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An Empirical Investigation of the Impact of Monetary Policy on Economic Growth in Zambia

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Abstract

Purpose: The aim of this study was to investigate the impact of monetary policy on the real sector and to assess the effectiveness of various monetary policy transmission channels in Zambia

Methodology: The Johansen cointegration approach, Error Correction Model (ECM), and Granger causality test were undertaken to achieve the study objectives

Findings: The study results reveal that economic growth proxied by Gross Domestic Product (GDP) in Zambia is negatively affected by lending rates, inflation, and an increase in private sector credit, while exchange rate and deposit rates were found to have a positive impact on the other hand. These results confirm the presence of exchange rate and credit channels of monetary policy transmission in Zambia.

Originality/Value: The study contributes to the theoretical and empirical literature on the impact of monetary policy on the real sector. Further, the study provides, through the results of the study, the effectiveness of various monetary policy transmission channels in Zambia. Therefore, the study is part of the studies the Central Bank and academic institutions and research think tanks can make reference to during further research and practice.

1.0 Introduction

Effective monetary policy plays a very significant role in achieving macroeconomic stability of any given economy. A critical and most important aspect of the monetary policy transmission process is the pass-through which is defined as the magnitude (degree) and speed with which a change in the monetary policy is passed on to the real economy (Aydin, 2007). In this regard, the impact of monetary policy on the real sector variables of the economy such as output and prices becomes a remarkable issue in discussions surrounding monetary policy transmission process.

Despite the changing financial and monetary environment in Zambia, the degree and speed of monetary policy pass-through to the real sector has not been adequately investigated. This paper intends to fill this gap by building on Ngoma and Chanda (2022) to assess the efficacy of monetary policy on economic growth in Zambia. Specifically, the study intends to answer the following research questions:

  i. What is the magnitude of monetary policy transmission to economic growth in Zambia?

  ii. How effective are the various channels of monetary policy transmission in Zambia?

The study is significant to the subject of monetary policy transmission as it offers the central bank off Zambia and other key stakeholders an in-depth understanding of the impact of monetary policy on the real economy. This helps to determine the monetary policy mix or the appropriate monetary policy stance that could be implemented at a particular time in order to achieve the intended goal of low and stable inflation necessary for sustainable macroeconomic growth.

2.0 Literature Review

2.0.1 Theoretical Review

The key theory underpinning this study is the monetarist view. The Monetarist view asserts that there is a direct link between the monetary sector and the real sector of the economy. They argue that "money matters", thereby advocating for the use of monetary policy in influencing economic growth. Thus, monetary policy through

changes in money supply thus functions by stimulating interest-responsive components of aggregate demand, primarily investment spending (Friedman, 1974). It is argued that lower interest rates have a positive impact on aggregate demand thereby increasing output.

2.0.2 Empirical Review

The impact of monetary policy on the real economy has gained prominence in macroeconomic analysis over the years. This has resulted into a number of empirical studies being undertaken in both developed and developing economies. In the developed world, the early attempt to explore monetary transmission on the real sector is by Bernanke et. al (1995) in the US and this was followed by Hayo and Uhlenbrock (1999) in Germany, Farès and Srour (2001) in Canada ,Raddatz and Rigobon (2003) in the United states of America, Tena and Tremayne (2006) in the United Kingdom, among others. In the developing world, empirical evidence on the real sector impact of monetary policy is documented by Alam and Waheed (2006) in Parkstan, Sing and Rao (2014) in India, Javanovic et.al (2015) in Macedonia, Ezeaku et.al (2018) in Nigeria, Omolade and Ngalwa (2016), Moussir and Chatri (2017) in Morrocco, and Nampewo et. al (2016) in Uganda, and in Zambia by Simatele, (2004), Mwange, (2018), Zgambo, (2008), Zgambo and Chileshe, (2014), Mwange, et al., (2022), Kaponda, et al., (2022), Mwange, (2017), Kaponda, et al., 2022). The results of these studies are mixed. Most empirical evidence for developed countries suggest that monetary policy has a strong influence on economic growth while it some suggests that it is limited in developing countries (Mishra and Montiel, 2012; Ngoma and Chanda, 2022; Mwange and Meyiwa, 2022; Mwange, et.al.,2022); and Kaponda, et al., (2022)

3.0 Materials and Methods

Similar to Das (2015) and Mbowe (2015), this study employs a Johansen cointergration approach. This estimation strategy also makes it possible to estimate all co-integrating vectors when there are more than two variables and facilitates the estimation of an error correction model (ECM).

