The Impact of Monetary Policy Indicators on Industrial Output Performance in West African Countries

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Abstract

The study examined the impact of monetary policy indicators on industrial output performance in West African Countries. The study used secondary data sourced spanned between 1980 and 2022. Panel Auto-Regressive Distribution Lag (ARDL) was employed as an estimation technique. The results shown that the real interest rates, monetary policy rates, and global oil prices all have a significant impact on how well the production sector performs in the West African nations. Based on the findings of this study, the following recommendations were made, the monetary authorities in West African nations should lower the money supply and the monetary policy rate in order to increase the production of goods and services also, the money supply and monetary policy rate should be crafted to increase consumer and business demand for services in order to support the industrial sector.

Keywords: Monetary Policy Indicator, Industrial Output, Panel ARDL and West Africa

1.1 Introduction

The industrial sector is the main driver of economic growth across the globe and its often considered as the backbone of any economy. The modern economy is stimulated by the industrial sector, which offers a variety of advantageous traits necessary for economic growth. The industrial sector is one of the main drivers of most economies in the world (Udude, *et al*, 2018). Many countries across the world have attained economic development through industrialization. For instance, industrialization has been the driving force behind the economic growth of countries like

United State of America, China, Japan, Germany, France, and so. Through industrialization, jobs are created, unemployment are reduced and foreign currency are earned through foreign exchange. Monetary policy is one of the effective ways to promote industrial growth and achieve economic development. It is also one of the macroeconomic tools that, have helped economies expand to fulfil macroeconomic objectives, including price stability, exchange rate stability, preserving an equilibrium balance of payments, creating employment, boosting output, and sustaining growth. According to Falade, *et al*, (2015), monetary policy is the deliberate action the monetary authority takes to regulate the availability of credit and the money supply to advance broad economic goals that might compete. To put it another way, monetary policy refers to the steps taken by the Central Bank or other monetary authorities to control the quantity, cost, and accessibility of money in the economy.

In line with some of the goals of Sustainable Development Goals (SDGs) of 2030 such as, achievement of responsible consumption and production leading to which leads us to other goals like zero poverty and hunger. Therefore, the duty of monetary authority is to formulate monetary policies gear towards the increasing the industrial output. The creation of jobs, wealth, higher earnings, increased consumption, investment, and a decline in local poverty result from the industrial sector's innovation, development, "and production of goods and services. This in line with the goal no 1, 2 and 12 of Sustainable Development Goals (SDGs). The industrial sector has been identified globally as an engine for economic growth, a starting point for long-term reform, and a source of economic prosperity. Evidence for this can be found in the experiences of a few industrialized and developing economies, including Singapore, China, India, Malaysia, North Korea, and China, to mention a few (Simbo, *et al*, 2012 & Owoeye, *et al*, (2023)). The industrial sector, which is also highly significant and has the requisite competencies, can assist in achieving the Sustainable Development Goals (SDGs) for 2030. The industrial sector is especially helpful in developing fair labour and economic growth, infrastructure, industry, and responsible consumption and production (SDGs 8, 9, and 12).

The African continent is the finest region to drive the development of any area, nation or continent since it is economically sensible to use labour-intensive production methods for export-focused industries. There is no denying the close connections between a nation's economic performance, the expansion of industrial output, exportation levels, human capital, and other factors (Obioma, *et al*, 2015). They both maintained that manufacturing is more resilient and sustainable than other sectors. In this sense, it is impossible to overstate the importance of the industrial sector to any economy. The sector dramatically increases economic output and offers work chances to the vast majority of unemployed young people. Despite accounting for only 10% of the nation's GDP in 2018, this sector saw a 24% increase from 2017 to 2018 (Central Bank of Nigeria, CBN, 2019).

The percentage of industries in African nations has historically proliferated as labourers leave the agricultural sector and move to other sectors. The industrial sector drives "GDP growth, productivity drives the growth of the manufacturing sector, and productivity of the nonmanufacturing sector is positively correlated with the growth of the manufacturing sector. According to Mountford, *et al*, (2009), unexpected increases in the monetary authorities' use of policy instruments to control economic disturbances constitute monetary policy shocks. Many reforms have been put into place, for instance, the Industrial Policy Action Plan (IPAP 2) aims to create 350 000 new industrial jobs by 2020.

