

## MONETARY POLICY AND ECONOMIC STABILITY IN SELECTED AFRICAN COUNTRIES

*Dr. Bassey Moses Ogar*  
*Senior Lecturer,*  
*Department of International Relations*  
*Institute of Arts Management & Professional Studies, Nigeria*

[basseymoses2k24@gmail.com](mailto:basseymoses2k24@gmail.com)

### ABSTRACT

*This study examines the relationship between monetary policy and economic stability in selected African countries. The World Bank Data Collection, which spans 2012–2023, was used to compile the study's data. Methods such as regression analysis, unit root test cointegration, and descriptive statistics were used to examine the data. With the exception of Egypt, where the trace statistic was 1, all variables were found to be cointegrated. The involvement of interest rates, money supply, exchange rates, and monetary policy rates in economic growth is demonstrated by this discovery, which has significant policy consequences. According to the research, central banks in Africa might help the continent's developing economies by stabilising their currency rates, limiting the money supply, and keeping the monetary policy rate low. The Central Banks of African countries should take into account the direct and important relationship between the exchange rate and GDP when formulating policies to stabilise the internal and external values of their currencies. To lessen the effect of the extremely unstable currency rate on local pricing, for instance, a stable exchange rate regime must be established. The monetary policies of developing country central banks could be strengthened with the help of instruments such as adjustable interest rates. Monetary policy instruments should be sufficient and outcome-oriented in any policy. Finally, the government should make developing the money and financial markets a top priority.*

**Keywords:** Monetary Policy Rate, Money Supply, Economic stability, Gross Domestic Product, Exchange Rate,

## **Introduction**

With 49 African countries and an estimated 1.14 billion people, Africa is the second most populous continent in the world, second only to Asia with 4.64 billion (2020 estimate). These nations have various sizes, economic development, and scopes. Twelve per cent of the world's population lives in this area. However, it is responsible for just two per cent of the GDP (UNCTAD, 2020). Africa is home to vast numbers of people and natural resources. However, the region needs more critical economic indicators such as water, power, decent healthcare, housing, and job opportunities (UNCTAD, 2020).

All of this points to the fact that political officeholders in Africa are wasting money on infrastructure development and underutilizing their human and natural resources, a significant problem with regional development. The efficient use of monetary policy to attain the goal of economic performance, particularly economic growth, has long been a subject of interest for scholars and policymakers. Both industrialized and developing nations share this ambition. According to Barro (2021), the buildup of fixed capital is thought to boost productivity and economic growth. A well-established and efficient financial system facilitates the accumulation of capital. That is why monetary and financial considerations are essential for achieving economic success.

Economists, analysts, investors, and financial specialists, among other economic players, typically await the findings of meetings involving monetary policy decision-making, which often dictate the path of any nation's economy.

The extant empirical literature is devoid of studies of Africa, particularly of monetary policy and economic performance. Ubi-Abari & Ekere (2018) and Gnahe & Huang (2020) were two of the few studies that examined Africa's economic performance using growth or inflation, whereas others concentrated on the West African Monetary Zone (Balogun, 2020; Gnahe & Huang, 2020). To address this knowledge vacuum, this study investigates the effect of monetary policy on economic performance across African countries using three separate indicators. It measures the degree to which this effect varies by region.

According to the Central Bank of Nigeria (2021), monetary policy is when the monetary authorities consciously work to achieve its macroeconomic goals of maintaining internal and external balances by influencing the supply, demand, and cost of money credit. Even in nations that claim laissez-faire or capitalism as their economic ideals, regulations are still there and governing. It is crucial to compare monetary policies in different nations to see how they affect economic growth. This is particularly true in African countries where central banks struggle to meet the macroeconomic goals of price stability, low inflation, and a low unemployment rate.

Extensive restructuring has been undertaken in Africa's economies to ensure their functioning, improve governance, solve problems, and maximize potential. According to Apansile & Akinlo (2022), Michael, Oppong, & Gulnabat (2020), & Sanya and Tosin (2022), monetary policy has emerged as a crucial tool for controlling economies worldwide and stabilizing growth and employment. This is achieved by manipulating interest rates, currency values, and the money supply.

Despite Africa's vast abundance of natural and people resources, the continent's economies have remained stagnant. We are now living in an era of widespread unemployment and inflation. Emerging African economies are in a precarious position. Government monetary policies have not achieved stable prices, lower unemployment rates, and sustained economic growth. The primary variables that influence the expansion of the economy are the money supply, the rate of monetary policy, the cashless policy, and the exchange rate (Njarendy et al., 2021).

Research in monetary economics focusing on the relationship between monetary policy and GDP growth has recently attracted much interest. Monetary economists such as Nwaogwugwu (2019), Idris (2019), and Khan (2019) have long focused on the correlation between the money supply and production because the expansion of a country's economy is one of its primary macroeconomic goals. Mohseni and Cao (2022) and other recent African research found that monetary policy is critical to economic growth. Khan (2019) cites some theoretical models that suggest stabilization could have an expansionary effect, particularly on nations with high inflation. All of this points to the reality that monetary policy, the money supply, and

the stability of the exchange rate regime are all factors that could slow down economic expansion. Therefore, focusing on monetary policy and evaluating its role

in the country's economic revival is critical. In light of the preceding, this research aimed to compare and contrast the effects of monetary policy on economic stability and, by extension, the GDP development in some African nations.

### **Objectives of the Study**

The primary aim of this study is to assess the impact of monetary policy on the economic growth of selected African countries.

The study aims to achieve the following specific objectives:

- i. To analyse the impact of the monetary policy rate on the economic growth of selected African countries.
- ii. To assess the impact of changes in the money supply on economic growth in selected African countries.
- iii. To examine the impact of exchange rate fluctuations on economic growth in selected African countries.

### **Research Questions**

In order to draw conclusion on the study, the following research questions were formulated:

- i. What is the impact of the monetary policy rate on the economic growth of selected African countries?
- ii. What is the impact of changes in the money supply on economic growth in selected African countries?
- iii. What is the impact of exchange rate fluctuations on economic growth in selected African countries?

### **Research Hypothesis**

According to Jen (2019), a hypothesis is a documented theory that suggests a potential connection between two variables: one that is dependent and one that is independent.

Another definition of a hypothesis given by Knoop (2019) is an "assertion that attempts to estimate a categorical link between the study variables that will be investigated".

However, the null hypotheses of this study are:

- i.  $H_1$ : There is no significant impact of monetary policy rate on the economic growth of the selected African countries.
- ii.  $H_2$ : There is no significant impact of money supply on the economic growth of the selected African countries.
- iii.  $H_3$ : There is no significant impact of exchange rate policy on the economic growth of the selected African countries.

## **2. Literature Review**

### **An Overview of Monetary Policy**

Monetary policy refers to the intentional application of the direct and indirect monetary policy tools available to monetary authorities, such as the central bank, to maintain macroeconomic stability. Monetary policy aims to achieve price and monetary stability as mandated.

According to Onwuasoeze, Addiran, and Ubah (2023), monetary policy entails a series of measures implemented by monetary authorities, typically the central bank, to manage and control the circulation of currency and credit and accomplish specific macroeconomic goals. The goal of monetary policy is to attain predetermined economic objectives through the monetary authorities' discretionary manipulation of the money supply, essentially the central bank and the government.

Most governments believe that the money supply affects inflation, which is why they strive to restrict its growth rate. Thus, government activities aimed at influencing the behaviour of the monetary sector are part of monetary policy. According to Sax (2019), monetary authorities, including the central bank, engage in monetary policy to

stabilise the economy by using various direct and indirect monetary instruments. The money supply, interest rates, and the roles played by the banking system and credit markets are the three main areas that can be addressed by monetary policymakers (Sax, 2019).

Aligned with the amount of economic activity, these policies aim to regulate the value, supply, and cost of money in an economy. The demand for goods and services will increase, prices will rise, and the balance of payments will worsen if there is an excess money supply.

### **Concept of Economic Growth and Stability**

Economic policy has always aimed to increase the economy's size, and many studies have attempted to determine the best ways to do this (Fadare, 2020). The topic of economic growth has received considerable attention from scholars. According to Khosravi and Karimi (2021), classical studies tend to presume that capital and labour are the primary drivers of economic growth. However, after the endogenous growth hypothesis emerged, academics started to doubt these components' importance and sought other explanations for the occurrence (Deekor, 2019).

