that have not realized the benefits of financial inclusion. For example, in Kenya, the youth have voiced their concerns over the accessibility of financial products and services, especially those listed in the Credit Reference Bureau (CRB). Therefore, to widen the scope of beneficiaries of financial deepening outcomes and its impact on monetary policy, this study summarizes the public good theory of financial inclusion.

Financial inclusion's public good theory emphasizes that delivery of unrestricted formal financial products and services ought to be handled as a public good. Drawing from World Bank's (2018) opinion on financial inclusion beneficiaries, the public good theory advocates for all individuals in an economy not to be excluded from accessing and gaining formal financial services. This theory's relevance reiterates the assertions of Swamy (2014) that financial inclusion outcomes must not benefit a relatively small segment of people in an economy. Still, it should aim at benefiting all citizens. As a public good, Ozili (2018) maintains that financial inclusion must help all people,

including poor households, youth, women, PWDs (people with disabilities), and even those from the formal financial sector bracket. This way, economies can achieve equity through a significant reduction of the financial gap between the rich and the poor.

However, Otioma, Madureira, and Martinez (2019) discredit provisions put forward by the public good theory of financial inclusion by arguing that treating it as a public good hardly addresses the shortcomings of financial exclusion. Additionally, Oluoko-Odingo and Mutisya (2018) contend that if financial inclusion is treated as a public good it can influence diversion of public funding, which otherwise could be used in other important projects such as sustainable energy. Concisely, if financial deepening is treated as a public good in East African Countries as embraced by the public good theory of financial inclusion it may not achieve the course's primary objective because it lacks sustainability in the long-term. For this reason, systems theory of financial inclusion provides a relatively better approach to achieving efficient financial inclusion by complementing the public good school of thought on financial inclusion.

### **2.2.2 Systems Theory of Financial Inclusion**

Social, economic, and financial systems play a critical role in achieving financial inclusion results. According to Ozili (2018), the financial inclusion systems theory denotes; financial inclusion results are attained via robust existing social, economic, or financial sub-systems in an economy. Bongomin et al. (2017) maintain that financial systems are integral to achieving financial inclusion objectives. In this context, monetary policymakers are part of the sub-systems, which influence the efficiency of financial inclusion. Aduda and Kalinda (2012) posit that economic and financial systems can change in an economy to accommodate financial innovations such as financial inclusion. Accordingly, the relevance of the systems theory in financial inclusion is that it underpins the part played by financial inclusion in improving the working of economic sub-systems such as monetary policymakers in East African Countries. The advantages of systems theory of financial inclusion are explained by Ozili (2018). The author posits that the theory acknowledges the functions of existing social, economic, and financial structures in an economy as far as financial inclusion is concerned. Additionally, this theory is relevant because it considers how financial inclusion impacts other sub-systems, such as monetary policy authorities in the

economy. Nevertheless, systems theory of financial inclusion's shortcoming is that it does not recognize influencing factors outside the social, economic, and financial sub-systems.

### **2.2.3 Keynes's Theory of Monetary Policy**

Keynesian school of thought regarding monetary policy provides a strong base for this study's theoretical framework. Kriesler and Lavoie (2016) argue that a Keynesian perspective implies that aggregate demand is affected by both private and public economic decisions-. Belongia and Ireland (2019) contend that Keynesian economics entails a theory of aggregate demand and its influences on inflation and output. Succinctly, decisions on monetary policies have a substantial influence on aggregate demand. According to Rochon (2017), the Keynesian theory of monetary policy proposes that there is no direct connection between the price level and supply of money, which ensues from the classical money quantity theory.

