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Impact of Fiscal Spending on Nigeria's Economic Growth: 1990-2021

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Please note that entries are not limited to the sub-themes above.

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Papers should be compiled in the following order: title page; abstract; keywords; main text introduction, materials and methods, results, discussion; acknowledgments; declaration of interest statement; references; appendices (as appropriate); table(s) with caption(s) (on individual pages); figures; figure captions (as a list).

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Impact of Fiscal Spending on Nigeria's Economic Growth: 1990-2021



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Abstract

This study examined the impact of government spending on Nigerian's economic growth in the period 1990-2021 by evaluating the effect of spending of each level of government. The study employed the Autoregressive Distributed Lag Model (ARDL) analysis on Nigerian Gross Domestic Product (GDP) and total spending of all the three tiers of Nigerian government – the local governments, state governments and the federal government. Gross Domestic Products was the dependent variable while total expenditures of the local governments; state governments and the Federal Capital Territory (FCT) as well as the federal government are the independent variables.

Augmented Dickey Fuller test was applied to test for unit root in the series. Findings from the study revealed that fiscal expenditure by the federal government has positive significant effect on economic growth in the long run. Also, fiscal spending by the 36 state governments and FCT has positive and significant effect on the economic growth of Nigeria in the long run but has negative and insignificant effect in the short run. However, findings showed that expenditure by the 774 local governments has a negative effect on economic growth in the long run. In the short-run all the variables do not exert significant effect except for their individual lag. By implication, public expenditure by the Federal Government of Nigeria and the thirty-six state governments and FCT impact economic growth positively than the local governments expenditure due to more spending on major contributors (agriculture, infrastructure and public utilities) to the Gross Domestic Products. The study recommended that fiscal policy should be focused on spending on infrastructural facilities to enhance manufacturing and exports in order to extend foreign revenue earnings from oil and gas to exports of finished goods

Keywords: Fiscal spending, economic growth, Nigeria

JEL Classification: A1, E0, H7, O4

1.0 Introduction

Spending on public utilities directly and provision of services and infrastructure provide liquidity in the economy and facilitates business transactions. Since the intervention of Keynes (1936) in the debate of whether public spending aids economic growth, there has been a shift towards the embrace of employing fiscal spending in stimulating the economy among economists and financial scholars. The growing support for the Keynesian model was hinged on the theory that causality runs from public spending to incomes with the

implication that government can increase national income using the instrument of fiscal stimulus as a catalyst.

In developing countries such as Nigeria, the issue has been dominant. Government is mostly seen as the major provider of both capital projects – critical infrastructure and majority employments in the economy. It means that the role of government in stimulating the economy is not only in providing administrative and regulatory oversights but also in actual participation in distribution of capital into the economy (Nasiru, 2012; Obasikene, 2017).

The government of Nigeria is divided into three tiers, with different budgetary provisions that make up the aggregate national government spending. Each of these divisions performs functions autonomous of each other at times, while functions overlap at other times. Each of the tiers has the complement of democratic governance structure, the executive, the legislature and the judiciary. The third tier, the local government, is the closest to the grassroots and responsible for regulations, provision of basic services and infrastructure as well governing at the local level. There are 774 local governments in Nigeria at this first tier. The second division, the state government, consists of 36 states – sub-nationals – and the Federal Capital Territory (FCT). This tier has higher responsibilities than the first tier and therefore has larger financial outlays. The first and the highest tier of the three is the federal government, which is the sovereign in charge of the monetary policies, the foreign policies, national defense, internal security, immigration, external trade and national accounts.

Statutorily, the Nigerian fiscal architecture allows both the local and state governments to generate revenues autonomously for use within their jurisdictions while revenue garnered into the Federation Account by the agencies of the federal government are allocated to the three tiers. Section 162 (1) of the Constitution of the Federal Republic of Nigeria 1999 (as amended) established the Federation Account into which all revenues collected by the Government of the Federation are deposited (Federal Government of Nigeria, 2011). The law made exemptions for revenues collected from few other sources from being lodged in the Federation Account. Among

these sources are personal income tax of the residents of the FCT and the staff of the Ministry of Foreign Affairs. Others are personal income tax of the officers and men of the armed forces and the Nigeria Police Force.

The federal government collects revenue from oil and gas sales together with other revenues like customs duties, excise duties, solid mineral tax, VAT and others on behalf of the other tiers. The federal government is the custodian of the Federal Account. Section 162 (2) of the constitution also laid out the process of and modalities for sharing the monies in the Federation Account to the 3 tiers of government. The share of each tier accounts for large percentage of revenue available for spending. Revenues must be allocated to the federal, states and local governments through a sharing arrangement of 52.68 percent, 26.72 percent and 20.60 percent for the federal, states and local governments respectively. The allocation is not in equal amount to every state or local government. Depending on the peculiarities of each state, the constitution takes into consideration allocation principles such as equality of all states, population, population density, internally generated revenue, land mass and terrain. In addition, 13 percent of the revenues derived from extraction of natural resources lodged in the Federation Account is allocated to the states where the natural resources is extracted, based on the principle of derivation.

Additionally, the federal government raises funds through borrowings locally and from foreign sources through issuance of debt instruments and from multilateral and bilateral finance institutions, these are added to the share of the federal government from the Federation Account, which forms the component of the federal government budget. Similarly, the state governments are empowered to raise debt from the financial institutions and markets locally while they are restricted by the federal government guarantee in the amount they can raise in foreign debts. Thus, the components of the states' revenue include, share from the Federation Account, Personal Income Tax of residents within each state, land use charges, loans from financial institutions, debt (state bonds) from the financial markets, sale of assets, foreign loans (to be guaranteed by the federal government), grants from development

agencies, and others.

This study investigated how fiscal spending can aid economic growth in Nigeria. It uses the aggregates expenditure of each of the three tiers of governments' annual budgets from 1990-2021 to determine whether or not fiscal expenditure is significant to the expansion of the economy. The consolidated character of the government income and the allocation of resources to the three tiers of government from a pool make it imperative to study the impact of government spending of the three tiers on the GDP growth in Nigeria.

2.0 Literature Review

The debate concerning utilizing fiscal spending to engineer national economic growth has been on between the Keynesian school and the monetarists for decades. Keynesians believe that aggregate demand can be stimulated through spending on capital projects during the period of low demand in the economy. It is also believed that government can raise employment through massive spending on infrastructure and capital goods (Giavazzi & Pagano, 1990; as cited in Barry & Devereux, 1992). Again, it is assumed that the crowding out effect on private sector financing of government spending should not arise in an open economy, which allows for capital importation into the private sector of the economy through foreign direct investments (FDI) and foreign portfolio investments (Barry & Devereux, 1992).

On the other hand, the monetarists reason that the acclaimed positive advantages of fiscal spending are based on false premise that revenues are derived from straightforward taxes that do not distort the economy. However, typically, taxation has a negative effect on economic output taxation reduces income of the productive units of the economy (Dladla & Khobai, 2018). Since the income, which would have been saved by the households or reinvested by businesses, are accrued to government in form of taxes, economic outputs are reduced to the extent of taxation.

Empirical studies (Fatas & Mihoy, 2001; Blanchard & Perotti, 2002; Mountford & Uhlig, 2009) about the veracity of the Keynesian model relating government spending on consumption and output indicate positive impacts over a short

period. Nevertheless, Agnello et al. (2011) investigated the short-run and medium term impact of fiscal policies on economic activity of 132 countries from 1960 to 2008. The study found that fiscal spending provided a short-run net impetus to the economies while fiscal spending increases the crowding in effects as incidents of crisis such as banking crisis are controlled for, which gives the impetus for fiscal spending. In the long run, increase in fiscal spending results in crowding out effects notably in debt crisis situation.

Empirical results of studies on the effects of fiscal spending on Nigerian economy have been had mixed results. Jelilov and Musa (2016) examined why government spending has not stimulated corresponding economic growth in Nigeria between 1981-2012. The study found that government expenditure affects the economic growth in a positive and significant way. Ileanacho (2016) studied the short-run and long run relationship between public expenditure and economic growth in Nigeria from 1986 to 2014. The study employed cointegration and error correlation techniques on two variables; public sector expenditure and gross capital formation drawn from the Cobb Douglass production function, while it controlled for the effect of non-oil revenue. The result of the empirical tests showed that recurrent expenditure is principally responsible for the economic growth in Nigeria. It showed that the long-run relationship between recurrent expenditure and economic growth is negative and significant and positive in the short-term which shows the double effects of recurrent expenditure on the economic growth. Capital spending, on the other hand, has a negative significant effect on the economy on the long run. Emori et al. (2015) studied the effect of fiscal spending on the Nigerian economy using the GDP, spending on education, health, agriculture, transport and communication using OLS regression technique. Results indicated that the effect of public spending on the Nigerian economy is significant. Jeff-Anyeneh and Ibenta (2019), employed ARDL and Granger causality to analyse the impact of government capital and recurrent expenditure on Nigeria's economic growth for the period 1981-2016. The result of the study found economic growth to be independent of government expenditure.

Bappahyaya, et al. (2020) examined the impact of government expenditure on Nigeria's economic growth between 1970-2017. The study employed Pairwise Granger causality test to evaluate the relationship between the dependent variable gross domestic products and the explanatory variables namely, capital and recurrent expenditure of the federal government of Nigeria, inflation and trade openness. Results revealed that there is a unidirectional causality from government expenditure to economic growth in Nigeria. Similarly, using error correction mode and granger causality test to evaluate the impact of government expenditure on economic growth, Umeh et al. (2022) employed data on federal government capital, recurrent expenditure and the gross domestic growth from 1981-2019. The study found that government expenditure exerts positive but insignificant impact on economic growth in Nigeria.

In the study conducted by Nwude et al. (2023), government expenditure on health, education agriculture, pension and gratuities as well as public debt servicing were employed to analyse the impact of government expenditure on Nigeria's economic growth for the period 1981-2020. The results of the study, which was analysed by Vector Error Correction Model (VECM) revealed that expenditure on education had positive and significant impact in both short-run and long run. While expenditure on health and agriculture exerts positive and significant impact on Nigeria's economic growth, pensions/gratuities and public debt servicing has negative and insignificant impact.

3.0 Methodology and sources of Data

The source of data for this study is the Central Bank of Nigeria Statistical Bulletin (2022). The data is tested for unit root using Augmented Dickey Fuller test. The Autoregressive Distributed Lag Model (ARDL) was employed to test the impact of fiscal spending on the economic growth of Nigeria in the short and long run. The three tiers of government of local, states (including the Federal Capital Territory) and federal government are represented individually in the model. Real GDP data is at current basic prices – it is regarded as the most appropriate to compare different years. The period of the study, 1990-2021, depicts government funding for over a quarter of century.

The ARDL (p, q) model specification:

$$RGDP_t = \Delta f(LGSP, STSP, FGSP) \dots \dots \dots (1)$$

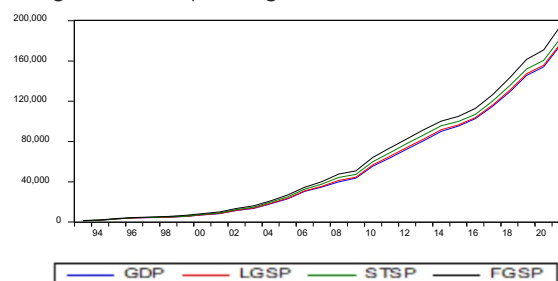
The operational form of the model is as shown in equation (2). Equation 2 will be represented in the form of Autoregressive Distributive Lag Model (ARDL) since it is the estimation technique used for the research. This is shown as:

$$\ln GDP_t = \beta_0 + \sum_{i=1}^k \beta_{1i} \Delta \ln GDP_{t-i} + \sum_{i=0}^k \beta_{2i} \Delta \ln LGSP_{t-i} + \sum_{i=0}^k \beta_{3i} \Delta \ln STSP_{t-i} + \sum_{i=0}^k \beta_{4i} \Delta \ln FGSP_{t-i} + u_t \dots \dots \dots (2)$$

Where: GDP = Gross Domestic Product at current price (proxy for economic growth); GDP_{t-1} = first year Lag of the Gross Domestic Product (This is used to account for the Lag of the variable); LGSP = Local government spending; SGSP = State government spending; FGSP = Federal government spending; B₀ = Constant intercept; B₁, B₂, B₃, B₄ = Coefficients to be estimated; u_t = Error term; t = years; Δ = first difference operation of the variables; Ln represents the log of the variables. The a-priori expectations of this study are that positive and significant relationships are expected between the explanatory variables (LGSP, STSP and FGSP) and the dependent variable (RGDP) in the short-run and long run B₁, B₂, B₃, B₄ > 0

4.0 Analysis of Data and Discussion of Results

Figure 1: Graph of gross domestic product, local government, state governments and federal government spending



Source: Authors' Computation (2022)

Figure 1 above displays the graphical trends of the variables employed for this study. The trends followed a similar pattern for the four variables: including the dependent variable, GDP, and the explanatory variables, LGSP, STSP and FGSP. The slopes are flat from 1990 until 1993 when they began a gradual rise, which steadied up till 1998. By the year 2000, the steepness of the slopes has started becoming noticeable continuing to 2004, when the slopes experienced upward acceleration until around 2009, when it flattened briefly. This was quickly followed by another steep upward acceleration in 2010, which was consistent, with little deviation until the end of the graph in 2021. Thus, there was upward trajectory of the slopes for all the variables in the study.

Table 1: Descriptive Statistic

	GDP	LGSP	STSP	FGSP
Mean	52952.50	845.2236	2184.134	3503.741
Median	34675.94	827.4000	2116.140	2450.900
Maximum	176075.5	1806.910	5206.396	12164.15
Minimum	1257.175	18.97000	44.18000	160.8900
Std. Dev.	52862.00	685.0472	1761.546	3300.871
Skewness	0.838418	0.030528	0.106391	1.039718
Kurtosis	2.498875	1.346951	1.486967	3.272901
JarqueBera	3.701013	3.306362	2.820909	5.314889
Probability	0.157158	0.191440	0.244032	0.070127

Source: Authors' Computation (2022)

Table 1 showed the mean values of 52952.50, 845.2238, 2184.134, and 3503.741 for GDP, LGSP, STSP, and FGSP respectively. The standard deviation values for the GDP (52862.00), LGSP (685.0472), STSP (1761.546) and FGSP (3300.871) indicate that the data are clustered around the mean of each variable. The skewness values of 0.838418, 0.030528, 0.106391 and 1.039718 for GDP, LGSP, STSP and FGSP respectively indicate that the variables are positively skewed; in other words, the

distributions are right-skewed. The Kurtosis values reported in Table 1 for GDP is 2.498875, LGSP, 1.346951, and SGSP, 1.754950, this connotes that the distributions are platykurtic (short-tailed), while FGSP, 3.272901 are greater than 3 which denotes that the distribution is leptokurtic or long-tailed. The Jarque-Bera probability indicates that all the variables are normally distributed with each variable's probability value greater than 0.05.

Table 2: Augmented Dickey Fuller ADF Unit Root Tests

At Level				
	LGDP	LLGSP	LSTSP	LFGSP
t-Statistic	-4.0800	-2.0324	-3.1822	-2.6670
Prob.	0.0039	0.2721	0.0319	0.0949
	***	n0	**	*
At First Difference				
	d(LGDP)	d(LLGSP)	d(LSTSP)	d(LFGSP)
t-Statistic	-4.4276	-4.4447	-3.4431	-3.4891
Prob.	0.0018	0.0016	0.0181	0.0166
	***	***	**	**
Order of Int	I(0)	I(1)	I(0)	I(0)

Source: Authors' Computation (2022)

The results of the ADF unit root tests presented in Table 2 revealed that GDP, STSP and FGSP are stationary at level I(0) while LGSP is stationary at first difference I(1). The variables were logged once to achieve stationarity. This is a case of mixed integrations, hence cointegration by Engle and Granger and/or Johansen is not

applicable. The applicable method is the ARDL and Bound test approach to cointegration (Pesaran & Shin, 1995), which is applied in this study.

Table 3: Optimal Lag Structure

Lag	LogL	LR	FPE	AIC	SC	HQ
0	58.83171	NA	1.73e-07	-4.217824	-4.024270	-4.162087
1	172.7317	183.9924	9.47e-11	-11.74860	-10.78083*	-11.46991
2	193.1947	26.75929*	7.42e-11*	-12.09190	-10.34992	-11.59028
3	212.2271	19.03233	7.74e-11	-12.32516*	-9.808965	-11.60059*

* indicates lag order selected by the criterion

LR: sequential modified LR test statistic (each test at 5% level)

FPE: Final prediction error; AIC: Akaike information criterion; SC: Schwarz information criterion; HQ: Hannan-Quinn information criterion

Source: Authors' Computation (2022)

Table 3 presents the recommended lag for the each of the information criterions, LR recommended 2, FPE, 2, AIC, 3, SC, 1, and HQ, 3.

Due to the mixture of recommended lag by the criterions, the study employed lag 3 based on the recommendation of AIC.

Table 4: Bound Test

Test Statistic	Value	Signif.	I(0)	I(1)
			Asymptotic: n=1000	
F-statistic	5.831261	10%	2.37	3.2
K	3	5%	2.79	3.67
		2.5%	3.15	4.08
		1%	3.65	4.66

Source: Authors' Computation (2022)

As shown in Table 4, the F statistic is 5.831261, the lower bound I(0) values at 1 percent for the actual sample size is 3.65 while the upper bound I(1) at 1 percent is 4.66. It seems good that the F statistic 5.831261 exceeds the upper value. This suggests that the null hypothesis of no level relationship and

it is rejected at 1 percent level of significance. This investigation finds that there is an existence of cointegrating relationship between economic growth, federal government spending, state government spending and local government spending.

Table 5: Long Run Result

Variable	Coefficient	Std. Erro	t-Statistic	Prob.
LLGSP	-1.230624	0.480145	-2.563028	0.0374
LSTSP	1.667307	0.608295	2.740954	0.0289
LFGSP	0.649674	0.172962	3.756155	0.0071
C	0.561038	0.232066	2.417575	0.0463

Source: Authors' Computation (2022)

The result showed that the coefficients of LLGSP, LSGSP, and LFGSP are approximately -1.23, 1.67, and 0.65 respectively; with corresponding probabilities of 0.0374, 0.0289, and 0.0071 respectively. These imply positive effects from state government spending and federal government spending to economic growth in the long run while local governments spending has a negative effect on the economic growth in the long run.

Consequently, a unit change in state governments spending induces economic growth by 1.67 units. Similarly, a unit change in federal governments spending induces economic growth by 0.65 units. On the other hand, a unit improvement in local government spending leads to 1.23 units reduction in economic growth. All the effects are found to be statistically significant.

Table 6: Short-Run Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LGDP(-1))	0.059048	0.129432	0.456209	0.6621
D(LGDP(-2))	0.355016	0.105314	3.371040	0.0119
D(LLGSP)	-0.076465	0.064587	-1.183906	0.2751
D(LLGSP(-1))	0.367233	0.085088	4.315941	0.0035
D(LLGSP(-2))	0.248413	0.064377	3.858744	0.0062
D(LLGSP(-3))	0.197597	0.068799	2.872090	0.0239
D(LSTSP)	0.208225	0.091336	2.279757	0.0567
D(LSTSP(-1))	-0.595872	0.136632	-4.361152	0.0033
D(LSTSP(-2))	-0.365657	0.113510	-3.221370	0.0146
D(LSTSP(-3))	-0.383658	0.123759	-3.100041	0.0173
D(LFGSP)	0.066027	0.074426	0.887154	0.4044
D(LFGSP(-1))	-0.198447	0.088209	-2.249726	0.0592
D(LFGSP(-2))	-0.111334	0.059911	-1.858331	0.1055
CointEq(-1)*	-0.489364	0.072297	-6.768829	0.0003
R-squared	0.897269	Mean dependent var	0.065376	
Adjusted R-squared	0.775860	S.D. dependent var	0.033490	
S.E. of regression	0.015855	Akaike info criterion	-5.151595	
Sum squared resid	0.002765	Schwarz criterion	-4.469024	
Log likelihood	78.39494	Hannan-Quinn criter.	-4.962279	
Durbin-Watson stat	2.233807			

Source: Authors' Computation (2022)

Table 6 revealed the adjustment parameter of -0.49 with the probability value of 0.0003. This satisfies the two basic assumption of short-run adjustment parameter and this implies that: short run impact runs from local government spending, state governments spending, federal government spending to economic growth, and 49 percent disequilibrium is to be corrected within a year. This suggests that 49 percent disequilibrium in economic growth is corrected/adjusted when federal government spending, state government spending and local government spending jointly changes by 1%. The local government spending has negative

and insignificant short-run dynamic influence on economic growth. The state governments spending also have a negative and insignificant effect on economic growth. More so, the federal government spending have a positive and insignificant effect on economic growth. However, at lag one local government spending and state government spending exerts positive and negative effect on economic growth respectively, with both effects being significant while federal government spending exerts a positive but insignificant effect on economic growth at lag one. The R-square shows that the selected fiscal spending variables are responsible for 90 percent of the changes in economic growth in the short-run.

Table 7: Diagnostic Tests

Serial Correlation Test	
F-statistic	2.505600
p-values	0.0527
Heteroskedasticity Test	
F-statistic	2.242699
p-values	0.1081
Normality Test	
JarqueBera	2.156465
p-values	0.340196
Ransey Reset Test	
F-statistic	3.334369
p-values	0.0535

Source: Authors' Computation (2022)

All diagnostic testing on the model was successful. The F-statistic of 2.505600 in the serial correlation test is not significant under the null hypothesis of "no serial correlation," with a p-value of 0.0527. This suggests that serial correlation in the residual's lags is not present in the calculated model. Similar to this, homoskedasticity is used as the null hypothesis for the heteroskedasticity test. The residual of the

calculated model is homoscedastic in this instance with F-statistics = 2.242699 and a p-value of 0.1081. Also, the normality test carried out under the null hypothesis of "normality," reveals that the residual of the estimated model is normally distributed, with Jarque-Bera = 2.156465, which is insignificant and has a p-value of 0.340196. Finally, the Ramsey Reset test with null hypothesis that the model have no omitted variables, with F-statistics of 3.334369 and a probability of 0.0535, the null hypothesis is accepted indicating that the model is stable and there are no missing variables in the model.

4.1 Discussion of Findings and Policy Implications

The result of the study reveals that both the state government spending and the federal government spending exert a significant long run effect on economic growth, while the local government spending has a negative effect on economic growth in the long run. This finding is consistent with the result of Jelilove and Musa (2016), which found that government expenditure yields positive and significant effect on economic growth in Nigeria. However, the result negates the findings of Iheanacho (2016), which indicated that capital spending has a long run significant negative effect on the economy.

In the short-run the results reveal that local government spending has insignificant negative influence on economic growth. Similarly, state government spending has insignificant negative effect on economic growth while federal government expenditure exerts insignificant positive effect on economic growth. However, at lag one local government spending and state government spending exerts positive and negative effect on economic growth respectively with both effects being significant while federal government spending exerts a positive but insignificant effect on economic growth at lag one.