3.1 Model Specification

Theoretically, the relationship between monetary policy and the real sector can be investigated using Vector Auto Regressive (VAR) models estimated as follows:

$$Y_t = c + A1Y_{t-1} + A2\,Y_{t-2} \ldots\ldots\ldots\ldots\ldots AkY_{t-p} + \varepsilon t \ldots\ldots\ldots\ldots\ldots\ldots\ldots. (1)$$

Assuming k=2 and p=1, this gives:

$$\begin{bmatrix} Y_{1t} \\ Y_{2t} \end{bmatrix} = \begin{bmatrix} C_1 \\ C_2 \end{bmatrix} + \begin{bmatrix} \alpha_{11} & \alpha_{12} \\ \alpha_{21} & \alpha_{22} \end{bmatrix} \begin{bmatrix} Y_{1,t-1} \\ Y_{2-1} \end{bmatrix} + \begin{bmatrix} \varepsilon_{1t} \\ \varepsilon_{2t} \end{bmatrix}$$

Explicitly, this can be rewritten as follows:

$$Y_{1t} = C_1 + \alpha_{11}Y_{t-1} + \alpha_{12}Y_{2,t-1}$$
$$+ \varepsilon_{1t} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots. (2)$$

$$Y_{2t} = C_2 + \alpha_{21}Y_{t-1} + \alpha_{22}Y_{2,t-1}$$
$$+ \varepsilon_{2t} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots. (3)$$

The vector Y in this study contains six endogenous variables whose vector is specified as:

$$Y_t = [GDP, alr, dpr, exr, inf, pcr] \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots.. (4)$$

3.1.0 The Long-run empirical model

It is expressed as:

$$GDP_t = \alpha_0 + \alpha_1 alr + \alpha_2 dpr + \alpha_3 exr + \alpha_4 inf \qquad + \qquad \alpha_5 pcr \qquad +$$
$$\varepsilon_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (5)$$

Taking the natural logarithm of the equation and assuming linearity among the variables gives:

$$log(GDP_t) = \alpha_0 + \alpha_1 log(alr) + \alpha_2 log(dpr) + \alpha_3 log(exr) + \alpha_4 log(inf) + \alpha_5 log(pcr) +$$

$$\varepsilon_t \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots$$

(6)

Where: GDP is Gross Domestic Product, alr is average lending rate, dpr is 6 months deposit rate, exr is the USD/ZMW exchange rate, inf is the inflation rate and pcr is credit to the private sector.

3.1.1 The Error Correction Model

The Granger representation theorem allows the estimation of ECM if cointegration is established in the model (Engle and Granger, 1987). The ECM is specified as:

$$\Delta logGDP_t = \psi_0 ect_{t-1} + \sum_{K=1}^{K} \psi_1 \Delta logGDP_{t-K} + \sum_{K=1}^{K} \psi_2 \Delta alr_{t-K} +$$
$$\sum_{K=1}^{K} \psi_3 \Delta dpr_{t-K} + \sum_{K=1}^{K} \psi_4 \Delta exr_{t-K} + \sum_{K=1}^{K} \psi_5 \Delta log\ inf_{t-K} + \sum_{K=1}^{K} \psi_6 \Delta logpcr_{t-K} +$$
$$\varepsilon_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots$$

(7)

Where:

ect_{t-1} is the error correction term measuring period t-1 deviation from the long-run stationary relationship through coefficient ψ_0; Δ is the difference operator.