Nevertheless, the Keynesian school of thought believes that there is an indirect linkage between the real GDP and money supply. Kriesler and Lavoie (2016) maintain that Keynesians believe that economists use expansionary monetary policy to increase supply of loanable money available through formal banking systems and consequently, cause interest rates to reduce. Therefore, with reduced interest rates, interest-sensitive consumables, and aggregate demand on investments tend to increase, resulting in increased gross domestic product (GDP). The relevance of this theory in the current study is to delineate how financial inclusion improves aggregate expenditure on investments by designing suitable monetary policies such as expansionary monetary policies. However, Kriesler and Lavoie (2016) remain skeptical on the less emphasis by Keynesians regarding the efficiency of monetary policy in the economy to attain primary objectives of financial inclusion such improving GDP and reducing unemployment.

### **2.3 Empirical Literature**

According to a study by Evans (2016), financial inclusion and effectiveness of monetary policy are connected by a set of long-term relationships. The study used Panel Vector Error Correction Model approach and annual data obtained from 2005 to 2014 to investigate financial inclusion and the effectiveness of monetary policy in Africa. This study by Evans (2016) was motivated by

policy reaction to financial innovation among African countries. The findings of the study indicated that financial inclusion does not have a significant drive on influencing monetary policy effectiveness. However, Evans (2016) appreciates the fact that effectiveness of monetary policy plays a critical role in driving forward financial inclusion in Africa. Concisely, Evans (2016) concludes that heightened monetary policy effectiveness is necessary to achieve increased financial inclusion. Contrary to this study that focuses on East African Countries, Evans (2016) focused on the wider African continent and failed to understand that different countries have unique monetary policy structures and different monetary policy conduct. Therefore, the current study seeks to not to generalize findings as it concentrates on the East African Countries economy on how financial inclusion impacts monetary policy. Additionally, the study by Evans (2016) fails to explore how financial inclusion drives monetary policy comprehensively. Therefore, the current study on East African Countries bridges this literature gap showcased by Evans (2016).

In their study on the impact of financial inclusion on monetary policy in Nigeria, Mbutor and Uba (2013) argue that financial inclusion augments the sensitivity of aggregate demand, which influences the success of monetary policy. Unlike the study by Evans (2016), they employed a simplified model to illustrate how financial inclusion impacts monetary policy in Nigeria. Additionally, the authors found out that financial inclusion in Nigeria was a variable strategy to improve monetary policy effectiveness. The study by Mbutor and Uba (2013) concluded that there is a significant but inverse correlation between the inflation rate as well as the size of loans and advances from commercial banks as ratios of GDP. Significance of this conclusion indicates that availing credit in the economy boosts investments besides dampening inflation. Adeola and Evans (2017) argue that the aggregate exposure to low income households in rural branches positively affects monetary policy effectiveness as it holds a negative coefficient to inflation. However, the study by Mbutor and Uba (2013) had limitations because the number of commercial bank branches used to measure financial inclusion failed to give the right sign. Nonetheless, the study general conclusion was that central banks ought to increase the efforts to embrace financial inclusion because it boosts economic growth besides effectuating monetary policy.

Huong (2018) carried out a study to examine the impact of financial inclusion had on monetary policy in Vietnam. The author employed the Principal Component Analysis method to construct a

financial inclusion index (which was considered as a wide-ranging measure of financial inclusion). The study used GLS and OLS models to answer the main research questions with a primary objective of overcoming the heteroskedasticity phenomenon. Huong (2018) analyzed data from secondary sources for the period 2004-2015. The outcomes of the empirical research showed significant negative impact of financial inclusion on monetary policy. These findings by Huong (2018) are contradictory to those of Mbutor and Uba (2013) and Adeola and Evans (2017). This way, the current study underpins the notion that financial inclusion has different impacts on different countries as conducts of monetary policies are unique. However, the studies of Mbutor and Uba (2013), Huong (2018), and Adeola and Evans (2017) reiterate the need to embrace financial inclusion as it allows monetary policy to widen its scope to populations that are not financially included. Additionally, financial inclusion enables monetary policy makers draft relatively better predictions of inflation movements in an economy. Therefore, the current research harmonizes the relationship between financial inclusion and monetary policy to show how the former effectuates the latter as far as inflation movement is concerned.

