

The Impact of Macroeconomic Policy on the Mining Sector Output in Nigeria

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DOI: <https://doi.org/10.51244/IJRSI.2023.1011051>

Received: 01 November 2023; Accepted: 09 November 2023; Published: 23 December 2023

ABSTRACT

Sustainable growth cannot be achieved in isolation without matching the relationship between natural resources and appropriate macroeconomic policies. The study examines the impact of macroeconomic policy on the mining sector output in Nigeria using time series data, spanning from 1981 to 2021. Preliminary tests such as descriptive statistics and correlation were carried out on the data. Also, the stationarity test was conducted using Philips-pereon, while the Autoregressive Distribution Lag (ARDL) method was employed to test for the differential impact of fiscal policy and monetary policy. The result showed that fiscal policy and monetary policy significantly influenced mining sector output in Nigeria. The study concluded that the performance of the mining sector has not been unimpressive in Nigeria during the study period. the government should advance more credit through special directives from the Central Bank of Nigeria to commercial banks to grant more loans to the mining sector.

Keywords: Maroeconomic, Mining, Fiscal Policy, Monetary Policy, Autoregressive Distibuted Lag (ARDL).

INTRODUCTION

Macroeconomic policy and the mining sector are two different entities in Economics. However one can complement the other, while the mining sector might be a channel to achieve macroeconomic policy objectives, macroeconomic policy on the other hand can pave the way to develop the mining sector. Moreover, based on economic principles, it is a well-known fact that there are two major macroeconomic policies, (fiscal and monetary policies) that are being used by economic managers to manage the health of an economy and economic growth (Gross Domestic Product; GDP). The relevance is that both monetary and fiscal policies complement each other (Havi & Enu 2014). The monetary policy includes the Interest rate, Credit and exchange rate, and Money supply while fiscal policy comprises taxation, government expenditure, balanced budget e.t.c (Lotto & Musa 2014b).

However, the combination of taxes, large size, and often (not always) high profitability implies that mineral taxes can generate as much as high revenue for the government. Also, government spending can be high relative to GDP; on the other hand, monetary policy achieved its objectives through interest rate management (Jefferies 2014). Decreases in interest rate influence investment in the production sector such as the mining sector.

Although mining has the potential to be a significant source of income and a catalyst for broader economic

growth, its 0.5% GDP contribution is still small and unfavorable. The main factor limiting the industry has been a lack of exploration funding, which has resulted in the industry's underperformance and, ultimately, a loss of business opportunities (David, Noah, & Agbalajobi 2016a). Through the local purchase of inputs, mineral production generates income and foreign exchange that boost local economies and can serve as the foundation for manufacturing and downstream processing sectors. Mineral production generates tax revenues for governments that can be used to pay for infrastructure projects like roads, electric power grids, and other forms of infrastructure like schools and hospitals. However, resource-endowed economies have long struggled with the idea that having access to natural resources might be a curse (Koitswe 2018).

However, Nigeria possesses great capability and opportunities to create growth and development through enhanced revenue generated from export earnings, taxes, royalties, job creation, skill and technology transfer, provision of infrastructure and social services, etc. Meanwhile, mining activities can also cause several negative effects on the environment, social fabric as well as economy. Although mineral resources are finite, the wealth from mining contributes to government revenue through the payment of royalties and taxes to the government (Hodge 2014).

Also, interest rate as one of the major monetary policy variables, has been exhibiting an adverse relationship to most investments in Nigeria as well as the manufacturing sector which is an important value chain to the mining sector (Onakoya 2018). This could be linked to the high-interest rate charged by financial institutions, the work of (Okwon, Ochinyabo & Sule 2014) and (Erinma 2016). Based on the above fact, the United Nations in its capacity came up with some policies which can bridge the funding gap in the mining sector to drive most developing economies of the world through the mining sector. United Nations 2021 lists a number of goals, one of which is to "De-risk sustainable investment through enhanced coordination between the private sector, multilateral and development banks, and governments," as well as to "continue to introduce reforms to improve access to finance and create alternative mechanisms to provide affordable energy consumption and protect the poor."

