



COMPARATIVE ANALYSIS OF THE IMPACT OF MONETARY AND INCOME POLICIES ON THE GROWTH OF THE NIGERIAN ECONOMY

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ABSTRACT: *This paper examined a comparative analysis of the impact of monetary and income policies on economic growth in Nigeria from 1985-2018 with the use of co-integration and Dynamic Ordinary Least Square (DOLS) techniques. Secondary data from Central Bank of Nigeria statistical bulletin collected on wage increase, price control, exchange rate, broad money supply and real gross domestic product (GDP) were used for the analysis. The pre-tests results via the ADF unit root test showed that the variables were integrated of order I(1) and I(0). The Johansen co-integration test showed that all the variable jointly exhibited co-integrating/long run relationships. The DOLS result showed that the value of wage increase (WG) has a positive but insignificant impact on economic growth. Also, the coefficient of price control (PC) is negatively signed to GDP but statistically not significant. The coefficient of exchange rate (EX) is positively signed and statistically significant with economic growth. Also, the coefficient of broad money supply (MS) is positively signed and statistically significant with economic growth. In conclusion, both monetary and income policies serves as a driver of economic growth. But comparatively, monetary policy measured by exchange rate and broad money supply impacted more on the growth of the Nigerian economy during the period of study than income policy, measured by wage increase and price control. Based on the empirical findings, the paper recommended that; government should put up price control mechanism that will fix minimum and maximum price for consumers goods and as well checkmate the wages in the labour market in order to prevent the occurrence of high inflation. Also, monetary policy management should ensure that a unify exchange rate system that help to drive the productive activities of the economy and as well ensured to minimize artificial scarcity in order to guarantee effective operation of foreign exchange activities. More so, monetary policy authorities should ensure a moderate level of broad money supply in order to avoid inflation driven economy which will be inimical to economic growth.*

Key Words: Monetary Policy, Income Policy, Money Supply, Exchange Rate, Wage Increase

I. INTRODUCTION

In the face of dwindling growth of the economy, several evolving nations, including Nigeria embarked on myriad of economic reforms and modifications with the aim of spurring growth. In doing this, different governments choose different institutional approaches for economic management. The regulated

approach, the deregulated approach or the coordination of both could be chosen. Therefore, policy instruments such as income and monetary policies are required for government to redirect the system for stability (Tubotamuno & Obayori, 2019).). Thus by means of definition, income policy is a



procedures through which government endeavors to control a rise in livelihood (wages, salaries, and dividends, rents) to restrict rise in price level in the absence of escalating unemployment. It is also seen as a wage or price policy that can stimulate the amount of wages and indirectly the price level (Hynková, 2008). On the other hand, monetary policy is concerned with flexible regulation of money supply and other monetary instruments by the monetary authorities (apex bank with central government) in order to achieve desired economic goals (Nwogwugwu, Obayori & Tubotamuno, 2017).

In the meantime, indication from Nigeria and many developing nations that experienced some degree of growth, revealed that prevalence of income discrepancy and low per capita income have been rising faster than the rate at which growth was documented; signifying that it is not the speed of growth that really matters in addressing problem of economic growth, but the policies that brought about growth. This is because income policy that ought to serve as a pointer to improving the wages of the people and at the same time control the prices of goods and services has not been well-tailored to do that (Alade, 2017). This is why Nigeria income per capita is far below the threshold of the World Bank. The country is classified as 'lower- middle income economies' of per capita income between \$1,026 and \$3,995. But Nigeria per capita income currently stands at \$2396.3 which is far less than over \$12,000 per capital income in high-income economies (World Bank, 2019). Also, from one viewpoint, there is little degree for monetary policy to give extra boost, as interest and exchange rates have remained at historic peaks. Conversely, for over two decades in Nigeria, interest rate as a

monetary policy instrument has always been on two-digits. A scenario that discourage domestic borrowing and hence economic growth. In like manner, the weak value of the naira in-term of other international currencies particularly US Dollar and British Pound has been inimical to the growth of the business enterprises and hence abysmal performance of economic growth in Nigeria (Obayori & George-Anokwuru, 2019).