3.1.2 Data Description and Sources

The study employs quarterly data collected from the Bank of Zambia and Zambia Statistical Agency over the period 2001q1 to 2021q2 (Table 1 and appendix 1).

Table 1: Summary of the Data

Variable name	Variable Description	Unit of Measurement	Source
gdp	Gross Domestic Product	Billions of Kwacha	Zambia Statistical Agency
alr	Lending rate	Percentage	Bank of Zambia
dpr	Deposit rate	Percentage	Bank of Zambia
inf	Inflation rate	Percentage	Zambia Statistical agency
exr	Exchange rate	K/USD	Bank of Zambia
pcr	Credit to the Private Sector	Billions of Kwacha	Bank of Zambia

4.0 Results

4.1 Pre-estimation Diagnostics

4.1.0 Descriptive Statistics

Table 2 presents descriptive statistics of the data set.

Table 2: Descriptive Statistics

Variable	obs	Mean	Std.dev.	Min	Max
$lngdp$	82	5.16	0.28	4.56	5.53
alr	86	30.50	11.03	16.00	56.00
dpr	86	11.73	6.19	6.00	33.00
exr	82	7.11	4.46	3.28	22.40
$lninf$	86	2.47	0.49	1.79	3.36
$lnpcr$	82	2.09	1.29	0.54	3.76

4.1.2 Unit Root Tests

Unit root tests were carried out using the Augmented Dickey-Fuller (ADF) test to ensure that spurious relationships, usually associated with time series data are avoided (Table 3).

Table 3: ADF Unit Root Tests

Variable Name	t-ADF Level	5% Critical Value	t-ADF First Difference	5% Critical Value	Order of Integration
gdp	-2.595	-3.528	-16.599	-3.532	I(1)
alr	-0.924	-3.469	-5.944	-3.470	I(1)
dpr	-1.354	-3.469	-7.173	-3.460	I(1)
inf	-1.810	-2.952	-3.804	-2.962	I(1)
exr	1.542	-2.950	-4.620	-2.947	I(1)
pcr	-1.022	-3.476	-7.167	-3.472	I(1)

4.1.3 Lag-Length Selection Criteria

Based on the Akaike Information Criterion (AIC) and the Shwarz Bayesian Information Criterion (SBIC), two lags were appropriate for the model of the study (Table 4).

Table 4: Lag-Length Selection

```
 Sample: 2001q3 thru 2021q2                    Number of obs = 80
 +------------------------------------------------------------------+
 |Lag|  LL    LR   df  p   FPE    AIC    HQIC    SBIC  |
 |-----+------------------------------------------------------------|
 |  0|-13.7795             .093647 -2.49339 -2.49339 -2.49339 |
 |  1| 157.702 342.96  1 0.000 .00132 -6.75542 -6.74348 -6.72564 |
 |  2| 161.574 7.7442*  1 0.005 .001229* -6.82722* -6.80334* -6.76767*|
 +------------------------------------------------------------------+
  * optimal lag
```

4.1.4 Johansen Cointegration Test

Having established that all variables are integrated of the same order I (1), a Johansen cointegration test was undertaken. The Trace Statistic reveals the existence of a cointegrating (long-run) relationship among the variables (Table 5)

Table 5: **Johansen tests for cointegration**

Trend: (none)   Number of obs = 80
Sample: 2001q3 thru 2021q2   Number of lags = 2

Maximum Rank	Params	LL	Eigenvalue	Trace statistic	Critical value 5%
0	36	-69.779145	.	104.5031	82.49
1	47	-50.295279	0.38559	65.5353	59.46
2	56	-36.101726	0.29871	37.1482*	39.89
3	63	-25.917756	0.22477	16.7803	24.31
4	68	-21.074989	0.11403	7.0948	12.53
5	71	-17.877076	0.07684	0.6989	3.84
6	72	-17.527612	0.00870		

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* selected rank

5.0: Discussion

5.1 Long-Run Passthrough Analysis

The long-run passthrough results from monetary policy variables to GDP are shown in table 6.