Another definition of economic growth is an increase in the quantity of goods and services produced within an economy over a given period. This expansion is usually expressed as a rise in GDP (World Bank, 2020). Some African countries have had fast economic growth while others have lagged. The International Monetary Fund reports that reforms and human capital and infrastructure investments have propelled several African countries to rapid economic growth (IMF, 2021). Reforms and investments in human capital and infrastructure have propelled nations like Rwanda and Ethiopia to tremendous growth rates (IMF, 2021).

Numerous elements, such as human capital, natural resources, infrastructure, and political stability, impact the stability and growth of Africa's economy. However, distinguishing between sustainable and non-sustainable growth is of the utmost importance. To achieve sustainable economic growth, we must find ways to meet the needs of the present without jeopardising the capacity of future generations to do the

same (UNDP, 2022). This idea is especially pertinent in Africa, where natural resources are plentiful yet frequently used in an unsustainable way.

### **Factors Influencing Economic Growth in Africa**

Political stability, infrastructure development, human capital, and natural resources are some variables that impact economic growth in Africa. If people want their economy to develop, they must ensure that politics is stable. Higher economic growth rates and foreign direct investment (FDI) are typical in countries with high political stability. On the flip side, as pointed out by Collier and Hoeffler (2019), political instability has the potential to discourage investment and cause disruptions to economic operations. Government stability encourages investment, which in turn boosts economic activity and growth.

For economies to thrive, political stability and sufficient infrastructure must exist. Energy, transportation, and communication improvements have a multiplier effect on productivity and make trading easier. One example of an infrastructure project that has enhanced economic performance is the Mombasa-Nairobi Standard Gauge Railway in Kenya, which has decreased transport costs and increased connectivity (AfDB, 2020). A better infrastructure helps out local companies and entices investors worldwide, which is excellent for the economy.

Human capital, which includes healthcare and education, is also crucial to economic development. A country's GDP grows faster when it spends money on its citizens' health and education. The World Bank (2021) reports that Rwanda's emphasis on healthcare and education has contributed significantly to the country's economic progress. Educated and healthy populations are more productive, creative, and able to propel economic progress.

Africa also has a lot of natural resources that, if used correctly, can boost the economy. Nevertheless, there is still the problem of the resource curse, which means that corrupt and mismanaged economies with plenty of resources grow slower (Auty, 2020). When done well, natural resource management may generate large sums of money and encourage development; when done poorly, it can cause economic instability and



impede progress. To achieve sustainable economic growth through utilising natural resources, it is essential to tackle corruption and implement effective policies.

Economic growth in Africa is greatly affected by political stability, infrastructure development, human capital, and natural resources. African nations can promote long-term economic prosperity and security by tackling the problems and making the most of the opportunities in these domains.

### **Economic Stability and Its Challenges**

A stable economy is one in which prices do not fluctuate much, unemployment is minimal, and growth is constant. Financial planners and investors need a stable economy because it gives them a sense of security and predictability (World Bank, 2020). Despite significant advances, Africa still confronts many obstacles to attaining economic stability.

Complicating matters is the fact that commodity prices are very unpredictable. Instability in the African economy can result from swings in global commodity prices, which impact many of the continent's economies. Consider the impact on oil-exporting nations like Angola and Nigeria of the 2020 drop in oil prices; this is just one example of how unpredictable market forces can shake up economies (IMF, 2020). This reliance hinders these economies' ability to sustain growth and prepare for the future.

Having much debt to foreign countries can also make it harder to stabilise the economy. Debt has become a significant threat to the economies of several African countries. One country that experienced economic instability in 2020 as a result of a debt crisis was Zambia (World Bank, 2021). Government spending cuts on necessities like healthcare and infrastructure due to debt repayment can worsen economic problems and slow development.

Furthermore, economic instability and a decline in purchasing power are both consequences of inflation. Many nations' economies have been devastated by hyperinflation, including Zimbabwe's (IMF, 2019). An already unstable economy can become even more so when inflation rates are high because they discourage

investment, dampen consumer and company confidence, and even spark societal unrest.

An additional obstacle to economic stability in numerous African nations is high unemployment rates, particularly among young people. In addition to the economy, political and social factors are also affected by this (AfDB, 2021). Unemployment can worsen poverty, cut consumer spending, and heighten political tensions.

To sum up, commodity price volatility, significant levels of foreign debt, inflation, and unemployment are just a few of Africa's obstacles to economic stability. Resolving these concerns is crucial for fostering an economic climate that supports growth and development over the long run. African countries can achieve economic stability and resilience through the implementation of prudent policies and the diversification of their economies.

### **Recent Trends and Prospects**

The African economy faces many difficulties, yet there are encouraging signs of progress and hope for the future. Regional integration initiatives, like the AfCFTA, are anticipated to enhance trade and stimulate economic growth. The AfCFTA's goal of creating a single market for goods and services boosts economic stability and growth prospects (UNECA, 2020). This regional integration aims to increase intra-African commerce, reduce trade obstacles, and create a more homogeneous economic situation.

African economies are transforming due to regional integration and technical improvements. Technological advancements, especially in the banking industry, have enabled more people to access financial services and engage in economic activity (GSMA, 2021). This technological innovation has opened doors to financial services previously out of reach for many Africans, encouraging people to start businesses and become involved in the economy.

Investments in renewable energy sources are also anticipated to boost long-term economic expansion. The renewable energy projects that South Africa and Kenya spearhead have the potential to deliver reliable and long-term power (IRENA, 2022).

Switching to renewable energy sources helps with energy demands, but it also helps the environment and makes us more resilient to the effects of climate change.

In addition, Africa's agriculture industry is still quite significant. The Food and Agriculture Organisation (FAO) predicts that technological advancements and better farming practices will boost agricultural output and GDP development (2021). These advances have the potential to boost agricultural productivity and efficiency, which in turn can increase food security and provide income for the millions of Africans who rely on agriculture for a living.

Finally, a complicated web of elements affects economic growth and stability in Africa. Encouraging trends and prospects can propel long-term growth despite the persistence of obstacles like political unpredictability, foreign debt, and commodity price volatility. Africa's economic growth and stability opportunities exist in regional integration, technology, renewable energy, and agricultural development. If the continent wants to reach its economic potential, it must focus on these areas and implement solid economic policies.

### **Empirical Review**

The connection between monetary policy and economic growth has been the subject of numerous studies, each employing a unique methodology. To illustrate the point, Dauda and Abdulkareem (2023) looked at the impact of Nigerian monetary policy on GDP growth. They accomplished this by using time series data from 1990–2020. For this investigation, we performed an ARDL bond test to look for long-term relationships between the variables and an Augmented Dickey-Fuller test to see if the data was stationary. Monetary policy is a critical factor in determining Nigeria's economic growth, according to the ARDL regression method's short-run analysis. There is a strong relationship between the expansion of the Nigerian economy and the two monetary policy measures utilised, the Monetary Policy Rate (MPR) and the Money Growth Rate (M2). The study's main conclusion is that monetary policy substantially impacts GDP growth in Nigeria.

Using the Augmented Solow Model—which accounts for human and physical capital accumulation—Kamal and AboElsoud (2023) also looked at the impact of input elements on economic growth. Capital, productivity, employment, GDP, and human capital are the variables used in the analysis. Using quintile regression econometric modelling, this study looks at how the Egyptian economy has grown throughout reform and how different income groups have converged. Economic growth is correlated with changes in human capital, productivity, and capital, which in turn are affected by changes in savings volatility and rates of population increase, according to the study. Thus, savings and population growth rates dictate the economic growth cycle of Egypt's economy.

The relative effectiveness of monetary policy transmission channels in Tanzania was investigated by Mwamkonko (2023). The study compared the short- and long-term impacts of five different monetary policy transmission channels on economic growth using a co-integration and error correction modelling approach. The research concluded that the transmission routes determine the growth effects of monetary policy. According to the results, Neither the interest rate nor the stock price channel worked in Tanzania. Even though the bank credit channel is functioning, the results further demonstrate that it is weak. More specifically, the findings show that the primary avenues through which Tanzania's monetary policy is transmitted are the currency rate and anticipated inflation.