Lapukeni (2015) in her case study of Malawi contends that financial inclusion is vital as it improves effectiveness and reach of monetary policy. The author used VAR (vector auto regression) model to conduct empirical analysis. The results of the study indicated an inverse correlation between money supply and inflation. Nonetheless, these findings were contrary to economic theory, Lapukeni (2015) concluded that financial inclusion allows monetary policy to widen and reach the greater population of Malawians who are financial excluded. Like the study on Vietnam by Huong (2018), Lapukeni (2015) argued that financial inclusion played a critical role in making relatively better predictions of inflation movements using monetary statistics.

Exchange rates have significant impact on monetary policy in an economy. There is a great deal of scholarly works from researchers like Kearns and Manners (2018); Ndou, Gumata, and Tshuma (2019); and Queiroz, dos Reis, and Martinez (2020) have focused on how monetary policy affects exchange rates. Accordingly, this factor provides the current study to fill the literature gap on impact of exchange rate on monetary policy in a bid to investigate the primary objective of the paper. The fact that few studies have focused on how exchange rate affects monetary policy. According to Chen, Devereux, and Lapham (2017), there is an indirect effect of exchange rates,

whose fluctuations extend deeper and broadly in ways that impact several aspects of individual's economic lives. For example, where people can afford to live, when they can get employment, and when they can retire. Agoba, Sare, and Bugri-Anarfo (2017) argue that exchange rates have indirectly influenced monetary policy makers to institute policies that promote economic growth of a country such as financial innovation. However, the study by Agoba, Sare, and Bugri-Anarfo (2017) does not extensively and clearly point out how exchange rate affects monetary policy in accommodating financial innovations such as financial deepening. Therefore, this study is relevant in the contemporary literature because it explains how financial inclusion impacts monetary policy through exchange rates besides their fluctuations.

A weak domestic currency is likely to push up rates of inflation attributed to higher prices of foreign products and services. Drawing on the discussion by Aduda and Kalunda (2012), central banks are induced to raise interest rates to combat the rising inflation when a domestic currency is weaker than that of the exporter. This way, central banks are compelled to adjust their monetary policy frameworks. A study by Nagahisarchoghaei, Nagahi, and Soleimani (2018) point out that firms' performances are significantly influenced by exchange rate fluctuations because of inflation rate. Equally, a strong currency is likely to depress inflation, which exerts a drag on a country's economy. According to Iwaisako and Nakata (2017), a drag on a nation's economy is reflected on the tight monetary policy. Therefore, in response, central banks might keep interest rates moderately low in efforts to preclude the local currency from becoming too strong. Reduced interest rates attract customers to borrow more from commercial banks and thus, contributing to increased supply of money. Therefore, this study seeks to explain how an economy embracing financial deepening may impact monetary policy through exchange rates, interest rates, and inflation. As such, Frankel, Ma and Xie (2019) maintain that there is a positive but indirect impact on monetary policy influenced by exchange rate. Thus, the importance of the current study is to comprehensively discuss how financial inclusion impacts monetary policy through exchange rate, which most studies have not articulated.

A study by Alaeddin et al. (2019) argues that lending rates are imperative because they measure monetary policy effectiveness in controlling inflation or stabilizing the economy. The study concludes that lending rates are adjusted by central banks to suit and control the supply of money

in an economy. Lending rates in economies such as Kenya, Tanzania and Uganda signals the stance of monetary policy, both in magnitude and direction. Kabuka, Orayo, and Ombaba (2018) argue that the lending rate, popularly known as Central Bank Rate (CBR) is the base for the entire monetary policy operations. Tersely, CBR in East African Countries enhances certainty and clarity in monetary policy implementation. Therefore, based on the claims of Kabuka, Orayo, and Ombaba (2018), lending rate or CBR impacts the monetary policy stance that the central banks are pursuing at a particular point in time.