Meanwhile, given the failure of either monetary policy or income policy to properly address the problem of economic growth in order to put the economy on the part of development, there is the need to have a paradigm shift by examining how the combination of both income and monetary policies vis-à-vis price control, credit easing, wage increase, exchange rate, money supply and interest rate could solve the problem of growth in the Nigerian economy. In lieu of the above, the specific objectives of this paper were to: examine the impact of wage increase on economic growth in Nigeria; determine the impact of price control on economic growth in Nigeria; and examine the impact of both money supply and exchange rate on economic growth in Nigeria. The remaining parts of the paper was structured into literature review, methodology, results and discussion as well as concluding remarks.

II. LITERATURE REVIEW

i. Monetary and Income Policies Conceptualized

According to Ekine, (2014), monetary policy is the range of instruments in the hands of the 'financial administration' which are employed for discretionary management of liquidity, currency value and cost of loanable funds directed at driving an economy from a less desirable to a more desirable condition. Also,



Abata, Kehinde and Bolarinwa (2012) posited that monetary policy is concerned with unrestricted management of monetary resources or cash in hand by the financial administration (Central Bank with central state) in order to bring about or consummate the anticipated economic goals. Governments try to control the monetary resources because most governments rely on the fact that its rate of growth affect the general price level. Hence monetary policy covers those government actions premeditated to influence the conduct of the financial sector. Also, monetary policy helps to regulate the degree of growth of the nation's money supply, and is under the control of a government institution known as the Central Bank (Abel, Bernanke and Croushore, 2008). In his own words, Dwivedi (2005), posited that monetary policy is the thoughtful use of direct and indirect monetary tools at the disposal of monetary authorities with the intention of attaining macroeconomic firmness. Two basic types of monetary policy are identified; the expansionary monetary policy; and the contractionary monetary policy. The combination of the two help to regulate the level of interest rate, money supply and reserves requirement in line with the level of economic activity in order to reduce inflation and unemployment rates and as well attain economic growth. Surplus supply of currency will give rise to surplus demand for goods and services, prices will rise and BOPs will depreciate.

Meanwhile, according to Tubotamuno and Obayori (2019), income policy is a procedures through which government endeavors to control a rise in livelihood (wages, salaries, and dividends, rents) to restrict rise in price level in the absence of escalating

unemployment. Similarly, incomes policies in economics are overall economy remuneration and price control, usually established as a reaction to inflation, and typically seeking to institute wages and prices below free market level. Its complement expansionary monetary and fiscal policies in order to control prices, permitting for a more robust recovery with relatively stable prices. Believers in the cost push inflation theory are the greatest advocates of incomes policy. But Monetarists (who advocated that inflation is initiated by surplus money supply) consider it irrelevant in controlling inflation. The central objective of income policies is to reconcile economic growth and price stability. Thus, price stability is to be ensured by preventing rise in wages and other incomes from surpassing the growth of real national product.

ii. Empirical and Theoretical Evidence on the Income and Monetary Policies

There are series of literature on the connections between monetary policy and economic growth, but empirical literature on the nexuses between income policy and economic growth in both developed and developing countries are very scarce. Tubotamuno and Obayori (2019) used VECM to examine the impact of income policy on inclusive growth in Nigeria from 1985–2017. The VECM results showed that income policies captured wage increase and corporate income tax serves as a driving force of inclusive growth. But negative price control mechanism will indirectly affect inclusive growth. Miftahu (2019) examined the correlation between monetary policy and economic growth in Nigeria for the period of 1980 to 2017 with the use of



Cointegration test and the Ordinary Least Square (OLS) technique. The estimate indicated the existence of long-run relationship between monetary policy and economic growth. Furthermore, while money supply has direct effect, both exchange rate and interest rate have indirect effect on the real GDP. Khaysy and Gang (2017) examined the impact of monetary policy on the economic development from 1989-2016 with the use of Johansen Cointegration/ECM. The finding showed that money supply, interest rate and price level indirectly affect real GDP per capita in the long run but real exchange rate has a direct effect. Aribah and Kalsoom (2016) used VECM to analyze policy framework for inclusive growth of selected Asian countries. The results exhibited an inclusive growth in the long run but not for short run. Empirical findings also indicated that inflation and rule of law play a significant role in improving the health quality, which leads to inclusive growth. Nwoko, Ihemeje and Anumadu (2016) examined monetary policy and economic growth in Nigeria from 1990-2011 using the multiple regression model. Empirical findings from the investigation indicated that average price and labour force have significant influence on GDP while money supply was not significant. Interest rate was negative and statistically significant. Obadeyi, Okhiria, and Afolabi, (2016) examined monetary policy tools and output growth of an emerging economy from 1990-2012. The study used the method of classical LS, and the result confirmed evidence of long-run interactions between the dependent and independent variables. Adigwe, Echekeba and Justus (2015) examined the impact of monetary policy on the Nigerian economy from 1980-2010 with the use of Ordinary Least Square (OLS). The result of the