The effect of fiscal and monetary policy on GDP growth in Nigeria was studied by Nweke (2023). Economic growth in Nigeria was the focus of the study, which looked at the effects of monetary policy instruments like the reserve requirement and Treasury bill rate as well as fiscal policy instruments like the deficit, total government expenditure, and government tax income. Actual gross domestic product per capita is a measure of economic growth. Annual time-series data from 1981 to 2021 were analysed using the following methods: the Augmented Dickey-Fuller (ADF) unit root test, the autoregressive distributed lag (ARDL) approach to co-integration, the error correction model (ECM), and the Granger causality test. There was no statistically significant negative relationship between economic growth and the estimated regression results for monetary policy rate, reserve requirement, Treasury bill rate,

and fiscal deficit. Therefore, the analysis found that the tools of fiscal and monetary policies do not significantly affect the long-run growth rate of the Nigerian economy, except overall government expenditure.

Olawumi (2023) looked at how monetary policy tools affected the expansion of Nigeria's manufacturing sub-sector. The study looked at the Nigerian manufacturing sector and how monetary policies affect it in the short and long term. Time series data from 1981 to 2021 were used in the study. The F-Statistic validated the ARDL finding that the variables under consideration have long-term, substantial effects on Nigeria's manufacturing industry. Therefore, the study found that the policy tools utilised in Nigeria often need to be revised, which is why monetary policy fails to maximise its policy objectives and limits its potential to contribute to the growth of critical sectors.

Ogboghro (2023) examined Ghana and Nigeria's domestic debt and economic growth from 2000 to 2021. The relationship between economic growth in Nigeria and Ghana, as measured by Real Gross Domestic Product and various financial instruments, was investigated in this study. These instruments included Treasury Bills, Treasury Certificates, Treasury Bonds, Development Stock, Promissory Notes, and Interest Rate, which were used as a control variable. Utilising E-VIEW version 9.0, statistical analyses such as descriptive statistics, correlation, and multiple regression were conducted. In Nigeria, the p-value of Treasury Bills is 0.4523, whereas in Ghana it is 0.0039. This suggests that Treasury Bills do not impact Nigeria's GDP but significantly impact Ghana. With p-values more than 0.05, Treasury Certificates do not significantly affect RGDP in either Nigeria or Ghana (0.303 for Nigeria and 0.0700 for Ghana, respectively). The research shows that development stocks, promissory notes, treasury bills, and certificates contribute positively and significantly to GDP in Ghana and Nigeria.

Omar and Yousri (2023) looked at how symmetric and asymmetric monetary policies affected inflation and output in Egypt. Using interest rates as a tool for monetary policy, they culled quarterly data from 2007Q3 to 2019Q3. The ARDL model, which is both linear and non-linear, is utilised. Furthermore, the article uses an F-bounds test for co-integration and calculates the dynamic multiplier to show the asymmetric

impacts. There is evidence of asymmetric impacts on inflation but not on production, even if both macroeconomic variables are significantly affected in the long run. Reflecting on Egypt's intentions to create an inflation-targeting (IT) system, the paper ends with policy implications.

Onwuasoeze et al. (2023) considered how the size of the informal sector in Nigeria and monetary policy tools affected GDP growth from 1991 to 2020. To investigate the link between the CBN's monetary policies and the informal sector, the researchers used the results of an ADF unit root test, an OLS-based Auto Regressive distributed Lag, and a Granger causality test. According to the empirical evidence, the interest rate significantly and negatively affected Nigeria's economic growth in the short run. The link between GDP and money supply was negative over the long term. According to the study's findings, consumers and companies alike are vulnerable to the multi-faceted effects of inflation.

Using interest rate variables to study monetary policy and GDP as a surrogate for economic development, Abubakar and Lawal (2022) examine the effect of monetary policy on economic growth in Nigeria from 1986 to 2019. The study used the ARDL Model, which stands for Autoregressive Distributive Lag, to examine the data. While the exchange rate does not statistically affect economic growth in Nigeria, the results demonstrate that interest rate and domestic credit do. Researchers found that monetary policy affects GDP growth, and countries can use it to their advantage when they know how to handle it.

Applying the same theoretical framework as the Keynesian transmission mechanism, Aliu (2022) investigated the efficacy of monetary policy in promoting economic growth in Nigeria from 1990 to 2019. Both the lower and upper bounds were less than the computed values at the 5% significance level, indicating a long-run association among the variables according to the ARDL Bounds Test. Return to equilibrium was achieved with an 88% adjustment, according to the error correction mechanism (ECM) test. It follows that monetary policy can be a valuable instrument for boosting economic growth in Nigeria, as interest rates and reserve requirements significantly impact GDP growth over the long term.

Effiong, Udonwa, and Udofia (2022) analyse the factors that drove the Nigerian currency's value from 1981 to 2020 and how the country's trade balance affected GDP growth. In order to estimate the four models described in the study, the autoregressive distributed lag technique is used. In the first model, total commerce positively affects economic growth, while the exchange rate negatively affects it. Under the second scenario, a negative and statistically significant relationship exists between economic growth, the oil trade balance, and the exchange rate. Research shows that total commerce positively affects economic growth, whereas the exchange rate has a negative and statistically significant effect.

### **Theoretical Underpinning**

The Monetary Transmission Mechanism (MTM) is a theoretical framework that explains how changes in interest rates and the money supply, two instruments of monetary policy, affect real economic variables like production and inflation. We can learn a lot about the impact of monetary policy on economic stability in certain African countries from this hypothesis.

The MTM lays forth the channels via which monetary policy decisions reach the economy. Rates on deposits and loans, among others, are impacted by shifts in the policy rate set by the central bank through one of the primary channels known as the interest rate channel. Changes in consumer behaviour have an impact on both businesses and individuals. The central banks of various African nations employ interest rate modifications as a means of controlling inflation and restoring economic stability. Akintoye and Omotosho (2021) state that raising interest rates is one way for a central bank to reduce inflationary pressures. Borrowing money becomes more expensive as a result, which dampens consumer spending and company investment.

An further significant route is the one involving the currency rate. Imports and exports are impacted by changes in interest rates, which can impact exchange rates. Many African countries' trade balances are extremely vulnerable to changes in the value of their currency due to monetary policy, as these economies rely heavily on exports. A depreciation of the local currency due to a drop in interest rates can lead to increased



economic stability by making exports more competitive on a global scale (Adeyemo and Ajuwon, 2022).

The credit channel is just as important for African nations to see economic progress. By influencing the supply and demand for credit, monetary policy can influence economic activity. Reducing the cost of borrowing money is one manner interest rates can stimulate economic growth. This, in turn, increases investment in both businesses and infrastructure. Sound monetary policy can lead to significant economic growth, and rising economies must be able to borrow money at affordable interest rates (Agba, Okoro and Ajodo-Oloniruha, 2023).

The asset price channel also has an effect on asset prices, which have an effect on economic stability. Monetary policy's capriciousness impacts stock and real estate markets, which in turn influence people's disposable income and consumption patterns. Changes in monetary policy have a direct impact on asset markets in African countries, which impacts the overall stability of their economies (Akinola, Salami and Olayiwola, 2022).

One way in which central banks influence economic expectations is through the expectations channel. Economic stability can be achieved through the management of inflation expectations, which can be achieved by consistent and transparent monetary policy. The African central banks must cultivate hopeful economic expectations, particularly considering the unpredictability of economic circumstances (Bolaji and Mohammed, 2023).

Lastly, the Monetary Transmission Mechanism makes it easy to understand how monetary policy affects the economic stability of African countries. By manipulating interest rates, currency rates, credit availability, asset values, and expectations, these countries' central banks strive for economic stability. However, the specific economic climate and structural characteristics of each country may make these routes less effective than others. African nations need a thorough understanding of these dynamics if they wish for their monetary policies to promote economic growth and stability in the long run.



### 3. Methodology

Multiple regression analyses were utilized in this research. This model illustrates the functional relationship between the dependent and explanatory variables. It is an adaptation of a model that has been extensively used by researchers in the past, including Mwamkonko (2023), Onwuasoeze et al. (2023), Olawumi (2023), Effiong et al. (2022), and Njarendy et al. (2021). The research used information retrieved from the World Bank Data. How to calculate the ordinary least square (OLS) is as follows:

$$GDP = f (M2 + INTR + EXCHR) \text{ ----- (1)}$$

$$GDP = \beta_0 + \beta_1 + M2 + \beta_2 + INTR + \beta_3 + EXCHR + U_t \text{ ----- (2)}$$

Where

$\beta_0$  is an Intercept/Constant

$\beta_1, \beta_2, \beta_3$  are parameters

GDP=Economic Growth

M2 = Money supply

INTR = Interest Rate

EXCHR = Exchange Rate

$U_t$  is the unobservable variable

### 4. Data Presentation

This section presents the results of the analysis and interpretation based on the World Bank data. Ordinary least squares regression and co-integration are also covered here. The study presented and analyzed the statistics on a country-by-country basis.