Theoretically, an increase in federal government spending causes a rise in the economic growth, thus, the government expenditure through the release of budgetary provisions for capital expenditure and public infrastructure have stimulated economic activities leading to rise in growth. Also, it is an indication that budgetary

approval by the legislature has impacted the provision of infrastructural that has catalyzed economic growth.

The results show that state governments spending have positive and significant effects on economic growth in the long run. This is in line with a priori expectation and it conforms to the findings of Emori et al. (2015). This could be a result of state governments spending primarily on sectors with the largest contributors to the GDP, such as agriculture and mining exploration. Furthermore, it was evidenced that local government spending has negative and insignificant effect on economic growth in both the long run and short run. This is an indication of apparent lack of financial resources and capacity of the third and smallest tier of the Nigerian fiscal administration to spend on the key sectors that contribute to economic growth of the country.

5.0 Summary, Conclusion and Recommendations

Findings from the test results show that the local government fiscal spending had a significant and negative impact on the Nigerian economy in the short-run but insignificant and negative impact on the long run. The spending by the states and the federal capital territory administration shows positive and significant impact on the economy in both short run and long run. The federal spending was found to have positive and significant effect on the GDP in both short run and long run. The result is in line with the Keynesian argument that government spending can be employed to stimulate economic growth in an economy.

The three tiers of government should intensify their spending on infrastructural developments – roads, railways, electricity, dams, public schools, healthcare, communication and technological expansion, among others. The effects of fiscal spending on these items will increase economic activities in the country in both short run and long run, especially as a catalyst to private sector development, which would stimulate innovation, growth and development.

As a primary product export dependent economy, reliance on hydrocarbons for government revenue makes the country vulnerable to the shock and volatility in the oil and gas markets. Therefore, fiscal policy should be

focused on spending on infrastructure to enhance manufacturing and exports in order to extend foreign revenue earnings from oil and gas to exports of finished goods. Also, constitutional amendment is necessary to devolve powers to the states governments in terms of removing some items in the exclusive legislative (items on which only the federal government has sole authority) list

and placing them rightly on the concurrent legislative list (sectors that both the federal and state government have control over), in order to give needed authority to state governments for more spending on the sectors that are directly linked to the growth of the economy.

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Impact Of The Contributory Pension Scheme On The Nigerian Capital Market



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Abstract

This paper examines the impact of the contributory pension scheme on the Nigerian capital market from 2006 to 2020 using a regression model. Market capitalization (MCAP) was proxy for capital market development, while public sector pension contributions (PUB) and private sector pension contributions (PRV) were proxies for contributory pension scheme. Results revealed that both public sector pension fund and private sector pension fund showed significant positive impact on market capitalization indicating that the contributory pension scheme has positively impacted the Nigerian capital market and by extension the Nigerian economy by acting as a source of long-term funds for productive investment. Consequently, all efforts should be directed at improving on the efficient channeling of contributions from pension deductions to pension fund administrators who will have more funds that can be invested in the capital market. To this end, pension fund regulators should ensure full implementation of the contributory pension scheme as well as total compliance in both public and private sectors so as to mobilize all eligible funds and take full advantage of pension funds as a source of long-term finance for investment in the Nigerian economy by way of the capital market.

Keywords: Pension Funds, Capital Market, Finance, Nigeria

JEL Classification: E02, E44, G21

1.0 Introduction

A well-developed financial system ensures that adequate funds are efficiently and effectively mobilized and allocated for productive investment which would ultimately lead to sustainable growth and development of the economy. To achieve this objective requires mobilization of funds, particularly long-term funds, which are best sourced from the capital market. The capital market is that arm of the financial system with the responsibility of mobilizing the savings of individuals and households as well as institutions and channeling same to business enterprises and government who make use of them. The capital market does this by providing the platform where firms and government can sell financial securities in form of shares and bonds and obtain the funds needed to carry out their long-term investment for the growth and development of the economy. However, the degree to which the capital market is able to intermediate between the savers and users units will depend not only on the savings habit of the populace, but more importantly on how developed the capital market is.

The studies of Levine and Zervos (1996), Rousseau and Wachtel (2000), Beck and Levine (2002), among many others, have highlighted the importance of capital market development in the growth process of the developed countries. They were able to show that in economies which have developed capital markets, firms and industries have grown faster than those with less developed capital markets, such as are associated with developing countries.

In Nigeria as well as in many Africa countries, a major factor hindering economic development has been the dearth of long-term funds (Okparaka, 2018). A credible source of long-term funds is the pension industry which has the capability to provide a continuous supply of institutional investors, particularly pension funds, mutual funds and insurance companies. The industry according to OECD (2005) has over the past few decades enhanced its role of accumulating savings. Meng and Pfau (2010) reported that domestic capital markets have greatly benefitted from rapidly growing pension fund assets which have been a steady source of investment funds. Stewart et al. (2017) see pension

funds as being more significant as a source of funds as governments and banks deal with over-stretched balance sheets. They however noted that in many countries, including those with relatively mature pension systems, pension funds are largely invested in bank deposits and government bonds which contribute minimally to long-term funding for investment in the real sector of the economy. Consequently, lower investment returns than could have been achieved are delivered.

The Federal Government of Nigeria replaced the defined benefit scheme with the contributory pension scheme in 2004 as a result of the inadequacy of the old scheme to cater to the needs of the retirees. The contributory pension scheme, being a funded system allows pension fund administrators (PFAs) to invest in financial markets. Funded pensions are expected to contribute to the growth and development of the economy by fostering national savings and development of the capital market. The long-term nature of pension funds means that more funds can be invested in illiquid and longer-term assets that can result in better returns and consequently act as a source of long-term funds for the capital markets (Meng & Pfau, 2010). Davis and Hu (2008), cited in Sun and Hu (2014) reported that differences observed in economic growth between countries could be explained by differences in the size of pension funds.

Stewart et al. (2017) reported that Organization for Economic Co-operation and Development (OECD) pension statistics show that in 18 out of 27 OECD countries, more than 75% of pension fund portfolios are held in equities and bonds. They noted that in Australia, China, Poland, Hong Kong and Namibia over 50% of pension fund portfolios were invested in equities. A high share of pension fund portfolios are held in bills and bonds in several Central and Eastern European economies (Czech Republic, Hungary, Serbia, and The Slovak Republic) and Latin American economies (Chile, Costa Rica, The Dominican Republic, Mexico and Uruguay), in spite of prevailing low interest rates.

Pension funds as institutional investors in capital markets have four advantages compared with individual investors. Sun and Hu (2014) highlight these advantages as follows: First, pension funds are able to provide copious funds to the financial

market in the long-term, rather than short-term speculative capital since their portfolios are held over a long period of time. Consequently, they enable the stability of capital markets. Second, pension funds improve corporate governance of quoted companies because of their influence on the board as large institutional investors and also large shareholders. Third, pension funds stimulate financial innovation indirectly by encouraging the creation of new securities, such as options and futures, zero-coupon bonds, among other new financial products in the United States. Lastly, pension funds are supervised by government and the financial markets where their operations are carried out also regulated by the government. This supervision and regulatory systems are vital for financial market development.

Pension funds represent the largest form of investors in Nigeria (Rewane, 2022). Since the inception of the contributory pension scheme, pension fund assets have been growing every year. As at 2007 year end, three years into the implementation, pension assets rose to ₦815 billion, representing 2.4% of nominal gross domestic product (GDP). By the end of 2017, pension assets had grown to ₦7.5 trillion representing 6.6% of nominal GDP. By 2020 year end, pension assets stood at ₦12.3 trillion, representing 8% of nominal GDP. This steady growth has been attributed to the growth in number of retirement savings account (RSA) holders, as well as increase in contributions and returns from the investment of assets (Ado, 2021). As at the end of 2020, about 66% of the ₦12.3 trillion in pension assets was invested in Federal government securities, providing low-cost long-term funds to the Federal government to implement its capital budget. 7% of the funds were invested in equities of quoted companies on the Nigerian Stock Exchange and 6.8% in private sector corporate bonds providing the firms with long-term cheap funding to finance growth (Ado, 2021). Assets under management by 2021 year end were reported to have grown by 5.6% from the preceding year surpassing ₦13 trillion. This, according to Rewane (2022) was driven by the portfolio's weighty exposure to Federal government of Nigeria securities to the tune of 63.2%.

The overwhelming investment of pension funds in

Federal government securities has limited the level of funds that go to growth-enhancing sectors. For instance, Iwegbu (2020) reported that 20.17% and 3.68% of pension funds went to industrial and agricultural sectors respectively. The low investment in these two sectors limits the propensity of pension funds to stimulate real economic growth. Bijlsma et al. (2018) argued that pension savings by providing more investment funds, should go a long way to galvanize economic growth and perhaps, more importantly deepen capital markets, thereby leading to more effective and efficient allocation of capital in the economy.

The relationship between pension funds and capital markets has been the subject of several empirical studies. Most of them have been conducted in developed countries and a few emerging markets. Studies in developing countries like Nigeria are quite scanty and this necessitates the present study. Studies addressing the impact of the contributory pension scheme have been carried out, but being a relatively recent reform highlights the need for updates as time passes to get a clearer picture of its impact on the development of the capital market. This study addresses this gap. It is therefore pertinent to assess the extent to which the contributory pension scheme has impacted the Nigerian capital market. It is expected that the findings from the study will benefit capital market development and pension policy in Nigeria and also update literature in this subject area. The specific objectives are to determine the impact of the public pension fund and private pension fund on the Nigerian capital market.

2. Review of Related Literature

2.1 Theoretical Framework

Financial intermediation theory as espoused and expanded by Goldsmith (1969), McKinnon (1973) and Shaw (1973) has explained that the differences observed in economic growth across countries could be attributed to the quantity and quality of services delivered by financial institutions. In this way financial markets play a critical role in determining the rate of growth and development of an economy. Various theoretical models explain that financial intermediaries carry out their function by reducing frictions such as

asymmetric information and transaction costs. Furthermore, they mobilize savings, reduce research costs, exert corporate control and manage risks (Andries, 2009).

The leading principle in the theory of financial intermediation is the theory of perfect markets. According to this theory, financial intermediaries have a function because financial markets are not perfect. The neoclassical model of perfect financial markets or the Arrow- Debreu model is based on the following assumptions: no individual participant can influence the prices in the market; borrowing and lending conditions are the same for all parties under the same circumstances; there are no discriminatory fees; the lack of competitive advantages at the level of participants; all financial securities are homogenous, divisible and tradable; there are no transaction costs; no information costs and no insolvency costs; all participants have immediate access to the complete information regarding the factors and elements that can influence the current or future value of the financial instruments (Scholtens & van Wensveen, 2003; Andries, 2009).

It follows that in perfect markets, the prices of securities are well defined, savers and users of funds find each other because they have perfect information about each other's preferences at no cost in order to exchange savings against readily available financial instruments. These financial instruments are created and traded at no cost and they completely and simultaneously meet the needs of both savers and users. Full risk diversification can be achieved because the supply of financial instruments is also sufficiently diversified. Due to complete information, market participants have the same expectations and act rationally.

It is obvious that the foregoing does not occur naturally; therefore, intermediaries are necessary to bring savers and users together and to create instruments that meet their needs. The deviations from this model which exist in the real world and which are seen as market imperfections necessitate intermediation by the specialized financial intermediaries. The primary functions of financial institutions are to aggregate savings of investors and allocate these funds to investment projects. The aggregation of savings is necessary

since many investments require funds that cannot be provided by any single investor. Financial intermediaries mediate between the providers and users of funds, by pooling the savings of many investors and by so doing enable the undertaking of large-scale projects.

Financial intermediation theory can be used to support the contribution of pension funds to the economy. Financial intermediation involves the transfer of funds from agencies with surplus (savers/providers) to agencies with deficit (firms/users) and occurs through securitization of assets by financial intermediaries (issuing houses and brokers). Pension funds are major participants in the capital market as institutional investors and fund providers. They accumulate large amounts of funds from individuals which they invest on their behalf so that when liabilities become due there will be sufficient income to settle maturing liabilities. The funds are channeled through the financial institutions like the capital market to productive investment. Thus, by increasing the proportion of resources society saves and/or by improving the ways in which capital markets mobilize and allocate savings, capital markets can promote economic growth.

2.2 Empirical Literature

The relationship between pension funds and capital markets has been explored in several empirical studies. Most of them have been conducted in developed countries and a few emerging markets. Studies in developing countries like Nigeria are quite scanty and this necessitates the present study.

Catalan et al. (2000) explored the relationship between contractual savings institutions (which include pension funds) and stock market development in 14 OECD countries and 5 developing countries. Employing Granger causality test, they found that stock market development was largely caused by contractual savings. Impavido et al. (2003) estimated the impact of pension funds and life insurance companies on stock market and bond market development in 32 developed and developing countries. They employed dynamic panel models and found that contractual savings impacted positively on the development of stock and bond markets.

Meng and Pfau (2010) examined the impact of pension funds on stock markets and bond markets in 32 developed and developing countries from 1980 to 2008. They employed stock market capitalization over GDP (MC/GDP) and stock market value traded over GDP (VT/GDP) to proxy stock market development. MC/GDP was indicator for stock market depth while VT/GDP was indicator for stock market liquidity. For bond markets, they considered only private bond markets since they were of the opinion that public bond issuance was at government's discretion based on its fiscal position and may not be an unbiased decision. They found that pension fund financial assets positively impacted stock market depth and liquidity as well as private bond market depth in the collective sample of countries. However, when the countries were split into two groups based on their level of financial development, countries with 'high' level of financial development had significant impacts. Pension funds had no significant impact on capital markets with a 'low' level of financial development. Sun and Hu (2014) examined the impact of pension systems on financial development in 55 countries. Based on panel data regression results pension funds were found to have very significant impact on financial development, especially in civil law and under-developed countries. Using vector auto regression (VAR) model with the Chilean data, they also found positive relationship between financial development and pension funds. They concluded that accumulated pension assets in a funded pension system had the capability to advance a country's financial development and economic growth.

Bijlsma et al. (2014) examined the relationship between economic growth and pension systems in 34 OECD countries using data obtained from 69 industrial sectors from 2001 to 2010. They included country-time, industry-time and industry-country fixed effects to account for unobserved heterogeneity and found that higher level of pension savings exerted a significant impact on growth in those sectors that are more dependent on external financing. They also reported that pension savings lead to deeper capital markets which invariably have a positive effect on economic growth by allowing faster growth in those firms that depend more on external finance.

Stewart et al. (2017) examined the role played by pension funds in capital market development and portfolio diversification in developed and developing economies. They observed that pension reforms have not had the expected desired economic impact in some countries. They also found that in a number of cases, especially in developing countries, pension fund portfolios are highly exposed to short-term assets such as short-term government securities and bank deposits, a situation that has resulted in somewhat low investment returns with the potential to adversely affect income inadequacy in retirement. They harped on the need for portfolio diversification by creating investment opportunities in domestic markets which would go a long way to improve the delivery of secure and adequate pensions to retirees.

Babalos and Stavroyiannis (2020) examined the impact of pension funds on stock market development in 29 OECD countries. Employing dynamic interaction between pension fund investments in equities and stock market development, they found that pension fund investment in equities promoted stock market development in some countries. They also found significant bidirectional causality between stock market development and pension fund investments in equities.

In Africa, Musawa and Mwaanga (2017) investigated the impact of pension fund investments on the Zambian capital market. Using quarterly data from January 2009 to December 2015 and employing co-integration and vector error correction technique, they found long-run relationship between pension funds and market capitalization. The authors stressed on the need to encourage pension funds to have more equity investments so as to enhance the growth and development of the capital market.

A few studies have also been carried out in Nigeria with varied findings. Zubair (2016) investigated the impact of pension fund investments on the Nigerian capital market from third quarter of 2009 to first quarter of 2016 using Autoregressive Integrated Moving Average (ARIMA) regression technique. He found significant positive relationship between capital market performance and pension fund investments. The study concluded that the performance of the Nigerian

capital market was significantly improved in terms of depth and liquidity by total pension fund investment in Nigeria using market capitalization and value traded respectively as proxies.

Okparaka (2018) investigated the impact of the contributory pension scheme on the capital market in Nigeria. He specifically analyzed the extent to which the Nigerian capital market had been impacted by total pension assets under management. He employed the ordinary least squares (OLS) regression analysis and found that pension assets positively and significantly impacted total market capitalization but had insignificant impact on total value of deals. He concluded that the development of the Nigerian capital market would be boosted by increasing total pension assets under management which would make more funds available for investment in the capital market.

Nageri et al. (2019) examined the relationship existing between capital market development in Nigeria and pension fund from first quarter of 2007 to second quarter of 2018. Employing Autoregressive Distributed Lag (ARDL) bound testing approach, they found that long-run co-integration exist between pension fund and capital market development. They also found short-term causality running from pension fund assets to capitalization at 10% significance level.

Iwegbu (2020) examined the indirect effect of pension fund on economic growth in Nigeria through the financial system. Using ARDL model, he found that pension funds stimulate growth by way of investment in portfolios that yield short-term returns.

The studies reviewed have shown that pension funds have the potential to provide long-term investment funds in the Nigerian capital market. The studies used aggregate pension fund variables in their models. This study disaggregates pension funds into public sector and private sector pension fund contributions and examines the impact of each component on the Nigerian capital market.

3. Methodology

3.1 Data

To examine the impact of the contributory pension scheme on the Nigerian capital market, time series data used for the analysis were obtained from Central Bank of Nigeria Statistical Bulletin and

National Pension Commission (PENCOM) annual reports. The data included market capitalization and pension contributions for the period 2006 to 2020. Market capitalization which is the market value of equities listed in the Nigerian stock market was used to measure capital market development. Pension contributions were made up of public sector and private sector contributions. The data analysis was carried out using an error correction model (ECM) technique.

3.2 Model Specification

The model was specified using market capitalization (MCAP) as the dependent variable with public sector pension fund (PUB) and private sector pension fund (PRV) as independent (explanatory) variables. Market capitalization is expressed as a function of contributory pension fund. The general form of the relationship between pension fund and capital market development is: Capital market development = F (Contributory pension fund) ... (1)

The functional relationship between the dependent and independent variables is expressed as follows:

$$MCAP = F(PUB, PRV) \dots (2)$$

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The functional relationship was then transformed into a form that can be tested in equation (3) as follows:

$$MCAP = \beta_0 + \beta_1 PUB + \beta_2 PRV + \epsilon_t \dots (3)$$

Where:
 MCAP = Stock market capitalization
 PUB = Public sector pension fund
 PRV = Private sector pension fund
 ϵ_t = Composite error term
 β_0 = Constant term (intercept)
 β_1 , and β_2 are the coefficients to be estimated.

From theoretical expositions each model parameter estimate is expected to have a positive sign. A priori expectations from the model were as follows: β_1 , and $\beta_2 > 0$. The specified model was estimated using the E-Views 10 statistical software and used to test the hypotheses at the 5% level of significance;

Hypothesis 1: Public sector pension fund has no significant impact on the Nigerian capital market.

Hypothesis 2: Private sector pension fund has no significant impact on the Nigerian capital market.

4. Results and Discussions

Normality Test

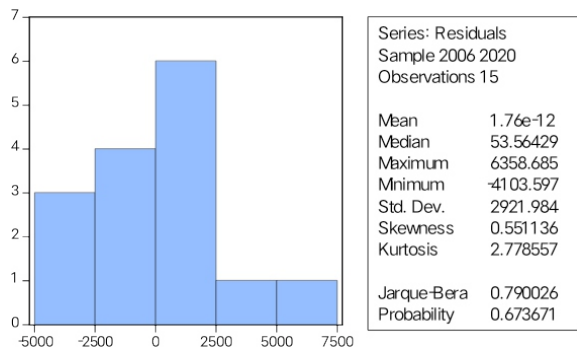


Figure 1: Jarque-Bera Normality Test

Source: Author's computation from EViews 10

The secondary data collected for this study was subjected to normality test. This is to achieve one of the assumptions of the parametric analysis and regression estimate, that the populations from which the samples are taken are normally distributed. The result in Figure 1, revealed that the probability value of Jarque-Bera, 0.673671 is higher than the level of significance of 0.05. This result means that the data is normally distributed.

Table 1: Descriptive Statistics of Variables

	MCAP	PUB	PRV
Mean	16,436.35 (B)	225.49 (B)	219.38 (B)
Standard Error	2,178.98(B)	31.21(B)	33.35(B)
Kurtosis	2.30	2.21	(1.83)
Skewness	1.21	0.91	(0.06)
Minimum	5,120.90(B)	37.38(B)	23.03(B)
Maximum	38,589.58(B)	536.97(B)	371.12(B)
Count	15	15	15

Source: Author's computation from EViews 10

The descriptive statistics shows that the average market capitalization for the period of this study was ₦16,436.35 billion. The average public sector pension fund was ₦225.49 billion and the average value of private sector pension fund was ₦219.38 billion. The nature of the peak of each variable is given by the kurtosis statistics, and the symmetric nature of the series given by the skewness value.

From the table it was observed that MCAP and PUB are skewed to the right, while PRV is skewed to the left with value of 1.21, 0.91 and -0.06 for MCAP, PUB and PRV respectively. The Kurtosis, with distribution greater than 3 is a leptokurtic distribution. A leptokurtic distribution (greater than 3) has a sharper peak with lower probability than a normal distribution of kurtosis whose value is equal to 3. A kurtosis with less than 3 is a platykurtic distribution which has a lower and wider peak with higher probability than leptokurtic and normal distribution. It revealed that MCAP, PUB and PRV are less than 3). Since the kurtosis values are less than 3, the variables are platykurtic.

Table 2: Correlation Matrix

	MCAP	PUB	PRV
MCAP	1		
PUB	0.9082451	1	
PRV	0.8183894	0.722102	1

Source: Author's computation from EViews 10

Table 2 shows the correlation matrix for the relationship between the dependent and independent variables. The result shows that all the independent variables positively correlate to the dependent. The correlation coefficients revealed that MCAP correlates to PUB by 90.8%, and MCAP correlates to PRV by 81.8%. The implication is that PUB and PRV induce strong impact on MCAP in Nigeria.

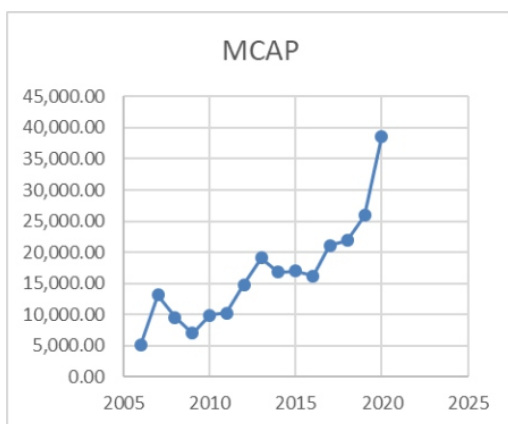


Figure 2: Graph showing trend of Market Capitalization
Source Author's Computation

Figure 2 shows the line graph showing the trend of market capitalization in the Nigerian capital market from 2006 to 2020. The graph shows a sharp rise from 2006 to 2007 followed by a decline over the next two years. The sharp rise in 2006 corresponds with the banking consolidation period and the sharp fall thereafter can be traced to the shocks arising from the global financial crises. It picked up in 2010 and shows an upward trend of MCAP with occasional fluctuations.