According to a study by Cubillos-Rocha et al. (2018), lending rates play a critical role in influencing loan expansion policies in Columbia. The study further contends that the higher the lending rate the lower the loan expansion policy. Chen, Devereux, and Lapham (2017) posit that lending rates by central banks are used to withdraw liquidity via a vertical Repo as well as injecting liquidity via Reverse Repo. Conversely, when injecting liquidity into the economy by lowering the lending rates, commercial banks tend to expand their credit services to both formal and informal systems. For this reason, using the variable of lending rate, the current study employs regression analysis to find out how financial inclusion impacts monetary policy.

## **2.4 Overview of Literature**

There is noteworthy evidence from reviewed literature regarding significant impact of financial inclusion on monetary policy. Studies by Evans (2016), Mbutor and Uba (2013), Lapukeni (2015), Huong (2018) and Adeola and Evans (2017) suggested that financial inclusion impacts monetary policy in one way or the other. However, for example, the study by Evans (2016) focused on a relatively wider scope and did not recognize the uniqueness of different countries in Africa. Therefore, the current study is keen to deduce findings on the impact of financial inclusion on monetary policy by narrowing the study scope to East African Countries' economy. This way, the findings can bridge the literature gap on the East African Countries' context. Additionally, unlike the research by Huong (2018), the current research harmonizes the relationship between financial inclusion and monetary policy to show how the former effectuates the latter as far as inflation movement is concerned.

Few research studies that have focused on the how variables like lending rate and exchange rate affect monetary policy. Most studies including researches by Kearns and Manners (2018); Ndou, Gumata, and Tshuma (2019); and Queiroz, dos Reis, and Martinez (2020) have argued how monetary policy impacts exchange rate. However, the current study intends to fill the literature gap on how such variables like lending rate and exchange rate impact monetary policy. Further, these variables attempt to expound on how financial deepening impacts monetary policy using regression analysis model.



## CHAPTER THREE

### METHODOLOGY

#### 3.1 Chapter Introduction

This study looks to investigate whether financial inclusion impacts monetary policy. Specifically, this section includes theoretical framework, empirical model, definition and measurement of variables, data type and source, estimation and testing as well as diagnostic tests.

#### 3.2 Theoretical framework

The theoretical model presented in this section was based on Keynes's Theory of Monetary Policy. Keynes's theory of monetary is mainly composed of the interest rate. Based on the argument of the theory, the relationship between the supply of money and the GDP is negative. The increase in the money supply in the market makes the interest rates to fall. This is because more money will be available in the market and the cost of borrowing needs to be lowered so that people can be attracted to use the money. Therefore, the interest rates are the only factors that can be altered downwards to attract more borrowers. The Keynes model is based on the IS-LM approach (IS entails the investment savings while LM presents the liquidity preference-money supply). The equation below presents the IS-LM model, which is key to Keynes's Theory of Monetary Policy.

$$Y = E \dots\dots\dots(1)$$

Y=Total national income

E=Total expenditure by the government

$$\text{But } E = e_0(r) + \beta Y \dots\dots\dots(2)$$

$e_0$ =Autonomous spending by the government which depends on real interest rates.

Therefore, the model becomes;

$$r = (1/L_2) [L_0 + L_1 Y - MP] \dots\dots\dots(3)$$

$$MP=L_0 +L_1Y-rL_2$$

$$Y= (e_0-e_1r)$$

MP=Monetary policy

r=interest rates

L<sub>0</sub>, L<sub>1</sub>, L<sub>2</sub>= Demand of money by the government for spending