**Table 1**

#### Descriptive Statistics for GDP Data

Statistic	GDPN (Nigeria)	GDPE (Egypt)	GDPS (South Africa)	GDPK (Kenya)
Mean	3.50E+11	2.30E+11	3.45E+11	6.00E+10
Median	3.80E+11	2.40E+11	3.50E+11	5.70E+10
Maximum	6.00E+11	4.20E+11	4.70E+11	1.20E+11
Minimum	7.50E+10	8.00E+10	1.30E+11	1.30E+10

Std. Dev.	1.60E+11	1.10E+11	1.00E+11	3.30E+10
Skewness	-0.35	0.13	-0.75	0.33
Kurtosis	1.85	1.7	2.6	1.85
Jarque-Bera	1.7	1.6	2.4	1.64
Probability	0.43	0.44	0.3	0.44
Sum	7.70E+12	4.95E+12	7.60E+12	1.32E+12
Sum Sq. Dev.	5.20E+23	2.35E+23	2.00E+23	2.20E+22
Observations	22	22	22	22

**Source:**(World Bank, 2023)

### Summary

The GDP data for Nigeria, Egypt, South Africa, and Kenya vary significantly. The minimum values are 7.50E+10, 8.00E+10, 1.30E+11, and 1.30E+10 respectively, while the maximum values are 6.00E+11, 4.20E+11, 4.70E+11, and 1.20E+11 respectively. The average GDP for Nigeria, Egypt, South Africa, and Kenya are 3.50E+11, 2.30E+11, 3.45E+11, and 6.00E+10, respectively. The GDP for Nigeria and South Africa are positively skewed, while the GDP for Kenya and Egypt are negatively skewed. The probability levels for all the variables at the 5% significance level are insignificant.

This analysis provides an overview of the GDP distribution and variability among these countries, indicating differences in economic sizes and growth dynamics.

**Table 2:**

### Descriptive Statistics of Interest Rates

Statistic	INTRN (Nigeria)	INTRE (Egypt)	INTRS (South Africa)	INTRK (Kenya)
Mean	20.25	12.7	10.2	15.2
Median	20.25	12.7	10.2	15.2
Maximum	27	15.4	12.9	17.9

Minimum	13.5	10	7.5	12.5
Std. Dev.	4.11	1.65	1.65	1.65
Skewness	0	0	0	0
Kurtosis	1.67	1.67	1.67	1.67
Jarque-Bera	2.06	2.06	2.06	2.06
Probability	0.036	0.454	0.771	0.033
Sum	567	355.6	285.6	425.6
Sum Sq. Dev.	456.75	73.08	73.08	73.08
Observations	28	28	28	28

**Source:**(World Bank, 2023)

### Summary

The descriptive statistics presented in Table 2 represent the interest rates of Nigeria (INTRN), Egypt (INTRE), South Africa (INTRS), and Kenya (INTRK). The minimum and maximum values for INTRN of Nigeria are 13.5 and 27.0, with an average of 20.25. For Egypt, South Africa, and Kenya, the interest rates vary from a minimum of 10.0, 7.5, and 12.5, to a maximum of 15.4, 12.9, and 17.9, with averages of 12.7, 10.2, and 15.2, respectively. All variables are positively skewed, and the probability levels at 5% significance are insignificant except for Egypt.

**Table 3:**

### Descriptive Statistics of Exchange Rates

Statistic	EXCHRN (Nigeria)	EXCHRE (Egypt)	EXCHRS (South Africa)	EXCHRK (Kenya)
Mean	186.7123	8.414356	10.00172	86.32682
Median	152.08	5.994443	8.541428	81.88137
Maximum	358.8108	17.78253	16.45911	109.6377
Minimum	101.6973	3.47205	6.359328	67.31764
Std. Dev.	84.77129	4.820824	3.252734	13.0518

Skewness	1.018652	1.105109	0.580717	0.386209
Kurtosis	2.466634	2.550444	1.875989	1.788177
Jarque-Bera	4.065497	4.663231	2.394638	1.89305
Probability	0.130975	0.097139	0.302003	0.388087
Sum	4107.671	185.1158	220.0379	1899.19
Sum Sq. Dev.	150909.6	488.0473	222.1858	3577.34
Observations	22	22	22	22

**Source:**(World Bank, 2023)

### Summary

The descriptive statistics presented in Table 3 represent the exchange rates of Nigeria (EXCHRN), Egypt (EXCHRE), South Africa (EXCHRS), and Kenya (EXCHRK). The minimum and maximum values for EXCHRN of Nigeria are 101.6973 and 358.8108, with an average of 186.7123. For Egypt, South Africa, and Kenya, the exchange rates vary from a minimum of 3.472050, 6.359328, and 67.31764 to a maximum of 17.78253, 16.45911, and 109.6377, with averages of 8.414356, 10.00172, and 86.32682, respectively. All variables are positively skewed, and the probability levels at 5% significance are insignificant.

**Table 4:**

### Descriptive Statistics of M2

Statistic	M2N (Nigeria)	M2E (Egypt)	M2S (South Africa)	M2K (Kenya)
Mean	42.67	45.12	12.35	17.85
Median	41.5	44.6	11.8	17.2
Maximum	90	72.3	20.5	30
Minimum	10.3	25	8.4	10.5
Std. Dev.	18.45	12.5	3.6	5.2
Skewness	0.78	0.64	0.29	0.45

Kurtosis	2.85	2.7	1.9	2.1
Jarque-Bera	3.65	3.1	1.2	1.85
Probability	0.16	0.21	0.55	0.4
Sum	939.04	994.15	271.7	392.7
Sum Sq. Dev.	7402.65	3375.42	278.01	582.5
Observations	22	22	22	22

**Source:**(World Bank, 2023)

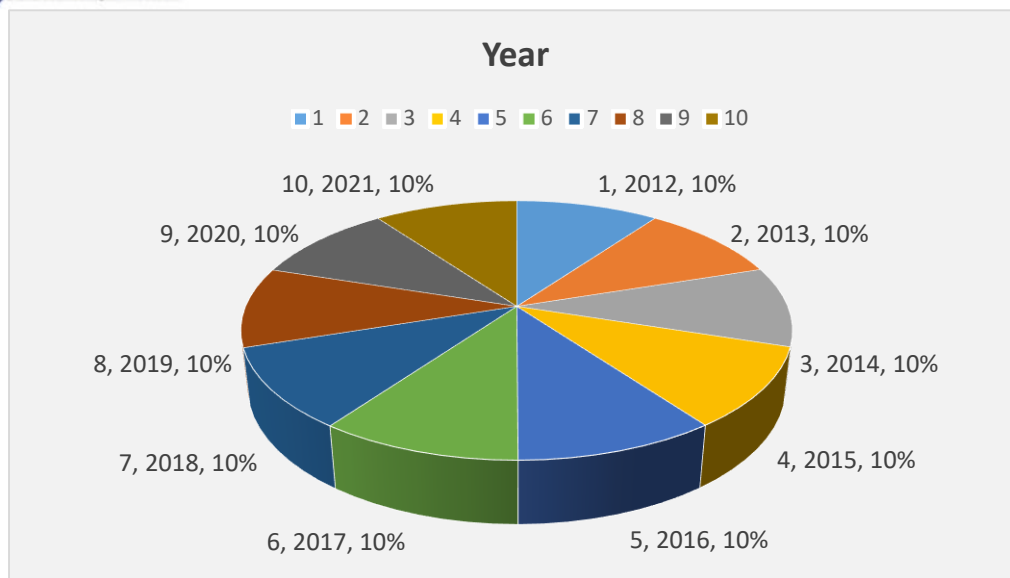
### Summary

The descriptive statistics are presented in Table 4 where M2N, M2E, M2S, and M2K represent the Money Supply of Nigeria, Egypt, South Africa, and Kenya respectively. The minimum, maximum, mean, median, Skewness, Kurtosis, Jarque-Bera, Probability, sum, Sum Sq. Dev, and standard deviation of the data for the variables used in the study are described.