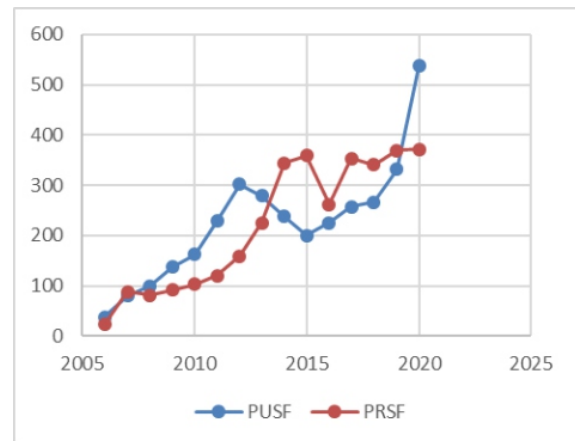


Figure 3: Graph showing trend of Public Sector and Private Sector Pension Funds
Source: Author's Computation

Figure 3 shows the line graph showing the trend of and public and private pension funds. It revealed that there is upward movement of both public sector and private sector pension funds with intermittent fluctuations. The low figure for private sector fund coincides with the period of the COVID-19 global pandemic when businesses had to be shut due to the lockdown.

Table 3: Kwiatkowski-Phillips-Schmidt-Shin (KPSS) Unit root Test

Variables	At Level	First Difference	Critical Value	Remark
MCAP	I(0) 0.585	I(1) 0.247	0.463	Stationary at first diff
Pub	I(0) 0.539	I(1) 0.241	0.463	Stationary at first diff
PRv	I(0) 0.574	I(1) 0.281	0.463	Stationary at first diff

Source: Author's computation from EViews 10

Table 3 shows the result of the unit root for the variables used for this study. The unit root test was used to examine the stationarity of variables. This is to ensure that regression result is not spurious. From Table 3, the KPSS unit root calculated value for MCAP, PUB and PRV at level are greater than the critical value at 0.05. This implies the presence of unit root. However, after the first difference, the variables became stationary. Hence, there is an integration order of I(1).

Table 4: Co-integration result

Unrestricted Cointegration Rank Test (Trace)				
Hypothesized		Trace	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.858266	46.80750	29.79707	0.0002
At most 1*	0.713765	21.40807	15.49471	0.0057
At most 2 *	0.326881	5.145823	3.841466	0.0233
Hypothesized		Max- Eigen	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.858266	25.39944	21.13162	0.0118
At most 1*	0.713765	16.26225	14.26460	0.0238
At most 2 *	0.326881	5.145823	3.841466	0.0233

Source: Author's computation from EViews 10

The results in Table 4 show that there are at least two co-integrating equations given that the p-values of Trace statistic and Max-Eigen statistics are all less than the level of significance of 0.05. Hence, indicating that there is co-integration for each of the models. The existence of co-integration requires the estimation of an error correction model (ECM) to determine the rate at which equilibrium occurs between the short-run and long-run.

Regression Result

Table 5: Regression result and error correction Model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(PRV)	29.70626	12.54249	2.368450	0.0394
D(PUB)	60.67768	9.870247	6.147534	0.0001
ECM(- 1)	-0.512257	0.207197	-2.472316	0.0330
C	-673.1145	587.5439	-1.145641	0.2786
R-squared	0.696617	Mean dependent var		2390.620
Adjusted R-squared	0.605602	S.D. dependent var		4467.321
F-statistic	7.653871	Durbin-Watson stat		1.824280
Prob(F-statistic)	0.006012	Wald F-statistic		14.21026
Prob(Wald F-statistic)	0.000615			

Dependent Variable: D(MCAP); HAC standard errors & covariance

Source: Author's computation from EViews 10

Table 5 gives the regression result from the Error Correction Model. The Error Correction Model parameter (ECM) is negative, less than unity as expected and significant. The value of the ECM approximately gave 51.2%, meaning that the disequilibrium is corrected (or adjusts to) its previous dis-equilibrium in the next period at a speed of 51.2% yearly. According to Asteriou and Hall (2007), it can be explained in the following ways:

- (1) If the ECM value = 1, then nearly 100% of the adjustment takes place within the period or the adjustment is very fast.
- (2) If the ECM value = 0.5, then about 50% of the adjustment takes place each period.
- (3) If the ECM value = 0, then there seems to be no adjustment.

From the results of Table 5, the a priori expectation were met. It shows that a positive and significant relationship exists between MCAP and PUB. This implies that since 2006 public sector pension fund has been on the increase in Nigeria and has resulted in the growth of the Nigerian capital market.

Private sector pension fund (PRV) also showed a positive effect on MCAP. The result revealed that the more the increase in the private sector pension fund, the more the growth of market capitalization in Nigeria. The coefficient of determination $r^2 = 0.697$ shows a 69.7% change in MCAP is as a result of the contributions of PUB and PRV. The F-statistic (ANOVA) from the table with a value of 7.65 and p-value of 0.006 shows that there is a strong linear dependency existing between the dependent and independent variables and is adequately a fit model. The method of estimation is valid and reliable because the Durbin-Watson value is approximately 2, which means that there is no serial correlation.

Table 6: Multicollinearity Test

Variable	Coefficient		Uncentered		Centered	
	Variance	VIF	VIF	VIF	VIF	VIF
PRV	89.13184	8.549392	2.089563			
PUB	101.7465	9.880203	2.089563			
C	3323749.	5.005150	NA			

Source: Author's computation from EViews 10

The variance inflation factor (VIF) for a predictor indicates whether there is a strong linear association between one predictor and the remaining predictors. The correlation in a situation in which two or more explanatory variables in a multiple regression are highly and linearly related, it renders one of the affected variables redundant and non-effective on the dependent variable. It is observed that in table 6, the model collinearity diagnosis reveals that the uncentred VIF is higher than the centered VIF. This implies that there is no multicollinearity.

Table 7: Heteroskedasticity Test

F- statistic	1.022817	Prob. F(2,12)	0.3889
Obs*R-squared	2.184630	Prob. Chi-Square (2)	0.3354
Scaled explained SS	1.243357	Prob. Chi-Square (2)	0.5370

Source: Author's computation from EViews 10

The heteroskedasticity result revealed that there is no problem of heteroskedasticity in the data used for analysis. The p-value of the Breusch-Pagan-Godfrey test (0.3889) was found to be greater than 0.05 significance level.

Stability Test

A stability test was used to examine if the relationship among the variables is stable over time. It is to determine whether or not the parameters of the model are stable across various sub-samples of the data. The decision rule is to observe the plot line of the CUSUMSQ within the 5% critical bound. The null hypothesis of instability would be rejected when the plots of the CUSUMSQ stay within the 5% significance level. However, the model is unstable when the plots of the CUSUMSQ move outside the 5% critical lines.

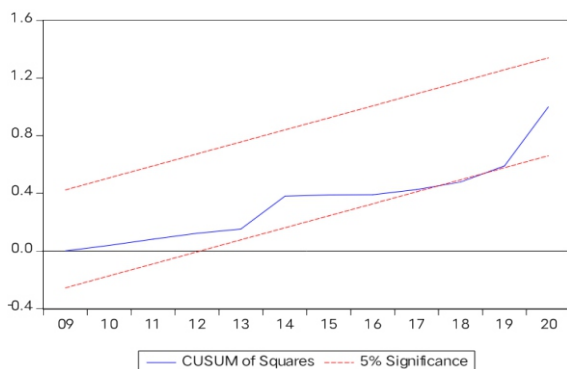


Figure 4: Stability Test Source: Author's computation from EViews 10

Figure 4 shows that the middle line did not deviate from the two-parallel lines. Thus, the relationship among the variables is stable.

Test of Hypotheses

Hypothesis 1: Public sector pension fund has no significant impact on the Nigerian capital market.

Decision Rule: If the p-value is greater than the level of significance of 0.05, we fail to reject the null hypothesis; otherwise, we reject it.

Reject H_0 if p-value < 0.05

Accept H_0 if p-value > 0.05

From the result of regression in Table 5, the coefficient value of PUB is positive with P-value of 0.0001. Since the p-value is less than the level of significance of 0.05, we reject the null hypothesis, while the alternate hypothesis is accepted. Thus, public sector pension fund has a significant impact on the Nigerian capital market. This means that public pension fund has been adequately mobilized and channeled to the Nigerian capital market.

Hypothesis 2: Private sector pension fund has no significant impact on the Nigerian capital market

Decision Rule: If the p-value is greater than the level of significance of 0.05, we fail to reject the null hypothesis; otherwise, we reject it.

Reject H_0 if p-value < 0.05

Accept H_0 if p-value > 0.05

From the result of regression in Table 5, the coefficient value of PRV is positive with P-value of 0.0394. Since the p-value is less than the level of significance of 0.05, we reject the null hypothesis, while the alternate hypothesis is accepted. Therefore, private sector pension fund has significant positive impact on the Nigerian capital market. This shows that private sector pension fund has been adequately mobilized and channeled to the Nigerian capital market indicating that private sector pension fund is an important source of investment fund for the Nigerian capital market.

Public sector pension fund and private sector pension fund showed significant positive impact on market capitalization. These findings indicate that the contributory pension scheme has positively impacted the Nigerian capital market and by extension impacted the Nigerian economy by acting as a source of investible funds

for the real sector of the economy for productive investment. These findings agree with those of Zubair (2016), Okparaka (2018) and Nageri et al. (2019) who reported that pension funds have positively impacted the Nigerian capital market.

5. Conclusion /Recommendations

The findings from this research work have provided empirical evidence that both public sector and private sector fund contributions have positive and significant impact on market capitalization. This shows that the contributory pension scheme can effectively mobilize funds for investment in the Nigerian capital market. This means that increasing levels of pension funds will translate to improvement in capital market development with a resultant improvement in economic growth and development. We can conclude that pension funds are a vital source of investment fund for the economy. Therefore pension fund regulators should ensure that the contributory pension scheme is fully and efficiently implemented in both private and

public sectors in the country so that more funds from pension contributions are available for investment in the capital market.

In line with the findings of the study, the following recommendations have been proffered towards improving the role of contributory pension scheme in the provision of funds for investment in the economy through the Nigerian capital market.

1. There is need to improve on the level of public sector contribution as reports have it that both Federal and state governments have not been remitting pension deductions from both employer and employees to the pension fund administrators.
2. There is also the need to ensure that the contributory pension scheme is fully and properly implemented in both the public and private sectors so as to mobilize all eligible funds and take advantage of pension funds as a source of investment funds for the economy.

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Implications Of Rising Inflation On Poverty In Nigeria



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Abstract

The first United Nations Sustainable Development Goal (SDG) stresses the importance of eradicating all forms and dimensions of poverty. The incessant rise in inflation level across the globe necessitated this research. This paper using time series data from 1984-2022 and Auto Regressive Distributed Lag (ARDL) Model investigated the connection between rising inflation and Nigeria's poverty level. Four other variables- institutional quality proxied by government effectiveness (GEFF), income level, proxied by gross domestic product per capita (GDPPC), external debt (EXD), and human capital proxied by educational attainment (measured by educational index (EI)) were included in the model as control variables. The ARDL short-run result reveals that during the period investigated, rising inflation (with coefficient of 0.046 and probability level of 0.466) has positive though insignificant impact on poverty, on the other hand, GEFF, GDPPC, and EXD (with coefficients of -44.21, -22.59, -9.33 and probabilities of 0.0106, 0.0003, 0.0188 respectively) has negative and significant effect on poverty. Surprisingly, educational attainment, (with coefficient of 140.98 and probability level of 0.0008) has a positive and significant effect on poverty. The study recommends that apart from increasing the monetary policy rate (mpr), the supply side should be strengthened and poverty reduction programs should be monitored.

Key Words: Inflation, Poverty, Sustainable Development

JEL Code: E31; F63; I32; Q01

1.0 Introduction

The global economy is currently facing numerous economic, social, and political problems such as inflation, unemployment, and insecurity. Developing countries (Nigeria inclusive) are further hit by increasing poverty level. Poverty is a socio-economic problem that can be described as a curse to humanity. Poverty impacts people in several negative ways as it subjects them to deadly situations, strips them of any sense of control over their lives, and infringes human rights (Yunus & Weber, 2007 as cited in Nzeribe et al. 2022a). This is authenticated by the first goal of the United Nations sustainable development goals (SDGs) which perceives the elimination of poverty in all its dimensions and forms as a necessary condition for any nation to achieve sustainable development.

According to Chen (2022), poverty can be described as a state of inadequacy in the provision of financial resources and fundamentals for a minimum standard of living. Persons or communities who are poverty-stricken are most likely to live without healthy food, suitable housing, clean water, and medical care (Chen, 2022). Ezeanyaeji and Ozughalu (2014) viewed poverty as the main cause of almost all political and socio-economic ills of the society in recent times. A significant number of the poor in the world still live in Sub-Saharan Africa, with World bank projecting that by 2030, Sub-Saharan Africa will be home to at least 90 percent of the extremely poor in the world (Wadhwa 2018).

In 2018, Nigeria became the poverty capital of the world after overtaking India with the World Poverty Clock (WPC) data revealing that about 87 million Nigerians are living in extreme poverty. Although the 2022 WPC report showed that Nigeria is no longer the poverty capital of the world since India has taken over with 83 million people living below the estimated

poverty-line of less than \$2 per day, the report revealed that the poverty rate is still high in Nigeria since 33 percent of the entire population are still living below the poverty-line (70,677,758 people precisely). In Africa, Nigeria is the number one country on the list of poor countries followed by the Democratic Republic of Congo.

A look at multidimensional poverty which includes several indicators- poor health, insufficient living standards, lack of education, and living in hazardous environments- reveals that a great number of Nigerians are multidimensionally poor. The year 2022 National Bureau of Statistics (NBS) Multidimensional Poverty Report Index revealed that 133 million Nigerians are multidimensionally poor, while the United Nations Development Programme (UNDP) poverty report showed that over 98 million Nigerians are living in multidimensional poverty (UNDP 2019). This implies that between 2019 and 2022, over 35 million Nigerians moved into multidimensional poverty. This is quite worrisome and is one of the major concerns for the Nigerian economy.

Several factors could be attributed to the increase in poverty level, and inflation is regarded as one of such factors. Inflation, which is the rate of changes in price could be caused by several factors such as aggregate production shortages and increase in aggregate demand. Inflation, measured by the consumer price index (CPI) appears to be increasing across the globe over time. Developed countries such as United States of America (USA), United Kingdom (UK) and others have experienced surges in inflation rates and developing economies are not left out. The CPI in Nigeria has been on the rise over the years. The NBS (2022) report revealed that the CPI increased from 15.60 percent in January 2022 to 21.47 percent in November same year and historic data also showed price instability in Nigeria over a significant period of time.

Global food prices which have been rising since 2019 were exacerbated by COVID-19. While countries- Nigeria inclusive- were trying to overcome the shocks from COVID-19, the Russian-Ukraine war erupted and devastated the entire world economy. The war resulted in blockades of the export of grains from Ukraine causing increased hunger across the globe, especially in the most vulnerable regions. According to William (2022), the OECD revealed that the war in Ukraine will have a significant impact on the global economy, and this impact which is expected to last a long time, includes stronger inflation, weaker growth, and damage to the supply chains. The OECD (2022) asserted that, globally, inflation is lowering living standards, limiting consumer spending, and causing businesses to struggle and shy away from investment which will affect supply in the near future. It is strongly believed that inflation escalates the problem of poverty, Indermit and Peter (2022), opined that inflation could have an adverse effect on the world's poor, reduce the global minimum wage, lower income per capita as well as the living standard, especially for those households with fixed income and those in the low-income group.

Although extremely high inflation has been generally believed to hurt the economy, some economists such as Howitt (1990), Summers (1991), and Delong and Summers (1992) are of the view that modest inflation favours the economy. There have been increasing concerns over the role of inflation on poverty, while some scholars highlighted that inflation has a positive influence on poverty (Isiaka & Olayiwola, 2022; Koyuncu & Koyuncu, 2022) some others (Cutler & Katz 1991, Romer & Romer 1999) reported a negative connection between both variables. The 2030 SDGs as mapped out by the United Nations stated that total poverty eradication is a great challenge and is

essentially required for sustainable development across the globe. Also, since several reports have revealed a positive relationship between inflation and poverty, it therefore becomes pertinent to conduct an empirical investigation on the association between inflation and poverty especially with the continuous rising inflation across the globe.

The United Nations estimated that in 2021, food prices rose by 22% and reached their greatest point in ten years (UN, 2022). This is terrifying for many individuals in developing countries. Additionally, the World Food Programme (WFP) and the Food and Agriculture Organization (FAO) warned that people will find it harder to buy food in numerous countries, including Afghanistan, Haiti, Liberia, Nigeria, and Sierra Leone, due to continued high commodity prices.

Against this background, this research study empirically investigated the nexus between inflation and Nigeria's poverty rate. Several studies have previously investigated this relationship in Nigeria and other developing and developed countries but due to the recent increase in inflation across the globe it is important we re-examine its impact on poverty in Nigeria. Consequently, this study appraised the influence between rising inflation and Nigeria's poverty from 1984 to 2022. Data on poverty is used as the dependent variable, data on inflation as well as other variables that could affect poverty such as economic growth; external debt; corruption index; quality of the institutions, and human capital constitute the independent variables. The article is further arranged thus: an explanation of core concepts, the context of poverty and inflation in Nigeria, the theoretical framework as well as a review of past related studies, are discussed in the Literature review in the next section. The methodology is presented in the Research Methodology section; the presentation and analysis of empirical results as well as discussion are contained in the Results and Discussion

section; the summary, policy implications and policy suggestions are documented in the last section.

2. Conceptual, Theoretical and Empirical Issues

This section discussed the key concepts, analysed Nigeria's poverty and inflation, presented the theoretical framework and reviewed related empirical literature.

2.1. Poverty

Poverty is a multifaceted concept that involves both material deprivation and other forms of deprivation-vulnerability and capability, therefore conceptualizing poverty is problematic. There is no common consensus on the operational definition of poverty by authors since it has been seen differently. The simplest form defined poverty as a state of lack of resources to meet basic needs. According to the father of modern economics Adam Smith, poverty is said to exist when a person is unable to afford fundamental necessities due to nature or custom (Smith 1776). Poverty is described by the United Nations (UN) as a state where people are severely lacking in basic essentials like clean water, food, health, education and sanitation facilities among others. It is determined not only by income but also by access to services (UN 1995). In economic terms, the number of people who are said to be poor are persons who live below a certain threshold of income, known as the poverty line (Todaro and Smith, 2006).

According to UNDP, poverty is a multidimensional phenomenon which can be manifested in different ways. It could present in the form of insufficient income (income poverty) and deficiency in basic needs (shelter, food, education, healthcare) (NHDR 1996 as cited in lyoko 2012). Poverty is also categorized into absolute, relative, transitory and

chronic. Absolute poverty is defined as a person's inability to provide himself/herself with the requirements of existence like health care, water, education, and food among others (Tregarthen 1996, Olowononi 1997). According to the UN (1995), the existence of absolute poverty results from a lack of adequate supply of goods. The UN further maintained that poverty results in the inability to support a physical subsistence income level and that someone is considered to be living in poverty if he/she cannot provide for him/herself the basic necessities of life. According to Todaro & Smith (2006), absolute poverty deprives individuals and does not allow them to participate in making decisions concerning important issues in society. The World Bank's 2000 World Development Report, stated deprivation and a lack of rights as the causes of poverty. According to this approach, someone is considered poor if he/she is much less wealthy materially and in terms of income than the average member of a given community. Transient poverty is a temporary poverty situation that could arise from certain factors such as drought, flood, fire, war, theft, etc (Iyoko 2012). In other words, transient poverty is a short-term phenomenon. On the other hand, Ogwumike (1995) opined that chronic poverty is a long-lasting and persistent poverty that can be passed down from one generation to another. To comprehend poverty, Amartya Kumar Sen created the Capability Approach. According to Sen (1995), poverty is a result of having insufficient ability to choose one's level of well-being. The Socioeconomic Exclusion Approach was created by Ruggeri, Saith, and Stewart (2003) to explain poverty, noting that it results from social and economic exclusion/disenfranchisement. In sum, there are various aspects of poverty - economic, environmental, financial, social, health, political

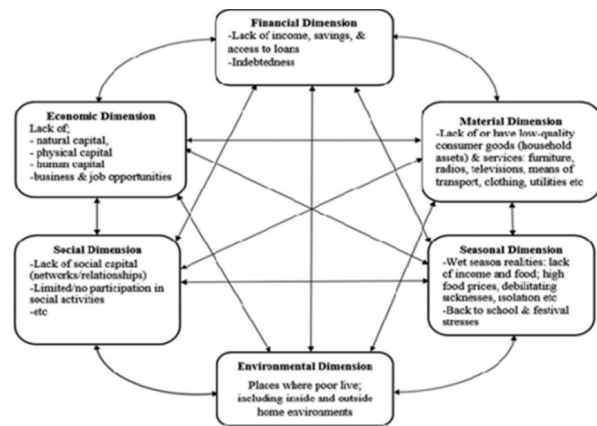


Figure 1: Multiple Dimensions of Poverty
Source: Gweshengwe

and seasonal - and they are interconnected and reinforce one another (Bourguignon & Chakravarty, ; Chambers, ; Devereux et al., ; Hick,). The concept of the multidimensional nature of poverty is depicted in Figure 1.

Figure 1 reveals that the relationship between the various dimensions of poverty is cyclical. Financial deprivation and other dimensions may be fueled by a lack of income, which may also produce and amplify social capital loss, scarcity of economic resources, and material hardship (Gweshengwe and Hassan 2020).

2.2. Inflation

Inflation is broadly measured as a rise in the general price level or cost of living of a country. Mankiw (1997) viewed inflation as the rise in the total price level over a time dimension. He maintained that inflation is one of the primary concerns of policymakers and economists. Oner (nd) opined that inflation measures the increase in the cost of products and services in a year. Inflation is among a country's main macroeconomic indicators and offers valuable insight into the health of the economy (Ezeanyeji, Imoagwu and Ejefobihi 2019). Inflation is also conceived as a continuous decline of real wages and

the rate at which real wages decline can be approximated using the average price rise of selected goods and services over time. A unit of money may buy less today than it could in the past due to price rises, which are typically expressed as percentage increases. The impoverished and most vulnerable population benefit from low and steady inflation rates, which also create a supportive climate for economic growth (Ahmad, Sheikh & Tariq, 2012). This is because according to Ames, Brown, Devarajan, and Izquierdo (2001), the majority of the financial assets held by the poor are typically in the form of cash as opposed to interest-bearing assets and they have less ability than those who are better placed to guard against inflation for the real value of their assets and income. As a result, price increases typically have a greater negative impact on the actual wages and assets of the impoverished than on those of the non-poor. This implies that high inflation hurts the poor.