analysis showed that monetary policy via money supply exerts a positive impact on GDP growth but negative impact on general price level. Fasanya, Onakoya and Agboluaje (2013) used ECM to examine the impact of monetary policy on economic growth in Nigeria from 1975 to 2010. The study shows that long run relationship exists among the variables. Also, inflation rate, exchange rate and external reserve are significant monetary policy instruments that causes growth in Nigeria. Also, Ferrira and Ravallion (2008) examined the relationships between poverty, growth and inequality. They established no correlation between economic growth rates and income changes. Nonetheless, this study instituted a strong positive relationship between growth rates and poverty reduction.

Theoretically, the research model for this study is founded on the overt form of the Monetarist theory which argued that monetary policy measures are more persuasive for income and output growth in an economy. Subsequent to the acceptance that quantitative monetary facilitating matters legitimately for organizing recuperation from financial downturn, the monetarists underline an immediate transmission component where supply of cash is considered a causal variable to growing the output of the economy in the adjustment procedure. Friedman, (1968) claimed that in embracing monetary measures through expanding supply of cash will make excess liquidity than required in the hands of the general population, so that increased aggregate effective demand would by extension boost real growth performance (Ahuja, 2013).



III. METHODOLOGY

This study adopted both descriptive statistics and econometrics approaches. The descriptive statistics via mean, standard deviation etc was used to analyze the characteristics of the variables under consideration. The econometrics method covers unit root test, co-integration test and the Dynamic Ordinary least Squares (DOLS) proposed by Stock and Watson (1993). The post estimation tests were carried out to authenticate the result of the DOLS. The essence of using the DOLS is because it has the ability to eliminate endogeneity problem and it is robust to autocorrelation problem. The unit root test was employed to test for the stationarity of the time series (Dickey & Fuller, 1979). Again, co-integration test was used to test for the long run association among the variables (Engle & Granger, 1987). The data for the study which spanned from 1985-2018 is $GDP = f(WG, PC, EX, MS)$

The linear form of the model was stated thus;

$$GDP = \beta_0 + \beta_1 WG + \beta_2 PC + \beta_3 EX + \beta_4 MS + e$$

The DOLS log-linear specification was stated as follow:

$$\begin{aligned} \ln GDP = & \beta_0 + \beta_1 \ln WG_t + \beta_2 \ln PC_t + \beta_3 \ln EX_t + \beta_4 \ln MS_t + \sum_{i=1}^n \Delta \beta_1 \ln WG_t - 1 + \sum_{i=1}^n \Delta \beta_2 \ln PC_t \\ & + \sum_{i=1}^n \Delta \beta_3 \ln EX_t - 1 + \sum_{i=1}^n \Delta \beta_4 \ln MS_t + \mu_t \end{aligned} \quad (3)$$

Where; GDP is Gross Domestic Product, WG is Wage Increase, PC is Price Control, EX is Exchange Rate, MS is Broad Money Supply μ is Error Term, t is Time Frame, β_0 is Autonomous components of GDP, \sum is summation, β_1 - β_4 are the slopes of income and monetary policies

4.0 RESULTS AND DISCUSSION

(i) Pre-estimation Test

Table 1: Descriptive Statistic Result

Measurements	GDP	WG	PC	EX)	MS
Mean	12.85937	7.937705	3.187937	3.898573	3.894625

essentially secondary, sourced from publications of the Central Bank of Nigeria (CBN) statistical bulletin for the year 2018. The data used for the analysis include; GDP proxy for economic growth was measured in billion naira represented the dependent variable. Wage increase (proxy by income inequality) was measured in million naira; and *price controls* (proxy by consumer price index) measured in million naira represented income policy. While exchange rate measured in dollar/naira and money supply measured in billion naira represented monetary policy.