Table 6: **Long-Run Results**

Variable	Coefficient	Std.err	z	P>|z|
$lniip$	1			
alr	-0.013***	0.003	-4.830	0.000
dpr	0.011***	0.002	4.500	0.000
$lninf$	-0.070***	0.026	-2.710	0.007
exr	0.016***	0.003	4.160	0.000
$lnpcr$	-0.334***	0.023	-14.500	0.000
c	2.148			

*** imply 1% level of significance

The results showed that in the long run, average lending rate (alr), inflation rate $(lninf)$ and credit to the private sector $(lnpcr)$ had a significant negative impact on gross domestic product $(lngdp)$ while exchange rate (exr) and deposit rate (dpr) were found to have a significant positive impact. This implies that one percentage increase in lending rate, inflation rate and private sector credit would lead to a

percentage decrease of GDP by 0.013, 0.070 and 0.334, respectively. The result on lending rate is consistent with theory in that contractionary monetary policy through a rise in lending interest rate constrains economic growth by decreasing money supply in the economy for real sector investments. Empirically, this has been supported by the work of Alavinasab (2016) in Iran, Imoughele and Ismaila (2016) in Nigeria and Onderi and Njuru (2015) in Kenya who found contractionary monetary policy to have a negative influence on economic growth.

Looking at inflation, economic theory suggests that if inflation becomes too high, it erodes the purchasing power funds which subsequently reduces the value of real sector investments. This is in line with the empirical findings of Andres and Hernando (1997) who established that too much inflation had a negative impact on economic growth of the OECD economies.

The result on the impact of the private sector credit to growth is however against the apriori expectation. There is, however, need to validate this using a different data set and different methodology. Empirically, this adds to the inconclusive debate on either private sector credit leads to economic growth or not and is consistent with other studies such as Shan and Jianhong (2006) in China and Hondroyiannis et al. (2005) in Greece that found a negative relationship between economic growth and private sector credit.

On the other hand, exchange rate and deposit rate had a significant positive influence on economic growth. Thus, holding all other things constant, a percentage increase in exchange rate and deposit rate would result into a percentage increase in economic growth of 0.016 and 0.011, respectively. This results into a long run passthrough elasticity of 2.2% from exchange rate and 2.5% from deposit rate. This suggests that exchange rate appreciation of the local currency increases the value of the country's export earnings. Further, expansionary monetary policy associated with a rise in deposit rates encourages real sector investments since there is an assurance of preserving the value of the investment returns. This is consistent with

the findings of Imoughele and Ismaila (2016), who found that deposit interest rates and exchange rate had a positive relationship with economic growth in Nigeria.

5.2 Short-Run Analysis

A separate short run dynamic equation which included the error correction term extracted from the long run was estimated in order to allow for the disclosure of additional information that might have not been revealed in the long run (Table 7).

Table 7: Short-Run Results

Variable	Coefficient	Std.err	z	P>|z|
ect	-0.2409	0.088	-2.750	0.006
$alrLD$	-0.0002	0.003	-0.070	0.947
$dprLD$	0.0019	0.003	0.770	0.444
$lninfLD$	-0.0381**	0.019	-1.950	0.051
$exrLD$	-0.0054	0.006	0.940	0.347
$lnpcrLD$	0.0161	0.049	0.330	0.742
c	0.0191			

*** 5% level of significance*

In the short run, only inflation had an impact on economic growth with a lag one. Thus, ceteris paribus, a percentage rise, a percentage increase in inflation would result into a 0.038 percentage decline in output. As opposed to the long-run dynamics, all the other variables were found to have a statistically insignificant relationship with economic growth.

The coefficient of the error correction term (ect) has a negative sign and is statistically significant. The absolute coefficient value of the ect of 0.2409, indicates that the speed of adjustment towards the long run equilibrium given that a shock occurs in the economy is about 24% in each given quarter.

