



Global Economic Uncertainty and Monetary Policy Intervention: A Case Study of Sub-Saharan African Countries

¹Abdurrauf Babalola
(abdclemeat@yahoo.com)

¹Tunde Salau
(tundesalau001@gmail.com)

²Josy Ikhayere Ijie
(ljiekhayere65@yahoo.com)

¹Department of Economics, Al-Hikmah University, Ilorin, Nigeria.

²National Drugs Law Enforcement Agency, Federal Ministry of Justice, Nigeria

Abstract

This study examined the impact of conventional and unconventional monetary policy intervention on economic uncertainty in Sub-Saharan African countries, between 1980 and 2019. Panel Autoregressive Distributed Lag model was employed with a cross-sectional analysis. Findings of the study revealed that, in the short-run using the general panel result, unconventional monetary policy has significant interventional capacity to resuscitate economic uncertainty and restore steady state, while the conventional monetary policy (interest rate) could not have any significant impact. However, in the long-run period, both policies did not indicate any significant impact. Individually, cross-sectional coefficients showed clearly that, in the short-run, both conventional and unconventional monetary policies improved economic uncertainty. The individual speed of adjustment indicated a significant correction of the uncertainty back to a steady state, though at different levels and speeds which could depend on different local factors. The study, therefore, recommends that, countries could further reduce their official interest rate as it is quite high compared to other developed nations. Also, though, conventional monetary policy is still effective in the short-run, based on individual countries, the unconventional monetary policy should be given priority in improving economic uncertainty and making nations return to a steady state.

Keywords: Conventional policy, Economic uncertainty, Global uncertainty, Monetary policy intervention, Unconventional policy.

1. Introduction

As economic uncertainty is wearisome and in fact prevalent all over the world and thus a global economic phenomenon, the choice of instrument is very important. While some countries use money supply to regulate their economy, some bang on interest rate, depending on the development of the financial sector or what is sometimes called policy environment. Some other issues that would affect the choice of monetary policy could be external such as security issues, health and natural disaster. Tools for carrying out



monetary policy are basically two in broad terms: Conventional and unconventional policy instruments. Conventional policy instruments are the tools that are predominantly and habitually used to control the money stock in an economy. Such policy instruments, in Nigeria, include the monetary policy rate, cash reserve ration and liquidity ratio. The unconventional policy instruments are occasionally used when the conventional policy instruments are not sufficient to achieve the objectives of the central bank. They include, among others, negative interest rate, asset purchase programmes and quantitative easing. Traditionally, the conventional monetary policy is used to regulate and bring back the economy to a steady state. However, when the conventional policy could not influence the economy in a speed required or within a specific period, the unconventional monetary policy is put in place to corroborate the conventional policy and thus, taking the economy to achieve macroeconomic targets.

In SSA, countries like Cape Verde and Comoros put their short term interest rate to 0.25 and 0.93 which are quite close to a zero interest rate with an aim to boost their economy. The United State of America, through its central bank (Federal Reserve Bank), used interest rate as policy instrument to achieve macroeconomic target. This was done by reducing the short term interest rate to near zero (similar to the Islamic zero-interest rate), for more than ten years (Rudebusch, 2018). Due to the irresponsiveness of the economy to this move, the Federal Reserve was pushed to employ some unconventional monetary policy instruments such as quantitative easing and forward guidance. These policy outfits really assisted in restoring economic recovery and also brought back the high inflation rate to its target (Rudebusch, 2018). In a similar vein, the indirect monetary measures were employed by the South African Reserve Bank (SARB) to redirect the economy and salvage it from a runaway inflation and outrageous unemployment rate, during which conventional policy instruments were almost become increasingly inefficient over time. Thus, the need for complementary monetary policy, which is the unconventional monetary policy (Van Wyngaard & De Jongh, 2019).