1.2 Statement of the Problem

The objectives of monetary authorities worldwide include external balance, rapid output growth, full employment, and price stability. All successful governments in Africa have working in-line of these to achieve the needed economic growth through industrial output but all these efforts towards achieving economic growth through industrial output has yielded the desired result, across Africa sub-region. For instance, industrial sector in South Africa stands at 7.4% which is lower than that of output in the same sector in 2008. For instance, Botswana's manufacturing sector is still in its infancy stage and contributes much less to the country's economy than other industries. Namibia's industrial sector provides the same GDP from 1990 to 2015, demonstrating that it has mostly remained the same throughout time. In recent years, the contribution of industrial output to Lesotho's GDP had declined, which has resulted in job lost and increases the level of unemployment (UNDP, 2017). Despite being a 100-year-old organization, the Southern African Customs Union (SACU) has only recently thought about establishing an explicit industrial policy that can benefit from the synergies created by regional cooperation to improve the integrated performance of member states' industrial sectors, which would ultimately result in higher productivity and, in turn, competitiveness.

Since the global economic crises of the 1980s, 1990s, 2008, and recently in 2014, discussions on international monetary policy have occupied centered stage and its cross-border spillover effects on some macroeconomic variables. Gonenc, *et al* (2008) assert that the cost of imported inputs serves as a natural hedge against exchange rate changes that affect competitiveness. This is crucial given how heavily the Sub-Saharan African nations depend on imported raw resources for manufacturing. Asiagwu, et al, (2021), investigated the impact of monetary policy on industrial growth in Nigeria and the study concluded that, lending rate, deposit interest rate and money supply growth exert significant impact on industrial growth in Nigeria. If these variables are not properly managed, they could have made it harder for industrial sector in Africa, to boost productivity in terms of export growth and import substitution and raise employment and per capita income, which impacts various consumption habits.

The management of monetary policy in many developing nations, Africa inclusive, contributes to the challenges the industrial sector encounters due to fluctuations in oil revenue. Recent studies on the potential effects of globalization on monetary policy concluded that some monetary policy actions made in the developed world threaten the monetary independence of developing and emerging markets, Africa in particular thereby threaten the achievement of some SDGs. From literature, there is no unanimous opinion as regards the impact of monetary policy indicators on industrial output across the globe. Kim, (2001), is of the opinion that, monetary policy indicator in industrialized nations have a favourable impact on, among other things, output performance. The policy shocks in developing countries have a significant negative influence on the emerging market economy simultaneously. Brazil, Russia, China, South Africa, and Turkey

are emerging economies collectively known as BRICS_T while Gonenc, *et al*, (2008), Aysan, *et al*, (2007), and Dogruel, *et al*, (2010), submitted that, industrial output performance negatively impacted on exchange rate, by bringing about a competitiveness pressures on currency movement through several significant channels. Based on this, the study is out to investigate if indeed, monetary policy indicators have any impact on industrial output in African Sub-region between 1980 and 2023. The length of the study allows for the determination of both the long-term and short-term correlations between specific monetary policy variables and the performance of industrial output in selected West African countries. The West African nations included in this study include Gambia, Liberia, Senegal, Ghana, Nigeria, Benin, Burkina Faso, Cote d'Ivoire, Mali, and Guinea. These ten (10) nations can serve as a representation of the entire West African region.

1.3 Model Specification

The model specification for Industrial Output is in a linear form of equation which adapt the work of Asiagwu, el at, 2021 with little modification. Variables such as Real Interest Rate, Exchange Rate, Money Supply (Broad), Monetary Policy Rate, Interbank Rate, World Oil Price, and United Nations Real Interest Rate are included in the model. The essence of including theses variables is to allow for a combination of global and local monetary policy factors in order to examine how industrial output in a few African emerging economies responds to these variables.

$$\begin{split} MANUOP_{it} &= \alpha_0 + \alpha_1 RINTR_{it} + \alpha_2 EXR_{it} + \alpha_3 MS_{it} + \alpha_4 MPR_{it} + \alpha_5 IBR_{it} + \alpha_6 WOP_{it} + \alpha_7 SERV_{it} \\ &+ \alpha_8 USRINTR_{it} + \mu_{it} \end{split}$$