Inflation is broadly divided into three based on its cause; demand-pull inflation, built-in inflation and cost-push inflation. Demand-pull inflation arises when consumers have access to credit and money at a faster rate than the economy can generate products and services. This leads to an increase in demand causing a price rise (Ling 2019). This implies that there is a discrepancy between demand and supply resulting from an increase in available credit and causing a price increase. On the flip side, cost-push inflation stems from an increase in the cost of manufacturing inputs, which in turn drives up the cost of goods and services. A typical scenario is a situation where there is negative economic shock (war, pandemic) which affects the supply of vital goods and services. Built-in inflation is related to people's expectations for the continuation of the current inflation rate. As the cost of goods and services rise, people may anticipate a continuous future rise at a

similar rate. To maintain their standard of living, workers may demand higher wages. Their higher wages drive up the cost of goods and services, and because wage and price are interdependent, the wage-price spiral keeps going.

Inflation can also be categorised from the perspective of its magnitude. It is grouped into, creeping inflation, walking inflation, running inflation and hyperinflation (CBN, nd). Creeping inflation occurs when the rate of price increase is very gradual; for example, a continuous yearly price increase of less than 3% per year fits into this category and is thought to be safe and necessary for economic growth. Walking inflation takes place when prices only slightly increase each year and the inflation rate is under 10%. This happens when price increases are occurring at a moderate rate of between 3% and 10%. The government should manage inflation at this rate before it becomes running inflation as it is a warning indicator. Running inflation is the term used to describe a sharp increase in prices of 10% to 20% annually. The poor and middle class are severely harmed by this kind of inflation. Strong monetary and fiscal policies are needed for control. Hyperinflation occurs when prices increase at rates of double or triple digits. It might reach a point when the inflation rate is both utterly unmanageable and impossible to measure. Many price increases could occur daily. Because of the persistent decline in the purchasing power of money, such a circumstance results in the complete collapse of the monetary system.

Implications of frequent price increases in the system includes; it discourages long term planning; it Reduces savings and capital accumulation; it reduces investment; it Creates uncertainty and distortions in the economy; and causes shift in the distribution of real income and mis-allocation of

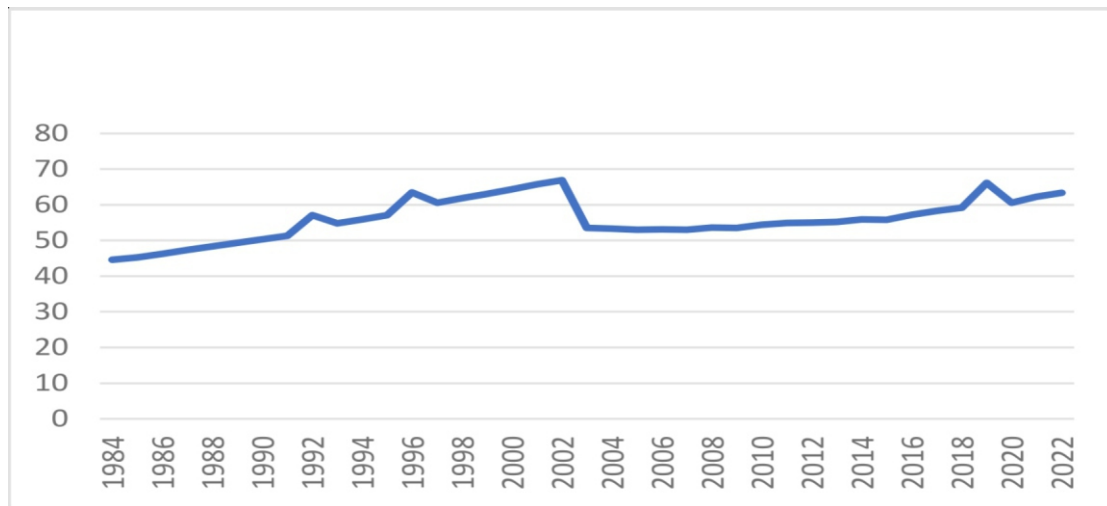


Figure 2: Poverty Rate in Nigeria from 1984-2022 (%)

Source: Author's compilation using data from NBS/World Bank/Macrotrends

resources.

2.3. Analysis of Poverty and Inflation in Nigeria

Poverty Profile in Nigeria

According to the International Monetary Fund (IMF), the number of Nigerians living in extreme poverty increased by about six individuals every minute in 2018. Orokpo et al. (2018) cited in Nzeribe et al. (2022b) stated that Nigeria's poverty profile has been rising and assuming alarming and worrisome dimensions in the last 20 years. According to World Bank prediction, 95 million Nigerians will be living in poverty by 2022, but the NBS (2022) Multidimensional poverty report revealed that 133 Million Nigerians are multidimensionally poor exceeding the 2022 World

Bank projection. A report by the World Bank in 2022 revealed that Nigeria's poverty reduction is being held back by several factors like weak labour markets, inadequate human capital, slow growth, and vulnerability to shocks. The impact of poverty on the population is severe (Nzeribe et al. 2022b) and according to Orokpo et al. (2018) poverty in Nigeria has resulted in hunger, unemployment, poor access to credit facilities, diseases, malnutrition, ignorance, low-life expectancy, and sense of hopelessness.

The pattern of poverty in Nigeria over time is depicted in Figure 2. It reveals that despite the government's efforts to ameliorate or eradicate poverty in Nigeria, the poverty rate in Nigeria has been on the increase. This is a major problem for the attainment of the SDGs

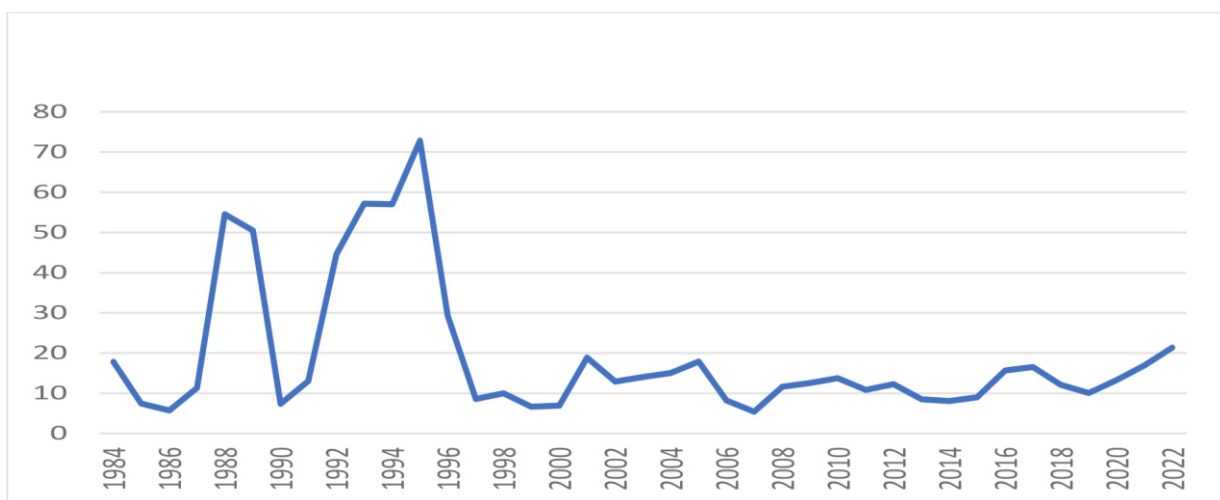


Figure 3: Inflation Rate in Nigeria 1984-2022 (%)

Source: Author's compilation using data from NBS/World Bank/Macrotrends

in Nigeria.

Inflation in Nigeria

Nigeria's inflation has been on the rise over the years. But its instability is the main issue. Figure 3 reveals the unsteadiness of Nigeria's inflation rate.

Inflation rates like the one shown in Figure 3 are often indicative of a failing economy and will result in fluctuating prices, higher unemployment rates, and rising levels of poverty.

2.4. Theoretical Insights

The Restricted Opportunity Theory serves as the theoretical foundation for this investigation. The restricted opportunity theory is one of the structural theories of poverty and contends that poverty is the outcome of events outside the control of the poor person. These situations typically revolve around a lack of opportunities or restricted access to such chances. Economist Bradley Schiller first offered the restricted opportunity theory as one of the three hypotheses of the origins of poverty in his book "The Economics of Poverty and Discrimination" published in 1972. An argument that poor individuals don't have appropriate and plentiful access to economic possibilities is at the heart of the thesis. If their economic possibilities don't improve, they can't avoid poverty or won't be able to escape their dire circumstances. Lack of opportunity is really what poverty is. According to the restricted opportunity theory, opportunities like having access to top-notch education, successful and efficient healthcare programs, secure neighbourhoods, and important government services and programmes can influence a person's socioeconomic standing.

2.5. Empirical Literature

There is conflicting evidence in the literature regarding how inflation influences poverty. Some scholars discovered a positive connection, while others reported a negative relationship, and yet

others highlighted no association between both variables. In a study of the United States of America between 1959 and 1983, Blank and Blinder (1985) appraised the influence of macroeconomic variables which included inflation among others on poverty. The study discovered that inflation had no discernable relationship with poverty. Cardoso (1992) investigated the implications of inflation on Latin American region's poverty level between 1970 and 1990 and the study established that poverty is aggravated by inflation. Powers (1995) re-investigated the relationships between inflation, unemployment and poverty and established that the effect of inflation on poverty is more serious than previously thought. Relatedly, Ravallion (1998) investigated the effects of rising food costs in India and identified a strong positive correlation between poverty and price rise. Additionally, Datt and Ravallion (2002) discovered that inflation has a negative influence on India's poor. They ascribed this effect mostly to adverse shocks to unskilled employees' real wages. Ventura and Erosa (2002) observed that poorer households maintain more cash relative to other financial assets than wealthy households do. As a result, the inflation tax is paid disproportionately by the poor, who also experience greater hardship from inflation.

In another study of Latin America between 1960 and 1997, Braumann (2004) showed that increasing poverty level is tied to real earnings decline during inflation. The study discovered that inflationary macroeconomic measures intended to assist the poor were most destructive to their living standards, and the study suggests that controlling inflation may be a critical step in the fight against poverty. Chaudhary and Chaudhary (2008), investigated the effect of food price inflation on poverty levels in

Pakistan and established that food price inflation can lead to increase in poverty levels in Pakistan. In Bangladesh, Ahmed and Mortaza (2011) looked into the connections between inflation, poverty, and economic growth between 1980 and 2009 while also estimating the inflation threshold for the economy. They discovered that the long-run inverse link between inflation, poverty rate, and economic growth was statistically significant. The computed threshold model estimates a 6% inflation rate above which inflation hurts Bangladesh economic growth and increases the prevalence of poverty.

Talukder (2012) appraised the connection between inflation and poverty in 115 emerging nations divided into three income segments from 1981 to 2008. For the full sample, the study highlighted that poverty is positively correlated with inflation. For low-income nations, the study discovered an adverse and statistically insignificant connection between inflation and poverty. A study by Koyuncu and

Koyuncu (2022) used ARDL and data from 1990 to 2022 to appraise the influence of inflation on human development and poverty in Turkey and revealed that inflation reduces and increases human development and poverty respectively. In a recent study of Nigeria between 1980 and 2020, Isiaka and Olayiwola (2022) indicated that the inflation rate is positively correlated with the prevalence of poverty in Nigeria.

3.1. Methodology

The variables and data used in this study are discussed in this section. Also, the model is specified and the estimation technique is also discussed.

3. Data and Variables

The study employed annual time series data in Nigeria covering the period 1984-2022. The data were sourced from the National Bureau of Statistics (NBS), the Central Bank of Nigeria (CBN) statistical bulletin, World Development Indicators as well as

Table 1 Descriptions and Sources of Variable

Variable	Description	Source
Pov	Poverty rate, measured percentages	World Bank/Macrotrends
Inf	Inflation rate, measured percentages	CBN Statistical Bulletin
Gdppc	Income, proxied by Gross domestic product per capita, measured in Dollars. (This was transformed to log).	World Bank
Ei	Educational attainment proxied by educational index, calculated as the mean years of schooling (MYS) and the expected years of schooling (EYS) (This was transformed to log).	World Bank
Geff	Institutional quality proxied by government effectiveness. (Scale from -2.5 (less effective) to 2.5 (more effective)). (This was transformed to log).	World Development Indicators
Exd	External debt, measured in Dollars. (This was transformed to log).	World Bank

Source: Author's compilation

Macrotrends. The dependent variable is poverty which is measured with poverty rate. The inflation rate measured in percentage is the key independent variable. Gross Domestic Product Per Capita (GDPPC) which is a measure of income, educational attainment a measure of human capital proxied by education index, institutional quality proxied by government effectiveness and external debt are included in the model as control variables. The variables of the study and sources are provided in table 1;

3.2 Model Specification

$$Pov_t = \beta_1 + \alpha_1 Inf_t + \alpha_2 Gdppc_t + \alpha_3 Ei_t + \alpha_4 Geff_t + \alpha_5 Exd_t + \varepsilon_t \quad (1)$$

Where Pov is the poverty headcount; Inf is inflation rate; Gdppc is gross domestic product per capita as a measure of income; Ei is Educational index as a measure for educational attainment (proxy for human capital); Geff is government effectiveness used to measure institutional quality; Exd is external debt; ε_t is the error term and t is time period.

3.3. Techniques of Estimation

To accomplish the goals of the study, several techniques were adopted. The study first conducted a Correlation Matrix check to test the collinearity of the variables used in the estimation. The correlation coefficients for different variables are presented in a Correlation Matrix table. Secondly, to check whether the variables were stationary, a unit root test was used. Stationarity is a property of time series, which indicates that the value of the variable does not change with time. The Augmented Dickey-Fuller (ADF) and the Philips Perron (PP) tests of stationarity are adopted. Thirdly, the Cointegration Test was also employed to confirm whether a long-term link existed between the variables. This was accomplished using the Autoregressive Distributed Lag (ARDL)

Bound Test created by Pesaran, Shin, and Smith (2001). The choice of the ARDL model is justified based on its three main advantages over other estimation techniques - (i) The variables do not have to be integrated in the same sequence. It can be used with mixed order variables, I(0) and I(1), or fractional integration (ii) With finite and small sample size, it is comparatively more effective (iii) Its use assures that we get unbiased long-run model estimates as well as correct t-statistics, even when some of the regressors are endogenous.

Post estimation tests, such as the Breusch-Godfrey serial correlation Lagrange Multiplier (LM) test for the absence of autocorrelation, the Autoregressive Conditional Heteroskedasticity Test (ARCH) for serial correlation, and the Ramsey RESET test for specification, are also carried out to make sure reliable results are obtained.

3.4 A Priori Expectation

Based on theory, the value of α_1 is expected to be positive (+), while α_2 , α_3 , and α_4 are expected to be negative (-), α_5 is undetermined (-+).

4. Presentation and Discussion of Results

The results are presented and discussed in this section.

4.1. Descriptive Statistics

The descriptive statistics analysis was conducted to examine the basic characteristics of the data. The results presented in Table 2 reveal the average poverty during the period under review to be 56%. This is comparatively high. The maximum level of poverty is 66.9% while the minimum value is 44.6% showing clearly that poverty has been on the increase. The average value of inflation is 19.1% with a maximum value of 72.8% and a minimum value of 12.9%. Inflation recorded the highest standard deviation value of 16.99 over the period under study. The high

Table 2: Descriptive Statistics

Date: 02/28/23 Time: 11:39

Sample: 1984 2022

	INF	LNEI	LNEXD	LNGDPPC	LNGEFF	POV
Mean	19.10769	-0.480096	24.14798	6.944270	0.013643	56.02462
Median	12.88000	-0.474269	24.13487	6.806220	0.043327	55.21000
Maximum	72.84000	-0.301659	25.08346	8.071204	0.136964	66.90000
Minimum	5.390000	-0.633898	23.28528	5.598524	-0.268023	44.60000
Std. Dev.	16.99895	0.111339	0.420046	0.745457	0.105490	5.881800
Skewness	1.816142	0.069892	0.331626	-0.025483	-1.097165	0.019822
Kurtosis	5.086960	1.603414	3.049997	1.491390	3.259666	2.326397
Jarque-Bera	28.51694	3.201239	0.718905	3.702567	7.934078	0.739883
Probability	0.000001	0.201772	0.698059	0.157036	0.018929	0.690775
Sum	745.2000	-18.72375	941.7713	270.8265	0.532068	2184.960
Sum Sq. Dev.	10980.64	0.471062	6.704666	21.11683	0.422869	1314.632
Observations	39	39	39	39	39	39

Source: Author's compilation

skewness value for inflation (1.8) is a clear indication that the inflation series was not centred on the mean value. This outcome is confirmed by the kurtosis value (5.1). The outcome of the Jarque-Bera Test validates the sample data's "goodness-of-fit" in terms of the distribution's normality.

The Jarque-Bera test revealed that while other variables are normally distributed, inflation and government effectiveness are not normally

distributed.

4.2. Correlation Test

The correlation test is conducted to analyse the correlations among the variables in the model. The correlation matrix result presented in Table 3 revealed the absence of perfect multi-collinearity among the variables.

Table 3: Correlation Matrix

	INF	LNEI	LNEXD	LNGDPPC	LNGEFF	POV
INF	1.000000	-0.427551	0.120578	-0.530012	0.209271	-0.073308
LNEI	-0.427551	1.000000	0.232379	0.878011	-0.640269	0.389463
LNEXD	0.120578	0.232379	1.000000	0.015896	-0.438128	0.542418
LNGDPPC	-0.530012	0.878011	0.015896	1.000000	-0.579152	0.059829
LNGEFF	0.209271	-0.640269	-0.438128	-0.579152	1.000000	-0.491551
POV	-0.073308	0.389463	0.542418	0.059829	-0.491551	1.000000

Source: Author's compilation

Table 4: Unit Root Test

IP				AF			
Level	Probability	1 st Dif	Probability	Level	Probability	1 st Dif	Probability
-1.644	0.094*	-7.770	0.000***	-0.939	0.278	-3.637	0.007***
-1.181	0.219	-1.967	0.042*	-0.345	0.556	-1.967	0.042*
1.280	0.927	-4.294	0.000***	1.286	0.940	-4.369	0.000***
0.674	0.843	-4.777	0.000***	0.743	0.874	-4.777	0.000***
-2.456	0.014*	-12.356	0.000***	-2.701	0.008***	-9.451	0.000***
0.913	0.890	-7.087	0.000***	0.755	0.875	-7.082	0.000***

Source: Author's compilation

*, **, *** denotes significant at 10%, 5%, and 1% respectively

4.3. Test for Stationarity

According to the outcome of the unit root test for stationarity shown in Table 4, certain variables are stationary at level I(0) while others are stationary at the first difference I(1) at a 5% level of significance. The stationarity test result indicates that the variables have a mixed order of integration, which supports the adoption of the ARDL model.

4.4. Cointegration Test

The Auto Regressive Distributed Lag (ARDL) Bound

Test was used to determine the long-run relationship between the variables. Table 5 demonstrates that the estimated F-statistic (F-stat. = 1.291277) is less than the lower boundaries critical value of 2.39 at a 5% level of significance (Pesaran et al. 2001). This clearly shows that there is no long-run link

As indicated in Table 5, since there is no long-term association among the variables, the suitable estimation technique for the short run is the ARDL Model and this

Table 5: ARDL Bounds Test

F - Bounds Test		Null Hypothesis: No levels rela		
Test Statistic	Value	Signif.	I(0)	I(1)
Asymptotic: n = 1000				
F - statistic k	1.291277 5	10%	2.08	3
		5%	2.39	3.38
		2.5%	2.7	3.73
		1%	3.06	4.15
Finite Sample: n = 35				
Actual Sample Size	35	10%	2.331	3.41
		5%	2.804	4.01
		1%	3.9	5.41

Source: Author's compilation

Table 6: ARDL Model

Levels Equation				
Case 2: Restricted Constant and No Trend				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNGEFF	-44.21273	12.09280	-3.656122	0.010
LNGDPPC	-22.59305	3.100815	-7.286165	0.000
LNEXD	-9.332804	2.924020	-3.191771	0.018
LNEI	140.9810	22.70924	6.208089	0.000
INF	0.046104	0.059248	0.778165	0.466
C	507.6688	99.73004	5.090431	0.002

$$EC = POV - (-44.2127 * LNGEFF - 22.5931 * LNGDPPC - 9.3140.9810 * LNEI + 0.0461 * INF + 507.6688)$$

Source: Author's compilation

was applied and the result is shown in Table 6.

4.5. ARDL Analysis

The ARDL result in Table 6 revealed that in the short-run inflation has a positive but insignificant relationship with poverty in Nigeria during the period under review. The positive sign of the result should be a cause for worry because this could be significant later on. The result conforms to the a priori expectation that higher inflation results in a higher level of poverty and is in line with the findings of Braumann(2004), Koyuncu and Koyuncu (2022), and Isiaka and Olayiwola(2022).

The result of the impact of institutional quality (proxied by government effectiveness) revealed a negative and significant relationship between institutional quality and poverty in Nigeria during the period under review. This implies that if the quality of institutions improves in Nigeria by 1%, the level of poverty will reduce by 44% which conforms to a priori expectations. This result conforms with the findings of Fagbemi, Oladejo, and Adeosun (2020), and Nzeribe et al.(2022b).

The result of the relationship between income level (proxied by GDP per capita) and poverty was in conformity with a priori expectation. It showed a negative significant relationship. It implies that an increase in the income levels of individuals leads to

a reduction in the poverty level. The external debt-poverty relationship as revealed by the result in Table 6 is negative and significant. This implies that during the period under review, increased debt results to reduction in poverty in Nigeria. This conforms to a priori expectation since in theory, external debts that are put to productive use are expected to reduce poverty.

The surprising result is the human capital (proxied by educational attainment and measured by education index) and poverty relationship. It shows a positive significant relationship between the two variables. This is contrary to a priori expectations and could be attributed to the high level of unemployment of graduates in Nigeria. It could be said that during the period under review, educational attainment is a necessary but not sufficient criteria for employment since the unemployment level keeps rising with the rising level of graduates leading to increase in poverty level.