Monetary policy is mostly and often used and goes in line with what is called quantitative, general or indirect instruments of monetary policy (Jhingan, 2014). It is modifying of short term interest rate to realize macroeconomic goal (Rudebusch, 2018). In most countries, central banks set the official policy rate, which is called: Monetary Policy Rate (MPR) in Nigeria; Federal Fund Rate (FFR) in the U.S.A.; Repo Rate (RR) in South Africa and Mauritius; Policy Interest Rate (PIR) in Ethiopia, to mention but few. Conventional monetary policy is when the central bank modifies a short term interest rate to realize a predetermined macroeconomic goals, such as reduction of inflation and unemployment rates, improved economic growth, favourable balance of payment, among others. Nevertheless, during the global financial crisis between 2007 and 2009, central banks everywhere pushed their official interest rates to near zero. At such terrible economic situation, economic activities may defy the actual efficacy of conventional monetary policy. Also, regrettably, due to the deepness of the economic slump, policy thrust of near-zero interest rates could not be enough to salvage and resuscitate the economy adequately



and sufficiently, through investment, employment and output. It is at the wake of these inefficiencies that central banks bow to a supplementary policy tools to realize their objectives. Unconventional monetary policy is a tool employed by monetary authority that falls out of line with the traditional measures. They are also called Non-standard monetary policies (Rudebusch, 2018). These include quantitative easing, forward guidance, collateral adjustment, asset purchasing, term funding facilities, among others. Advanced countries such as the U.S.A., Canada and Germany have been using the non-standard monetary policy tools to support short term interest rates. Australia has been using the conventional monetary policy which worked for the economy until the emergence of COVID-19 in year 2020, which made the country to further apply unconventional policy to create more jobs and improve economic activities (Stals, 2021). Nigeria joined the use of unconventional monetary policy during the economic meltdown in 2007 (CBN, 2016). The broad objective is to analyse the impact of monetary policy intervention in stabilizing economic uncertainty in SSA countries. The specific objectives are to examine the effect of conventional monetary policy on economic uncertainty in SSA and to investigate the impact of unconventional monetary policy on economic uncertainty in SSA.

2. Literature Review

Economic literature recognized systematically that monetary policy could modify many actions of both the nominal and real variables such as growth in the gross domestic product and unemployment. Nevertheless, the strength of its efficiency varies across periods, the long-run versus short-run, and across economies. These, of course, could also inform the wide continuum of the arguments among various schools as well as economic experts. Such arguments are still ongoing, and the empirical findings of a lot of researches are still an open inconclusive fact of the actual workings of the policies (Beyene & Singh, 2019). The basic theories on impact of monetary policy on an economy are not farfetched. This has to do with neutrality and non-neutrality of money.

The Classical economic theory believes in money neutrality which says that, money does have a proportionate positive impact on the price level (inflation rate) only. That, it does not have the capability to influence the real sector of the economy, such as interest rate, wealth, investment, employment, and output level. The Keynesian have two situations in which money is neutral. The first is when the economy is experiencing full employment and the second is the special case of liquidity trap. Aside from these two situations, they believe in the non-neutrality of money, that the nominal money stock has the capacity to influence real variables in the economy. This is also the believe of the Post-Keynesians. The Monetarists, led by Friedman, believe that in the short-run, there is money neutrality. However, in the long-run, money is said to be non-neutral (Jhingan, 2014).

On empirical review. There appears to be an agreement that monetary policy committed to inflation targeting which would lead to macroeconomic stability for developed countries. For economies that are evolving and developing , findings are not only limited and uncommon, but are also inconclusive most especially in Mauritius and Seychelles



economies in Sub-Sahara Africa (Madhou et al., 2021). Salihu (2020) examined the impact of monetary policy in pegging price level in Nigeria between 1981 and 2019. The paper employed Granger causality test and cointegration techniques. The co-integration test showed the existence of long-run relationship between the variables. While the empirical findings of the OLS test showed that the conventional monetary policy instruments exert a direct influence on inflation in Nigeria. A study was carried out by Aye (2020) using quarterly time data used to measure monetary policy uncertainty. Incorporating partial method of least squares structural equation model to analysis the effect of fiscal and monetary policies on output in South Africa, findings showed that there is existence of uncertainty within the South African economy which tends to cut back the total output (Aye, 2020). Yusuf (2020) made use of cointegration method to test for the long term relationship between the monetary policies in controlling inflation in Nigeria. The Johansen co- integration test revealed the existence of long-run relationship between the variables. While the empirical results of the OLS test showed that monetary policy rate, M_2 and Treasury rates exert positive influence on inflation in Nigeria. The study therefore concluded that money supply, treasury bills rate, monetary policy rate and rate of exchange had influence on inflation within the period under study.