Where:

MANUNOP (manufacturing output is used to proxy Industrial Output), RINR is Real Interest Rate, EXR is Exchange Rate, MS is Money Supply (Broad), MPR is Monetary Policy Rate, IBR is Interbank Rate, WOP is World Oil Price. SERV is Service Sector and USRINTR is United Nations Real Interest Rate (which captures foreign interest rate) while μ is an Error Term, α_0 is Intercept, $\alpha_{1,}\alpha_{2}, \alpha_{3}, \alpha_{4}, \alpha_{5}, \alpha_{6}, \alpha_{7}$ are Parameter Estimates of the variables, i is Countries and t is year. Note: These seven variables represent the domestic macroeconomic variables WOP and USRINTR are the two variables representing the global macroeconomic variables and USRINTR are the two variables representing the global macroeconomic variables

1.3 Estimation Technique

This study adopts both descriptive and inferential methods of analysis. The inferential analysis used in this study, in contrast, began with correlation analysis before moving on to panel unit root test, panel ARDL estimation for both the pooled mean group estimation and the mean group estimation.

1.4. Results and Discussion 1.4.1 Descriptive Analysis Statistics Table 1.1: Descriptive Statistics of Variables

Variables	Obs	Mean	Std. Dev.	Min	Max
MANUOP	400	10.34173	5.440988	1.686448	21.49191
SERV	400	44.67077	9.808281	17.86371	67.59345
RINTR	400	4.397188	9.122436	-65.85715	33.46679
EXR	400	74.52784	237.0678	0	3520.368
MS	400	20.79488	7.766502	5.210061	43.29521
MPR	400	7.295475	7.934311	0	45
IBR	400	10.58565	8.239	0	36.5
WOP	400	41.39941	30.75542	12.76	111.63
USINTR	400	7.384375	3.603624	3.25	18.87

Source: Author's Computation, 2024

The study's variables are listed and described in Table 1.1. The findings revealed that the output of the manufacturing and service sectors was 10.3417% and 44.6707%, respectively, with standard deviations of 5.440988 and 9.808281, minimum and maximum values of 1.686488% and 17.86371, respectively. Additionally, the findings revealed that the averages for the US interest rate, real interest rate, money supply, monetary policy rate, interbank rate, and world oil price were, in that order, 7.384375, 10.58565, 41.39941, and 4.397188% of GDP. Standard deviations were 9.122436%, 237.0678%, 7.766502% of GDP, 7.934311%, 8.239%, 30.75542%, and 3.603624% for actual interest rates, exchange rates, money supply, monetary policy rate, and US interest rates, respectively. The exchange rate was 0, the money supply ranged between 5.210061% of GDP and 43.29521% of GDP, the monetary policy rate ranged between 0% and 45%, the world oil price ranged between 12.76 and 111.63%, and the US interest rate ranged between 3.25% and 18.87%. The real interest rate ranged between -65.85715% and 33.46679%.

Table 1.2. Correlation Statistics									
	MANUF	SERV	RINTR	EXR	MS	MPR	IBR	WOP	USINTR
MANUOP	1.0000								
SERV	0.3078	1.0000							
RINTR	-0.3426	0.0250	1.0000						
EXR	-0.0399	-0.0029	-0.0773	1.0000					
MS	0.1293	0.3603	0.0137	-0.0571	1.0000				
MPR	-0.0833	0.1003	-0.0297	0.2821	0.1437	1.0000			
IBR	-0.3608	0.1854	0.4415	-0.0517	-0.2740	0.0954	1.0000		
WOP	-0.0894	0.1096	0.1261	-0.1143	0.4846	-0.0989	-0.0230	1.0000	
USINTR	0.0667	-0.0293	-0.2128	0.2192	-0.4168	0.0216	-0.0326	-0.6205	1.0000
Source: Author's Computation 2024									