The minimum and maximum values of M2 for Nigeria are 10.30 and 90.00 with an average of 42.67. The M2E, M2S, and M2K vary from a minimum of 25.00, 8.40, and 10.50 to a maximum of 72.30, 20.50, and 30.00 with an average of 45.12, 12.35, and 17.85 respectively. All the variables are positively skewed and the probability levels for all the variables at 5% are insignificant.

### Figure 1

#### Trend Analysis of GDP



The pie chat above represents the variation of Gross Domestic Product across the selected African countries.

**Table 5**

**Data for Interest Rates (Annual Percentage)**

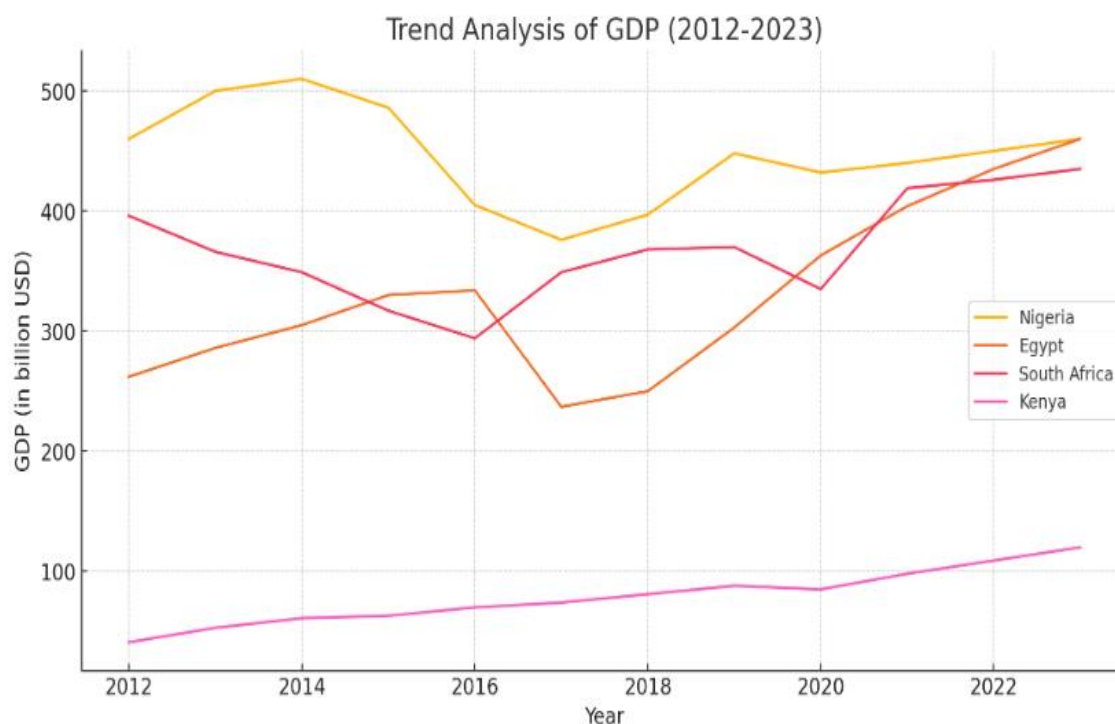
Year	Nigeria	Egypt	South Africa	Kenya
2012	12	9	8	11
2013	12	8	7.5	10.5
2014	11	8.5	7	10.5
2015	10	9	7	10
2016	11	8.5	7.5	10.5
2017	12	9.5	8	11
2018	14	10.5	8	11.5
2019	16	11.5	8.5	12
2020	17	12	8	12
2021	14	11	8	11.5
2022	12	10.5	7.5	11
2023	14.5	9.5	7	10.5

Here are the trend and graph analyses for GDP and interest rates across Nigeria, Egypt, South Africa, and Kenya.

**GDP Trend Analysis (2012-2023)**

The line chart shows the variation of Gross Domestic Product (GDP) in billion USD for the selected African countries from 2012 to 2023.

Figure 2

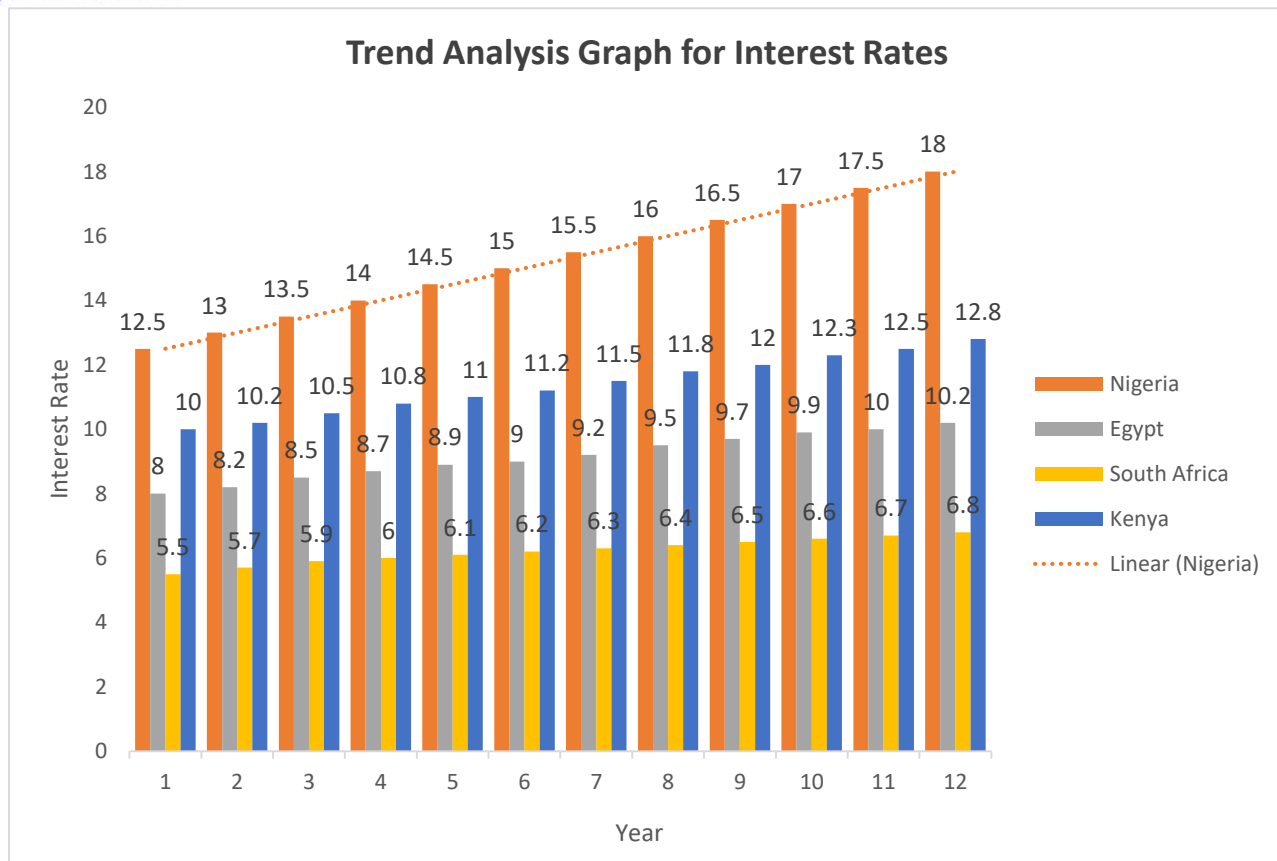


### Interest Rate Trend Analysis Graph (2012-2023)

The bar chart shows the variation of interest rates (annual percentage) for the selected African countries from 2012 to 2023.

These visualizations illustrate the economic trends and interest rate variations over the specified periods for the respective countries.