Simultaneously solving IS and LM curves, Y is substituted from the IS curve into the LM curve to get

$$r = (1/L_2) [L_0 + L_1Y - MP]$$

But Y= (e<sub>0</sub>-e<sub>1</sub>r)

$$r = (1/L_2) [L_0 + L_1 m (e_0-e_1r) - MP].....(4)$$

e<sub>1</sub>=change in spending as a result of interest rates

m=coefficients of interest rates

MP= Monetary policy

$$MP=L_0+L_1me_0-L_1mer$$

$$r = (1/) [L_0 + L_1 m (e_0-e_1r) - MP]$$

$$\text{Therefore, } MP= L^2r-L_0-L_1me_0+L_1me_1r].....(5)$$

The magnitude of the interest rates can be determined by applying the equation. The monetary policy is a factor that is determined by the level of spending undertaken by the government. The relationship between spending and interest rates is inverse. Thus, financial inclusion is expected to be a factor that influences the monetary policy as indicated below.

$$MP = f(r,FI)$$

$$MP_t = Ay + m(r)_t + b (FI)_t \dots \dots \dots (6)$$

Where:

r= Lending rate

FI=Financial inclusion

m and b=coefficients of lending rate and financial inclusion respectively

### 3.3 Empirical model

In this study, Keynes's theory of monetary policy model (IS-LM) was improved by introducing financial inclusion. Inflation is considered a proxy variable to measure the success of monetary policy in the study. Other variables such as national income, lending interest rates and money supply were used as control variables. Hence, the empirical model was;

Therefore, the empirical model becomes;

$$MP_{it} = \beta_0 + \beta_1 FI_{it} + \beta_2 Ctrl_{it} + e \dots \dots \dots (7)$$

Where:

MP=Monetary Policy (inflation)

FI= Financial Inclusion

Ctrl =Control variables (Money supply, bank lending rates, National Income)

$\beta_0$  =Constant

$\beta_1 \dots \beta_2$  =Coefficients of the variables

e =Error term

### 3.4 Definition and measurement of variables

Monetary policy was dependent variable, while financial inclusion was independent variable. In addition, GDP growth, Lending rates and Money supply were used as the control variables. According to Agoba, Sare and Bugri-Anarfo (2017), financial inclusions consist deposits accounts with commercial banks. The number of people accessing and using formal financial institutions makes aggregate demand and investment more sensitive to monetary policy by increasing lending rates (Shimizu, 2014). Therefore, it is necessary to implement financial inclusion through banks' lending rates to affect the ultimate objective of monetary policy, money supply and the ultimate inflation target. The summary of measurement of variables is presented in Table 1

**Table 1: Definitions and Measurement of Variables**

Variable Name		Measurement	Notation	Source of data	Expected sign	Sources
Financial inclusion	Independent variable	Deposits accounts with commercial banks (per 1000 adults)	DCB	IMF	+/-	Lapukeni (2015); Huong (2018); Lenka & Bairwa (2016); Evans (2016);
GDP growth	Control variables	GDP per capita growth	GDP	World Development Indicators	+/-	Shimizu (2014); Sharma (2016), Sethy (2016);
Lending rates		Bank Lending rates	BLR			
Money supply		Money Supply	MS			
Monetary policy	Dependent variable	Inflation (Annual % change in consumer prices)	IR	IMF		Lapukeni (2015); Yetman, (2015); Kearns & Manners (2018); Ndou, Gumata, & Tshuma (2019);

### **3.5 Data type and source**

This study used secondary data from IMF and World Bank. Data obtained from IMF and World Bank were expected to be authentic; thus, conclusions are reliable for policy implementations.

### **3.6 Estimation and testing**

This study utilized a cross country panel design to get aggregate observations across the East Africa countries that are formulating the study's scope. The study was notably conducted in three counties; Kenya, Uganda and Tanzania, with data of between 2004 and 2019. The descriptive statistics was tested before subjecting the data for regression analysis to provide an overview of the study variables. This was important to show the trends of the variables under investigation. Considering that the data was a panel, unit root examinations was performed utilizing the Levi Lechun (LLC) test to find out whether the variables were stationary or not. The importance of conducting this test was to avoid spurious regression results being acquired by utilizing a non-stationary series. Moreover, when doing panel information evaluation, one needs to figure out whether to run a random or fixed model. The most appropriate model was determined by running both the random and fixed model. The study used the Hausman test to evaluate the most appropriate model to be adopted.