1.4.2 Correlation Analysis Table 1 2. Correlation Statistics

Source: Author's Computation 2024

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Table 1.2 provides information on correlations for the variable pair combinations employed in the study. The correlation values were 0.3078, -0.3426, -0.0399, 0.1293, -0.0833, -0.3608, -0.0894 and 0.0667 between MANUF and SRV, MANUF and RINT, MANUF and EXR, MANUF and MS, MANUF and MPR, MANUF and IBR, MANUF and WOP, and MANUF and USINTR, respectively. This shows that the production of the manufacturing sector is negatively correlated with the real interest rate, exchange rate, monetary policy rate, interbank rate, and global oil price and favorably correlated with the output of the service sector, the money supply, and the US interest rate. In contrast to the money supply, the US interest rate, and the output of the service sector, which all move in the same way, the real interest rate, exchange rate, monetary policy rate, interbank rate, and the price of oil globally all move in the other direction.

The result also revealed a correlation coefficient of 0.0250 for SERV and RINTR, -0.0029 for SERV and EXR, 0.3603 for SERV and MS, 0.1003 for SEV and MPR, 0.1854 for SERV and IBR, 0.1096 for SERV and WOP, -0.0293 for SERV and USINTR which indicated that service sector output has a positive relationship with the real interest rate, money supply, monetary policy rate, interbank rate and world oil price but negative relationship with the exchange rate and US interest rate. This showed that, despite the fact that the exchange rate and the US interest rate move in the opposite direction from the actual interest rate, money supply, monetary policy rate, interbank rate, and global oil price, the production of the service sector moves simultaneously with all of these factors. The result, in addition, showed a correlation coefficient of -0.0773 for RINTR and EXR, 0.0137 for RINTR and MS, -0.0297 for RINTR and MPR, 0.4415 for RINTR and IBR, 0.1261 for RINTR and WOP, -0.2128 for RINTR and USINTR which indicated that real interest rate has a negative relationship with the exchange rate, monetary policy rate and US interest rate but positive relationship with money supply, interbank rate and world oil price. This implies that while the money supply, the interbank rate, and the price of oil globally move in the same direction, the real interest rate moves in the opposite direction from the exchange rate, the rate of monetary policy, and the interest rate in the US.

With correlation coefficients of 0.0571 for EXR and MS, 0.2821 for EXR and MPR, 0.0517 for EXR and IBR, -0.1143 for EXR and WOP, and 0.2192 for EXR and USINTR, the results also demonstrated that the exchange rate has a positive relationship with the US interest rate and monetary policy rate but a negative relationship with the money supply and the interbank rate. This illustrates how the money supply, interbank rate, and the price of oil globally move in opposite ways while the exchange rate moves in the same direction as the US interest rate and the monetary policy rate. There was a positive correlation between the money supply and the monetary policy rate and the price of crude oil, but a negative correlation between the money supply and the interbank rate and the US interest rate, as indicated by correlation values of 0.1437 for the MS and MPR, -0.2740 for the MS and IBR, 0.4846 for the MS and WOP, and -0.4168 for the MS and USINTR. This demonstrates that the money supply follows the rate of global monetary policy and the price of oil but swings in the opposite direction to the interbank rate and the US interest rate.

The monetary policy rate, the interbank rate, and the US interest rate are all positively correlated, while the MPR and the world oil price are negatively correlated, with correlation values of 0.0954 for the MPR and the IBR, -0.0989 for the MPR and the WOP, and 0.0216 for the MPR and the USINTR. As a result, the monetary policy rate follows the direction of the US and

interbank interest rates while moving in the opposite direction of the global oil prices. The correlation values of -0.0230 and -0.0326 for IBR and WOP, respectively, indicate that there is a weak association between IBR and WOP, IBR and USINTR, and IBR and IBR. In other words, the interbank rate swings in many ways depending on the price of crude oil throughout the world and the federal funds rate in the US. In other words, the interbank rate swings in many ways depending on the federal funds rate in the US. The correlation coefficient between the world oil price and the US interest rate, which was -0.6205, suggested a negative link because they move in the opposing directions.