The recovery of Nigeria's mining sector, the fall in oil prices, rising youth unemployment, Niger Delta unrest, and the worldwide economic downturn are all suspected causes. By diversifying the economy away from its reliance on oil exports, the mining industry can significantly contribute to the country's economic growth and development. Several agencies, including the Nigerian Mining Corporation (NMC), the Nigeria Coal Corporation (NCC), the Nigeria Uranium Mining Corporation (NUMC), and the Associated Ores Mining Company (AOMN), have been established by previous governments of Nigeria in an effort to revitalize the sector. However, because the mining industry has made such a small contribution, their successes have been limited (David, Noah, & Agbalajobi, 2016b).

Despite its enormous potential as a new source of revenue for Nigeria, the mining sector has been largely ignored by the country's government. In spite of the country's rich mineral deposits and the substantial revenue they could generate, mining has historically contributed less than one percent to GDP, well below that of other African countries with similar mineral endowments like South Africa 7.3 percent (Adeniyi & Afuye, 2018a). . Also, other African's contributions of the mining sector to their GDP include; Botswana 38%, Zambia 18%, Guinea 12%, and Ghana 7% respectively (Olade 2019)

Considering the trend in the contribution of the mining sector to GDP in Nigeria, the Nigeria mining sector is still largely underdeveloped. It contributed less than 0.5% to the Gross Domestic Product (GDP), a contribution which is a reversal from the higher percentage of about 4-5 % in the 1960s and 1970s. Currently, the sector contributes 0.0002% in 1980, 0.0012% in 1990, 0.019% in 2000, 0.023% in 2010, and 0.03% in 2020. Also, the sector is responsible for 0.33% of employment, 0.02% of exports, and 0.3% of the country's GDP, the contribution is considerably lower than its projected estimate (Okechukwu & Arowosaye 2020). Therefore, following the creation of a Sector Roadmap and its objectives, the federal government of Nigeria as part of its expansionary fiscal policy to boost the mining sector obtained credit

from the International Development Association (IDA) and The World Bank to fund the Mineral Sector Support for Economic Diversification (MinDiver) project which is aimed at implementing the targets of the Sector Roadmap and revitalizing the mining sector's contribution to the economy Ashish (2020). The government borrowed the sum of 908.63 billion Naira, as special credit to develop the mining sector. In addition, the Sectoral Distribution of VAT showed that the mining sector has persistently generated the least VAT in the last few years. VAT generation was ₦147 million, ₦133 million, ₦135 million, ₦182 million, and ₦209 million for 2015, 2016, 2017, 2018, and 2019, respectively. Low VAT generation from Nigeria's mining sector indicates under performance.

LITERATURE REVIEW

Endogenous growth theory

Endogenous growth theory propounded that, growth in the economy is driven by internal, rather than external, forces. It is based on the theory that investments in technology, education, and people lead to greater productivity and a healthier economy (CFI 2022). According to proponents of the endogenous growth theory, economic expansion results from within rather than without. Investment in human capital, innovation, and knowledge are thought to promote economic growth, according to the proponents of endogenous growth. The theory places an emphasis on the virtuous externalities and growth-inducing spillover effect of a knowledge-based economy. Improvements in technology and productive efficiency are cited as reasons why investing in a country's human capital pays off economically (Liberto, 2020). Some endogenous growth models rely on policy measures like subsidies, R&D, or education to boost growth in the long run, and this theory holds that this is how economies grow. Romer (2012).

Dissatisfied with exogenous growth factors' inability to explain long-term growth, a school of thought emerged in the 1980s that advocated a model in which the key determinant of growth was replaced by an exogenous growth variable (technological progress). The research was based on the work of Kenneth Arrow (1962), Hirofumi, Uzawu(1965), and Miguel Sidrauski (1967). The authors Romer (1986), Lucas (1988), Rebelon (1991), and Santos (1997) neglected to mention, they hypothesized that the models' economies would continue expanding as a result of technological advancements because of the multiplier effect of investing in human capital. The AK model was the simplest form of endogenous technological change, requiring only a single input variable (A). That "the production function does not exhibit diminishing returns to scale" is the premise upon which this theory rests. Positive spillovers from capital investment to the economy at large or improvements in technology leading to further improvements were cited as the rationale for this assumption. Meanwhile, models in which agents optimally determine consumption and saving provide further support for the endogenous growth theory. Grosswith and Helpman (1991) and Aghion and Howitt (1992) incorporated imperfect markets and R&D to growth, while Romer (1986, 1990) argued that optimizing R&D allocation led to technical progress. AK model is a special production function, a special case of Cobb- Douglas production function. , The equation depicts a Cobb- Douglas function where Y represents total factor productivity, K is Capital, L is Labour and the parameter α measures the output elasticity of capital. The production function became linear in a special case α is equal to 1 i.e. ($\alpha=1$) thereby giving a constant return to scale i.e. $Y=AK$ an endogenous theory that implies that policies that embrace openness, competition, change and innovation will promote growth.