Model Specification

In an attempt to establish the relative impact of between income and monetary policies on economic growth in Nigeria, a multiple regression equation was estimated. The functional, linear and non-linear equations were stated below:

(1)

(2)



Median	12.67785	7.896528	3.630346	4.780894	3.649583
Maximum	13.81458	8.584536	5.214338	5.931874	4.865378
Std. Dev.	0.654847	0.542855	1.721696	1.586209	0.715743
Skewness	-0.338165	-1.677779	-0.696615	-0.804449	0.240570
Jarque-Bera	0.731322	30.67056	3.707577	3.825646	3.311656
Probability	0.693738	0.000000	0.156643	0.147663	0.190934
Observations	34	34	34	34	34

Note: GDP=Gross Domestic Product, WG=Wage Increase, PC=Price Control, EX=Exchange Rate, MS= Money Supply

Source: Authors' Computation from (E- view 9)

The descriptive statistics reported in Table 1 indicated that real gross domestic product (GDP), wage increase (WG), price control (PC), exchange rate (EX) and broad money supply (MS) averaged ₦12.9billion, ₦7.9million, ₦3.2million, \$/₦3.9 and ₦3.89billion respectively. The standard deviation showed that all the variables (GDP, WG, PC, EX and

MS) converged around their respective means. The skewness test result showed negative values for all the series except MS. The probability of Jarque-Bera statistics suggests that the null hypotheses of normal distribution for all the series except wage increase (WG) were accepted at 5% level

Table 2: Augmented Dickey Fuller Unit Root Test at Level and First Difference

Variables	ADF Test Statistic @ Level	ADF Test Critical Value @ 5% (level)	Order of Integration	ADF Test Statistic @ 1 st Difference	ADF Test Critical Value @ 5% (1 st Diff.)	Order of Integration
GDP	-4.4696	-2.9639	Stationary			1(0)
WG	-1.8418	-2.9540	Not Stationary	-5.7084	-2.9571	1(1)
PC	1.6645	-2.9540	Not Stationary	-5.3449	-2.9571	1(1)
EX	0.3651	-2.9540	Not Stationary	-5.7759	-2.9571	1(1)
MS	0.3651	-2.9540	Not Stationary	-5.7759	-2.9571	1(1)

Note: GDP=Gross Domestic Product, WG=Wage Increase, PC=Price Control, EX=Exchange Rate, MS=Money Supply

Source: Authors' Computation from (E- view 9)

The unit root test for stationarity of each of the series via the ADF test as presented in Table 2 showed that only the dependent variable (GDP) was stationary at level I(0). Thus, the remaining four independent

variables (WG, PC, EX and MS) were differenced once to attain stationary at first difference prior to estimation of the DOLS test to prevent false regressions results

(ii) Estimation Techniques

Table 3: Johansen Test for Cointegration

Eigen value K=1, r=5	Trace Statistics	5% critical value	Prob. **	Hypothesis of CE(s)
0.995299	227.1776	69.81889	0.0000	None *



0.517734	55.65965	47.85613	0.0078	At most 1 *
0.381390	32.32335	29.79707	0.0251	At most 2 *
0.270894	16.95436	15.49471	0.0299	At most 3 *
0.192561	6.844406	3.841466	0.0089	At most 4 *
Eigen value K=1, r=2	Max-Eigen Statistic	5% critical value	Prob. **	Hypothesis of CE(s)
0.995299	171.5180	33.87687	0.0001	None *
0.517734	23.33630	27.58434	0.1596	At most 1
0.381390	15.36899	21.13162	0.2639	At most 2
0.270894	10.10996	14.26460	0.2048	At most 3
0.192561	6.844406	3.841466	0.0089	At most 4 *

r =number of co-integrating vectors and k = number of lags in model. * rejection of the H_0

Source: Authors' Computation from E- view 9

The results of the Johansen test of co-integration via both the Trace and Max-Eigen statistics revealed the existence of five and two co-integrating equations respectively at 5% level. Thus, the null hypothesis (H_0) of no co-integration among the variables was (2019).

rejected. Based on this result, the paper concludes that there is a long run equilibrium relationship amongst the variables in the model. The juxtaposed the empirical result of Miftahu

Table 4: Analysis of DOLS Result

Dependent Variable: Ln(GDP)			
Variables	Coefficients	t-statistics	Probability
C	7.150813	5.288372	0.0061
Ln(WG)	0.541449	2.656935	0.0566
Ln(PC)	-0.081167	-1.695070	0.1653
Ln(EX)	0.217634	5.293701	0.0061
Ln(MS)	0.272367	3.999098	0.0161
R-Squared	0.902699	F-statistics	958.3
		Prob(F-statistic)	0.0000