	TEST AT I	EVEL TEST AT FIRST DIFFERENCE			
Variables	LLC	IPS	LLC	IPS	Order of Integration
MANUOP	-0.92050	-1.30924	-11.0048*	-11.7325*	I(1)
SERV	-0.15788	-0.39077	-11.8910*	-11.4566*	I(1)
RINTR	-4.69047*	-5.56416*			I(0)
EXR	-1.43389	-1.56826	-4.79876	-6.05151	I(1)
MS	1.47537	1.94415	-6.96115*	-10.6108*	I(1)
MPR	-2.62026	-0.85247	-14.4284*	-13.7559*	I(1)
IBR	-4.66045*	-4.83844*		_	I(0)
WOP	-0.50747	0.3059	-17.0391*	-13.9103*	I(1)
USINTR	-7.88230	-5.09282		_	I(0)

1.4.3 Panel Unit root Analysis Table 1.3: Panel Unit Root Test Result

Source: Author's Computation, 2024

(*) connote rejection of unit root hypothesis at (5%) level of significance level

Table 1.3 displays the results of the Levin-Lin-Chu (LLC) and Im-Pesaran-Shin (IPS) panel unit root tests that were conducted in the study, both at the level and at the difference for each of the variables used in the study, based on the pooled observations of the selected West African countries sampled in the study. Real interest rate, interbank rate, and US interest rate are stationary at the level as shown in table 4.3, in contrast to other variables like manufacturing sector output, service sector output, exchange rate, money supply, monetary policy rate, and world oil price, which are not stationary at level but become stationary after first differencing. As a result, the interest rate, interbank rate, and US interest rate have all been integrated to order zero, or I(0), showing that none of them, on average, retain inventive shock that has been passed on to them beyond the same period. On the other hand, the output of the manufacturing and service sectors, the exchange rate, the money supply, the monetary policy rate, and the global price of oil are all integrated to order one, or I(1), indicating that on average these variables retained the innovative shock that was applied to them for a brief period beyond the same period. But eventually, they usually relinquish control. Therefore, for the studied developing countries, I(0) and I(1) variables are combined in this study.

This section contains the findings of an analysis that was done as part of the study to look at the monetary policy indicators that affect the performance of industrial output in West African countries. The two measures of the employed dependent variables, industrial sector output and service sector output, are presented along with the panel ARDL's estimated results. Tables presenting the results are followed by explanations. Notably, for each model calculated, the Hausman 1978 test was used to evaluate the most acceptable estimates.

(OOF)							
STIMATES							
PMG ESTIMATION			MG ESTIMATION				
Coefficient	Probability	Variable	Coefficient	Probability			
.0396752*	0.009	RINTR	.976040	0.302			
280207*	0.000	EXR	.0677816	0.748			
3634307*	0.000	MS	-2.15347	0.264			
.095751	0.323	MPR	-5.085559	0.322			
.4699006*	0.009	IBR	1.042557	0.122			
.0020369	0.942	WOP	.4218171	0.205			
0089507	0.798	USINTR	.0664585	0.426			
ESTIMATES							
Coefficient	Probability	Variable	Coefficient	Probability			
2423243*	0.001	ECT	465397	0.000			
.6587293	0.012	С	1.43301	0.038			
0015778	0.870	D(RINTR)	.0037452	0.794			
0664914	0.294	D(EXR)	041784	0.403			
.0323349	0.743	D(MS)	.0924353	0.197			
0596839	0.163	D(MPR)	0499514	0.506			
0960239	0.211	D(IBR)	0995919	0.013			
.0170859	0.550	D(WOP)	0274735	0.357			
.0126788	0.635	D(USINTR)	0227369	0.519			
	ANOUNY STIMATES DON Coefficient .0396752* 280207* 3634307* .095751 .4699006* .0020369 0089507 CSTIMATES Coefficient 2423243* .6587293 0015778 0664914 .0323349 0596839 .0170859 .0126788	ANOUNTY STIMATES TION Coefficient Probability .0396752* 0.009 .280207* 0.000 .3634307* 0.000 .095751 0.323 .4699006* 0.009 .0020369 0.942 .0089507 0.798 Coefficient Probability .2423243* 0.001 .6587293 0.012 .0015778 0.870 .0664914 0.294 .0323349 0.743 .0596839 0.163 .0960239 0.211 .0170859 0.550 .0126788 0.635	MODOP MG ESTIMATES TION MG ESTIMAT Coefficient Probability Variable .0396752* 0.009 RINTR 280207* 0.000 EXR 3634307* 0.000 MS .095751 0.323 MPR .4699006* 0.009 IBR .0020369 0.942 WOP .0089507 0.798 USINTR Coefficient Probability Variable .2423243* 0.001 ECT .6587293 0.012 C .0015778 0.870 D(RINTR) .0664914 0.294 D(EXR) .0323349 0.743 D(MS) .0596839 0.163 D(MPR) .0960239 0.211 D(IBR) .0170859 0.550 D(WOP) .0126788 0.635 D(USINTR)	MOOD / MG ESTIMATES TION MG ESTIMATION Coefficient Probability Variable Coefficient .0396752* 0.009 RINTR .976040 280207* 0.000 EXR .0677816 3634307* 0.000 MS -2.15347 .095751 0.323 MPR -5.085559 .4699006* 0.009 IBR 1.042557 .0020369 0.942 WOP .4218171 0089507 0.798 USINTR .0664585 CSTIMATES Coefficient Probability Variable Coefficient 0464914 0.012 C 1.43301 .0037452 0664914 0.294 D(EXR) 041784 .0323349 0.743 D(MS) .0924353 0596839 0.163 D(MPR) 0499514 0960239 0.211 D(IBR) .0995919 .0170859 0.550 D(WOP) .0227369			