EMPIRICAL LITERATURE REVIEW

Since Nigeria's primary source of foreign income is the export of crude oil, Azubuike, Nakanwagi, and Pinto (2022) investigate the country's need to diversify its economy. To alleviate poverty and support the country's continued growth and development, Nigeria is looking into other economic opportunities, such as creating a Mining Resource Corridor (MRC). Jobs are created, economic diversification is encouraged, and more people benefit from economic growth when MRCs catalyze mineral extraction, transportation,

processing, and infrastructure development. To ensure a diverse and sustainable economic future for Nigeria, this study used an applied research approach to analyze the most important factors to consider and steps to take when creating an MRC. The study, emphasizes the relevance of the economic diversification agenda as a tool for achieving economic diversification agenda as a tool for achieving economic growth.

However, Achi (2020) examine the impact of macroeconomic factors on manufacturing sector output in the economy spanning between 1981-2017 using time series data from CBN statistical bulletin and World Bank Development indicator. The study uses OLS and granger causality Test on the following variables. Interest rate, exchange rate, inflation rate, manufacturing output and GDP, to examine the causal relationship between Macroeconomic factors output in Nigeria. The result established a positive relationship between macroeconomic variables and the manufacturing sector in Nigeria. The study established the relevance of macroeconomic variables in the achievement of economic growth through the manufacturing sector of the economy.

Similar research was conducted by Onyema and Onuoha (2019), who used time series data to analyze the connection between fiscal policy and economic growth in Nigeria from 1981 to 2017. The study used a decomposition analysis of government spending, with taxation and other forms of revenue standing in for direct taxation to represent fiscal policy. Unit root test, co-integration test, multiple regression, and error correction model are just some of the series of estimation techniques used. The results showed a negative relationship between government spending on administration and the fiscal deficit and economic growth in Nigeria, while government spending on economic and social services and taxes had a positive and significant relationship. The research concludes that fiscal policy has been a major factor in Nigeria's rising standard of living over the years.

However, Idris (2019) examined the impact of monetary and fiscal policy on output growth in Nigeria from 1980 to 2017 via annual time series data. The study adopted the OLS technique of analysis and cointegration test showed that both monetary and fiscal policy exhibits a positive and significant relationship with economic growth. Also, further results indicate that monetary policy is more effective than fiscal policy in Nigeria over the period investigated. However, the need for fiscal discipline in public finance is still imperative to maintain a healthy balance in the economy as well as safeguarding the maintaining of a steady macroeconomic environment ensures that monetary aggregates are operating within the growth limits.

Also, Lotto and Musa (2018) investigate the impact of macroeconomic policy on industrial sector performance on short and long-run effects of specific policy instrument combination on each industrial subsector by categorizing into three major parts based on the assumption of its ability to enhance the performance of the real sector. The study employed a non-linear bound test approach to the cointegration technique and the result showed the existence of a long-run bound relationship between selected policy variables and each industrial subsector. Error correction term indicated that short-run disequilibrium can be corrected in the long run without a lag period. The monetary policy rate was effective in the short run while financial deepening, exchange rate, depreciation and economic openness were significant in the long- run. Therefore, deepening the financial system and prudential management of the macroeconomic framework were recommended for industrial growth in Nigeria. This study examined the interactive impact of monetary and fiscal policy on industrial sector performance. Some variables were significant in the short run while some were significant in the short run. Therefore, both policies play significant roles in the performance of industrial the industrial sector.