Note: GDP=Gross Domestic Product, WG=Wage Increase, PC=Price Control, EX=Exchange Rate, MS=Money Supply

Source: Authors' Computation from (E- view 9)

In determining the dynamic long run impact of income and monetary policies on the growth of the Nigerian economy, the Dynamic Ordinary Least Square (DOLS) technique was applied. The estimated DOLS results in Table 4 showed that the value of R^2 is about 90%; indicated that the model is a good fit. The probability of f-statistic (0.0000)

which is less than p-value of 0.05, showed that the explanatory variables in the model are significant in explaining economic growth. In considering income policy variables, from the result, the value of wage increase (WG) has a positive but insignificant impact on economic growth. Thus, a percent increase in WG causes an increase in economic



growth by 0.54%. Since, the P-value of WG at 0.0566 is greater than 0.05 critical value; the null hypothesis of no significant relationship between WG and GDP was accepted. Also, the coefficient of price control (PC), is negatively signed to GDP but statistically not significant. This implies that an unregulated price system will lead to decrease in economic growth by 0.08%. In summary, income policy via wage increase and price control although not statistically significant to impact on economic growth; but they are economically viable in causing growth in Nigeria during the period of study. The finding is in line with empirical work of Tubotamuno and Obayori (2019) who examine the impact of income policy on inclusive growth in Nigeria and demonstrated that income policies via wage increase, corporate income tax and price control mechanism, serves as a driving force of inclusive growth. Meanwhile, in considering the monetary variables, the coefficient of exchange rate is positively signed and statistically significant with economic growth. Thus, the strong value of the naira in-term of other international currencies, particularly the US Dollar will impact significantly on economic growth in Nigeria. Also, the coefficient of broad money supply (MS) is positively signed and statistically significant with economic growth. Thus, a percentage increase in money supply by the CBN will increase economic growth by 0.27%. Given that the P-value of MS at 0.0166 is less than 0.05 critical value; the null hypothesis of no significant relationship between MS and economic growth was rejected. Conclusively, it can be infer that monetary policy vis-à-vis exchange rate and broad money supply are effective in spurring economic growth in Nigeria during the period of study. The finding

corroborated the empirical work of Adigwe, Echekeba and Justus (2015) as well as Obadeyi, Okhiria, and Afolabi, (2016).

(iii) Post Estimation Tests

Before drawing conclusions/policy inference from the above DOLS estimated regressions, it is imperative to conduct appropriate diagnostic tests to ascertain the legitimacy of the classical linear regression models. The most important of these assumptions is that, there is a linear relationship between the dependent variable and the independent variables. The violation of this postulation may suggest that the model under deliberation is non-linear or wrongly specified. The following tests were conducted; Wald test, normality test and serial correlation test.

Table 5: The Wald Test

Test Statistic	Value	Df	Probability
F-statistic	958.3	(4, 4)	0.0000
Chi-square	3833.207	4	0.0000

Source: *Authors' Computation from E- view 9*

The Wald test helps to measure the joint significant of the explanatory variables in explaining the dependent variable in an estimated model vis-à-vis the p-value of the F-statistics which must be less than 0.05 critical p-value. Given the result in Table 5, the four explanatory variables are significant in explaining the growth of the Nigerian economy since the p-value of 0.0000 of the f-statistics value of 958.3 is less than the critical p-value of 0.05.

The Normality Test

The normality test as presented in Figure 1, showed that the error terms are normally distributed. This is because the probability values of the Jerque-Bera



statistic (J-B stat) which is 0.5032 is greater than 0.05 critical value. Thus, it was concluded that the sample data fit a standard normal distribution.