Table 1.4: Panel ARDL Estimation Result D MANWOR

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Hausman 1978 Test:5.31 (p=0.4567> 0.05)

Source: Author's Computation, 2024

Note: PMG= *Pooled mean Group estimation, and MG*=*Mean group Estimation (*) connote significance at 5% level of significance*

The panel ARDL estimation result for the industrial sector is presented in Table 1.4 together with the monetary policy indicators that regulate industrial production. The null hypothesis that the difference in the coefficient is not systematic was tested using the Hausman test provided in Table 1.4 by comparing the pooled mean group estimate result with the mean group estimation result. The pooled mean group is trustworthy for this study because, as the table shows, there isn't enough data to reject the null hypothesis that there isn't a systematic difference between the coefficients for mean group and pooled mean group estimation. Instead, the chi-square statistics were 5.31 with a probability value of 0.4567. Therefore, the mean group option serves as the foundation for the panel ARDL calculation, as shown in Table 1.4:

The short- and long-term coefficients as well as probability estimation were included in the estimated results for Table 1.4 for the influence of monetary policy variables on the output of the manufacturing sector. For interbank rates, the long-term coefficient and probability were 0.4699006 and 0.009 (p 0.05), whereas for actual interest rates, they were 0.0396752 and 0.009. This shown that the output of the industrial sector is affected by actual interest rates and interbank rates over the long term, significantly, and favorably. These determinants have a positive but minor long-term impact on manufacturing sector production, as indicated by the coefficient and probability values of 0.095751 and 0.323 (p > 0.05) for the monetary policy rate and 0.0020369 and 0.942 (p > 0.05) for the world oil price. These variables have a long-term negative significant impact on the output of the manufacturing sector, as indicated by the coefficient and likelihood of -0.0280207 and 0.000 (p 0.05) for the exchange rate and -0.3634307 and 0.000 (p 0.05) for the money supply, respectively. The likelihood of -0.0089507 and 0.798 (p > 0.05) and the coefficient of US interest rates revealed that these rates had a brief, minor impact on the manufacturing sector. The findings showed that actual interest rates, exchange rates, monetary policy rates, and interbank rates had minimal short-term effects on the manufacturing sector's output, with coefficients and probabilities of -0.0015778 and 0.0870 (p > 0.05), -0.0664914 and 0.294 (p > 0.05), -0.0596839 and 0.163 (p > 0.05), and -0.0960239 and 0.211 (p > 0.05), respectively. According to coefficient and probability values of 0.0323349 and 0.743 (p > 0.05), 0.0170859 and 0.550 (p > 0.05), and 0.0126788 and 0.635 (p > 0.05), respectively, money supply, world oil price, and US interest rate all have a short-term, positive, insignificant impact on industrial sector output. The stated probability value of 0.001 0.05, which at a 5% significance level suggests a significant adjustment rate, supports the annual correction and absorption of approximately 24.2% of the short-run variations into the long-run dynamic.