On the contrary Usman, Mahamud, Usman and Abdussalam (2018) Limestone is a valuable staple within world production which signified the distribution or the supply of the staple within the countries and therefore the economic development also depends on regular production. In Nigeria, the cement industry has made a substantial improvement in production capacity and development. This has resulted in a rise in

cement production within the nation. Nigeria is going to be producing over 25 million metric tonnes of cement annually. The study focuses on the relevance of cement production which is one of the value chains in the mining sector. It emphasizes its importance in economic growth and development

However, Farkhri, Faud and Naye (2018) examined the non-oil sector effect of fiscal policy in Azerbaijan over a long period incorporating low oil price, cointegration and error correction modeling. The result showed that fiscal policy has a statistically significant positive impact on the non-oil sector both in the short and long run.

In the same vein, Onkoya (2018) investigate the impact of the changes in the macroeconomic factors on the output of the manufacturing sector in Nigeria from 1981-2015. Descriptive statistics and stationarity Preliminary test showed variation in the level of stationarity which necessitated the need for the Johansen cointegration test. The study revealed a long-run association between manufacturing output and each GDP, exchange rate, broad money supply and unemployment rate. On the other hand, there is an existence of a negative relationship between the inflation rate, interest rate, exchange rate and broad money supply.

Ubesie (2016) also looked into how economic policy affected growth in Nigeria's economy. The goal is to dissect the role that distinct elements of economic policy have played in boosting Nigeria's GDP growth rate. Secondary data were used for this analysis, specifically those published in the Statistical Bulletin of the Central Bank of Nigeria (CBN) between 1985 and 2015. After making sure the data was stationary, descriptive statistics and the ordinary least square (OLS) multiple regression method were used for the analysis. The findings revealed a positive and statistically significant relationship between total government expenditures and government income, with expenditures peaking ahead of revenue. The low rate of economic growth in the country was confirmed by the fact that investment spending was significantly lower than regular spending. The uncertainty and volatility of oil revenue has a significant impact on economic policy research in oil-producing countries. Oil revenue volatility should be mitigated in policy formulation to account for natural resource depletion. The country's past economic policy has failed because of the extreme volatility of both revenues and expenditures, which is largely due to changes in oil prices.

However, David, Noah, and Agbalajobi (2016) look into the impact of the mining industry on Nigeria's economic growth from 1960 to 2012. Error Correction Model (ECM) was used to examine the immediate and future consequences of the mining industry's growth on Nigeria's economy. Use of statistical data allowed the researchers to assess the contribution of the necessary key sectors to economic growth as measured by per capita income. These sectors included crude petroleum and gas extraction, solid mineral extraction, manufacturing, and agriculture. Both the opportunities and challenges facing Nigeria's mining industry as it seeks to transform the country's economy are highlighted. The study's results demonstrated the importance of solid mineral value to Nigeria's economic growth.

Meanwhile, Oshinowo (2015) used the Auto regressive Distributed lag (ARDL) and Error Correction Model (ECM) to analyze the impact of economic policy on the expansion of specific sectors of Nigeria's economy from 1970 to 2013. Total government spending (TEXP) was found to have a positive effect on all but the agricultural sector's output. The results showed a positive correlation between the manufacturing sector and all the determinant variables, while inflation had a negative effect on the growth of output across all sectors except the producing sector.

METHODOLOGY

Ex-Post research was adopted in the study. It is an Ex –Post research design because secondary data will be sourced and analysed via OLS econometric analysis. Secondary data are primary data that has been collected and worked upon earlier by another researcher and stored for future use. Endogenous growth theory was adopted based on its relevance to the study. the theoretical framework of this investigation is a

watered-down version of endogenous growth theory. The endogenous growth model, which can be investigated via the production function, places an emphasis on the impact of macroeconomic policy on long-run growth. In this light, let's think about a straightforward intensive form of the production function, in which total output is simply a linear function of total capital.

$$Y = Af(k) \tag{1}$$

Y_t is real output (aggregate output), A is the efficiency of production (technological level) which is a positive constant, and k is the volume of capital stock. Output per capita in Equation (1) is given as:

$$Y/L = Af(K/L) \tag{2a}$$

$$Y_t = Akt \tag{2b}$$

(Kt) in a broad sense can be decomposed into human capital (K_H^β) and physical capital (K_p^α) as in Lucas (1988).