4.6 Post Estimation Tests

The post-estimation tests are conducted to ascertain if the model is suitable, robust and valid for policy application and recommendation. The results presented in Tables 7–9 and Figure 4 revealed that the model had no evidence of diagnostic issues. The

Breusch-Godfrey serial correlation Lagrange Multiplier (LM) test for autocorrelation (Table 7) with the probability of F-statistic (0.11) greater than 0.05 reveal that there is no serial correlation among the residuals. Results of the Autoregressive Conditional Heteroskedasticity Test (ARCH) (Table 8) with the

probability of Chi-Square of the observed *R-square greater than 0.05 (0.066) show that the estimated model is homoscedastic and adequate over the period covered by this study. The Ramsey RESET test revealed that there is no specification error. This according to DeBenedictis and Giles (1996) signifies

Table 7: Serial Correlation Test

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	3.843179	Prob. F(2,4)	0.1172
Obs*R-squared	23.02022	Prob. Chi-Square(2)	0.0000

Source: Author's compilation

Table 8: Heteroskedasticity Test

Heteroskedasticity Test: ARCH

F-statistic	3.637711	Prob. F(1,32)	0.0655
Obs*R-squared	3.470542	Prob. Chi-Square(1)	0.0625

Source: Author's compilation

Table 9: Specification Test

Ramsey RESET Test

Equation: EQ01

Specification: POV POV(-1) POV(-2) POV(-3) LNGEFF LNGEFF(-1) LNGEFF(-2) LNGEFF(-3) LNGEFF(-4) LNGDPPC LNGDPPC(-1) LNGDPPC(-2) LNGDPPC(-3) LNGDPPC(-4) LNEXT LNEXT(-1) LNEXT(-2) LNEXT(-3) LNEXT(-4) LNEI LNEI(-1) LNEI(-2) LNEI(-3) LNEI(-4) INF INF(-1) INF(-2) INF(-3) INF(-4) C

Omitted Variables: Squares of fitted values

	Value	df	Probability
t-statistic	1.062428	5	0.3366
F-statistic	1.128754	(1, 5)	0.3366

F-test summary:

	Sum of Sq.	df	Mean Squares
Test SSR	11.50215	1	11.50215
Restricted SSR	62.45280	6	10.40880
Unrestricted SSR	50.95065	5	10.19013

Source: Author's compilation

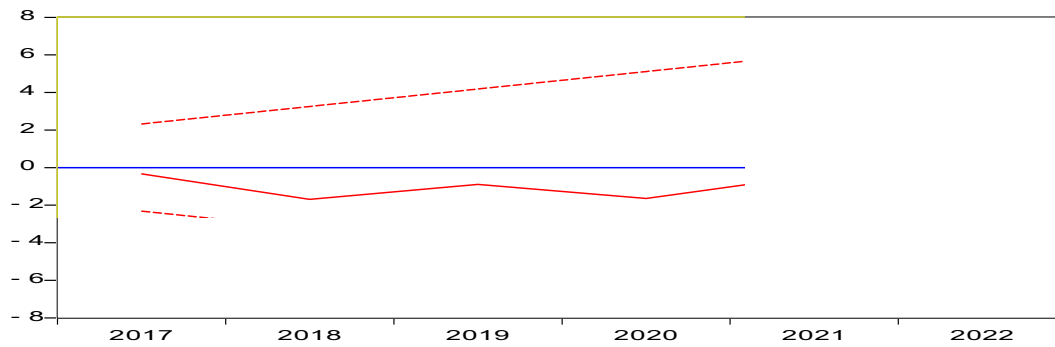


Figure 4: Stability Test Source: Author's compilation

that the model is properly described in terms of the included variables.

A model is reliable for policy making if it is stable. The author used the plots of the Cumulative Sum of recursive residuals (CUSUM) to test the stability of the model over the study period. The model is stable, as shown by the outcome in Figure 4.

5. Summary, Policy Implications and Recommendations

The primary goal of this study was to examine how rising inflation influenced Nigeria's poverty level between 1984 and 2022. The stationarity tests found mixed variables' integration and consequently to determine whether there is a long-term link between the variables, the ARDL Bounds test of cointegration was applied. The ARDL technique was employed for the estimation after the Bounds test demonstrated that there is no long-term link between the variables. The study established that, although not significant, rising inflation over the studied period in Nigeria may have contributed to an increase in the country's poverty rate. This result should be handled with caution, because if nothing is done to reduce the rising inflation in Nigeria, more people might be pushed into poverty and the progress towards attaining the first SDG will be eroded. It is also important to note that educational attainment is supposed to be a headway out of poverty but the study reported that the nation's educational attainment leads to a significant rise in the poverty level. This could be so because households spend their money training their children with the hope

that they will eventually be gainfully employed and then lift their families out of poverty, however, a significant obstacle is the nation's high unemployment rate.

Premised on the study's results, the study suggests that for Nigeria to achieve its SDGs (goal one in particular), the rising inflation must be tackled. The Central Bank of Nigeria (CBN) apart from increasing the interest rate (monetary policy rate), the supply side should be boosted. Producers and entrepreneurs who depend mostly on the importation of goods should be supported by giving them incentives. The Federal government should intensify efforts to absorb graduates into the labour force. They should also ensure that the policies and programmes aimed at the reduction of unemployment and poverty (N-power, Agro-loans, School feeding, etc) are properly monitored and evaluated to ensure the stated objectives are achieved.

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Impact of Regulatory Frameworks on the Adoption and Growth of Digital Payments in Inflationary Economies: Evidence from Nigeria.



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Abstract

Digital payment regulatory frameworks are the set of laws, rules, and regulations put in place by governments and regulatory bodies to control and monitor digital payment networks and transactions. This study aims to evaluate the regulatory difficulties posed by digital payments for Nigerian consumer protection and inflation management. This study used survey research design. 810 top and middle management employees from five chosen deposit money institutions constituted the population. 300 research participants were sampled using Bill Godden's sample size calculation formula. Anova was used to test the hypotheses. The study's conclusions show that consumers are protected by digital payments against pricing limitations, currency controls, and money laundering. The study suggested that in order to address issues related to digital payments, regulatory frameworks should give priority to consumer protection.

Keywords: Regulatory framework, Adoption, growth & Digital payments

1.0 Introduction

An inflationary economy's regulatory environment necessitates a proper balance between embracing innovation and mitigating potential dangers. In order to create regulatory frameworks that promote the expansion of digital payments while defending consumer interests and preserving economic stability, regulatory authorities and digital payment companies must work together. Corporate entities and people working in companies that adopted information and communication technology (ICT) have undergone significant changes as a result of the adoption of digital payments systems, (Aldaas, 2021). With digital technologies greatly advancing commerce, finance, and operational costs (Slozko & Pello, 2015). Digital payment regulatory frameworks are the set of laws, rules, and regulations put in place by governments and regulatory bodies to control and monitor digital payment networks and transactions. These frameworks seek to safeguard the integrity, effectiveness, and safety of digital payment systems while defending consumer rights and fostering fair competition in the market (Ahmed, 2022).

Due to globalization and technological growth, the digital payment system is seen as a modern payment system and is essential to the modern economy. Transparency, ease of use, speed, and security are its primary concerns in addition to its simplicity. (Zandi, Singh, & Irving, 2013; Ravikumar, Suresha & Rajesh, 2019), online payment methods have a large amount of fiscal advantages, such as encouraging financial inclusion (Efanga, Umoh, Essien, & Umoh, 2020; Afaha, 2019), discouraging robberies and crimes involving cash (Armeiy, 2014), improving the effectiveness of the financial markets and system at large, and raising consumer confidence.

Business transactions depend on cash and account for more than 95% of all transactions in Nigeria prior to the implementation of the digital payment system. Over 99% of all client activity in banks were cash-based, and 10% of all cash transactions over N150,000 were cash-based (CBN, 2010). In addition to the estimated N192 billion in direct costs to the banking sector in 2009,

which included N27.b billion in cash transit costs, N69.1 billion in cash processing costs, and N18.1 billion in vault management costs, other issues with the cash-based system include the large amount of money that is not part of the formal economy as a result of heavy cash use, which restricts the ability of monetary policy to control inflation and stimulate the economy. The Nigeria Automated Clearing System (NACS) was established in 2002 as the definitive step toward the implementation of electronic payments. The CBN started a gradual implementation of a digital payment system to address the aforementioned difficulties. Automated Teller Machines (ATMs) were first introduced by Inter Switch in 2003. Real-Time Gross Settlement (RTGS) was then implemented in 2006. The transition to a new universal accounting system took place in 2010. (NUBAN). The initial set of cash deposit automated teller machines was introduced in 2011, and the Nigerian Inter-Bank Settlement System subsequently declared prompt payment services (KPMG, 2012).

In essence, modern technology has replaced out-of-date cash-based transactions with a more organized and effective digital, electronic, and internet-based payment system as well as a cashless payment system that does not adhere to the "cash and carry" pattern (Ayo, 2010; Oginni, El-Maude, Abba, & Onuh, 2013; Premchand & Choudhry, 2015; Ravikumar, et al, 2019). An inflationary economy's regulatory environment demands striking a fine balance between encouraging innovation and addressing possible hazards. In order to create legal frameworks that promote the expansion of digital payments while safeguarding consumer interests and sustaining economic stability, regulatory authorities and digital payment companies must work together.

Statement of the Problem

Due to excess of money in circulation, inflation has recently caused money to lose some of its purchasing power and increasing living expenses which exceed the means of most low income earners in Nigeria. Despite the monetary policies implemented to stop the threat, this pattern has persisted. If the regulatory framework is enhanced, it is thought that the acceptance and growth of digital payment will aid in containing an inflationary country like Nigeria. However, prior

research has tended to concentrate more on cross-border trade, regulatory compliance, and cyber security. This study aims to examine the impact and issues the regulation of digital payments has on consumers' protection and inflation control in Nigeria and not neglect the regulatory challenges of digital payments.

Objectives of the Study

The overall objective of this study is to provide insights on how regulatory decisions impact the overall development and effectiveness of digital payment systems in the context of inflationary economies like Nigeria. its particular goals are to:

- i) assess the regulatory challenges of digital payments on consumer protection.
- ii) ascertain the influence, the adoption and growth of digital payments has on inflation control in Nigeria.

Research Questions

- I) What are the regulatory challenges of digital payments on consumer protection?
- II) What influence does the adoption and growth of digital payments have on inflation control?

2.0 Conceptual Framework

Nigeria's digital payment system has gained popularity over time to the point where business people prefer using it to make financial transactions rather than going to physical banks (Oginni, et al, 2013; CBN, 2020). Despite the initial difficulties identified, studies by Asaolu, Ayoola & Akinkoye (2011), Odior & Banuso (2012), Echekoba & Ezu (2011), Siyanbola (2013), Oginni, et al. (2013), and Nkwanko (2013), among others, have shown that digital payment systems have steadily gained users' acceptance and that the proportion of cashless transactions has increased over time (Nkwanko, 2013). Volume and value of the new payment mechanism have increased. For instance, in December 2019, the value of POS transactions increased from N12.72 billion to N6,512.61 from the value of ATM transactions, which were N399.71 billion in 2010.

According to Onyeagba (2015), a cashless payment system makes a substantial contribution

to a successful and stable financial system. The platforms have given low-income families a more affordable alternative method of transaction and have done away considering the cost of traveling and bank fees (Akintaro, 2012). Despite the numerous economic advantages, even in mature economies the digital payment system has its limitations (Okifo & Igbunu, 2015). More specifically, a consistent platform of banks and MDAs, ownership of appropriate relevant technological infrastructures, platform security (Atanbasi, 2010), seriousness (Ovia, 2002), and the fact that Nigeria's digital payment system is evolving rapidly, as well as an effective shift to a digital economy, all depend on these factors.

The effectiveness of the electronic payment system, particularly in emerging economies, is hindered by issues like Integrity, non-reputation, confidentiality, reliability, and authorization, according to Ogedebe & Babatunde (2012). According to Ajisegiri & Oyebisi (2014), it is unable to fully take advantage of payment systems because of low internet connection and unstable electrical supplies, especially in rural areas where many contemporary payment platforms are located. Researchers and decision-makers have voiced a number of concerns despite Nigeria's effective adoption and development of the digital payment system: Can digital payments work in an emerging economy like Nigeria when there are so many groups that are disproportionately low income, have limited computer and financial literacy, have a sizable informal economy, and have significant levels of poverty?

2.1 Inflationary Economy

An economy that is experiencing inflation is one where there has been a consistent rise in the overall price of goods and services over time. In such economies, as prices rise, money loses some of its purchasing power, which lowers the currency's value. Increased demand for products and services, supply constraints, changes in production costs, changes in monetary policy, or external variables like fluctuations in exchange rates or commodity prices are only a few of the causes of inflation. It is often calculated using inflation indices that track the average price

changes of a selection of products and services, such as the Consumer Price Index (CPI) or the Wholesale Price Index (WPI) Blach, (2011).

As the cost of living and the prices of goods rise, consumers face a decline in the real worth of their income in an inflationary economy. Businesses may encounter difficulties keeping costs under control, sustaining profitability, and modifying pricing plans to account for increased prices. To monitor and control inflation levels, governments and central banks frequently put in place a variety of measures, including monetary policy modifications, fiscal policies, and regulatory actions.

Inflationary economies can have a variety of repercussions, some of which include diminished purchasing power, dwindling savings, higher borrowing rates, unpredictability in the financial markets, and potential inefficiencies in economic decision-making. To preserve stable economic circumstances and encourage sustainable growth, governments must manage inflation (Blach, 2011).

In an inflationary economy, digital payments face both regulatory challenges and opportunities. Here are some key factors to consider;

1. Regulatory Challenges:

a. In order to manage price increases, inflationary economies may enact price control regulations. The necessity to modify their platforms in order to adhere to pricing limitations or other regulatory obligations can provide difficulties for digital payment providers.

b. Foreign exchange controls: To prevent currency swings, inflationary economies frequently enact stringent foreign exchange controls. The functionality and potential for worldwide expansion of digital payment systems may be impacted by these rules' limitations on their ability to process cross-border transactions.

c. Consumer protection: Consumer vulnerability may increase as a result of inflation. To promote fair practices in digital payments, regulatory organizations may create or reinforce consumer protection measures, such as price transparency, dispute resolution systems, and protection against fraud or illegal transactions.

d. Compliance with anti-money laundering (AML) and know your customer (KYC) regulations: To stop money laundering, terrorism financing, and other illegal acts, regulators may tighten AML and KYC laws as digital payments become more commonplace. For companies that offer digital payments, compliance with these rules can be difficult and time-consuming (Ayo,2010).

Regulatory Opportunities:

a. Innovation-friendly environment: The potential benefits of digital payments in reducing inflation may be recognized by inflationary economies, who may then embrace more flexible regulatory frameworks. By stimulating competition and accelerating technological improvement, this may promote the creation and use of digital payment systems.

b. Financial inclusion initiatives: Financial inclusion presents many difficulties for economies experiencing inflation. In particular, for underprivileged areas, digital payments can present a chance to address these issues by increasing access to financial services. Adoption of digital payment solutions could be boosted by regulatory support for programs promoting financial inclusion.

c. Collaboration with central banks: Central banks place a high premium on managing inflation. To better the efficiency of monetary policy, gather transaction data, and understand economic patterns, regulators may work in conjunction with digital payment service providers. Such partnerships may result in regulatory frameworks that handle inflationary pressures and facilitate digital payments.

d. Enhanced cybersecurity measures: Increased digital transactions in inflationary economies may make them aware of the significance of cybersecurity. To safeguard consumer financial information and guarantee the security of digital payment systems, regulators might enact or tighten cybersecurity legislation.

e. Interoperability and standardization: Regulations that encourage standardization and interoperability among digital payment systems can increase their effectiveness and foster competitiveness. This may result in financial savings, greater consumer convenience, and a

wider acceptance of digital payments (Akintaro,2012).

2.2 Regulatory Framework of Digital Payment System in Nigeria

The regulatory framework for digital payment systems varies by country and region, but generally involves a combination of laws, regulations, and guidelines aimed at ensuring the security, efficiency, and consumer protection of digital payment transactions. In Nigeria, the regulatory framework for digital payment systems encompass several key aspects:

Licensing and Authorization: The Central Bank of Nigeria (CBN) is the primary regulatory authority overseeing digital payment systems. Payment service providers are required to obtain licenses or approvals from the CBN to operate in the country. These licenses ensure compliance with operational and security standards.

Mobile Money Regulations: The CBN introduced specific regulations for mobile money operators, outlining requirements for licensing, capitalization, and operational guidelines. These regulations aim to promote financial inclusion and provide a framework for mobile-based financial services.

Payment System Oversight: The CBN oversees the country's payment systems to ensure efficiency, safety, and reliability. It establishes rules and standards for payment system operators and promotes the use of electronic payment channels.

Anti-Money Laundering (AML) and Know Your Customer (KYC): Digital payment service providers must adhere to AML and KYC regulations. This includes verifying customer identities, monitoring transactions for suspicious activities, and reporting large or unusual transactions.

Consumer Protection: The CBN emphasizes consumer protection by setting guidelines for fee transparency, dispute resolution, and the prevention of fraudulent practices. Service providers are required to provide clear information to customers about fees, terms, and conditions.

Data Protection and Privacy: Payment service providers must comply with data protection regulations and safeguard customer information. They are required to obtain consent for data processing and ensure secure handling of sensitive data.

Interoperability and Competition: The CBN encourages interoperability among payment service providers to promote competition and broaden access to digital payment systems. This allows customers to transact seamlessly across different platforms.

Digital Identity and Biometric Verification: In efforts to enhance security and prevent fraud, the CBN introduced biometric verification requirements for

certain transactions, such as opening bank accounts and conducting high-value transactions.

Fintech Innovation: The CBN has shown interest in fostering fintech innovation through initiatives such as regulatory sandboxes, which provide a controlled environment for testing new financial products and services.

International Remittances and Cross-Border Payments: The CBN regulates cross-border payments and foreign exchange transactions to ensure compliance with international standards and prevent money laundering and illicit financial flows.

Regulatory Reporting and Compliance: Payment service providers are required to submit regular reports to the CBN, detailing their operations, financials, and adherence to regulatory requirements, (CBN, 2021).

2.3 Impact of Digital payments

1. **Cybersecurity risks:** The expansion of digital payments could pose cybersecurity difficulties. Cyberattacks on digital payment systems have the potential to undermine economic trust and disturb financial stability. To preserve the stability and integrity of the financial system, these risks must be adequately addressed.
2. **Reduced money supply:** Digital payments, including mobile money and internet banking, may result in less real currency being used in daily transactions. The overall money supply may consequently decline, which can assist in reducing inflationary pressures.
3. **Increased transparency and accountability:** Transparency is enhanced and corruption is decreased by the frequent electronic trail of transactions left by digital payment systems. By reducing leaks and inefficiencies in the economy, this greater accountability may contribute to better economic management and possibly lower inflation.
4. **Enhanced monetary policy effectiveness:** By using digital payments, central banks may be able to collect more precise and timely information on financial transactions, which would help them

make more informed monetary policy choices. This may help make inflation control efforts, such as changing interest rates and reserve requirements, more effective.

5. **Improved financial inclusion:** Digital payment systems can give people and enterprises who were previously unbanked or underbanked access to formal financial services. Digital payments can boost economic activity, encourage competitiveness, and possibly lessen inflationary pressures by increasing financial inclusion.
6. **Efficiency gains and reduced costs:** Financial transactions can be streamlined with digital payments to become quicker, more convenient, and less expensive. By lowering transaction costs, this efficiency can help organizations grow more productively and possibly cut pricing. Increased competition and lower prices can help lessen the effects of inflation (Asaolu, et al 2011).

It's important to note that the influence and impact of digital payments on countries with high inflation rates, such as Nigeria, may differ depending on a number of variables, including the adoption rate of digital payments, the quality of the financial infrastructure, the presence of regulatory frameworks, and the macroeconomic environment as a whole.

2.3 Theoretical Review

Technology Acceptance Model theory (TAM): The TAM was first suggested by Davis (1986) as a means of expressing a willingness to employ technological expertise (Monyoncho, 2015). The approach is more reliant on perceptions than real system utilization, contending that anytime a novel scientific development is created and made available to clients, one of two things occurs: either perceived usefulness (PU) or perceived ease of use (PEOU) influences their selection (Lule, et al, 2012). Customers' PEOU, or level of faith in the new system, indicates if they anticipate both immediate and long-term benefits from it. If they do, they will be more inclined to use it. Additionally, both short-term and long-term performance will

be enhanced by the way a user sees a system. According to the Model, a user's behavior is influenced by perceived benefits from the system. The Model suggests that user goals drive the adoption of technology and functionality, which affects how a user perceives the system (Mojtahed, Nunes & Peng, 2011). TAM thinks that acknowledging or suspecting advancements aids in the development of mental states, which eventually results in system usage behavior (Lim & Ting, 2012). The Model also examines how individuals interact with various systems (Lule, et al, 2012). By presenting facts, the Model clarifies and illustrates the motives why clients embrace or disregard a new idea or data edifice. The Model is crucial as a foresight tool for determining whether people and organizations will adopt a certain innovation (Mojtahed, et al, 2011). Adoption and growth of digital payments system can be represented by the Model as it growth or otherwise is based on (PEOU).

Financial Innovations theory (TFI) Siber (1983) suggested the TFI because he thought that a key objective of financial inclusion was benefit expansion of foundations with a financial component (Li & Zeng, 2010). According to the TFI, the major idea behind new inventions is the challenges in the money-related business sector, particularly varying data, office costs, and exchange rates (Blach, 2011). TFI found that because of their qualifications under the conditions, financial-related innovations may be ordinary methods for supplying new components of development or exceptionally creative decisions that increase organizations' liquidity and increase the number of applicants. According to the TFI, financial innovation is a key driver of the financial system's motivation since it results in greater economic benefit from new recurrent adjustments and increased economic competence. (Sekhar2013). Innovation is a tool used to address, control, and distribute the added burden. The use of innovations promotes the expansion of financial entities by enhancing allocation, efficiency, and reducing financial and administrative costs (Sekhar, 2013). According to the TFI, financial innovations broaden financial inclusion by improving financial market liquidity, ensuring that resources are allocated to underserved regions, and enhancing contact to

developing possibilities (Bach, 2011).

The TFI continues by stating that some limitations, such as external disadvantages, aid businesses in achieving their primary objective of earning income (Li & Zeng, 2010). Commercial banks therefore come up with novel approaches to connect with more people in order to increase earnings. Emerging new financial inclusion approaches, particularly in many African economies, are employing digital and mobile financial services.

2.4 Empirical Review

Aldaas (2021) used convenience sampling based on various geographic regions and income levels of randomly chosen countries all over the world to study the relationship between electronic payment transactions and economic growth.

Using correlation and regression approaches with SPSS 20.0 software, data on many aspects of electronic transactions, including several payment cards, ATMs, etc., and the gross domestic product, were used for the years 2014 through 2018. The outcome does not provide any conclusive evidence in favor of or against the inferred country-specific relationship between the e-payment system and economic growth.

Mamudu and Gayovwi (2019) studied the cashless policy and its effects on the Nigerian economy using quarterly time-series data from 2011q1 to 2017q4 on Automated Teller Machine Payment Value, Web/Internet Transfers Payment Value, Mobile Payment Value, National Electronic Funds Transfer Value, Point of Sale Value, and Cheques Cleared Value. Additionally, the OLS method, the Johansen Co-integration test, and the Error Correction Model were applied. The results show that employing cashless policy instruments has a favorable and considerable impact on GDP. According to the short-run regression results and the Johansen co-integration test, which shows a long-run relationship between the chosen cashless policy variables and economic growth, the use of these non-cash instruments has a significant and positive impact on GDP.

Efanga, et al. (2020) used annual data from 2009 to 2018 on the transaction from PoS terminals, E-payment systems are being replaced by ATMs and web (internet) payments, whereas economic

Table 3.1 Table showing population and sample size estimates for each bank.