5.3 Pair Wise Granger Causality Tests

In order to establish the possible channels of monetary policy transmission in the real sector, a pairwise granger causality test was undertaken between GDP and each monetary policy variable (Table 8).
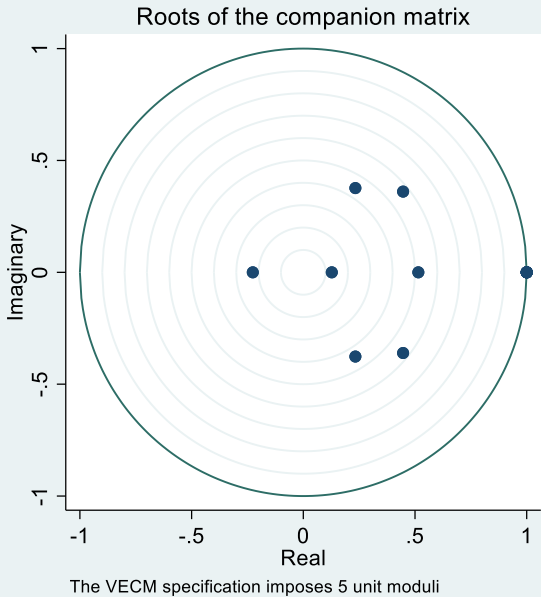
Table 8: **Pair-wise granger causality tests**

Ho	Prob > chi2	Conclusion
Average lending rate does not granger cause GDP	*0.188*	*accept*
GDP does not granger cause average lending rate	*0.368*	*accept*
6 months deposit rate does not granger cause GDP	*0.194*	*accept*
GDP do not granger cause 6 months deposit rate	*0.483*	*accept*
Exchange rate does not granger cause GDP	*0.060*	*reject*
GDP do not granger cause Exchange rate	*0.456*	*accept*
Inflation rate does not granger cause GDP	*0.125*	*accept*
GDP do not granger cause inflation rate	*0.110*	*accept*
Private sector credit does not granger cause GDP	*0.006*	*reject*
GDP do not granger cause private sector credit	*0.001*	*reject*

A unidirectional causation from exchange rate to GDP was established while a bi-directional causality was established between private sector credit and GDP. These results suggest that the exchange rate and credit channels of monetary policy are essential in transmitting monetary policy impulses into the real economy in Zambia. These results are similar to the findings of Nampewo et.al (2013) who established the effectiveness of exchange rate and credit monetary policy channels in Uganda, a developing country like Zambia. Chileshe et.al (2015), using a different dataset, also established the effectiveness of the exchange rate channel Zambia, mostly due to Zambia's dependence on copper exports.

5.6 Post-Estimation Diagnostic Tests

In order to assess the adequacy of the model, LM residual correlation, VEC stability and normality tests were undertaken (Table 9).

Table 9: Diagnostic Tests

LM Test for Residual Correlation	Lagrange-multiplier test | lag	chi2	df	Prob > chi2
1	35.4685	36	0.49369
2	30.9433	36	0.70772 | H0: no autocorrelation at lag order
---	---
Stability Test	Roots of the companion matrix The VECM specification imposes 5 unit moduli
Normality Test	

Jointly Test	chi2	df	Prob > chi2
Jarque-Bera test	700.515	12	0.000
Skewness test	93.418	6	0.000
Kurtosis test	607.097	6	0.000

The model passed serial correlation and stability tests, but it failed normality test. However, this is a common phenomenon for time series data due to its nature, as such, the employment of the Johansen cointegration approach becomes appropriate due its robustness (Diof, 2007).

317

6.0 Conclusions

This study investigated the impact of monetary policy on economic growth in Zambia over the period 2001q1 to 2021q2 based on the Johansen cointegration approach and granger causality test.