The average product and marginal product of capital in Equation (2b) are constant at level $A > 0$. Capital (K_t) in a broad sense can be decomposed into human capital K_H^β and physical capital K_p^α as in Lucas (1988).

Thus,

$$K_t = (K_H^\beta, K_p^\alpha) \tag{3}$$

Incorporating Equation (3) into Equation (2b), we have: specified as;

$$Y_t = AK_H^\beta K_p^\alpha \tag{4}$$

Further, the endogenous growth theory emphasized the positive influence of externalities (e) on aggregate output. Thus, incorporating 'e' into Equation (4) becomes:²

$$Y_t = AK_H^\beta K_p^\alpha e^x \tag{5}$$

where β , α and x are elasticities of human capital, physical capital and externalities respectively. The ability of externalities such as macroeconomic policy to influence the economy depends on the development of its absorptive capacity (such as the stock of human and physical capital in the economy and the macroeconomic policies of the economy). Therefore, externalities 'e' is assumed a function of human capital K_H , physical capital K_p and macroeconomic policy M_p^θ that is:

$$e = f(K_H, K_p, M_p^\theta) \tag{6}$$

Where e is the elasticity of macroeconomic policy, if $\theta > 0$, macroeconomic policy is expected to yield a positive effect on the economy?

Model Specification

The model for this study was specified in line with (Nwosa and Akinbobola 2019) with little modification.

$$\ln Y_t = \alpha_0 + \alpha_1 \ln K_{Ht} + \alpha_2 \ln K_{pt} + \alpha_3 M_{pt} + \alpha_4 INT + \alpha_5 EXT + \mu_t \quad (7)$$

Equation (7) becomes the baseline equation for estimation.

DATA ANALYSIS AND INTERPRETATION

It starts with the preliminary analysis, and then the regression estimate. The regression estimate was carried out in line with the objectives of the study.

Table 1. Descriptive Statistics

Statistics / Variables	MIN	LF	CAP	GXP	INT	ERT	MS
Mean	48.118	43172862	7557.45	2494.3	17.309	108.168	8225.97
Median	36.87	43030921	2473.47	1018	17.5	111.94	1269.32
Std. Dev.	30.161	12588753	10819.1	3189.89	4.63953	109.911	12165.9
Skewness	0.954	0.0277	2.023	1.406	0.268	0.973	1.445
Kurtosis	2.730	1.7442	6.482	4.206	3.515	3.172	3.953
Jarque-Bera	6.344	2.6995	48.668	16.002	0.944	6.519	15.818
Probability	0.042	0.2593	0.000	0.000	0.624	0.038	0.000
Observations	41	41	41	41	41	41	41

Source: Author's computation.

Correlation Matrix

The correlation estimate showed that the mining sector is positively correlated with labour force (LF), capital stock (CAP), government expenditure (GXP), exchange rate (ERT) and money supply while the mining sector output (MIN) had a negative association with interest rate. The coefficients of the correlation matrix indicated the absence of the possibility of multicollinearity since the coefficients of the pairs of variables are less than 0.80. Thus, the results of the correlation matrix suggest a positive relationship between mining sector output and fiscal policy while the suggested relationship between mining sector output and monetary policy depends on the measurement of monetary policy.

Table 2. Correlation Matrix

Variables	MIN	LF	CAP	GXP	INT	ERT	MS
MIN	1.0000						
F	0.6507	1.0000					
CAP	0.7301	0.8005	1.0000				
GXP	0.6896	0.7809	0.7649	1.0000			
INT	-0.3857	0.0418	-0.2175	-0.2001	1.0000		
ERT	0.7780	0.8267	0.7270	0.7568	-0.0953	1.0000	
MS	0.8139	0.7373	0.5988	0.8003	-0.2093	0.7351	1.0000

Source: Author’s computation from E-views 9, 2023.

Stationarity Test

The stationarity test is conducted using the Philips-Perron (PP) test. The results of the unit root tests showed that all the variables (LMIN, LLF, LCAP, LGXP, LERT, LMS) were stationary at the first difference, suggesting that the variables are of order one. However, the interest rate (INT) was stationary at the level, indicating that the variable (INT) is of order zero.

Table 3. Stationarity Estimate.