## CHAPTER FOUR

### EMPIRICAL FINDINGS

#### 4.1 Introduction

This chapter presents the results and the discussion of the study. The study mainly looks at the descriptive statistics, correlation analysis, stationarity test, Hausman test and estimation result (regression analysis)

#### 4.2 Descriptive Statistics

A descriptive statistics test was conducted before subjecting the data to regression analysis as depicted at Table 2

Table 2: Descriptive Statistics

Variable	Inflation rate	Deposits accounts with commercial banks (per 1000 adults)	GDP per capita growth	Bank Lending rates	Money Supply (annual growth)
Notation	IR	DCB	GDP	BLR	MS
Observation	48	48	48	48	48
Mean	8.1915	10900000	2.9702	18.2365	16.2730
Std. Dev.	4.5161	14300000	1.6552	3.0619	5.7304
Minimum	2.6240	1000000	-2.5034	12.4411	3.6677
Maximum	26.2398	62000000	7.3459	23.0000	34.7820

Based on the results presented in Table 2, the mean score of the inflation rate among the three countries (Kenya, Tanzania and Uganda) between 2004 and 2019 was 8.1915. The minimum inflation rate was 2.6240, with a maximum of 26.2398. This implied that the three counties' inflation rate is high; however, it fluctuates between years, as shown by the standard deviation of 4.5161. Inflation that is greater than 3% represent a dangerous zone and could cause the currency to become devalued (Oikawa & Ueda, 2018; Zulfiqar & Din, 2015; Kaplan & Gungor, 2017). The study also found that the mean score of deposits accounts with commercial banks per 1000 adults was 10900000, with a minimum of 14300000 and a maximum of 62000000 between 2004 and

2019. This indicated that deposits accounts with commercial banks are adequate in the three countries and has been growing. Further, the average GDP per capita growth (% annual) was 2.9702, with a minimum of -2.5034 and a maximum of 7.3459. GDP per capita growth is essential in lowering the inflation rate; however, in some years, the countries had a negative GDP per capita growth, which is very delicate. The minimum bank lending rates among the three countries between 2004 and 2019 were 12.4411%, with a maximum of 23%. Lastly, the minimum rate of money supply between 2004 and 2019 among the three countries was 3.6677, with a maximum of 34.7820. The average was 16.2730, with a standard deviation of 5.7304. This implied there has been an increase in the money supply over the years in the three years; however, the supply varies across countries as supported by the standard deviation of 5.7304.

### 4.3 Correlation Analysis

Correlation analysis predicts the association between research variables. It can be positive or negative and ranges from -1 to 1. Thus, Table 3 shows the findings of the correlation matrix.

**Table 2: Correlation Matrix**

Variable	IR	Log. DCB	GDP	BLR	MS
IR	1.0000				
Log. DCB	-0.4420	1.0000			
GDP	-0.2563	-0.1159	1.0000		
BLR	0.4408	-0.1619	-0.1400	1.0000	
MS	-0.0066	-0.0948	0.1270	0.2050	1.0000

Based on the results presented in Table 3, financial inclusion measured by the logarithm of deposits accounts with commercial banks was negatively correlated with the Inflation rate (IR). Further, GDP per capita growth (GDP) was negatively associated with the inflation rate. Moreover, the study results showed that a positive association was found to exist between bank lending rates (BLR) and inflation rate. Lastly, the money supply (MS) was positively associated with the inflation rate. The results concur with the findings of Lapukeni (2015) who indicated an inverse correlation between money supply and inflation. Similarly, Aduda and Kalunda (2012) induced that central banks raise interest rates to combat the rising inflation when a domestic currency is weaker than that of the exporter. Further, Frankel, Ma and Xie (2019) found a positive but indirect

impact on monetary policy influenced by the exchange rate. Moreover, Alaeiddin et al. (2019) found that lending rates are adjusted by central banks to suit and control money supply in an economy.