Since pandemic period that lead to uncertainty and made many economies unstable, Babalola, Adagiri and Ogirima (2020) examined the effectiveness of monetary policy amidst Covid-19 pandemic in Nigeria. Using dataset between December 2019 and October 2020 and employing the Granger Causality and Vector Auto-Regressive tools, they found out that, individually, only monetary policy rate and exchange rate had unidirectional causality while money supply did not have, but when used jointly, all the three variables caused economic growth in Nigeria. Beyene and Singh (2019) examined the role of monetary policy on industrial growths in Ethiopia. The Bound Testing ARDL tool was employed on annual data between 1974 and 2017. The result gave an insight that in the long-run, all variables were found to significantly have impact on industrial value additions except for interest rate. Following coefficient restrictions, the Wald test and Adjusted R-square methods, the VEC short-run parsimonious model revealed that one period lag of commercial output (LINDY(-1)), interest rate and its one period lagged value (LR(-1)) determines the short-run industrial productions of Ethiopia. In South Africa, Van Wyngaard and De Jongh (2019) study made use of quarterly data from 2001 to 2017 and employed ARDL model and Error Correction Model to examined the results of official charge per unit, broad money supply, the rate of exchange, government debt and government income on price level. The study also established that there existed a causal relationship between the variables under study. Adodo et al. (2018) examined the effectiveness of monetary policy and control of inflation in Nigeria. They employed Augmented Dickey – Fuller (ADF), Johansen Co-integration and Error Correction Model (ECM) to gauge the effect of money supply, interest rate and rate of exchange on inflation rate in Nigeria. The results divulged that long run association among the variables existed and that, both money supply and interest rate are statistically significant in explaining



variation in rate of inflation. On the Zambian economy, Haabazoka and Nanchengwa (2016) examined the effectiveness of the monetary policy rate (MPR) on inflation. Using a two-stage regression analysis on data between April 2012 and December 2014, their finding indicated that the MPR (conventional policy tool) did not have significant effect on the inflation rate of the economy. Summarily, some other empirical researches are those of Akarara & Azebi, (2018); Bonga-Bonga, (2017); Berg et al., (2015); Rojid, (2013); Tsangarides, (2010); and Christensen, (2008). None of them has placed their research light on the effect of conventional and unconventional monetary policy on economic uncertainty in SSA countries. This is the gap in literature that this paper intends to fill.

3. Methodology

Data were sourced from World Development Index 2020 for six selected SSA countries and annual dataset was from 1980 to 2019, given about 241 observations. These countries are: Zambia; Morocco; Mauritius; Nigeria; Kenya and Egypt. The choice of countries was based on the availability of adequate data for the variables employed to represent conventional and unconventional monetary policy instrument. The choice of 2019 as the end period was informed by the unavailability of data for 2020 for these variables in the WDI. The technique of analysis was basically the Panel Autoregressive Distributed Lag model which further diagnosed the cross-sectional analysis of individual countries in SSA. Since the dataset were time bound, preliminary checks were carried out which informed the use of ARDL technique.

A parsimonious model specification is adapted from the work of Beyene and Singh (2019) as

$$E_u = f(Convm_p, Unconvmp) \dots\dots\dots 1$$

Where E_u represents economic uncertainty, $Convm_p$ is conventional monetary policy and $Unconvmp$ stands for unconventional monetary policy. The equation 1 was constructed in econometric form to give the equation 2 as below:

$$E_u = \phi_0 + \phi_1 Convm_p + \phi_2 Unconvmp + \eta \dots\dots\dots 2$$

The ϕ s are parameters estimation while η is the error term. Economic uncertainty in the SSA consists of turbulence in unemployment rate, economic growth rate, inflation rate, exchange rate, balance of payment, debt to GDP ratio, among others. For the sake of parsimony, this study used only one major variable to proxy economic uncertainty which is economic growth (E_u). This is because it is the most important macroeconomic objective which signals others. Inferring from the work of Bindseil and Fotia (2021) and Haabazoka and Nanchengwa (2016) in Zambia, conventional monetary policy is proxied by central banks official interest rate ($Convm_p$). The choice of this instrument is informed by its effect on many other short term rates in the money market. More so, it is a single instrument that is mostly used by all central banks in the world. Unconventional monetary policy is proxied by Technical cooperation grants ($Unconvmp$). This variable was used since they



are generally used as policy intervention in most SSA countries and they are measured in same term. It is expected (*a priori* expectation) that when interest rate reduces, investment cost will reduce and becomes cheaper to invest. Investment leads to more employment and increase in aggregate output, which will increase the economic growth of the country. Therefore, conventional monetary policy (interest rate) is expected to have an inverse impact on economic uncertainty. Unconventional monetary policy will have positive and significant impact on economic uncertainty, since as more fund is realized for the intervention, more production will take place and hence, increase growth rate. However, countries with peculiar internal crisis and security issues may not realize this expected results.

Growth rate is the rate of change in the overall output in an economy measured quarterly, by-annually or annually. It is annual percentage growth rate of GDP at market prices based on constant local currency. Aggregates are based on constant 2010 U.S. dollars. GDP is the sum of gross value of goods and services produced by residents of the country over a particular period of time. Interest rate is the cost of obtaining loan. Here, it measures the official interest rate at which central bank lend out money to commercial banks. It affects many other interest rates in an economy. It is sometimes called the central bank rate. Technical cooperation grants include free-standing technical cooperation grants, which are intended to finance the transfer of technical and managerial skills or of technology for the purpose of building up general national capacity without reference to any specific investment projects; and investment-related technical cooperation grants, which are provided to strengthen the capacity to execute specific investment projects.

4. Results

Descriptive Statistics

The descriptive statistics as presented in Table 1 with 241 observations shows that $Unconv_{mp}$ has the highest mean of 1.840, followed by $Conv_{mp}$ and E_u with mean of 16.6073, and 3.8540 respectively. The mean of the distribution is all high because their logarithm is not taken.

The distribution also shows a kurtosis higher than 3 which indicates that the distribution is peaked (Leptokurtic distribution). The Jarque-Bera shows the normality distribution of the data. The probability as reported is the probability that the Jarque-Bera statistic exceeds, in absolute terms, the observe value under the null hypothesis. The probability shows that all variables are not normally distributed as they are all less than 0.05, hence the null hypothesis is rejected. The standard deviation shows the rate of disparity from the mean, the standard deviation follows the same pattern as the mean on the table where $Unconv_{mp}$ has the highest standard deviation followed by $Conv_{mp}$ and E_u with standard deviation of 1.80E+08, 11.43808 and 3.851861 respectively.



Table 1: Descriptive Statistics

	$conv_{mp}$	$Unconv_{mp}$	E_u
Mean	16.6073	1.840	3.8540
Median	15.0000	1.390	4.3300
Maximum	113.3083	9.700	15.3292
Minimum	3.0117	0.0000	-15.4503
Std. Dev.	11.4381	1.800	3.8519
Skewness	3.6278	1.8662	-1.6889
Kurtosis	25.8353	6.6494	9.5730
Jarque-Bera	5764.909	273.6220	548.4110
Probability	0.0000	0.0000	0.0000
Sum	4002.378	4.420	928.8153
Sum Sq. Dev.	31399.13	7.780	3560.840
Observations	241	241	241

Source: Author's Computation, 2022

Skewness is a measure of asymmetry of the distribution of the series around its mean. The positivity of $Unconv_{mp}$ and $Conv_{mp}$ implies that the distribution has a long right tail while E_u is negative indicating a left tail. It is also understandable that the variables are not logged so their volatility are not increased.

Pairwise Correlation Matrix

Correlation analysis is important to ascertain that, the regressors do not have perfect or exact linear representations of one another and to detect multicollinearity issue in the explanatory variables. $Unconv_{mp}$ has a weak positive relationship with E_u while $Conv_{mp}$ on the other hand has a weak negative relationship with E_u . This is shown in the table 2.