Philips-Perron (PP) Test					
Variables	Level	5% Critical Values	Difference	5% Critical Values	Status
LMIN	-0.2610	-2.9369	-3.8834*	-2.9389	I(1)
LLF	-1.4556	-2.9369	-5.1873*	-2.9389	I(1)
LCAP	-0.0562	-2.9369	-3.8600*	-2.9389	I(1)
LGXP	-1.2127	-2.9369	-7.5106*	-2.9389	I(1)
INT	-3.3598**	-2.9369	–	-2.9389	I(0)
LERT	-2.3048	-2.9369	-5.3624	-2.9389	I(1)
LMS	-0.7577	-2.9369	-4.2406*	-2.9389	I(1)

Source: Author’s computation.

Note: LMIN, LIF and LCAP are logs of mining output, labour force and capital stock respectively while LGXP, LERT and LMS are logs of government expenditure, exchange rate and money supply respectively.

Co-integration Estimate

Sequel to the results of the stationarity test otherwise known as the unit root test, which showed a combination of I(0) and I(1), the co-integration is conducted using the Auto-regression Distribution Lag (ARDL) bound co-integration technique. The results of the estimate showed that the variables are co-integrated at a five percent significant level. This showed that the variables have a long-run relationship. Therefore, the regression estimate is conducted using the ARDL method.

Table 4. ARDL Co-integration Estimate

Test	Value	
F-statistic	3.6677	
Critical Value	I(0)/Lower Bound	I(1)/Upper Bound
10%	2.12	3.23
5%	2.25	3.61
1%	3.15	4.43

Source: Author’s computation

Regression Estimate

The estimate of the impact of macroeconomic policy on mining sector output is presented below. The

estimate showed that labour force (LLF), capital stock (LCAP), government expenditure (LGXP) and interest rate (INT) had the expected theoretical relationship with mining sector output while exchange rate (LERT) and money supply (MS) did not show the expected theoretical relationship with mining sector output. More so, the regression estimate showed that labour force (LF), government expenditure (LGXP) and interest rate (INT) had a significant impact on mining sector output. A unit increase in the labour force and government expenditure is expected to promote mining sector output by 24.9 units and 0.58 units respectively. However, a unit decrease in interest rate (INT) is expected to enhance the output of the mining sector by 0.10 units. Furthermore, the regression estimate showed that capital stock (LCAP), the exchange rate (LERT) and money supply (LMS) were insignificant in influencing mining sector output. This means that these variables have not contributed meaningfully to the growth of the mining sector in Nigeria.

Concerning the short-run estimate, it was observed that the second lagged value of labour force Δ (LLF (-2)), the current value of the capital stock Δ (LCAP (-2)) and the first lagged value of the capital stock Δ (LCAP (-1)) had a positive and significant contribution to the growth of the mining sector in the short run. Also, the second lagged value of government expenditure Δ (LGXP (-2)) and the current value of interest rate Δ (INT) had positive and significant contributions to the growth of the mining sector credit.

More so, the error correction term (Coint E q (-1)) was significant at five per cent and it had the expected negative sign. The coefficient of the error term which is -0.3897, indicates that the short-run disequilibrium is corrected by 38.97 per cent towards the long-run equilibrium. In addition, the Durbin-Watson estimate of 2.04, suggests that the regression estimate is free of serial correlation problems. The Durbin-Watson result is corroborated by the Breusch-Pagan-Godfrey Heteroskedasticity and serial correlation LM estimates in Table 6.

Table 5. Regression Estimate

Independent Variables	Estimated Co-efficient	Standard Error	t-Statistics	Prob.
Long Run Regression Estimate				
LLF	24.9316	5.9310	4.2036	0.0008*
LCAP	0.5782	0.5633	1.0263	0.3210
LGXP	3.0367	0.5368	5.6571	0.0000*
INT	-0.1018	0.0461	-2.2080	0.0433**
LERT	-0.0712	0.2021	-0.3525	0.7294
LMS	-0.3638	0.4782	-0.7607	0.4586
C	-416.658	99.2720	-4.1971	0.0008
Short Run Regression Estimate				
Δ (LLF(-2))	9.6555	2.4619	-3.9220	0.0014*
Δ (LCAP)	0.7133	0.2466	-2.8925	0.0112**
Δ (LCAP(-1))	0.6066	0.2344	-2.5881	0.0206**
Δ (LGXP(-2))	0.4721	0.1454	3.2473	0.0054*
Δ (INT)	0.0364	0.0101	3.6071	0.0026*
CointEq(-1)	-0.3897	0.1473	-2.6448	0.0184**

$R^2 = 0.9196$	F-stat. (Prob.) = 84.76 (p<0.05)
Adjusted $R^2 = 0.8944$	Durbin-Watson = 2.0359

Source: Author’s computation.