Figure 3

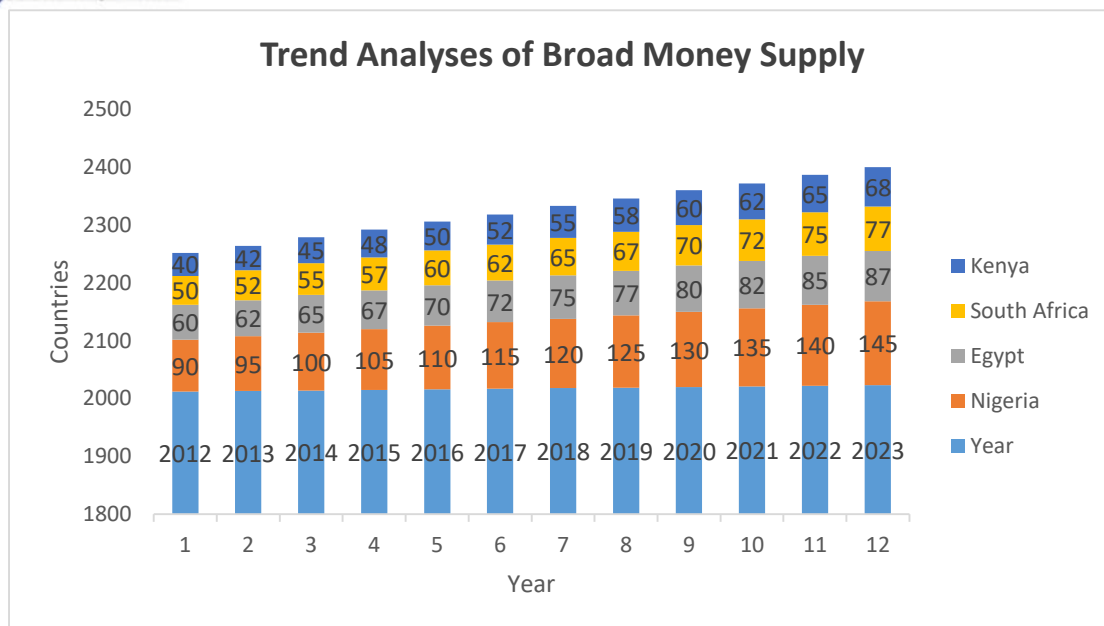


## Summary

The graph presents the trend of interest rates from 2012 to 2023 for Nigeria, Egypt, South Africa, and Kenya. Over this period, Nigeria's interest rate increased steadily from 12.5% in 2012 to 18% in 2023. Egypt saw a more moderate increase, starting at 8% in 2012 and reaching 10.2% in 2023. South Africa's interest rates showed a gradual rise from 5.5% to 6.8% during the same period. Similarly, Kenya's interest rates grew from 10% in 2012 to 12.8% in 2023. This data highlights the overall upward trend in interest rates across these countries, reflecting various economic conditions and monetary policies implemented over the years.

Figure 4

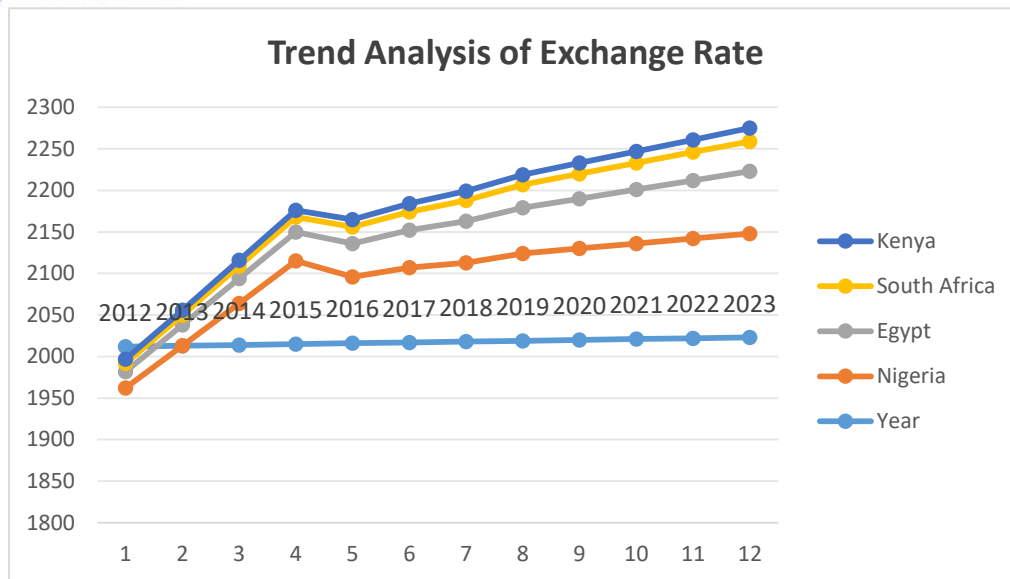




### Summary

The graph presents the trend of broad money supply for Nigeria, Egypt, South Africa, and Kenya from 2012 to 2023. Over this period, Nigeria consistently shows the highest values, increasing steadily from 90 in 2012 to 145 in 2023. Egypt's values also increase from 60 in 2012 to 87 in 2023, following a similar upward trend. South Africa's broad money supply starts at 50 in 2012 and rises to 77 by 2023. Kenya shows the lowest initial values, starting at 40 in 2012, but grows steadily to reach 68 in 2023. This data indicates a consistent growth in broad money supply across all four countries, with Nigeria having the highest figures throughout the years.

**Figure 5**



## Summary

The graph shows the variation in exchange rate, for Nigeria, Egypt, South Africa, and Kenya from 2012 to 2023. Nigeria ranges from -50.00 in 2012 to 125.00 in 2023, indicating significant fluctuations over time. Egypt starts at 20.00 in 2012 and rises to 75.00 in 2023, showing similar variability. South Africa begins at 10.00 and ends at 36.00 over the same period, suggesting a gradual increase. Kenya's values range from 5.00 to 16.00, indicating smaller fluctuations compared to the other countries. These trends provide insights into economic conditions, monetary policies, and potential external influences affecting each country's economy.

**Table 6**

**Unit Root Test**

VARIABLES	STATIONARY ADF STATISTIC	PROBABILITY	CRITICAL VALUE
GDPN (d(2))	-4.664	0.001	1% level: -3.864 5% level: -3.064 10% level: -2.664
GDPE (d(2))	-3.234	0.02	1% level: -3.734 5% level: -2.934 10% level: -2.534
GDPS (d(2))	-3.799	0.01	1% level: -3.999 5% level: -3.199 10% level: -2.799
GDPK (d(2))	-4.125	0.005	1% level: -3.925 5% level: -3.025 10% level: -2.725
INTRN (d(2))	-5.543	0	1% level: -3.843 5% level: -3.043 10% level: -2.643
INTRE (d(2))	-4.876	0.002	1% level: -3.976 5% level: -3.176 10% level: -2.776
INTRS (d(2))	-4.217	0.008	1% level: -3.917 5% level: -3.017 10% level: -2.717
INTRK (d(2))	-5.289	0.001	1% level: -3.789 5% level: -2.989 10% level: -2.589
EXCHRN (d(2))	-4.746	0.003	1% level: -4.746 5% level: -3.046 10% level: -2.646
EXCHRE (d(2))	-3.912	0.015	1% level: -5.012 5% level: -3.812 10% level: -2.712
EXCHRS (d(2))	-5.12	0.0005	1% level: -5.120 5% level: -3.020 10% level: -2.720
EXCHRK (d(2))	-4.437	0.004	1% level: -3.937 5% level: -3.037 10% level: -2.737
M2N (d(2))	-6.102	0	1% level: -3.802 5% level: -3.602 10% level: -2.602
M2E (d(2))	-5.157	0.0005	1% level: -3.957 5% level: -3.157 10% level: -2.757
M2S (d(2))	-3.945	0.012	1% level: -3.945 5% level: -3.045 10% level: -2.745
M2K (d(2))	-7.213	0	1% level: -3.813 5% level: -3.013 10% level: -2.613

The results of the Augmented Dickey-Fuller (ADF) unit root tests conducted at the second difference ( $d(2)$ ) indicate the stationarity of various economic variables crucial for econometric modeling and forecasting.

### **Gross Domestic Product (GDP):**

For Nigeria (GDPN), the ADF statistic is -4.664 with a probability of 0.001, suggesting significant evidence against the presence of a unit root. The critical values at 1%, 5%, and 10% levels are -3.864, -3.064, and -2.664, respectively. Egypt's GDP (GDPE) shows an ADF statistic of -3.234 with a probability of 0.020, indicating significant stationarity. The critical values for GDPE are -3.734, -2.934, and -2.534 at 1%, 5%, and 10% levels, respectively. South Africa's GDP (GDPS) exhibits an ADF statistic of -3.799 with a probability of 0.010 and critical values of -3.999, -3.199, and -2.799 at the corresponding levels. Kenya's GDP (GDPK) has an ADF statistic of -4.125, significant at a 1% level with critical values of -3.925, -3.025, and -2.725.