S/N	Bank Name	Number of staff	Sample Size Determination ($n \times 365 / \Sigma n$)	Sample Size for each Bank
1	Access bank	145	65.33950617	65
2	Eco bank	100	45.0617284	45
3	First bank	275	123.9197531	124
4	UBA	140	63.08641975	63
5	Zenith Bank	150	67.59259259	68
Total		810		365

Source: HR Dept of the banks under study, 2023

growth is measured by real GDP growth to examine the impact of electronic payment systems on economic growth in Nigeria. Correlation analysis and the ARDL Model were used in the investigation. The outcome showed a correlation between economic growth during the study period and electronic payment systems that was favorable.

Ravikumar et al.(2019) surveyed the effect of the digital payments system on economic growth in India using annual data spanning from 2011 to 2019 on real GDP and digital payments variables, such as card payments, clearing corporation operated system, real-time gross settlement, retail e-clearing, paper and other prepaid instruments like m-wallet.They used OLS and the ARDL co-integration bound technique. The findings showed that short-term digital payments have a major impact on economic growth. Though the study could not identify any long-term effects on economic growth.

3.0 Methodology

3.1 Research Design

The study adopted survey research design. Questionnaire was used as the primary source of data in this study.

3.2 Population and Sampling Technique

The target population for the study consists of 810 top and middle management employees from the city's five chosen deposit money institutions (810). Table 3.1 Table showing population and sample size estimates for each bank.

3.4 Sample Size Determination

The eight hundred and ten staff members who will be the subject of this study are the target population. The sources are all of the employees of the five chosen banks in the Enugu city, from high management to intermediate management. Due to the population's finite size, the researcher employed Bill Godden's (2004) sample size calculation formula, which is given below:

$$SS = \frac{(Z^2 \times p(1-p))}{M^2}$$

Where:

SS = Sample Size

Z = 1.96 at 95% Confidence Level

P = population proportion assumed to be 0.5 (50%).

M = error margin

$$Eg \ SS = \frac{(1.962 \times 0.5 (1 - 0.5))}{0.052}$$

$$SS = \frac{(3.8416 \times 0.25)}{0.00250}$$

$$SS = 384.16 = 85$$

$$Therefore; \ Sample = SS \div (1 + SS - 1) \div N$$

$$= 385 \div (1 + 385 - 1) \div 810$$

$$= 385 \div 1 + 384 \div 810 = 385 \div 1 + 0.47407$$

$$= 385 \div 1.47407 = 261$$

This sample is thought to be too small for a study of this nature. Unyimadu (2005) asserts that when a sample gets bigger, it becomes more representative of the population and, thus, the

accuracy and validity of the conclusion drawn from it improve. In order to account for respondents who, the researcher might not be able to reach, the researcher added 10% (26 copies) in accordance with Israel's recommendation from 1992. Additionally, the researcher was required to provide an additional 30% (78 copies) to account for non-respondents in line with Unyimadu's opinion (1992). To ensure that the desired level of validity, precision, and confidence was attained, this was done.

Consequently, the following results were obtained using the population sample size: Using the Bill Godden sample size of 261, 10 percent to account for inaccessible respondent's equals 26

3.5 Description of Research Instruments

The questionnaire was the primary tool used in this

study to collect data. Only for analytical purposes was a questionnaire with a 5-point Likert scale employed. The study's objectives were addressed through structured questions on a normal five-point Likert scale, such as strongly Agree (SA), Agree (A), strongly Disagree (SD), Disagree (D), and Undecided (U). Through their human resource officers, this was distributed to each of the five banks in accordance with their quota.

4.0 Presentation of data, analysis, and discussion of results

In accordance with the research questions given earlier in this study, questionnaire data was evaluated. The presentation is based on questionnaires that were fully completed and returned, even if the sample size was greater than what is shown.

Table 4.1 Distribution on whether regulatory challenges of digital payments affect consumer protection

Options	Frequency	Percent	Valid Percent	Cumulative Percent
Undecided	20	6.7	6.7	6.7
Disagree	70	23.3	23.3	30
Strongly disagree	30	10	10	40
Agreed	120	40	40	80
Strongly agree	60	20	20	100
Total	300	100	100	

Source: Field survey, 2023 (SPSS Output file 20.0).

Table 4.1 The results indicate that (20 respondents, or 6.7 percent) were undecided, (70 respondents, or 23.3 percent), (30 respondents, or 10 percent), agreed, and (120 respondents, or 40 percent), with

(60 respondents, or 20 percent, strongly agreeing. Data evidence revealed that Nigeria's consumer protection is hampered by regulatory issues with digital payments

4.2 Distribution on what influence the adoption and growth of digital payments have on inflation control Valid Options Frequency Percent Valid Percent Cumulative Percent

Valid Options	Frequency	Percent	Valid Percent	Cumulative Percent
Undecided	30	10	10	10
Disagreed	20	6.7	6.7	16.7
Strongly disagreed	10	3.3	3.3	20
Agreed	90	30	30	50
Strongly agree	150	50	50	100
Total	300	100	100	

Source: Field survey, 2023 (SPSS Output file 20.0)

Table 4.2. reveals that (90) respondents represented 30% of the respondents, (30) respondents represented 10% of the respondents who were undecided, (20) respondents represented 6.7% of the respondents who disagreed, while (10) respondents represented 3.3% of the respondents who strongly disagreed. (150) respondents represented 50% of the respondents who strongly agreed. The majority of respondents, according to data, were firmly in favor of the idea that the adoption and expansion of digital payments can aid in reducing Nigerian inflation.

4.3 Test of Hypotheses: To assess respondent opinions on the impact of regulatory barriers for digital payments and the impact that the adoption and expansion of digital payments have on inflation, data from tables 4.1 and 4.2 were used.

Hypothesis One

Ha: There is significant effect of regulatory challenges of digital payments on consumer protection

Ho: There is no significant effect of regulatory challenges of digital payments on consumer protection.

4.3.0 Hypothesis

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.884 a	0.782	0.78	0.425	0.091

- a. Predictors: (Constant), regulatory challenges vs price control, forex control, consumer protection and money laundering control
- b. Dependent Variable: adoption of digital payments will protect consumers

Table 4.3.2 ANOVAa

S/N	Model	Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	191.916	3	63.972	354.07	.000b
2	Residual	53.48	296	0.181		
Total		245.397	299			

- a. Dependent Variable: adoption of digital payments will protect consumers
- b. Predictors: (Constant), , regulatory challenges vs price control, regulatory challenges vs forex control and regulatory challenges vs money laundering control

Table 4.3.3 Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.	95.0% Confidence Interval for B	
	B	Std. Error	Beta			Lower Bound	Upper Bound
(Constant)	0.06	0.086		0.695	0.488	-0.109	0.229
Regulatory challenges vs price control	0.401	0.047	0.482	8.569	0	0.309	0.493
Regulatory challenges vs Forex control	0.207	0.037	0.321	5.645	0	0.135	0.279
Regulatory challenges vs Money laundering	0.095	0.029	0.136	3.285	0.001	0.038	0.151

- a. Dependent Variable : adoption of digital payments will protect consumers in Nigeria .

Interpretation

The fact that the regression sum of squares (191.916) is higher than the residual sum of squares (53.480) indicates that the model accounts for a larger portion of the variation in the dependent variable. The variance explained by the model is not random, according to the significance value of the F statistic, which is (0.000), which is less than 0.05.

In the chosen Deposit Money Banks in Enugu, Nigeria, R, the correlation coefficient, which has a value of 0.884, shows a significant correlation between digital payments and consumer protection. R square, the coefficient of determination, demonstrates that the model accounts for 78.2 percent of the variation in regulation.

The estimate error for the linear regression model is minimal, at 0.425. Auto-correlation is shown by the Durbin Watson statistics of 0.091, which is less than 2, which is below 2. Consumer protection is greatly increased in inflationary economies like Nigeria by the introduction of digital payments, which is statistically significant with a control effectiveness coefficient of 0.782 for money laundering, FX controls, price controls, and pricing controls (0.695). Therefore, it is necessary to reject the null hypothesis.

4.4.0 Hypothesis Two

- Ho Adoption of digital payment does not have influence on inflation control
- H₁ Adoption of digital payment has a significant influence on inflationary control

Table 4.4.1 Model Summary ^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.871a	0.759	0.756	0.549

a. Predictors: (Constant), Adoption of digital payments vs influence on inflation control

b. Dependent Variable: adoption of digital payments will reduce price hikes, reduced purchasing power, increased demand for goods and potential distortions in economic decision making.

Table 4.4.2 ANOVA ^a

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	280.475	3	93.492	310.269	.000b
Residual	89.192	296	0.301		
Total	369.667	299			

a. Dependent Variable: adoption of digital payments will reduce price hikes, reduced purchasing power, increased demand for goods and distortions in decision making in Nigeria

b. Predictors: (Constant), Adoption of digital payments vs inflation control

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.	95.0% Confidence Interval for B	
	B	Std. Error	Beta			Lower Bound	Upper Bound
1(Constant)	0.076	0.116		0.655	0.513	-0.152	0.303
Adoption of digital payments vs inflation contr,	-0.144	0.098	-0.155	-1.471	0.142	-0.336	0.048
Digital payment vs purchasing power,	0.814	0.056	0.711	14.652	0	0.705	0.924
Digital payment vs dd for goods	0.295	0.096	0.339	3.074	0.002	0.106	0.485

Interpretation

The fact that the regression sum of squares (280.475) is higher than the residual sum of squares (89.192) shows that the model accounts for a larger portion of the variation in the dependent variable. The variance explained by the model is not due to chance because the significance value of the F statistic is (0.0001), which is less than 0.05.

In selected Deposit Money Banks in Enugu,

Nigeria, R, the correlation coefficient, which has a value of 0.871, shows a significant correlation between the use of digital payments and inflationary economies. R square, the coefficient of determination, demonstrates that the model accounts for 75.9% of the variation in adoption.

The estimate error for the linear regression model is minimal, at 0.425. Auto-correlation is shown by the Durbin Watson statistics of 0.091, which is less than 2, which is below 2.

The selected deposit money banks in Enugu, Nigeria, have a strong impact on inflation with a coefficient of 0.759, which is statistically significant with respect to price control and FX control (0.655). Therefore, it is necessary to reject the null hypothesis.

4.5.0 Discussion of the Results

Under the numerous study objectives, the results of this study are discussed.

4.5.1 To assess the regulatory challenges of digital payments on consumer protection in Nigeria.

In order to determine the regulatory challenges of digital payments on consumer protection, it was also found that digital payment protect consumers against price controls, forex controls and compliance with money laundering. This finding is in line with the findings by Aldaas (2012), Mamadu & Gayovwi (2019) who noted that the key issues are price controls mechanisms, forex controls and anti-money laundering compliance in is the overall interest regulatory authorities in protecting the consumers which has been the major challenge do face by the regulatory authorities.

4.5.2 To ascertain the influence, the adoption and growth of digital payments has on inflation control in Nigeria.

In order to ascertain the adoption and growth of digital payments influence on inflation, after asking respondents for their opinions, it was discovered, adoption and growth of digital payment has significant influence on inflation control. This is in line with the findings of Ravikumar et al (2019) and Efanga et al (2020) who showed that digital payments have great influence in reducing inflation in an economy such as Nigeria. This is true because too much money in circulation will definitely ignite inflation.

5.0 Conclusion

This study, "Impact of regulatory frameworks on the adoption and growth of digital payments in inflationary economies: evidence from Nigeria," comes at an opportune time and is unquestionably essential because the regulatory environment strongly influences the adoption and expansion of digital payments in inflationary countries like Nigeria. It is obvious that the issues of

consumer protection in the world of digital payments call for strong legislation. Regulatory organizations can foster customer confidence by putting strong consumer protection measures into place, such as security requirements, open pricing, and dispute resolution procedures.

However, regulatory frameworks should place a high priority on enhancing consumer protection measures, encouraging cooperation between regulatory agencies and industry participants, enacting proactive inflation control measures, and promoting financial inclusion. In Nigeria, the regulatory framework can successfully promote the acceptance and expansion of digital payments while protecting consumer interests and making a contribution to the reduction of inflation by taking care of these issues.

5.1 Recommendations

From the result that emanated from this study, these recommendations aim to address the regulatory challenges associated with consumer protection, while also considering the potential influence of digital payment adoption on inflation control in Nigeria.

1. Regulatory frameworks should place a high priority on consumer protection. This can be done by establishing channels for dispute resolution, implementing strict security regulations, and making sure that pricing and transaction information are transparent. Consumer confidence can be fostered in order to promote the adoption and expansion of digital payments.
2. Encourage cooperation between regulatory bodies and players in the industry: Regulating organizations should work closely with sector participants including banks, fin-tech firms, and telecom companies to promote the adoption of digital payments. This partnership can aid in the creation of efficient rules that balance risk reduction and innovation.
3. Implement preventative measures to reduce inflation: Regulations should take into account how digital payments could

help keep inflation under control. By encouraging the use of digital payments, economies can lessen their reliance on hard currency, which frequently causes inflation.

4 Promote Financial Literacy and Inclusiveness: Regulatory organizations ought to give priority to programs that would increase financial literacy and inclusion. Public awareness of the

advantages and dangers of digital payments can allay fears and promote acceptance. Public awareness campaigns, training initiatives, and collaborations with academic institutions and business stakeholders can all help achieve this.

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Contemporary Analysis of Velocity of Money and Payment Systems: A Descriptive and Empirical Approach



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Abstract

This study examines the role of payment systems on the movement of the velocity of money (VM) in Nigeria using quarterly time series data between 2010 Q1 and 2022 Q3. This study generated a normalized index of payment systems using a principal component analysis of the four most evolving payment instruments (Automated Teller Machine, Point of Sales, Web and Mobile Pay). The paper simulates the response of VM to one standard deviation shock to payment instrument index, inflation expectations, broad money growth and monetary policy rate. The study findings based on the unrestricted error correction model indicated VM is cointegrated with these variables. Among all the simulated shocks, only the payment system and next-quarter inflation expectation exhibit significant effects on VM. A one-standard-deviation shock to the index renders VM to decrease over time despite some positive and negative changes. The same shock on inflation expectation generates a decline in VM in the longrun. The shock on money growth and policy rate does not produce any significant impact. In summary, the payment systems have encouraged cash hoarding when the propensity to spend is low and amid heightened economic uncertainty, thus leading to a decrease in the velocity of money, and the monetary policy has been ineffective in pushing the VM. The paper recommends intensive reforms of the payment systems to render the monetary policy more effective.

JEL:D84, E31, E37, E41, E52

Key words: payment system, velocity, money, simulation, inflation, ARDL

1.0 Introduction

Electronic and digital payment systems primarily aid the transaction process. The payment system is also central to a well-functional market economy (Folkerts-Landau et al. 1993). The electronic and digital payment system has evolved significantly due to their improved efficiency over the past ten years. However, new challenges have also emerged in Nigeria. The statistics revealed by the fiscal and monetary authority indicate in 2015, currency in circulation was 1.4 trillion naira, and as of the third quarter of 2022, the currency in circulation had risen to 3.23 trillion naira - just 16.41 per cent of this money is in the banking system. According to the monetary authority, this is a case of demand for cash for hoarding purposes which can render monetary policy ineffective. (Central Bank of Nigeria governor's press briefing, 2022).

The monetarist believe 'inflation is a monetary phenomenon' and the efficiency of monetary policy in controlling price rest on how they can control the money supply in circulation. This assumption also rests on the degree of stability in velocity of money (the rate at which an average currency is exchanged for goods and services in a given period). To establish if a direct relation between money supply and price level exist, it is important to examine the assumption of constant velocity of money in Nigeria. Under the classical Irving Fisher's identity, that the velocity of money is not stable and has had a declining trend in Nigeria since the third quarter of 2019 (see Figure 1). For the effectiveness of monetary policy in controlling price level, the velocity of money should be predictable and within the control of the apex bank.

Money as a medium of exchange and store of value can be enhanced by the advancement and adoption of digital and electronic payment systems in recent years. In the first quarter of 2021, the adoption rate of the e-transactions payment system has increased by 147 per cent (Central Bank of Nigeria, 2022). Prior to this quarter, the growth has shown gradual movement. However, little is known about how the efficiency of monetary policy in achieving its mandate of price stability when velocity of money is unpredictable in Nigeria. Also, the design of payment systems also has an impact on the efficiency of monetary

policy and the economy at large Balino et al. (1996). The challenges like the case of cash hoarding are linked to the much-needed currency reforms in the banking system.

The currency redesign and the initial plan to withdrew the old currency in circulation were accompanied by new regulations on the new evolving payment systems to effectively control the money in circulation and invariable inflation. This policy action was accompanied by acute shortage of cash thus prompting wide adoption of the evolving electronic and digital transactions in the forms of online mobile apps, and web payments. Other modern payment systems like point of sales (POS) have also gained significant adoption for the settlement of transactions with debit card holders.

Over the years, the velocity of money has been declining in Nigeria and little empirical facts exist to ascertain the macroeconomic fundamentals behind such decline. This paper filled this gap by examining what is responsible for the declining velocity of money. Answers to this question is available among studies that have examined the determinant of velocity of money (see Palivos et al. 1993; Nampewo & Opolot 2016; Nunes et al. 2018; Marmora & Mason 2020; Ardakani 2022). However, these studies focused on advanced and emerging economies, thus, creating a knowledge gap in Nigeria. This paper could not establish any contemporary studies that examine the declining velocity of money in light of the payment system and consumer inflation expectations in Nigeria.

This study attempts to fill the existing gap by examining the role of payment system and inflation expectations on velocity of money in Nigeria. This study computed an index for the payment system in Nigeria. A similar approach was adopted by Marmora and Mason (2020) on a panel study which comprise of 37 countries (excluding Nigeria). The primary objective is to examine how shocks to the payment instruments impact velocity of money in Nigeria under the framework of dynamic autoregressive distributed lag model. This framework enables us to examine the response of velocity of money to a series of shocks. We also provide some stylized facts on the association between increase in volume and value of the payment systems and their

association with demand for money, the velocity rate and price level. We also examined in what ways could demand for money affects velocity of money in Nigeria using quarterly data from 2010Q1 to 2022Q3.

The rest of the paper is divided as follows. Section 2 discusses the stylized facts and theoretical and empirical literature. The methodology of the study is then presented in Section 3. The results are presented and discussed in Section 4. Conclusion and summary of findings, policy implications are presented Section 5.

2.0 Literature Review

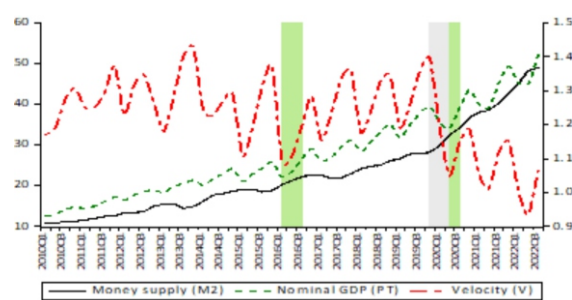


Figure 1: Trend in Money supply, Nominal GDP and Velocity of Money

2.1 Stylized Facts

Figure 1 shows the trends in money supply, nominal GDP and velocity of money. The light green shaded areas are the endogenous shocks in form of recessions and the grey area is the US recession. Prior to the 2016 recession, the velocity of money is unstable and in most instances above 1.2. Also, the money supply and nominal GDP exhibit a positive association. The post-2020 recession shows the velocity of money has a negative trend indicating an inverse association between the money supply and the velocity of money. In summary, the velocity of money is unstable and its trend association with money supply varies from different phases. The velocity of money has a one-to-one association with nominal GDP.

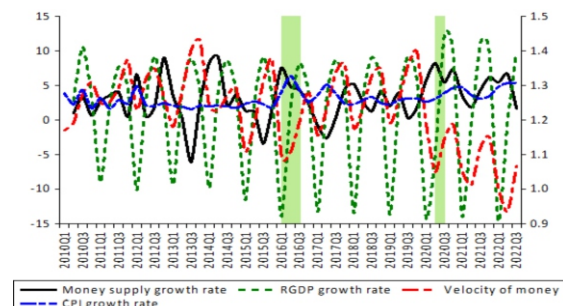


Figure 2: Association between the growth rates of money supply, real GDP, CPI, with velocity of money

The growth rates relations with respect to changes in velocity of money in presented in Figure 2. The next quarter growth rate of CPI is relatively stable before the 2016 recession. The 4th quarter of 2015 shows velocity of money dropped below 1.2 and this was accompanied by the recession and the CPI has a record growth of 6.4 percent during the recession and decline to 4.3 per cent in 2016Q3. When velocity of money at 1.2 is restored prior to 2020 recession, the spike in the growth rate of CPI remain moderate.

The response of CPI is similar to that observed in 2016. However, the 2020 recession was caused by supply disruption due to the lockdown initiated at the onset of the pandemic. Between the two recessions, increase in velocity of money is matched by increase in growth rate of CPI vice versa thus indicating an inverse relation between them. The velocity of money decreased below 1.2 after exiting the COVID-19 recession and the growth rate of CPI is continuously trending upwards. In summary, velocity of money above 1.2 leads to either a stable or less significant spike in CPI growth rate. However, below 1.2 leads to much stronger growth in CPI. Thus, the increasing inflation rates being reported in recent times could be attributed to an unfavorable rate at which money exchanges hands in the economy. This could explain why this is attributed to 'hoarding'. Based on reports by the monetary authority, more than 80 percent of money supply is outside the banking system as of 2022. Rather, the 'hoarding' tendencies might indicate vast majority of people prefer the non-conventional system in storing their income, thus indicating lack of reliance in the banking sector. A fall below the threshold of 1.2, monetary policy might be ineffective in controlling price and stimulate real output.

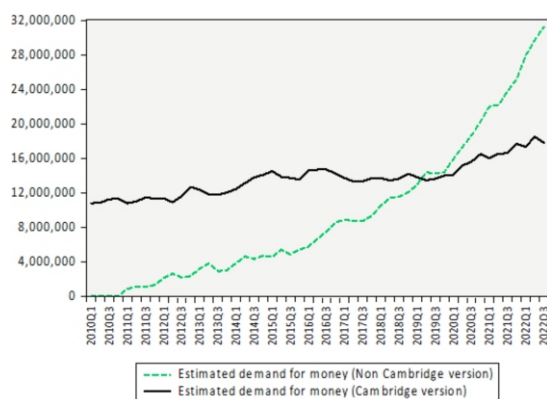


Figure 3: Estimated demand for money

Increased in savings by economic agents, debt servicing, and contractionary monetary policy which leads to drop in lending, and increase demand for money could explain the decrease in velocity of money after exiting the 2020 recession. Various motives for holding money exist. Following the classical assumption of money demand at a given time equates money supply. We obtain other proxies as motives for holding money by subtracting the cash balance approach estimated demand for money from the aggregate money supply to capture the non-Cambridge demand for money.

The trend in these variables are presented in Figure 3. Both demands for money have positive trend. Prior to 2019, the Cambridge demand for money exceeds the other motives for holding money but revised in post 2019 periods.