Table 2: Correlation Matrix

	$Conv_{mp}$	$Unconv_{mp}$	E_u
$Conv_{mp}$	1	-0.06470	-0.01070
$Unconv_{mp}$	-0.06470	1	0.14127
E_u	-0.01070	0.14127	1

Source: Author's Computation, 2022

The Two explanatory variables ($Conv_{mp}$ and $Unconv_{mp}$) have correlation coefficient of -0.065 indicating a very low relationship and hence, the absence of multicollinearity.

Result of Panel Unit Root

Three tests of unit roots were carried out to actually diagnose the status of the variables and make good choice of technique for analysis.



Table 3: At Level and at 1st difference

Method	E_u		$Conv_{mp}$		$Unconv_{mp}$	
	Stat (at Level)	Stat (at 1 st Diff)	Stat	Stat (at 1 st Diff)	Stat	Stat (at 1 st Diff)
Levin, Lin & Chu t*	-1.008	-6.595***	0.693	-4.925***	1.398	-1.902**
Im, Pesaran and Shin W-stat	-3.599***	-	-0.226	7.461***	-0.199	-6.281***
ADF - Fisher Chi-square	-2.608***	-	0.096	-7.025***	1.673	-5.788***

Note:*** indicates significance at 1% level, ** Indicates significance at 5% level
 Source: Author's Computation, 2022

The three test statistics used are Levin, Lin & Chu t*, Im, Pesaran and Shin W-stat and ADF - Fisher Chi-square and the results are presented in Table 3. All the three statistics show that $Conv_{mp}$ and $Unconv_{mp}$ are not stationary at 1% and 5% level of significant as their probabilities are greater than 0.05 at level except GR that is stationary at level using Im, Pesaran and Shin W-stat and ADF - Fisher Chi-square and PP - Fisher Chi-square. At first difference, all three statistics show that E_u , $Unconv_{mp}$ and $Unconv_{mp}$ are stationary at 1% level of significant as their probabilities are less than 0.01. Therefore, E_u is I(0) while the $Conv_{mp}$ and $Unconv_{mp}$ are I(1), which informed the study that Autoregressive Distributed Lag (ARDL) be employed.

Result of the ARDL Model

Table 5 present the panel ARDL results for both long-run and short-run period, with economic uncertainty (E_u) as the dependent variable. In the long-run, $Conv_{mp}$ (interest rate) could not have the correct sign in line with theory. Also the hypothesis test statistics all indicate that both variables do not have significant impact in the long-run, even at 10% level as shown by their probability (0.345 and 0.723) values. This implies that, in the long-run, conventional and unconventional monetary policies do not have any influential capability to adjust economic uncertainty in SSA. This result is not in line with the findings of Salihu (2020), Yusuf (2020) and Beyene and Singh (2019), though they used inflation rate to capture economic uncertainty and their works were only for individual country. Therefore, the reason for this strange result could be because it is based on selected countries in SSA.

Still on Table 4 in the Panel analysis, in the short-run, TCG ($Unconv_{mp}$) it happens to have the correct positive sign and most especially, significant at 5% level. This implies that unconventional monetary policy, as policy intervention, has the capability to resuscitate the economy, in the short-run. The Error Correction Mechanism (ECM) coefficient has the correct negative sign, with about 72.7% speed of adjustment. More so, it is significant at 1% level. However, interest rate ($Conv_{mp}$) could not have any significant impact on economic growth (E_u). The result is quite supported by the study of Adodo *et al.* (2018); Rudebusch (2018); Van Wyngaard and De Jongh (2019); Beyene and Singh (2019).