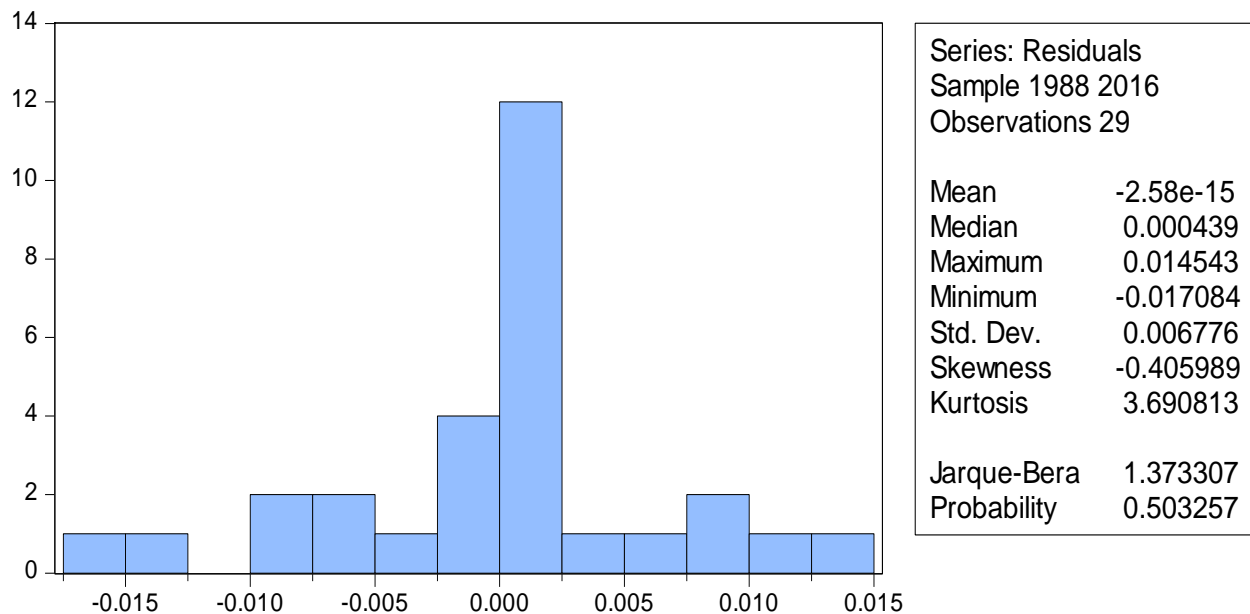


Figure 1: Normality Test Result

Serial Correlation Test

The serial correlation test was conducted via the correlogram Q-statistics. If there is no serial correlation, then, all the Q-statistics should be insignificant. In other words, there is no serial correlation, if the p-values are greater than 0.05 critical value.

Table 6: The Correlogram of Residual

Date: 04/29/20 Time: 01:55

Sample: 1985 2018

Included observations: 29

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob*
. **.	. **.	1	0.330	0.330	3.5008	0.061
. * .	. * .	2	-0.066	-0.196	3.6454	0.162
. .	. .	3	-0.028	0.074	3.6722	0.299
. **.	. **.	4	0.270	0.284	6.2864	0.179

*Probabilities may not be valid for this equation specification.

Source: Authors' Computation from E- view 9



From the estimated correlogram of residual result in Table 6, all the p-values of the Q-stat at various lags are insignificant at 5% level of significant. Meaning that all the p-values are greater than the critical p-value at 0.05. Thus, there is no serial correlation in the estimated model. In sum, all the diagnostic tests in Table 5, Table 6 and Figure 1 showed that the estimated model was correctly specified and valid for policy.

V. CONCLUDING REMARKS

This study examined a comparative analysis of the impact of monetary and income policies on economic growth in Nigeria. The focus on monetary and income policies in order to spur growth was informed by the paradigm shift in the failure of either of the policies to engender economic growth to the desired level in Nigeria. Thus, the need to combine both and check their effectiveness in spurring economic growth. To achieve this lofty aim, the techniques of co-integration and Dynamic Ordinary Least Square was used to analyze the secondary data collected from CBN statistical bulletin. The empirical finding showed that both monetary and income policies serves as a driver of economic growth. But comparatively, monetary policy impacted more on the growth of the Nigerian economy during the period of study than income policy. This was captured by the positive and significant impacts of both exchange rate and broad money supply. Although income policy captured by wage increase and price control were conforms to economic theory in increasing economic growth but were not in any way significant. Based on the empirical findings, it was recommended that; government should put up

price control mechanism that will fixed minimum and maximum price for consumers goods and as well checkmate the wages in the labour market in order to prevent the occurrence of high inflation. Also, monetary policy management should ensure that a unify exchange rate system that help to drive the production activities of the economy and as well ensured to minimize artificial scarcity in order to guarantee effective operation of foreign exchange activities. More so, monetary policy authorities should ensure a moderate level of broad money supply in order to avoid inflation driven economy which will be inimical to economic growth. Monetary policy measures should be well coordinated so that the desired behavioural changes in the real sector will be achieved in term of job creation and promotion of export.

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