Figure 4 and 5 show the association of the various growth rates of these demands for money with the velocity of money. In most instances where velocity of money is less than 1.2, lesser spike in non-Cambridge demand for demand and convergence of the growth rates of both demands for money is noticed.

Theoretically, velocity of money is inversely related to liquidity preference (i.e demand for money). From figure 4, at specific points, velocity of money is inversely related to demands for money. The growth in Cambridge's demand for money below 2 per cent is accompanied by velocity of money hovering above 1.2 in most instances. Conversely, above 2 per cent growth rate of the same money demand leads to subsequent decline in the velocity of money. In summary, by decreasing growth of Cambridge's demand for money, we could boost the volatility of money above 1.1 after the covid-19 recession.

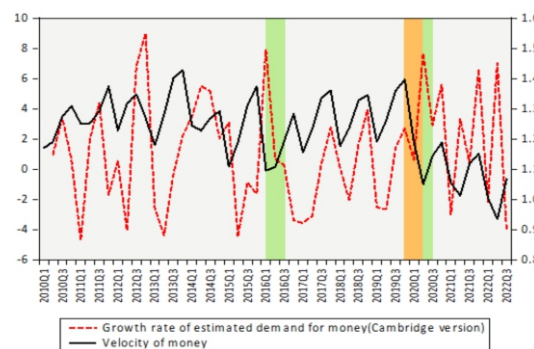


Figure 4: Demand for money and velocity of money

From Figure 5, an inverse association between non - Cambridge's demand for money and velocity of money is more lucid prior to 2020 recession. We can conclude from 2020 onward, changes in Cambridge's demand for money can be a primary factor that could explain the movement in velocity of money. This can also point to low level of investment as people prefer to keep money as a store of wealth rather than invest in the real sector. Policy to reduce demand for money as a store of wealth with the aim of boosting saving in the banking sector should not be match by higher interest rates. The government has to incentivize economic agents to invest in the economy as the real sector is yet to reach its full employment. Without boosting the real sector, the monetary policy attempt to adopt a cashless policy via increased adoption of fintech and account holders (depositors) withdrawal limits might be ineffective to have full control of price level since velocity of money is not stable at least in the short-run and the economy is yet to reach its full potentials. The monetary authority should investigate what could be responsible for 'hoarding' of money in the country. Could it be due to heightened macroeconomic uncertainty in the economy or the loss of confidence in the banking sector as a medium for safe keeping of one's currency?

The payment system is said to enhance trade and thus boost liquidity preference. Thus, the efficiency of monetary policy in controlling prices can be affected by the level of development of the payment system. Figure 6 shows the association between total value of the payment system and total volume of payment systems. Here, the categorized e - transactions payment systems are the sum of statistics on point of sales (POS), Automated Teller Machine (ATM), mobile pay and web pay.

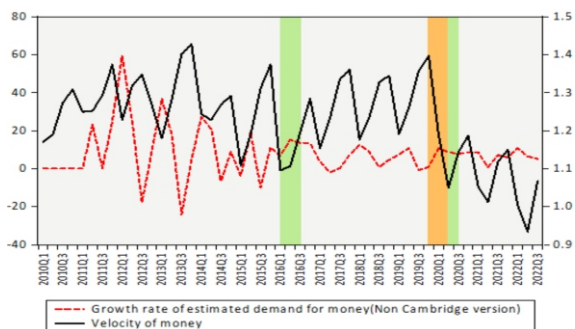


Figure 5: Estimated Demand for money and Velocity of money

In 2011, as a significant spike of 238 per cent growth rate in the volume of transactions is present and simultaneously translates to 135 per cent growth in the monetary value of these transactions. The difference in the growth rates is largely significant compared to a similar significant spike recorded in 2020. Nevertheless, the corresponding spikes in value of these transactions accompanying the growth in the volume of transactions are alarming. This paper had reported in these same periods, velocity of money is dropping. This could indicate the increased adoption of payment systems has facilitated the various motives for holding. The 2020 hike was due to the shutdown due to the COVID-19 pandemic, the need to decongest the banks and maintain social distance, and improved standardization of the fintech also facilitated the increased in the volume and value of these transactions. Also, the adoption the payment systems are seasonal. During the third and fourth quarters of every year, there is spike in the growth rate.

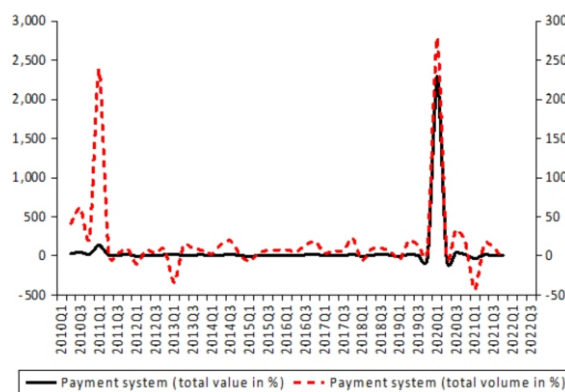


Figure 6: Payment systems, total value and total volume

The difference in the growth rates of the volume and value of the payment systems should vary significantly with the growth rate of the volume of transaction being stronger than the values. In the first quarter of 2020, the difference was -2016.67, marking a significant outlier that can distort the effective control of inflation. For effective control of the systems to ensure motives for holding money are not counterproductive to price mandate of CBN, there is need for the difference in growth rates to be in a positive range with a tolerance limit of -15 percent for situations where growth rate of values exceed volume. The rate of withdrawals from POS and ATM should be strictly controlled.

2.3 Empirical Literature

The bank's stance of controlling money supply aimed at achieving price stability can best be understood from the classical and Keynesian views on the quantity theory of money. From the classical point of view, to control inflation, the monetary authority has to control the growth rate of money supply. However, this direct relationship between price level and money supply rest on some key assumptions which state the velocity of money is relatively stable over time and real output is at or near full employment level.

The cash balance approach to the quantity theory of money postulates the demand for money rather than supply is crucial to the price level. The demand for money is proportional to the fraction of nominal income that is held as a store of value. The velocity of money from this framework is not constant and has an inverse relationship with the demand for money. The assumption on the velocity of money and its role in the quantity theory of money is relevant in understanding the latest policy framework of the monetary authority and the advancement and reforms on the payment systems in recent times.

2.2 Theoretical Literature

Palivos et al. (1993) examined the velocity of money in advanced and developing economies under the framework of a dynamic general equilibrium model. The finding observed growth rate of money has a negative effect on the velocity of money. Nampewo and Opolot (2016) examine the stability of velocity of money in Uganda in an ARDL framework between 2000 and 2013. The authors' findings indicate financial innovation has a positive effect on the velocity of money in the longrun. In addition, inflation expectation has a positive effect on money velocity. Nunes et al. (2018) examined the income velocity of money in Portugal between 1891 and 1998. Their finding from the vector autoregressive model indicates velocity of money is cointegrated with macroeconomic indicators (interest rate inclusive) and institutional variables.

Omanukwue (2010) the quantity theory of money in Nigeria from 1990 to 2008. The author observed the presence of causality from money supply to consumer price index. The velocity of money was

examined in Sudan by Altayee and Adam (2013) in a VAR framework. The authors observed between 1992 to 2012, financial development has a significant impact on velocity of money in Sudan. The study shows changes in macroeconomic variables are significant factors to explain changes in velocity of money. Sharma and Syarifuddin (2019) observed demand for money has a significant impact on velocity of money in the short-run in Indonesia between 2000m12 to 2017m12.

Akinlo (2012) examined the impact of financial development and a host of macroeconomic indicators on the determinant of velocity of money in Nigeria from 1986 to 2010 using an error correction model. The study also highlighted financial development has a significant impact on velocity of money in the longrun and exchange rate depreciation leads to a decrease in velocity of money. Per capita income has a positive effect on velocity of money. Okafor et al. (2013) adopt vector error correction model to examine the macroeconomic determinants (income, exchange rate, interest rate, inflation rate) of velocity of money in Nigeria from 1985Q1 to 2012Q4. They observed growth rate of income, and interest rate has a positive effect on velocity of money. Inflation and exchange rates have a negative impact on velocity of money.

Titalessy (2020) examined the impact of cashless payments on inflation in Indonesia from 2019M01 to 2020M05. They adopt ordinary least square estimator and observed only the electronic money payment system significantly decreases inflation. Other payment systems like debit and credit cards have positive impacts on inflation but are not statistically significant. Pambudi and Mubin (2020) examine electronic money transactions on the velocity of money using data from quarterly data from 2010 to 2018. The finding shows electronic money transactions significantly cause an increase in velocity of money in Indonesia

Rahayu and Nugroho (2020) using ARDL observed the card-based payment system has positive impact on velocity of money. Putra et al. (2021) using the vector error correction model observed between 2016m1 to 2020m6 examine the macroeconomic determinants of velocity of money in Indonesia. The finding indicates bidirectional causality exists between velocity of

money and inflation, and a one-way causality between velocity of money and card-based payment system- in all cases, it runs from velocity of money to card-based transaction. The card-based system only has a significant impact on velocity of money in the longrun. Marmora and Mason (2020) examined the impact of cashless technologies on velocity of money in 37 economies between 2004 - 2014. The finding indicates cashless technologies (POS, number of financial cards and card payment per capita) have positive impact on velocity of money. They also observed, the larger the shadow economy, the less impact cashless technologies have on increasing velocity of money in these economies. Marmora and Mason (2020) observed the impact of cashless technologies is mitigated by the size of the shadow economy. The authors observed from a list of 37 countries between 2004 to 2014, using system GMM and bounded regression results that cashless technologies have a positive effect on velocity of money.

In Indonesia, the role of payment systems has shown mixed results. Huljannah and Satria (2021) adopt error correction model to examine the impact of payment system innovation on velocity of money in Indonesia from 2016M1 to 2020M6. Their finding indicated debit cards have the strongest impact on velocity of money. The study concludes monetary policy could more effective with efficient regulation of debit card use. A more recent study in the same country was done by

Sasikarani and Andrian (2022) using the same methodology as Huljannah and Satria (2021). They observed use of credit cards significantly increased velocity of money and debit cards decrease velocity of money in circulation both in the short-run and longrun. A similar study by Roy et al. (2021) in Indonesia using data from 2009 to 2019 observed from multiple linear regression that credit cards have decreased the velocity of money while debit card increases the velocity of money.

This paper observed from the reviewed studies, the instruments of payment systems have had mix effect effects on velocity of money across countries. An important gap in the literature regarding Nigeria is none of the studies has adopted an index in examining the impact of the payment system on the velocity of money. In addition, none of the existing studies has considered the consumer inflation expectation index. We fill this gap by estimating an index and examining the shocks to the payment system along with monetary aggregates on velocity of money.

3.0 Methodology and Sources of Data

3.1 Data

The data are sourced from the Cental Bank of Nigeria site called [cbn.gov.ng](https://www.cbn.gov.ng) at <https://www.cbn.gov.ng/documents/QuarterlyStatbulletin.asp> Details are presented in the Table 1.

Variable	Definition	Scale	Measurement	Source
VM	Velocity of money	Natural logarithm	Nominal GDP divided by Money supply (M2)	CBN Quarterly statistical bulletin, third quarter 2022; Author computation
INFE	Next quarter Inflation expectation (index)	Natural logarithm	-	CBN Consumer expectation survey
volpayinst_index	Principal component analysis	Normalize index	ATM, POS, Mobile pay and Web pay volumes of transactions	Author computation
valpayinst_index	Principal component analysis	Normalize index	ATM, POS, Mobile pay and Web pay volumes of transactions	Author computation
MPR	Interest rate	Percentage	Monetary policy rate	CBN Quarterly statistical bulletin, third quarter 2022
M2G	Growth rate of money	Growth rate (%)	Broad money supply	CBN Quarterly statistical bulletin, third quarter 2022; Author computation

3.2 Theoretical Framework

3.2.1 Quantitative Theory of Money

The monetarists believe inflation is a monetary phenomenon with the postulation change in money supply growth leads to direct change in price level. This theory rely on some key assumptions among them is the rate at which money changes hand is relatively stable and real output is at full employment. This theory is commonly represented by the Irving Fisher's identity.

$$M^s V = PT \quad (1)$$

Where M^s is aggregate money supply, V is velocity of money, P is implicit price deflator and T is real output (i.e transaction). This equation is known as identity since the left hand side of the equation is equivalent to nominal GDP and the right hand of the equation is also the nominal GDP.

The money supply from equation 1 is transformed as

$$M^s = \frac{PT}{V} \quad (2)$$

The velocity of money which measure the average number of times a unit of money is used for transactions is obtained as

$$V = \frac{PT}{M^s} \quad (3)$$

P and V have a positive relationship theoretically

Marshall, Pigou, Robertson et al. modified the Irving Fisher identity examine the relationship between money demand as store of value and price level. This approach known as the Cambridge cash balance or demand theory for money rely on the role on money demand on inflation by assuming the aggregate money supply is fixed. We can represent this function as

$$M^d = \frac{PT}{V} \quad (4)$$

where M^d is demand for money as store of value. We can represent the right hand side of the equation as

where $k = 1/V$ and represent the proportion of nominal income that can be hoarded. An increase in velocity will be preceded by a decrease in k and vice versa. At equilibrium,

$$M^d = kPT \quad (5)$$

We can obtain the other motives for holding

money as

$$M^d = M^s \quad (6)$$

Both M^{od} and M^d form the aggregate money in circulation at equilibrium level.

3.3 Model Specification

We estimate the following unrestricted error correction model M^{od}

$$M^{od} = M^S - M^d \quad (7)$$

Where a_0 is the intercept, a_1 is the coefficient of the trend, t . B_1 is the coefficient of the autoregressive distributed lag of the dependent variable Y_t . B_j are the coefficients of the lag explanatory variables X_j and y_j , i are the coefficients of the short-run variables. The longrun parameters from equation 8 is given as $LRj = - (Bj/B1)$. We conduct the Pesaran et al. (2001) bounds test using the null hypothesis $Bj = 0$. From equation 8, we will estimate two models as

$$\Delta Y_t = \alpha_0 + \alpha_1 t + \beta_1 Y_{t-1} + \beta_2 Y_{t-2} + \beta_3 Y_{t-3} + \beta_4 X_{t-1} + \sum_{i=1}^p \theta_i \Delta Y_{t-i} + \sum_{j=1}^{k+q} \phi_j \Delta Y_{t-j} + \epsilon_t, i = 1, 2, \dots, p; j = 2, 3, 4; i = 0, 1, 2, \dots, q \quad (8)$$

Where VM is the velocity of money, INFE is next quarter inflation index. MPR is the monetary policy rte. VPI is a normalized index obtained from the principal component analysis of the payment system instruments such as ATM, POS, Web pay. The VPI takes any of the denoted acronym, volpayinst index or valpayinst index. These variables serves as our near proxy for cashless or payment technologies. C or V is a 1+3 vector with the elements of INFE, VPI and either of M2G or MPR.

$$\Delta VM_t = \alpha_0 + \beta_1 VM_{t-1} + \beta_2 INFE_{2,t-1} + \beta_3 MPR_{3,t-1} + \beta_4 VPI_{4,t-1} + i = 1 p \theta_j \Delta VM_{j,t-i} + j = 2 k = 4 l = 0 q_j \phi_j, l \Delta V_{j,t-1}$$

$$\Delta VM_t = \alpha_0 + \beta_1 VM_{t-1} + \beta_2 INFE_{2,t-1} + \beta_3 M2G_{3,t-1} + \beta_4 VPI_{4,t-1} + i = 1 p \theta_j \Delta VM_{j,t-i} + j = 2 k = 4 l = 0 q_j \phi_j, l \Delta C_{j,t-1}$$

From the theory on velocity of money, Palivos et al. (1993) established money growth rate is expected to have inverse relationship with velocity of money. The Impact of MPR will depend on their ability to increased credit trading. Increase in interest rate lower the velocity of money when is less demand for loans.

We would also expect, the card less payment system would reduce hoarding of cash and thus increase velocity of money. As for the paper based system, when it facilitates trade transactions, velocity of money is bounds to increased in anticipated inflation rate is expected to have positive effect on velocity. Consumers will reduce demand for cash when they anticipate higher inflation rate and have no credibility on the monetary policy and this leads to increase in the velocity of money.

3.4 Estimation Procedure

This paper conduct unit root test to assess the data stationarity properties to ensure no variable is integrated at second order difference. The paper also adopt the dynamac package of Jordan and Philips (2020) in estimating the dynamic ARDL model.

4.0 Data Presentation and Discussion of Results

4.1 Analysis of Data

Variable	Mean	SD	Min	Max	kurtosis
vm	1.26	0.09	1.05	1.43	-0.66
mpr	12.02	2.26	6	14	1.42
infe	27.1	14.81	0.29	47.82	-1.34
m2g	2.95	3.25	-6.13	9.12	0.23
atm_vol	53701851.37	40170117.91	3730691	177000000	2.48
mobile_pay_vol	11099616.25	20099118.85	70731.67	80767467	3.26
pos_vol	12943025.79	18231937.13	39540	71616537.33	1.12
web_pay_vol	51937115.62	164176056.7	96442	742483316.3	8.26
atm_val	441710.61	389205.67	26906.67	1684701	3.3
mobile_pay_val	192943.7	384631.06	360.52	1669835	6.84
pos_val	104607.19	129672.94	621.79	505289.6	0.73
web_pay_val	3055326.02	9758586.46	1420	40091063	6.58

Table 2 displays the descriptive statistics for the variables adopted. The mean value of velocity of money is 1.26. The least velocity of naira is 1.05 and peaked at 1.43. The rate of variability measured as standard deviation is 0.09. The monetary policy rate averaged 12.02 per cent having minimum and maximum values of 6 and 14 per cent respectively. The standard deviation is 2,26 per cent. The mean growth of money supply is 2.95 having a least negative growth of 6.13 and maximum growth of 9.12 per cent. The standard deviation around the mean is large and stood at 3.25 per cent. The next quarter's inflation expectation average at 27.1 and the minimum and maximum values are 0.29 and 47.82 respectively. The mean volume of transactions among these payment instruments is larger for ATM, followed by web pay. Mobile pay has the

lowest mean volume. The level of variability is larger for Web pay which stood at 164.2 million. The least variability was observed for POS with a value of 18.2 million. As for the values of these transactions, the mean and standard deviation value of these transactions is larger for web pay and followed by ATM.

Table 3: Correlation between velocity of money and payment instruments

	VM	ATM	Mobile pay	POS
Volume of Cash Payment Technology				
atm_vol	-0.25			
mobile_pay_vol	-0.33*	0.86**		
pos_vol	-0.35*	0.85**	0.97***	
web_pay_vol	-0.49**	0.81**	0.90***	0.90**
Value of Cash Payment Technology				
atm_val	-0.33*			
mobile_pay_val	-0.38**	0.95**		
pos_val	-0.35*	0.94**	0.99***	
web_pay_val	-0.53**	0.80**	0.83***	0.79**

Note: ***p < 0.001; **p < 0.01; *p < 0.05; (.)p < 0.1

Table 3 displays the correlation between velocity of money and the payment instruments. The velocity of money has an inverse association with all payment systems. This association is below a moderate level for ATM, Mobile pay and POS. The association with Web pay is between -0.49 and -0.53 for volume and value of transactions respectively. The association among these variables is above 0.7 in almost all instances thus indicating a high degree of collinearity when the four variables are adopted in a single model of estimation. This gives room for a principal component analysis is displayed in Appendix (A1). However, the association between the normalized index of the principal component analysis and the velocity of money is displayed in Table 4

Table 4: Index of Cash Payment Technologies: Correlation

	volpayinst	valpayinst
Panel A: Volume of transactions		
vm	-0.39	-0.44
atm_vol	0.91	0.92
mobile_pay	0.85	0.88
pos_vol	0.72	0.78
web_pay_vol	0.7	0.75
Panel B: Value of transactions		
vm	-0.39	-0.44
atm_val	0.91	0.94
mobile_pay	0.7	0.77
pos_val	0.7	0.75
web_pay_val	0.73	0.8

From Table 4, the paper observed a moderate negative association between the velocity of money and various indices of the payment systems. Furthermore, these indices are well correlated with the various instruments of the payment system.

The stationarity properties of the variables were tested using the augmented dickey fuller (ADF) test and Philip Perron test (PP) and the results are presented in Table 5.

Table 5: Unit root test

	ADF		PP	
	Constan	Const& trend	Constan	Const& trend
Panel A: Level				
vm	-5.78**	-6.16**	-4.44**	-4.67**
infe	-1.45	-1.23	-2.7	-3.09
mpr	-3.23*	-2.24	-2.95*	-1.48
m2g	-4.82**	-4.85**	-4.41**	-4.41**
volpayinst_ind	1.26	-0.93	1.11	-1.92
valpayinst_ind	0.76	-1.33	0.53	-1.96
Panel B: First Difference				
vm	-8.87**	-8.82**	-9.18**	-9.05**
infe	-3.46*	-3.47	-10.73**	-10.71**
mpr	-3.38*	-4.22**	-4.13**	-4.74**
m2g	-6.02**	-5.95**	-8.28**	-8.19**
volpayinst_ind	-4.78**	-5.11**	-8.65**	-9.12**
valpayinst_ind	-4.55**	-4.72**	-7.43**	-7.66**

Note: ** 0.01, * 0.05 significance lev

The essence of these tests is to ensure none of the variables is only integrated at the second-order difference. The results in panel A showed the variables at level and only velocity of money and growth rate of money supply is consistently integrated at order zero. The results in panel B showed at first difference, all the variables are stationary. We now established, the variables are integrated at order one. We proceed with the estimation of the short-run and longrun parameters and test for the Pesaran et al. (2001) bounds cointegration test. For small sample sizes, the reported F statistics are that of Narayan (2005). The results are presented in Table 6

Table 6 shows velocity of money is cointegrated with any of the indices of payment systems, inflation expectations, and the growth rate of money. In addition, I estimated another set of models where growth rate of money was replaced by monetary policy rate and the same cointegrated relationship exists. The results are displayed in appendix (A2). The models are free from autocorrelation but the residuals are not normally distributed in all cases. The short-run estimates as explicitly displayed in Table 6 indicates, the payment system, both volume and value have a statistically significant positive impact velocity of money at both 5 and 10 per cent levels. The same conclusion also applies to inflation expectations having positive impact on velocity of money. The growth rate of money impact is positive but not statistically significant at a 5 per cent level in the short-run.

The estimated longrun relations are displayed in Table 7 for all the estimated models. The longrun relationship indicates with an exception for monetary policy rate, all other variables have a negative impact on velocity of money in the longrun. However, at a 5 per cent level of significance, the index of payment system and inflation expectations have significant impact.