Table 4: Result of ARDL

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
Long Run Equation				
$Conv_{mp}$	0.041305	0.043635	0.946595	0.3450
$Unconv_{mp}$	-5.89E-10	1.66E-09	-0.355547	0.7226
Short Run Equation				
COINTEQ01	-0.726540	0.206545	-3.517588	0.0005
$D(Conv_{mp})$	0.535032	0.583494	0.916945	0.3603
$D(Conv_{mp} (-1))$	-0.007286	0.056040	-0.130014	0.8967
$D(Unconv_{mp})$	1.05E-09	6.59E-09	0.159418	0.8735
$D(Unconv_{mp} (-1))$	7.19E-09	3.65E-09	1.971295	0.0501
C	2.727743	0.970632	2.810275	0.0054

Source: Author's Computation, 2022

Short-Run Coefficients of Individual Countries

Table 6 showcases the cross-sectional individual short-run coefficients of selected countries in SSA. The Table shows the short-run impact of interest rate ($Conv_{mp}$) and technical corporation grants ($Unconv_{mp}$) on economic growth rate (E_u), including their respective ECM coefficients. In Table 5, it is evident that all six selected countries in SSA have their conventional monetary policy instruments (interest rate) being having the correct inverse effect on economic uncertainty (E_u) and their effects are statistically significant at 5% level.

Table 5: Cross-Sectional Short-Run Coefficients of Individual Countries

VAR	Zambia Coeff	MOROCCO Coeff	MAURITIUS Coeff	NIGERIA Coeff	KENYA Coeff	EGYPT Coeff
COINTEQ01	-0.391***	-1.731***	-0.728***	-0.475***	-0.460***	-0.571***
$D(Conv_{mp})$	0.081***	3.431**	-0.119**	0.222**	-0.165***	-0.2417**
$D(Conv_{mp} (-1))$	-0.17***	-0.118	0.143**	-0.068	0.0084	0.16124
$D(Unconv_{mp})$	5.800***	5.560***	-2.690***	2.280***	-8.94***	-2.170***
$D(Unconv_{mp} (-1))$	7.830***	8.970***	-6.510***	1.260***	1.910***	1.150***
C	0.8652	7.291	2.996	1.180	1.521	2.511

Note:*** indicates significance at 1% level, ** Indicates significance at 5% level

Source: Author's Computation, 2022

Looking at the unconventional monetary policy, the analysis result in Table 6 indicates that there is a direct influence of TCG ($Unconv_{mp}$) on economic growth (E_u), and the impacts, in all countries are statistically significant at 5%. The result further shows that, the ECM coefficients in all countries are correctly signed and all are statistically significant at 1% level. While Morocco has the highest coefficient of about 173.2% as speed of adjustment, Mauritius and Egypt have 72.8% and 57.1% speed, other countries have low adjustment path (39.2% to 47.6%) to equilibrium. This implies that monetary policy generally has high speed in resuscitating the economy during uncertainty of some countries, while some are



low. This could depend on so many reasons such as: policy environment; development of the financial sector; security issues, among others. The result is not different from the studies of Adodo *et al.* (2018); Rudebusch (2018); Van Wyngaard and De Jongh (2019); Beyene and Singh (2019) and Salihu (2020).

5 Conclusion and Recommendations

From the result of analysis of data set of six countries in Sub-Saharan Africa between 1980 and 2019, and using economic growth to proxy economic uncertainty, interest rate to proxy conventional monetary policy and technical cooperation grant to proxy unconventional monetary policy, the study concluded that, in the short-run using the general panel result, unconventional monetary policy has significant interventional capacity to resuscitate economic uncertainty and restore steady state, while the conventional monetary policy (interest rate) could not have significant impact. However, in the long-run period, both policies did not indicate any significant impact. Individually, cross-sectional coefficients showed clearly that, in the short-run, both conventional and unconventional monetary policies improved economic uncertainty. The individual speed of adjustment in SSA indicated a significant correction of the uncertainty back to a steady state, though at different level and speed which could depend on different local factors. The study therefore recommends that, countries in SSA should further reduce their official interest rate as it is quite high compared to other developed nations. Though, conventional monetary policy is still effective in the short-run, based on the results of the individual countries, the unconventional monetary policy should be given priority in improving the economic uncertainty and return SSA nations to a steady state.