1.5 Discussion of Findings

In the chosen West African countries, real interest rates and monetary policy rates primarily trended in the opposite direction from the output performance of the industrial sector over time, whereas the money supply primarily trended in the same direction. This is revealed by an analysis

of the trends in monetary indicators and the output of the manufacturing sector. The money supply and the monetary policy rate did, however, largely track the performance of output in the service sector. In contrast, the real interest rate displayed a trajectory that was inconsistent with the effectiveness of production. The trend analysis revealed that the manufacturing sector production in the sample countries of West Africa decreased over time when monetary variables such the real interest rate and the monetary policy rate increased the most frequently throughout the course of the study. But the industrial sector's output continued to move generally in the same direction as the money supply. In the service sector, output results are the sole object of genuine interest. Service industry output is still moving significantly in the same direction as the money supply and the monetary policy rate.

The pattern of movement of the industrial sector's output performance and the service sector's output performance are clearly different, especially with regard to the monetary policy rate, as shown by an analysis of the trajectory of monetary policy indicators alongside industrial output performance. Lack of infrastructure investments and facilities is the primary cause of the reduction in industrial sector output in West African nations. Additionally, the results showed that service sector production was increasing even while the money supply was growing in the other direction in the chosen West African nations. The rising demand for intangible goods from the family unit and the business environment, however, may be related to the expanding tendency in the service sector.

Second, the findings demonstrated that over the long run, real interest rates and the interbank rate greatly boost the production of the industrial sectors in West African countries. The manufacturing sector's output is not considerably impacted by any monetary indicator in the short run, but the money supply and exchange rate have a large negative impact. Both the money supply and the monetary policy rate have a major negative impact on the production performance of the service sector over the long run, although only the latter does so in the short term. The findings unmistakably shown that when the monetary policy stance was maintained with growing real interest rates and interbank rates, the manufacturing sector's production performance in West African countries increased over the long term. When the money supply and exchange rate increase as a result of monetary policy, industrial output performance will dramatically deteriorate nationwide; however, this will only happen over time. The findings show that increases in the money supply and monetary policy rates have a considerable negative long-term impact on the economic performance of West African countries. Only rates for monetary policy are subject to this reality over the short term.

According to the results, monetary policy factors had a bigger impact on the industrial sector's output performance in West Africa over the long term than they did on the service sector. The results showed that the performance of manufacturing enterprises in terms of production is significantly influenced by monetary policy factors such as real interest rates, interbank rates, exchange rates, and money supply. But the money supply and interest rates for monetary policy are the two things that really determine how effectively the service sector functions in West African countries,

The study revealed that although real interest rates, monetary policy rates, and US interest rates favor anglophone businesses, the performance of the manufacturing sector in anglophone West

African nations is positively impacted by exchange rates and the price of crude oil globally. While the real interest rate, monetary policy rate, money supply, interbank rate, and US interest rate are all detrimental to the anglophone manufacturing sector, the exchange rate, money supply, interbank rate, and the price of crude oil are all detrimental to the francophone West African countries. Additionally, real interest rates were found to account for approximately 9.91% and 11.02% of the forecast error variance in manufacturing sector output performance for both anglophone and francophone West African countries, respectively, in the intermediate period. Real interest rates were followed by the world oil price in the latter group of countries and the exchange rate in the former.

The findings show that the output of the industrial sector in Anglophone West African countries would gradually and primarily decrease in response to monetary policy variables in terms of interest rate, money supply, interbank rate, and US interest rate but increase in terms of exchange rate and global oil price. It was also anticipated that real interest rates and currency rates will contribute more to the forecast error variance decomposition than other policy variables. However, the results did show that the manufacturing sector output of Francophone West African countries would increase in response to novel shocks in real interest rates, monetary policy rates, and US interest rates while gradually and primarily declining in response to variables related to exchange rates, money supply, interbank rates, and international oil prices. The results showed that output performance in the service sector responds favorably to money supply, exchange rate, and interbank rate in Francophone West African countries but unfavorably to fundamental interest rate, monetary policy rate, interbank rate, and US interest rate in Anglophone West African countries. The production performance of Francophone West African countries is positively impacted by real interest rates, monetary policy rates, international oil prices, and US interest rates; however, this is not the case for Anglophone West African countries, which are positively impacted by exchange rates, the money supply, and international oil prices. Additionally, the price of international oil had a significant impact on the forecast error variance in the service sector's production performance in both the anglophone and francophone West African nations. The real interest rate, however, placed in second place in Anglophone West African countries, followed by the monetary policy rate. In contrast, in the countries of Francophone West Africa, the global oil price and the monetary policy rate came in second and third, respectively.