Monetary policy was proxied by average lending rate, 6 months deposit rate, exchange rate, private sector credit while inflation rate was used a control variable. The study results suggest that monetary policy has an impact on the Zambian economy via interest rates (lending and deposit), exchange rate and private sector credit. In addition, inflation had a significant influence on economic growth. This confirms the presence of the interest rates, exchange rate and credit channels of monetary policy transmission in Zambia. In terms of policy, there is need to enhance the effectiveness of interest rates channel and credit channel by improving the operations of the financial markets to enable them to transmit central bank actions in the real sector at the right time and appropriate magnitudes.

7.0 References

Alavinasab, S.M.. (2013). Exports and economic growth: Evidence from Iran. Middle East Journal of Scientific Research. 18. 936-941. 10.5829/idosi.mejsr.2013.18.7.11797.

Andrés, J., and Hernando, I. (1997). Does Inflation Harm Economic Growth? Evidence For the OECD. Available at: https://www.bis.org/publ/confp04p.pdf. [Accessed on 12/12/2022]

Bernanke, Ben S., and Mark, G. (1995). Inside the Black Box: The Credit Channel of Monetary Policy Transmission. *Journal of Economic Perspectives*, 9 (4): 27-48.

Claudio R, and Roberto, R. (2003). Monetary policy and sectoral shocks : did the Federal Reserve react properly to the high-tech crisis?, Policy Research Working Paper Series 3160, The World Bank.

Das, S. (2015). Monetary Policy Transmission to Bank Interest Rates. IMF working Paper no:129,2015.

Diouf, M. A. (2007). Modelling inflation for Mali. IMF Working Paper, WP/07/295, Washington DC.

Engle, R., and Granger, C. (1987). Cointegration and Error Correction: Representation, Estimation and Testing. Econometrica, 55, 251–276.

Hayo, B., and Uhlenbrock, B. (1999). Industry Effects of Monetary Policy in Germany. Available at SSRN: https://ssrn.com/abstract=168470 or http://dx.doi.org/10.2139/ssrn.168470.

Hondroyiannis, G., Lolos, S., and Papapetrou, E. (2005). Financial Markets and Economic Growth in Greece, 1986-1999. Journal of International Financial Markets, Institutions and Money, 15: 173-188.

Imoughele .,I. (2016), Global Journal of Research in Business & Management, Vol. 4, No. 1, February 11, 2016 www.gpcpublishing.com ISSN: 2454-3128.

Jean,F. and Gabriel, S. (2001). The Monetary Transmission Mechanism at the Sectoral Level, Staff Working Papers 01-27, Bank of Canada.

José, V., and Javier V. (1999). On the Real Effects of Monetary Policy, Working Papers 9917, Banco de España.

Jose, V., and Javier, V. (1999). On The Real Effects of Monetary Policy. Available at: https://www.bde.es/f/webbde/SES/Secciones/Publicaciones/PublicacionesSeriadas/DocumentosTrabajo/99/Fic/dt9917e.pdf [Accessed on 13/03/2021]

Kandil, M. (2014). On the effects of monetary policy shocks in developing countries. Available at: https://doi.org/10.1016/j.bir.2014.04.001 [Accessed on 12/12/2022]

Mbowe, W. (2015). Monetary Policy Rate Pass-through to Retail Bank Interest Rates in Tanzania, Bank of Tanzania WP No. 4

Mishra, P. and P. Montiel. (2012). How effective is monetary transmission in developing countries? A survey of the empirical evidence. IMF Working Paper No. WP/12/143. International Monetary Fund, Washington DC, November

Mutoti, N. (2006). Monetary policy transmission in Zambia. Bank of Zambia Working Paper No.3

Mwange, A (2017). Determinants of Bank Selection Criteria: The Case of University of Zambia Students. *Imperial Journal of Interdisciplinary Research*, *3(3).* Available at: https://www.onlinejournal.in/IJIRV3I3/053.pdf

Mwange, A (2017). Exploring Levels of Financial Literacy among University of
Zambia Final Year Students. Journal of Business Management Research, 3(3). Available at:
https://www.academia.edu/32139709/Exploring_Levels_of_Financial_Literacy_amo ng_University_of_Zambia_Final_Year_Students. https://ijrdo.org/index.php/bm/article/view/1272

Mwange, A. (2018). Measurement of Variables in Entrepreneurship Intention Studies: A Review of the Entrepreneurship Intentions Questionnaire (EIQ).