References

- Adodo, F., Akindutire, O., & Ogunyemi, J. (2018). Monetary Policy and Control of Inflation in Nigeria. *International Journal of Management, IT & Engineering*, 8(12), 154-170.
- Akarara, E. A., & Azebi, O. I. (2018). The Effectiveness of Monetary Policy in the Control of Inflation in Nigeria: An Ecm Approach. *Opcion*, 9(1), 314-355.
- Aye, G. C. (2020). Effect of Fiscal and Monetary Policies on Economic Activities in South Africa : The Role of Policy Uncertainty. *Department of Economics Working Paper Series*, 1-14.
- Babalola, A., Adagiri, I. H. & Ogirima, A. (2020). Monetary Policy amidst COVID-19 Pandemic in Nigeria. *Lapai Journal of Economics*. 4(2)134-147.
- Berg, A., Stephen, A. O., Pattillo, C., Portillo, R., & Unsal, D. F. (2015). Monetary Policy Issues in Sub-Saharan Africa. *The Oxford Handbook of Africa and Economics*, 2, 62-87. <https://doi.org/10.1093/oxfordhb/9780199687107.013.006>
- Beyene, T., & Singh, I. (2019). Effectiveness of Monetary Policy on Industrial Growth of Ethiopia : ARDL Modeling on Monetary Framework. *IOSR Journal of Economics and Finance (IOSR-JEF)*, 10(3), 1-13. <https://doi.org/10.9790/5933-1003010113>
- Bindseil, U. & Fotia, A. (2021). Conventional Monetary Policy. In: Introduction to Central



- Banking. *SpringerBriefs in Quantitative Finance*. Springer, Cham. https://doi.org/10.1007/978-3-030-70884-9_3
- Bonga-Bonga, L. (2017). Assessing the effectiveness of the monetary policy instrument during the inflation targeting period in South Africa. *International Journal of Economics and Financial Issues*, 7(4), 706–713.
- CBN. (2016). Unconventional Monetary Policy: Introduction. *Education in Economics Series, Central Bank of Nigeria*, 5(1), 1–34.
- Christensen, B. V. (2008). Have monetary transmission mechanisms in Africa changed? *BIS Papers*, 56, 37–61. [http://benedictvibechristensen.com/BIS paper no 56.pdf](http://benedictvibechristensen.com/BIS%20paper%20no%2056.pdf)
- Haabazoka, L. & Nanchengwe, C. (2016). A study of the Effectiveness of the Monetary Policy Rate as a Tool of Inflation Control in Zambia. *Developing Country Studies*. 6(5) 141-151.
- Jhingan, M. L. (2014). *Monetary Economics* (10th ed.). VRINDA.
- Madhou, A., Sewak, T., Moosa, I., Ramiah, V., & Gerth, F. (2021). Towards Full-Fledged Inflation Targeting Monetary Policy Regime in Mauritius. *Journal of Risk and Financial Management*, 14(3), 126. <https://doi.org/10.3390/jrfm14030126>
- Rojid S., A. & S. E. (2013). *Seychelles : How Classic Policies Restored Sustainability*. <http://www.worldbank.org/content/dam/Worldbank/document/Africa/Seychelles/sc-how-classic-policies-restored-sustainability.pdf>
- Rudebusch, G. D. (2018). A Review of the Fed’s Unconventional Monetary Policy. *FRBSF Economic Letter*, 33, 1–11.
- Salihu, Y. T. (2020). The Effectiveness of Monetary Policy in Controlling Inflation in Nigeria. *Orphanet Journal of Rare Diseases*, 21(1), 1–9.
- Stals, C. L. (2021). Monetary Policy and COVID-19. *Reserve Bank of Australia*, 104(March), 721–752.
- Tsangarides, C. G. (2010). Monetary Policy Transmission in Mauritius Using a VAR Analysis. In *IMF Working Papers* (Vol. 10, Issue 36). <https://doi.org/10.5089/9781451962789.001>
- Yusuf, S. T. (2020). The Effectiveness of Monetary Policy in Controlling Inflation in Nigeria. <https://portal.bazeuniversity.edu.ng/student/assets/thesis/20201208223422545811382.pdf>
- Van Wyngaard, D., & De Jongh, M. J. J. (2019). *An Analysis of Monetary Policy and its Effect on Inflation and Economic Growth in South Africa*. <https://repository.nwu.ac.za/handle/10394/32250>