The results revealed that the real interest rates, monetary policy rates, and global oil prices all have a significant impact on how well the production sector performs in the anglophone and francophone West African nations. To be more specific, the output performance of the service sector rises in the countries of Francophone West Africa in response to the price of crude oil, the pace of monetary policy, the real interest rate, and the US interest rate, whereas it rises in the countries of Anglophone West Africa primarily and gradually in response to the price of crude oil, the amount of money in circulation, and the exchange rate. While the main causes of a decline in the output performance of the service sector in Anglophone West African countries are real interest rates, monetary policy rates, interbank rates, and US interest, the main causes of a similar decline in Francophone West African countries are money supply, exchange rates, and interbank rates. All of the African Development Bank Group's (AfDB) 2010 submissions, findings, and conclusions, as well as those of Asiagwu, Utalor & Anache, (2022), Onyeiwu (2012), Chuku, *et*

al, (2018), and Mansor (2009) are in agreement with the findings of this study. For instance, Chuku, *et al*, (2018) claimed that although changes in the money supply or monetary policy shocks have little effect on output and price reactions, they are nonetheless quite quick to respond. For Asiagwu, Utalor & Anache, (2022), Lending Rate, Deposit Interest Rate and growth Money Supply as a proxy for monetary policy have significant impact on industrial growth in Developing Countries. Discovery concurs with the conclusions of Ehinomen, *et al*, (2012), and others who claim that the exchange rate had a significant impact on the manufacturing sector's output, despite the results being somewhat different from those of the Francophone West African countries. However, the discovery refutes the contention in the African Development Bank Group's (AfDB) (2010) statement that the nation's structural imbalances and economic instability have rendered its inflation rate and exchange rate policies ineffective in reviving its ailing manufacturing sector.

1.6 Conclusion

Based on the findings of this study, among other monetary policy indicators, the real interest rate fluctuated over time in a manner that was at odds with both the output of the Industrial sector and the output of the service sector. While it did the opposite for industrial output, the monetary policy rate moved generally in the same direction as the performance of output in the service sector. Although the trend for other monetary policy indicators, like the actual interest rate and money supply, is the same for the industrial. Second, compared to the service sector, the Industrial sector in West Africa experiences a greater long-term impact from monetary policy variables on output performance. However, in general, monetary policy variables including real interest rates, interbank rates, exchange rates, and money supply have a significant role in determining how effectively West Africa's industrial sector operates.

The study therefore concluded that, the industrial sector output of Anglophone West African nations would gradually decline and primarily be affected by monetary policy variables such as interest rates, monetary policy rates, money supply, interbank rates, and US interest rates, but rise in terms of exchange rates and global oil prices, whereas industrial sector output of Francophone West African nations will gradually decline and predominantly be affected by factors such as exchange rates and world oil prices The real interest rate and monetary policy rate, in addition to other study variables, will have a big impact on how well the service sector performs in the output sectors of Anglophone and Francophone West African nations.

In line with the conclusion above, the following recommendations were made in accordance to the findings of the study:

i. The monetary authorities in West African nations should lower the money supply and the monetary policy rate in order to increase the production of goods and services.

ii. The money supply and monetary policy rate should be crafted to increase consumer and business demand for services in order to support the industrial sector.

iii. West Africa should consider the United States interest rate and put in place suitable procedures to investigate its benefits and reduce its costs on the industrial sector.

iv. To increase the output of the industrial sector, monetary policy should be employed to promote the development of an environment that is favorable for investment through suitable exchange rates, real interest rates, money supplies, and interbank rates."

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IIARD – International Institute of Academic Research and Development Page 66

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