Journal of Social Science and Humanities Research, 3(10). Available at: https://ijrdo.org/index.php/sshr/article/view/2511

Mwange, A (2018). An Evaluation of Entrepreneurship Intention Theories. *Journal of Social Science and Humanities Research 3(9)* Available at: https://ijrdo.org/index.php/sshr/article/view/2529/2126

Mwange, A (2018). A Critical Review of Strategic Directions for Enhanced Employment Creation in Zambia. *Journal of Applied Management Science, 4(10).* Available at: https://ijrdo.org/index.php/ams/article/view/2514/2122

Mwange, A (2018). A Critical Review of Antecedents of Entrepreneurship Intention. *Journal of Business Management, 4(9).* Available at: https://ijrdo.org/index.php/bm/article/view/2528/2124

Mwange, A., Kasongola, P., & Meyiwa, A. (2022). An Assessment of the Effect of Mobile Money Services on the Profitability of the Banking Sector in Zambia. *Economics and Business Quarterly Reviews, 5(3), 139-152.* Available at: https://www.asianinstituteofresearch.org/JEBarchives/An-Assessment-of-The-Effect-of-Mobile-Money-Services-on-The-Profitability-of-The-Banking-Sector-in-Zambia-

Mwange, A., & Meyiwa, A. (2022). Monetary Policy Responses to Crude Oil-Price Shocks: The Case of Selected Central Banks. *Economics and Business Quarterly Reviews, 5(3), 102-112. Available at:*

https://www.asianinstituteofresearch.org/JEBarchives/Monetary-Policy-Responses-to-Crude-Oil-Price-Shocks%3A-The-Case-of-Selected-Central-Banks

Nampewo, D., Munyambonera,E. ,and Lwanga,M.Manyanga (2013). Sectoral effects of monetary policy in Uganda. Journal of Statistical and Econometric Methods, vol.2, no.4, 2013, 17-40 ISSN: 2241-0384 (print), 2241-0376 (online)

Ngoma, C., and Chanda,C. (2022). Interest Rates Pass-through in Zambia. Available at: http://publication.aercafricalibrary.org/handle/123456789/3369   [Accessed on 18/08/2022]

Shan, J. and Jianhong, Q. (2006). Does Financial Development lead to Economic Growth? The case of China, Annals of Economics and Finance, 1: 231–250

Simatele, M. (2004). Financial Sector Reforms and Monetary Policy in Zambia. Available at:https://www.researchgate.net/publication/47328505_Financial_Sector_Reforms_and_Monetary_Policy _in_Zambia.[Accessed on 18/02/2021]

Simpasa,A., Nandwa, B., and Tiguéné,N. (2014). Working Paper - 211 - Bank Lending Channel of Monetary Policy Transmission in Zambia: Evidence from Bank-Level Data, Working Paper Series 2147, African Development Bank.

Tasneem, A., and Muhammad, W. (2006). Sectoral Effects of Monetary Policy: Evidence from Pakistan. Available at: https://core.ac.uk/download/pdf/337604024.pdf [Accessed on 12/12/2022]

Tremayne, A. R. and Tena, H, Juan de, D. (2006). Modelling monetary transmission in UK manufacturing industry, DES - Working Papers. Statistics and Econometrics. WS ws062911, Universidad Carlos III de Madrid. Departamento de Estadística.

Zgambo, P., and Chileshe, P. (2014). Empirical Analysis of the Effectiveness of Monetary Policy in Zambia. Available at http://cmi.comesa.int/wp-content/uploads/2016/03/Zambia-1.pdf. [Accessed on 23/12/2021]

Zgambo, P. (2017). Liquidity Management in an Interest Rate Targeting Framework. Bank of Zambia Working Paper series, 2012 no.4.