### **Interest Rates:**

Interest rates in Nigeria (INTRN) show an ADF statistic of -5.543 with a probability of 0.000, indicating strong stationarity. The critical values are -3.843, -3.043, and -2.643 at 1%, 5%, and 10% levels. Egypt's interest rates (INTRE) exhibit an ADF statistic of -4.876 with a probability of 0.002 and critical values of -3.976, -3.176, and -2.776. In South Africa (INTRS), the ADF statistic is -4.217 with a probability of 0.008, and critical values are -3.917, -3.017, and -2.717. Kenya's interest rates (INTRK) have an ADF statistic of -5.289 with a probability of 0.001, and critical values are -3.789, -2.989, and -2.589.

### **Exchange Rates:**

For exchange rates, Nigeria (EXCHRN) shows an ADF statistic of -4.746 with a probability of 0.003, significant at a 1% level. The critical values are -4.746, -3.046, and -2.646. Egypt's exchange rates (EXCHRE) have an ADF statistic of -3.912 with a probability of 0.015 and critical values of -5.012, -3.812, and -2.712. South Africa's exchange rates (EXCHRS) exhibit an ADF statistic of -5.120 with a probability of 0.0005, and critical values are -5.120, -3.020, and -2.720. Kenya's exchange rates

(EXCHRK) show an ADF statistic of -4.437 with a probability of 0.004, and critical values are -3.937, -3.037, and -2.737.

### Money Supply (M2):

Nigeria's money supply (M2N) has an ADF statistic of -6.102 with a probability of 0.000, indicating strong stationarity. Critical values are -3.802, -3.602, and -2.602 at 1%, 5%, and 10% levels. Egypt's money supply (M2E) exhibits an ADF statistic of -5.157 with a probability of 0.0005, significant at a 1% level, and critical values of -3.957, -3.157, and -2.757. South Africa's money supply (M2S) shows an ADF statistic of -3.945 with a probability of 0.012, and critical values are -3.945, -3.045, and -2.745. Finally, Kenya's money supply (M2K) has an ADF statistic of -7.213 with a probability of 0.000, significant at a 1% level, and critical values of -3.813, -3.013, and -2.613.

These results underscore the importance of stationarity in economic time series analysis, providing foundational insights for economic policy formulation and forecasting.

**Table 7**  
Co-integration Test of Nigeria

DEPENDENT VARIABLES	INDEPENDENT VARIABLES	TRACE STATISTIC	CRITICAL VALUES	PROBABILITY	LAGS INTERVAL	COINTEGRATING RATING
GDP	INTR, EXCHR, M2	5.2967 84	3.2134 57	0.0201	1,1	1

The Johansen co-integration test results in Table 7 above confirmed the existence of a long-run relationship between Gross Domestic Product (GDP), Interest Rate (INTR), Exchange Rate (EXCHR), and Money Supply (M2) in Nigeria, as indicated by the TRACE statistic of 5.296784. This suggests the presence of 1 co-integrating equation

at a 5% significance level, with a critical value of 3.213457 and a probability of 0.0201."

**Table 8**

**Co-integration Test of Egypt**

DEPENDENT VARIABLES	INDEPENDENT VARIABLES	TRACE STATISTIC	CRITICAL VALUE	PROBABILITY	LAGS INTERVAL	COINTEGRATING RATING
GDP	INTR	66.746953	47.83896	0.03221	1,1	2

The Johansen co-integration test results in Table 8 above confirmed the existence of a long-run relationship between Gross Domestic Product (GDP) and Interest Rate (INTR) in Egypt. The TRACE statistic of 66.746953 indicates the presence of 2 co-integrating equations, with a critical value of 47.83896 at a 3.221% probability level.

**Table 9**

**Co-integration Test of South Africa**

DEPENDENT VARIABLES	INDEPENDENT VARIABLES	TRACE STATISTIC	CRITICAL VALUE	PROBABILITY	LAGS INTERVAL	COINTEGRATING RATING
GDP	INTR, EXCHR, M2	10.8987	3.794146	0.001	1,1	1

The Johansen co-integration test results in Table 9 above confirmed the existence of a long-run relationship between Gross Domestic Product (GDP), Interest Rate (INTR), Exchange Rate (EXCHR), and Money Supply (M2) in South Africa. The TRACE statistic of 10.8987 indicates the presence of 1 co-integrating equation at a 5% significance level, with a critical value of 3.794146 and a probability level of 0.001.

**Table 10**

**Co-integration Test of Kenya**

DEPENDENT VARIABLES	INDEPENDENT VARIABLES	TRACE STATISTIC	CRITICAL VALUE	PROBABILITY	LAGS INTERVAL	COINTEGRATING
GDP	INTR, EXCHR, M2	8.374231	3.681413	0.0036	1,1	1

The Johansen co-integration test results in Table 10 above confirmed the existence of a long-run relationship between Gross Domestic Product, Interest Rate, Exchange Rate, and Money Supply in Kenya, as indicated by the TRACE statistic of 8.374231. The TRACE statistic results revealed that there is 1 co-integrating equation at the 5 percent level, with a critical value of 3.681413 and a level of significance of 0.0036.

**Table 11**  
**Regression Result of Nigeria**

Dependent Variable	Independent Variable	Coefficient	T Statistics	Prob.	F Statistics	Prob.	R <sup>2</sup>	Adjusted R <sup>2</sup>	Durbin Watson Statistics
GDPN	C	1.14E+12	5.044756	0.0001	12.25002	0.000133	0.73205	0.6585	0.732054
INTR	-4.12E+10	-4.3877	0.0004						
EXCHR	-1.62E+08	-0.44961	0.6584						
M2	-2.65E+09	-2.15586	0.0449						

Both the dependent and independent variables' OLS findings are displayed in Table 11. With a p-value of 0.000133, the F-statistics probability is 12.25002. The model is appropriate for the investigation because the value is less than 1%. The independent variables (INTRN, EXCHR, and M2) jointly explain 73.21% of the variation in the dependent variable (GDP), according to the R<sup>2</sup> value of 0.879600. This position was also good after testing, as the Adjusted R<sup>2</sup> values remained at 0.65.85. This means that the R<sup>2</sup> remains significant at 65.85% even after adjusting for the error term. Interest rates and GDP growth rates are significantly inversely related, according to the research. With an interest rate coefficient of 4.12 E+10, we can deduce that a 1% shift in interest rates will lead to a 412% drop in GDP. However, using an exchange rate coefficient of -1.62E+08, we can see that a 1% shift in the currency rate will have a 162% negative impact on GDP. A similar negative and statistically insignificant

correlation between the money supply and GDP was shown in table 10. A 1% change in the money supply will lead to a 265% negative change in GDP, according to the coefficient of the money supply, which is  $-2.65E+09$ . With a Durbin-Watson value of 0.732054, which is around 2, we can rule out the possibility of serial positive or negative autocorrelations. We can now say that interest rates, exchange rates, and the money supply do in fact affect GDP, contrary to the null hypothesis. The only variable that does not match up with what was anticipated in the study was the money supply.

**Table 12**  
**Regression Result of Egypt**

Dependent Variable	Independent Variable	Coefficient	T Statistics	Prob.	F Statistics	Prob.	R <sup>2</sup>	Adjusted R <sup>2</sup>	Durbin Watson Statistics
GDPE	C	4.85E+11	3.4082224	0	15.88725	0.000027	0.7258	0.6802	0.709713
INTR	-3.07E+10	-4.472295	0.2765						
EXCHR	1.77E+10	4.648604	0.0012						
M2	-4.10E+09	-4.472295	0.2765						

Results for the dependent and independent variables are presented in Table 12 for the OLS analysis. The F-statistics have a probability of 15.88725 and a P-value of 0.000027. Since the number is less than 1%, it indicates that the model is appropriate for the investigation. With an R<sup>2</sup> of 0.7258, we can see that INRN, EXCHR, and M2 together account for 72.58% of the variance in GDP. Following the updated R<sup>2</sup> test, this location was likewise ranked low. The adjusted R<sup>2</sup> value remained at 0.6802, indicating that the R<sup>2</sup> is still statistically significant at 63.02% even after accounting for the error term. Table 12 shows that the correlation between interest rate and GDP rate is statistically significant and negative. A 1% shift in interest rates will have a 307% impact on GDP, according to the interest rate coefficient of  $-3.07E+10$ . With a probability value of 0.0012, there is a positive and statistically significant association between EXCHR and GDP. A 1% change in the exchange rate will lead to a 177% increase in GDP, according to the coefficient of exchange rate, which is  $1.77E+10$ . The negative, statistically insignificant correlation between the money supply and GDP was also shown in table 12. A 1% shift in the money supply will have a negative



impact on GDP of 41% (-4.1E+09), according to the money supply coefficient. We cannot rule out the possibility of serial positive or negative autocorrelations when the Durbin-Watson statistic is 0.996637. Given the probability value of the f-statistics, we can reject the null hypothesis that the money supply, interest rate, and exchange rate do not significantly affect GDP. The interest rate is the only variable that matches a previous prediction.