#### 4.4 Stationarity test

The study used Levi Lechun (LLC) test to examine whether the variables under consideration were stationary or non-stationary. The results obtained are presented in Table 4

**Table 4: Panel Unit Root Test Results**

Variable	Statistic(adjusted)	P-value	Comment
IR	0.6480	0.0258	Stationarity
DCB	3.5559	0.0498	Stationarity
GDP	3.5621	0.0002	Stationarity
BLR	2.3364	0.0097	Stationarity
MS	1.0974	0.0136	Stationarity

As per the results presented in Table 4, it is evidenced that the variables under the study were stationary. This was supported by the reported P values of the variables that were less than 0.05. Hence, the variables were satisfactory for conducting further the analysis.

#### 4.5 Hausman Test

The study used the Hausman test to establish the most appropriate model to be adopted between random and fixed model. The results obtained are presented in Table 5

**Table 5: Hausman Random Test for Random and Fixed Effects**

Column	(b) fixed	(B) random
Log. DCB	-7.20047	-6.24367
GDP	-0.65464	-0.66537



BLR	0.53021	0.526084
MS	-0.02981	-0.06984
<hr/>		
chi2(4) = (b-B)'[(V_b-V_B) ^ (-1)] (b-B) = 18.54		
Prob>chi2 = 0.20		

The null hypothesis of the Hausman test was that the random-effects model was appropriate compared fixed. The results from Table 5 shows that the Hausman test indicated  $\lambda=18.54$  with a p-value of  $0.200 > 0.05$ . The study failed to reject the null hypothesis that random effects model was preferred to a fixed model. Therefore, the random effect model was the most appropriate and thus adopted in the study.

#### 4.6 Estimation Results

The general objective of the study was to examine the impact of financial inclusion on monetary policy in East African Countries. The estimation results are presented in Table 6

**Table 6: Impact of Financial Inclusion on Monetary Policy**

Variable	Notation	Coef.	Std. Err.	t	P>t
Log of Deposit accounts with commercial Banks	Log DACB	-6.24367	1.785803	3.50	0.000
GDP per capita growth	GDP	-0.66537	0.330992	2.01	0.044
Bank Lending rates	BLR	0.526084	0.182289	2.89	0.104
Money Supply Growth	MS	-0.06984	0.095938	0.73	0.467
constant		42.30412	12.86718	3.29	0.0001
<hr/>					
R squared=	0.4064				

The results presented in Table 6 shows financial inclusion measured in deposit accounts with commercial banks, GDP per capita growth, bank lending rates and money supply growth explain 40.64% of the variations in the monetary policy (inflation rate). Specifically, financial inclusion (Deposit accounts with commercial Banks) was negatively and significantly related with monetary policy (inflation rate) ( $\beta=-6.24367$ ,  $p=0.0000$ ). This implied that an increase in the financial

inclusion by one unit will lead to a decrease in the inflation rate by 6.24367 units while holding other factors constant. Further, GDP per capita growth was negatively and significantly related to monetary policy (inflation rate) ( $\beta=-0.66537$ ,  $p=0.044$ ). This indicated that when GDP per capita growth increases by one unit, the inflation rate will reduce by 0.66537 units when other factors are kept unchanged. Likewise, money supply growth was negatively and insignificant related to inflation ( $\beta=-0.06984$ ,  $p=0.467$ ). Finally, it was found that bank lending rates had a positive relationship with the monetary policy (inflation rate) ( $\beta=0.6129486$ ,  $p=0.006$ ). This implied that increasing bank lending rates by one unit will increase the inflation rate (monetary policy) by  $\beta=0.6129486$  when other factors are held constant.