Table 6. Diagnostic Tests

Estimates	F-Statistics	Obs*R-squared	Prob. F (2, 13)	Prob. Chi-Square (2)
Serial Correlation LM	0.4389	2.34036	0.6540	0.3103
	F-Statistics	Obs*R-squared	Prob. F (5, 33)	Prob. Chi-Square (5)
Breusch-Pagan-Godfrey Heteroskedasticity Test	0.7857	0.7009	19.3805	0.5607

Source: Author’s computation.

The empirical analysis of the study noted that fiscal policy contributed significantly to the growth of the mining sector in Nigeria. This can be attributed to the various fiscal expansionary policy measures of the government which include the loans obtained from the International Development Association (IDA) and The World Bank to fund the mining sector. This is in line with the achievement of the Mineral Sector Support for Economic Diversification (Min Diver) of the Nigerian

Also, the study observed that the measures of monetary policy had a mixed impact on the mining sector. While exchange rate and money supply had an insignificant impact on the mining sector, the interest rate significantly enhanced the performance of the mining sector. The insignificant impact of the exchange rate on the mining sector may be attributed to the lack of sector-specific exchange rate and credit policy to the mining sector like that of the fiscal policy. More so, the significant impact of interest rates on mining sector performance may be attributed to the occasional reduction in the monetary policy rate by the Central Bank of Nigeria, which might have spurred investment in the mining sub-sector of the Nigerian economy. Also, accessing the differential impact of fiscal policy and monetary policy on mining sector output in Nigeria; the results of the study revealed that fiscal policy impacted more than monetary policy. More so, the level of significance of the fiscal policy variable (LGXP) at one per cent is higher than that of the monetary policy variable (INT) at five per cent. As noted above, this may be attributed to the government-specific fiscal policy measure to the mining sector.

The regression estimates showed that both fiscal policy (proxy by government expenditure) and monetary policy (proxy by interest rate) contributed significantly to promoting mining sector output in Nigeria. However, the magnitude of the impact of fiscal policy (LGXP) which is 3.0367 is greater than the magnitude of monetary policy (INT) which is -0.1018. This implies that fiscal policy contributes more to enhancing the growth of the mining sector compared to the impact of monetary policy (INT). More so, it was observed that other measures of monetary policy (exchange rate (LERT) and money supply (LMS)) were insignificant in influencing mining sector output in Nigeria. The input from the above estimate is that macroeconomic policies (fiscal and monetary) influence mining sector output differently.

CONCLUSION AND POLICY RECOMMENDATION

The focus of this study is on the impact of macroeconomic policy on mining sector output in Nigeria for the

period 1981 to 2021. Based on the analysis of this study, the study concluded that the performance of the mining sector has been unimpressive in Nigeria during the study period. The study also concluded that fiscal policy and monetary policy had a differential impact on mining sector output. Therefore the study recommends that: to boost the growth of the mining sector, there is a need to increase the budgetary allocation to the mining sector both at the federal and state level and there is the need to advance more credit through special directives from the central bank of Nigeria to commercial banks in Nigeria. These directives are for commercial banks to grant more loans to mining sector investors.

ACKNOWLEDGEMENT

I sincerely appreciate the management of Tertiary Education Trust Fund (Tetfund) for being magnanimous to funding the institutional based research of which I am privileged to be among the beneficiaries in my Institution. I also appreciate the amiable Vice Chancellor of my Institution in person of Prof. O.V. Adeoluwa for exposing us to the research opportunity for my personal development as a researcher. I also acknowledged the Centre for Research and Development (CERAD) of my Institution for their support during the course of carrying out this research.

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