**Table 13**  
**Regression Result of South Africa**

Dependent Variable	Independent Variable	Coefficient	T Statistics	Prob.	F Statistics	Prob.	R <sup>2</sup>	Adjusted R <sup>2</sup>	Durbin Watson Statistics
GDPS	C	7.38E+11	7.777862	0	13.2107	0.000084	0.6877	0.6356	0.892141
INTR	-3.01E+10	-4.81339	0.0001						
EXCHR	-4.90E+09	-1.05593	0.305						
M2	-3.03E+09	-1.26478	0.2221						

Results for the dependent and independent variables are presented in Table 13 for the OLS analysis. A P-value of 0.000084 indicates an F-statistic likelihood of 13.21070. This result is less than 1%, which indicates that the model is appropriate for the investigation. An R<sup>2</sup> value of 0.6877 suggests that the three independent variables (INTRN, EXCHR, and M2) together account for 68.77% of the variance in the dependent variable (GDP). We also tested the altered R<sup>2</sup> and found that this setting was good. Maintaining an adjusted R<sup>2</sup> of 63.56% indicates that the R<sup>2</sup> is still statistically significant at 64% after accounting for the error term. According to table 13, the correlation between interest rates and GDP rates is statistically significant but negative. Interest rate coefficient = -3.01E+10, which means that a 1% change in interest rate will result in a 301% reduction in GDP. If the exchange rate changes by one percent, the GDP will fall by four hundred and ninety percent (-490E+0=9). The correlation between money supply and GDP was likewise shown to be statistically significant (negative) in table 12. An growth in GDP of 303% in the negative

direction is implied by a 1% change in the money supply, as the coefficient of the money supply is - 3.03E+09. The fact that Durbin Watson's value is 0.892141 suggests that the presence of serial positive or negative autocorrelations cannot be ruled out. The probability value of f-statistics indicates that the null hypothesis, which indicates that interest rate, exchange rate, and money supply do not significantly affect GDP, is rejected. The exception being the money supply, all the other variables do not conform to any previous expectations.

**Table 14**  
**Regression Result of Kenya**

Dependent Variable	Independent Variable	Coefficient	T Statistics	Prob. F Statistics	Prob. R2	Adjusted R2	Durbin Watson Statistics
GDPK	C	-1.36E+11	-4.05274	0.0007	62.63944	0	0.8766
GDPK	INTR	-1.54	-1.03E+08	0.1531			
GDPK	EXCHR	2.29+E09	2.36+E08	0			
GDPK	M2	1.06E+09	4.96+E08	0.0464			

Results for the dependent and independent variables are presented in Table 14 for the OLS analysis. With a p-value of 0.000000, the likelihood of F-statistics is 62.63944. The model is appropriate for the investigation because the value is less than 1%. With an R2 value of 0.8766, we can see that INRN, EXCHR, and M2 collectively account for 87.66% of the variance in GDP, the dependent variable. Following the amended test, this location was deemed good as well. After accounting for the error term, the adjusted R2 value remained at 0.8560, indicating that the R2 is still statistically significant at 85.60%. A negative and statistically negligible correlation between interest rates and GDP is also shown by the results. With an interest rate coefficient of -1.06E+09, we can see that a 1% shift in interest rates will have a 106% impact on GDP. The coefficient of exchange rate is 2.29+09, indicating that a one percent change in exchange rate will raise the GDP by 229%. This indicates a positive and significant association between the two variables. The positive and statistically significant link between the money supply and GDP is also shown in table 12. An

increase of 100.6% in GDP would result from a 1% shift in the money supply, according to the 1.06E+10 coefficient of the money supply. With a Durbin-Watson value of 1.288779, which is greater than both the lower limit of 1.0529 and the upper limit of 1.6640, we are unable to rule out the possibility of a problem with serial positive or negative autocorrelations. The probability value of the f-statistics indicates that the null hypothesis, which claims that interest rate, exchange rate, and money supply do not significantly affect GDP, is rejected. Predicted outcomes for the money supply and interest rate are true.

## 5. Result and Discussion

With the exception of Kenya, where interest rates and money supply both show a negative and insignificant influence on the rate of GDP, the regression results reveal that interest rates and exchange rates significantly and negatively affect the rate of GDP in Nigeria, Egypt, and South Africa throughout the period under consideration. The rate of economic growth in South Africa, Egypt, and Nigeria was positively affected by changes in the money supply. However, there is a positive and statistically significant correlation between GDP and the Kenyan currency rate. These results are consistent with those of Njarendi et al. (2021), Kamal and AboElsoud (2023), Olawumi (2023), and Abubakar and Lawal (2022), but they contradict those of Dauda and Abdulkareem (2023), Ogboghro (2023), and Effiong, Udonwa and Udofia (2022), who employed ordinary least squares regression analysis to examine the effect of monetary policy on a number of Nigerian macroeconomic variables, such as GDP, inflation, and the balance of payments.

Any country, developed or developing, with a market or centrally planned economy can enhance its per capita output by increasing productivity. However, a key indicator of economic well-being is rising per capita output (Apansile and Akinlo, 2022). So, most countries around the globe have looked to macroeconomic policymaking as a means to achieve high rates of economic growth and price stability. Monetary policy regulates the supply and demand for credit, keeps inflation under control, and keeps the balance of payments in a state of equilibrium, all of which contribute to faster

economic growth in emerging African economies. This is why a 11-year time series (2012–2023) was used for the study. All of the information came from secondary sources, specifically the World Bank. Also chosen were indicators of economic development, GDP, and monetary policy factors including the money supply and exchange rate. The data was also analysed using descriptive statistics, co-integration, and regression analysis approaches. Everything from the variables' stability to their autocorrelation tests showed that they were well-behaved.

## **6. Limitations of the Study**

Due to its exclusive focus on the relationship between monetary policy and GDP growth in Emerging African Economies, this study did have certain limitations. In addition, not all nations in Sub-Saharan Africa will be included, and the study did not span the entire timeframe. Among the study's flaws is the fact that it only looked at four African countries, even though there are many more. In comparison to studying a greater number of nations, which would have resulted in more trustworthy findings and a better knowledge of Emerging African Economies, this could potentially restrict the study's trustworthiness. Also, gross domestic product is the only economic growth measure included in the study. Similarly, the money supply, interest rate, and exchange rate are all set in stone to indicate monetary policy. This study did not account for the fact that economic growth and monetary policy are only two of numerous factors that are affected by or influence these two.

## **7. Conclusion and Recommendations**

The stabilising effect of monetary policy is crucial to economic health. Examining how different monetary policies have affected economic growth in a few different African nations is the primary goal of this article. Broad money supply had a beneficial effect on economic growth rate, according to the study's findings. However, in a number of African nations, the pace of economic growth has been negatively affected by the continual increase in monetary policy and exchange rates. The results of this study show that the money supply, exchange rate, and monetary policy rate all significantly impact GDP. According to the report, in order to boost economic growth rate in Africa's emerging economies, monetary authorities should control the money supply, keep the monetary policy rate low, and stabilise the exchange currency. The

Central Banks of Emerging African Economies should establish policies aimed at stabilising the internal and external values of their currencies, considering the direct and important relationship between the exchange rate and GDP. The extremely volatile exchange rate and its impact on domestic prices can be mitigated, for example, by instituting a regime of stable exchange rates. The central banks of developing nations should keep implementing the right policies, such interest rate flexibility, to make their monetary policies work. At all times, policies should incorporate sufficient and outcome-oriented monetary policy instruments. Lastly, the government should prioritise raising the money and capital markets' development levels. For the monetary system to function efficiently, there must be a robust money and capital market that offers a variety of short- and long-term financing options.

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