The results concur with Evans's (2016) findings, who revealed that financial inclusion does not significantly influence monetary policy effectiveness. Further, a study by Cubillos-Rocha et al. (2018) found that lending rates play a critical role in influencing loan expansion policies. In addition, Lapukeni (2015) indicated an inverse correlation between money supply and inflation. Similarly, Aduda and Kalunda (2012) induced that central banks raise interest rates to combat the rising inflation when a domestic currency is weaker than that of the exporter. Further, Frankel, Ma and Xie (2019) found a positive but indirect impact on monetary policy influenced by the exchange rate. Moreover, Chen, Devereux, and Lapham (2017) posited that lending rates by central banks are used to withdraw liquidity via a vertical Repo and to inject liquidity via Reverse Repo and determine the inflation rate.

## CHAPTER FIVE

### CONCLUSION

#### 5.1 Introduction

The chapter presents a summary of the key findings and policy implications. The summary of the findings will be based on the results of the study. The policy implication will entail the impact that the research findings have on future research or policy decision making.

#### 5.2 Summary of the key findings

Based on the findings of the study, it was found that 40.64% of the variations in the inflation rate was explained by financial inclusion, GDP per capita growth, bank lending rates and money supply. The results showed that financial inclusion, GDP per capita growth and bank lending rates were significant in explaining the monetary policy. It is known that the main concern of the monetary policy is maintaining the inflation rate as low as possible. Thus, the variables (financial inclusion, GDP per capita growth and bank lending rates) were found to be key in explaining the inflation rates.

Specifically, the study found that financial inclusion was negatively and significantly related to the inflation rate. Financial inclusion is the accessibility and equal possibilities to access financial services. It involves a process whereby people and organizations can access adequate, inexpensive and timely financial services and products such as banking services, loans, deposits, among others. GDP per capita growth was found to have a negative effect on the inflation rate. A higher GDP per capita growth indicates that the economy is performing well, which can reduce the inflation rate.

Lastly, the study showed that bank lending rates were positively related to inflation rates. This implied when the bank lending rates increases, the inflation rate will also increase. Specifically, the study found that increasing bank lending rates by one unit will increase the inflation rate by 0.6129486 units when all other factors are held constant. A rising inflation rate tends to increase

the rates on loans. The cost of funds for banks rises. This leads to an increase in home loan interest rates, among other loan rates. To contain the spiraling of the inflation rate, the central bank of Kenya needs to take some measures that will reduce the lending interest rates.

### **5.3 Policy implications**

Based on the study results, financial inclusion, GDP per capita growth and bank lending rates were significant in determining the monetary policy. The association between financial inclusion, GDP per capita growth and inflation was highly negative and statistically significant. This confirmed that if financial inclusion and GDP per capita growth increases, it may reduce the inflation rate in an economy, causing the stability of price levels. These research outcomes show that the government's most important task is to improve financial inclusion because it will help stabilize the price level and control inflation in an economy, which is essential for sustainable economic growth. However, bank lending rates need to be maintained low. The study showed that bank lending rates were positively related to inflation rates. This implied when the bank lending rates increases, the inflation rate will also increase. A rising inflation rate tends to increase the rates on loans. To handle the inflation rate's spiraling, Kenya's central bank needs to take some measures that will reduce the lending interest rates.

The policy implications are that government needs to improve financial inclusion. This study is expected to help policymakers and communities to understand the importance of financial inclusion in the economy. The expansion of formal financial services to reach millions of underserved and underserved adults will help Kenya achieve its goal of poverty reduction and continued dynamic growth, advancing to the vision of prosperity. Financial inclusion brings about more economic well-being to individuals and small and medium enterprises. There is a need to enhance consumer protection and financial literacy to help individuals be better equipped with modern financial services.

Nevertheless, in Kenya, the economy is still dominated by cash transactions and most people still do not use formal financial services. Thus, switching to a non-cash system is a priority in enhancing efficiency, promoting business and economic development, and reducing poverty in remote rural

areas where financial services providers are difficult to reach. Consequently, the expansion of formal financial services, notably financial inclusion, will help Kenya promote the non-use of cash and improve monetary policy transmission in the economy to achieve poverty reduction goals and sustainable growth.

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