For a more comprehensive view of VM response to the right-hand variables via simulation, I present a simulation of one standard deviation shock to these variables displayed in Figure 7 through 10. Panel A through C shows the varieties of the response in velocity of money (VM) to one shock in the index of the payment system (in volume) represented as volpayinstindex. Panel D through F is for shock in inflation expectations and panel G through I is for shock in money growth. Panel A, D and G show the response of VM to the respective shock. B, E and H show the changes in the VM mean response over time and C, F and I show the changes in VM. This setting is applicable to other Figures under the simulation framework. Focusing on Panel A, D and G, the index of the payment systems shows a consistently significant impact on VM over time. A positive shock to the index produced an instantaneous increase in VM, then followed by a stable positive response and then decreases gradually. The response of VM to the same level of shock to inflation expectations decreases on impact, followed by a hump shape which fades out to a steady state.

Table 1: Longrun relations

	Estimate	Std.error	t-stat
Panel A: Volume of transactions			
1.1.volpayinst_index	-0.29	0.06	-4.57
1.1.infe	-0.05	0.01	-3.67
1.1.m2g	-0.01	0.01	-2.20
Panel B: Value of transaction			
1.1.valpayinst_index	-0.33	0.09	-3.68
1.1.infe.1	-0.04	0.01	-3.00
1.1.m2g.1	-0.02	0.01	-1.77

The response of VM to money growth is relatively positive and stable throughout. However, the latter two shocks were not as statistically significant as that obtained for the payment system. The same conclusion is arrived at using an alternative index (i.e payment system, in value) represented as valpayinstindex (index of value of payment

instruments). The results for another model where money growth is replaced with monetary policy rate are displayed in the appendix and the same conclusions are obtained for the indices of

payment systems and inflation expectations. Meanwhile, the response of VM to a shock on MPR at first decreases, followed by a sharp increase and then level out on a positive trajectory.

Table1: Unrestricted Error Correction Model

Parameters	(1)	(2)	Parameters	(1)	(2)
(Intercept)	0.54*** (0.10)	0.54*** (0.11)	l.1.m2g	-0.01* (0.01)	- 0.02
l.1.vm	-1.18*** (0.21)	-1.14*** (0.24)	ld.1.infe	0.03* (0.01)	0.03
ld.1.vm	0.37* (0.16)	0.29 (0.19)	ld.2.infe	0.05** (0.02)	0.04* (0.02)
d.1.volpayinst_in ex	0.61** (0.21)		ld.3.infe	0.03 (0.01)	0.03
l.1.volpayinst_in x	-0.34* (0.09)		ld.1.m2g	0 0.00	0.01 (0.01)
ld.1.volpayinst_i ex	0.41 (0.29)		ld.2.m2g	0.01 0.00	0.01 0.00
ld.2.volpayinst_i ex	0.65* (0.28)		d.1.valpayinst_in ex		0.48* (0.20)
ld.3.volpayinst_i ex	0.56 (0.28)		l.1.valpayinst_in x		- 0.37* (0.11)
ld.4.volpayinst_i ex	0.66* (0.30)		ld.1.valpayinst_i ex		0.45 (0.27)
ld.5.volpayinst_i ex	0.74* (0.29)		ld.2.valpayinst_i ex		0.53* (0.24)
d.1.infe	-0.03* (0.01)	-0.03* (0.01)	ld.3.valpayinst_i ex		0.53 (0.26)
d.1.m2g	0 0.00	0 0.00	ld.4.valpayinst_i ex		0.79* (0.36)
l.1.infe	-0.05** (0.02)	- 0.05** (0.02)	ld.5.valpayinst_i ex		0.69 (0.34)

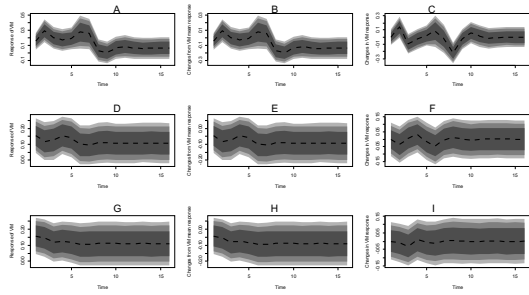


Figure 7: One standard deviation shock to Volpayinstindex, inflation expectation and growth rate of money

4.2 Discussion of Findings And Policy Implications

The index of payment system has a negative effect on the velocity of money. This is contrary to our expectations. To better understand this index, we need to examine the components of the payment system measured in this study which is ATM, POS, Mobile and Web pay. These instruments are driven by cards. The ATM facilitate ease of cash withdrawals which can lead to an increase in demand for money and invariably lead to reduction in the velocity of money. In addition, the rate of POS users has increased tremendously primarily serving as a retail platform for cash withdrawals upon charges. This implies this system when deploy for cash withdrawals encourages cash hoarding which can translate to a decrease in velocity of money. Basci and Gherbi (2020) observed, when the propensity to spend is low, as money accumulates in the hands of agents, the velocity of money drops.

An increase in inflation expectation should lead to a decrease in demand for money which in turn leads to an increase in velocity of money. In other words, an anticipated increase in inflation will lower the demand for money and thus leads to an increase in velocity of money. This relationship has been supported by Chowdhury (1994) and Nampewo and Opolot (2016). We observed a contrasting finding that in the longrun, velocity of money decreases due to some anticipated increase in inflation expectations. This finding is supported by Ardakani (2022) observation that velocity of money decreases after a shock on inflation expectation. The response of velocity of money to inflation expectation is similar to the impact economic uncertainty has on velocity of money. According to Anderson et al. (2015), an increase in uncertainty can induce an increase in

money demand and eventually lower the velocity of money. Hence the anticipated increase in inflation expectations is perceived as an increase in uncertainty. One of the available arguments given for the negative effect of consumer inflation expectations can be deduced from the findings of Premik and Stanistawska (2017) that consumers with higher inflation expectations experience a decrease in buying attitude and an increase in savings attitude. Bachmann et al. (2015) earlier mentioned higher consumer inflation expectations could signify a state of uncertainty. The consumer may want to restrict the demand for money when they perceive difficult times ahead.

In the longrun, the growth rate of money has negative significant impact on the velocity of money. This finding is justified by the Friedman (1984) hypothesis that the declining velocity of money can be attributed to uncertainty in money growth. Our finding is also supported by the results obtained by Palivos et al. (1993). According to the authors, this is applicable only when the cash-in-advance constraint is not binding. The explanation from the authors is also applicable to our case. An increase in the growth rate of money amidst increasing price levels will render credit trading less feasible and thus intensify a downward movement in velocity of money.

MPR has a positive impact on the velocity of money and this effect is contrary to our expectation of an increase in interest rate will render the cost of borrowing high and lowers the demand for loans. Rather, this impact is insignificant. This theory may only hold when the consumer does not anticipate an increase in economic uncertainty which leads to increase in demand for money.

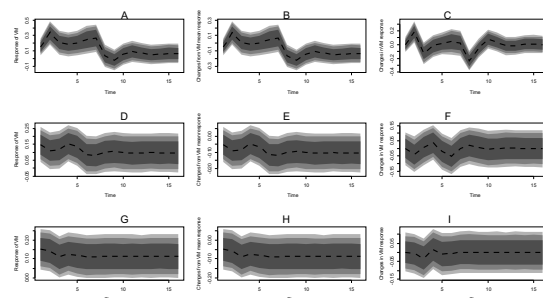


Figure 1: One standard deviation shock to Volpayinstindex, inflation expectation and growth rate of money

Figure 8: One standard deviation shock to Volpayintstindex, inflation expectation and growth rate of money

5.0 Summary, Conclusion and Recommendations

The central bank of Nigeria redesign and introduction of the new currency notes was accompanied by new financial reforms on the fast-evolving electronic/digital payment system. These policy actions are expected to render the monetary policy instruments more effective for price stability and achieve a functional cashless economy. In midst of increased adoption of digital payment systems, we examined the relevance of the quantity theory and its assumption of a constant velocity of money. More precisely We adopt the unrestricted error correction model on historical quarterly data from 2010 to 2022 and examine the nexus between the velocity of money, average price level, and the aggregate volume of the existing electronics/digital payment systems in Nigeria.

The constant velocity of money is central to the proportionate relationship between growth rate in money supply and price level. Our findings indicate velocity of naira is unstable within the study period in Nigeria rendering the classical postulation of a change in the growth rate of money supply will lead to proportionate change in price level invalid. Also the velocity of money is

cointegrated with the adopted variables. We also observed the payment system has a positive impact on velocity in the short-run and a negative impact in the longrun.

Further work is needed on the effects of each payment instruments on velocity of money and demand for money in Nigeria. In other to attain a targeted threshold for velocity of money, the propensity to spend should be improved upon as these will boost the real sector and invariably steam the upward trend in the price level. The decrease in velocity of money is also a sign of heightened difficulty in the economy. It is recommended, to boost velocity of money in an accepted threshold to boost the real sector growth, uncertainties should be eliminated. We recommend a more innovative approach to monetary policy decisions as the monetary policy tightening might be ineffective since credit trading does not only rely on the cost of loans, but on the confidence, an economic agent has in the economy.

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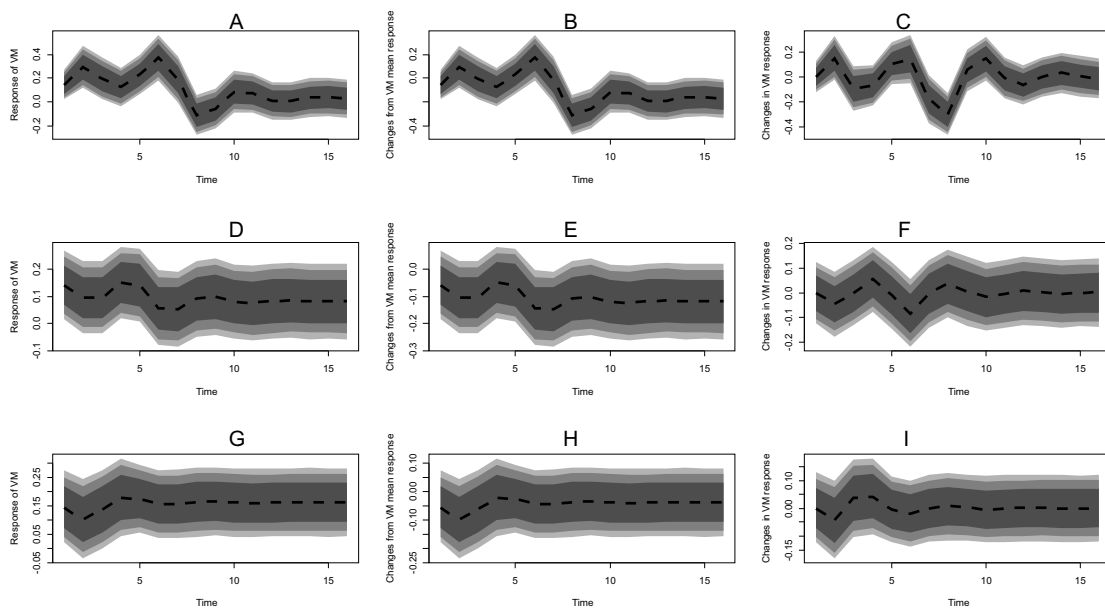
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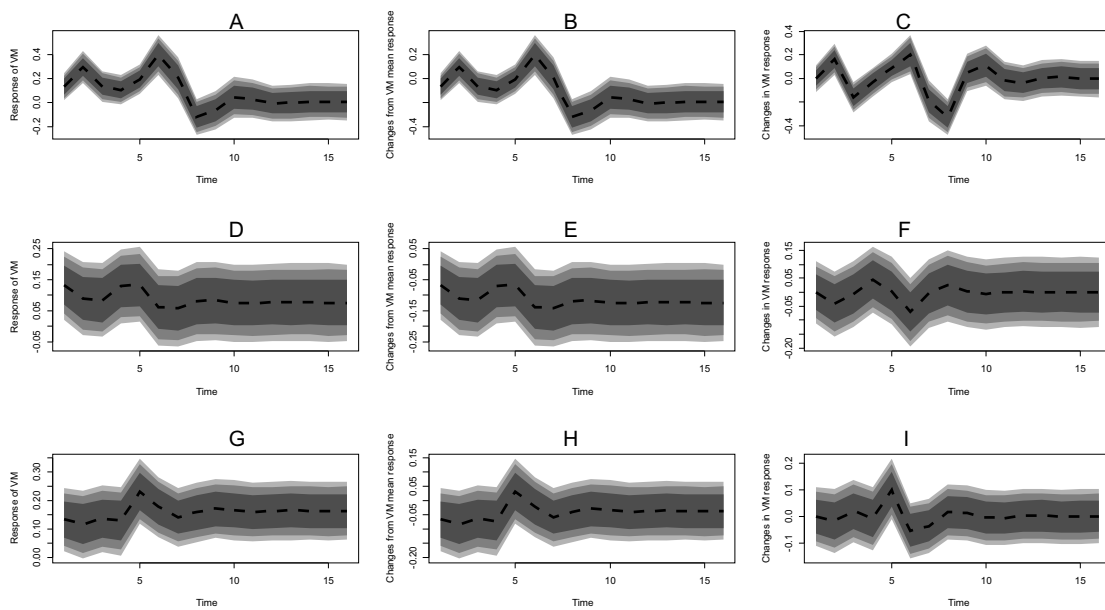
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APPENDIX



: One standard deviation shock to Volpayintstindex, inflation expectation and



	PC1	PC2	PC3	PC4
Summary				
Volume of transactions				
Standard deviation	4.196	0.923	0.443	0.383
Proportion of Variance	0.936	0.045	0.01	0.008
Cumulative Proportion	0.936	0.982	0.992	1.00
Value of transactions				
Standard deviation	4.62	1.449	0.327	0.168
Proportion of Variance	0.905	0.089	0.005	0.001
Cumulative Proportion	0.905	0.994	0.999	1.00
Eigen Values				
Volume	17.606	0.852	0.196	0.147
Value	21.344	2.1	0.107	0.028
Eigen Vectors				
Volume of transactions				
atm_vol	0.185	-0.11	-0.904	0.37
mobile_pay_vol	0.493	-0.385	-0.165	-0.763
pos_vol	0.574	-0.484	0.394	0.53
web_pay_vol	0.627	0.778	0.036	0.005
Value of transactions				
atm_val	0.209	-0.15	0.961	-0.101
mobile_pay_val	0.561	-0.443	-0.119	0.689
pos_val	0.455	-0.47	-0.247	-0.715
web_pay_val	0.659	0.748	-0.033	-0.061

Appendix: A2

Statistical models

Parameters	Model 1	Model 2	Parameter s	Model 1	Model 2
(Intercept)	0.52*	0.42*	ld.1.infe	0.03*	0.02
	(0.18)	(0.16)		(0.01)	(0.01)
l.1.vm	-1.36***	-1.29***	ld.2.infe	0.06**	0.05**
	(0.17)	(0.17)		(0.02)	(0.02)
ld.1.vm	0.46**	0.33*	ld.3.infe	0.05**	0.05**
	(0.13)	(0.13)		(0.02)	(0.01)
d.1.volpayinst_inde x	0.48^..		ld.1.mpr	-0.01	-0.02

	(0.25)		(0.02)	(0.01)
l.1.volpayinst_in dex	- 0.51** *	ld.2.mpr	0	-0.02
ld.1.volpayinst_in dex	(0.11) 0.63^..	d.1.valpayinst_in dex	(0.02)	(0.01) 0.58**
ld.2.volpayinst_in dex	(0.34) 0.66^..	l.1.valpayinst_in dex		(0.18) - 0.59** *
ld.3.volpayinst_in dex	(0.33) 0.87*	ld.1.valpayinst_in dex		(0.12) 0.58*
ld.4.volpayinst_in dex	(0.33) 1.20**	ld.2.valpayinst_in dex		(0.26) 0.68*
ld.5.volpayinst_in dex	(0.34) 0.72*	ld.3.valpayinst_in dex		(0.25) 0.82**
d.1.infe	(0.31) -0.04* -0.04*	ld.4.valpayinst_in dex		(0.25) 1.49** *
d.1.mpr	(0.01) -0.01 -0.02 -0.01	ld.5.valpayinst_in dex		(0.32) 0.90*
l.1.infe	(0.02) 0.07** * 0.06** *	ld.3.mpr		(0.32) 0.03^..
l.1.mpr	(0.01) 0.01 (0.01) 0.02			(0.01)
Response var:	VM	VM	VM	VM
Control var:	volum e	value	volum e	value
Fstat:	16.12	18.03	16.12	18.03
lb:	3.55	3.55	3.55	3.55
ub:	4.8	4.8	4.8	4.8
tstat:	-7.78	-7.69	-7.78	-7.69
AUTC:	2.34	2.09	2.34	2.09
SW_test:	0.99	0.98	0.99	0.98
R ²	0.84	0.88	0.84	0.88
Adj. R ²	0.68	0.76	0.68	0.76
Num. obs.	38	38	38	38
RMSE	0.05	0.04	0.05	0.04

Note: ***p < 0.001; **p < 0.01; *p < 0.05 ; (^..)p < 0.1.

Analysis of the Politics of Fuel Subsidy Removal in Nigeria: Economic Implications



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Abstract

The objective of this study is to examine the implication of oil subsidy removal on the Nigeria economy and was anchored on the endogenous growth theory. The study was designed to be a descriptive study and analyzed using content analysis technique. The findings of the study revealed that poor governance structure and corruption in NNPC was the major cause of the sufferings of Nigerians. It concluded that for subsidy to work, the refineries must be fixed to raise local production and government should reduce fiscal spending.

Key words: Politics, Petroleum subsidy Removal, Economy, Nigeria

1.0 Background to the study

Nigeria was the sixth largest producer of crude oil but currently dropped to be the world's tenth most petroleum-rich nation and very rich in natural gas reserve and now overtaken by Angola. Upon the discovery of crude oil in commercial quantities, Nigeria established four existing refineries and the combined capacities of these refineries exceeded the domestic consumption of refined products in Nigeria. Oil and gas exports alone accounted for more than 95% of Nigeria's export earnings. The country's proven oil reserves are estimated at between 16 and 22 billion barrels while some sources claimed there could be as much as 35.3 billion barrels (Akpadolu, 2014).

From 1970, Nigerian economy began to experience economic depression. The adverse impact of this economic crisis became monumental in the early part of 1980, as the nation began to witness a dramatic decline in economic performance. All indices of economic health from 1970 to date have been reading negative among which are a near triple-digit rate of inflation, high unemployment rate, low industrial capacity utilization of less than 30% with a clear justification of the nation's four refineries operating far below their installed capacities, as they were more or less abandoned during the military era due to corruption, thereby skipping the routine and mandatory turnaround maintenance that made products importation inevitable, low agricultural output, a depreciating national currency, balance of payments deficits, burgeoning external debt and insecurity among others. All this tell the story of a prostrate economy.

The arrival of petroleum did not only lure Nigeria into the debt trap, it also diverted the country's

attention from diversifying the economy and developing other sources of revenue and created an insatiable taste for foreign consumer and industrial goods with the booming oil revenue. Nigeria was importing virtually everything she needed including tools, pick, wood, sand and saw. It was during the same period of oil boom that Nigeria was lured not only into the courts of the credit agencies of Europe but also into the net of international capital market. Thus, Nigeria's mounting debt burden was the direct consequence of the high expectations founded on the oil boom (AC-Ogbonna, 2023).

Historically, oil subsidy in Nigeria could be traced back to 1973 when the federal government started uniform pricing of petroleum products. Then the northern region cried out that the high cost of the petroleum products was retarding development in their region. As at that time, a litre of fuel in Lagos was three shillings and five pence, while it was five shillings ten pence, in a place like Maiduguri. The price disparity was quite glaring but was understood to cover the cost of transportation from Lagos to the north and based on the public outcry by the northerners, the federal government felt that the only way to solve such problem and speed up development in the north was to have uniform pricing of petroleum products across the nation. The difference in the cost of transportation would now be cushioned under the scheme called Price Equalization Fund. (PEF). This was the fund set up where transporters would be able to make up for the cost of moving products from one location to the other.

In 1975, despite this intervention by the federal government, there was acute fuel scarcity in Nigeria which led to heavy riots in Nigeria and the government in a bid to bring an end to the lingering crisis set up a panel of inquiry headed by

the late Justice Chukwudifu Oputa and whose panel made a recommendation to the government for implementation. In 1976, the Nigerian National Petroleum Corporation (NNPC) had to put in place offshore processing arrangement to further forestall occurrence of such acute scarcity that could further destabilize the economy. The processing of this refining arrangement in offshore Caribbean Island was well coordinated by the Shell petroleum Development Company Ltd on behalf of the NNPC. Though there was no proper memorandum of understanding as to who got what and at what rate based on the barrels of crude oil refined and this may have possibly laid the foundation for certain persons to take advantage for such lapses to circumvent the process for personal gain and this was the beginning of the corrupt practices in NNPC because the volume of gasoline and diesel that would have come from the crude taken offshore for refining would have been estimated and agreed upon by both the NNPC and the refinery abroad as facilitated by shell petroleum. Whatever surplus that is gotten from diesel and fuel oil was always sold and the proceeds used to offset the processing and transportation to Nigeria of the refined products. The excess of what was left was paid into the Central bank of Nigeria (NNPC, 2000). The difference between the international price of a litre of petroleum products and the cost at the pumps here in Nigeria, has been growing from 1973 to date and this has had a negative effect on the standard of living of Nigerians and all indices of health status of the economy are reading negative. All these could be attributed to the poor governance structure, corruption and lack of political will and the collapse of local refining capacity which had adversely affected the

productive capacity of the Nigeria economy.

1.2 Statement of the Problem

In the recent pronouncement by the President during his inaugural speech on May 29, 2023 he said, petroleum subsidy was not captured in the 2023 budget, and therefore petroleum subsidy is gone. Immediately, petroleum filling stations adjusted their pump prices and queues resurfaced at the filling stations. Fuel subsidy removal has become an annual ritual in Nigeria that must be performed by any administration that comes to power, yet Nigerians have not seen or benefitted anything from any subsidy removal. From 1976 to date, due to the poor memorandum of understanding signed between NNPC and shell petroleum during the offshore processing arrangement, corruption had totally crippled NNPC with the four refineries totally broken down and abandoned without any framework designed to carry out periodic turn around maintenance and due to corruption in Nigeria, the government and NNPC saw it as more economical to fully depend on fuel importation without fixing the refineries.

During the electioneering campaign of Muhammadu Buhari in 2014-2015, he said fuel subsidy was a fraud but when he was sworn in as the President and Commander-in-Chief, he removed subsidy eight times, fuel scarcity and queues became the order of the day, thereby inflicting more hardship on Nigerians with only the privilege few benefiting from the fuel subsidy removal.

Despite the existing four refineries in Nigeria and the intervention window by the petroleum equalization fund (PEF), Nigeria is still the largest net importer of petroleum products and in some cases transport crude oil to Europe for refining before

bringing them back and sell to Nigerians at a high cost because the refineries have broken down without any turn-around maintenance for years.

Petroleum subsidy had emerged for two main reasons. First, since Nigeria is an oil producing nation, it is thought that Nigerians should enjoy petroleum products at prices lower than the international market price and secondly, it was easier to administer as the government also owned the production facilities in the name of refineries and charge whatever price it chooses which of course will be determined by the forces of demand supply of the petroleum products. Before subsidy on diesel and kerosene were removed, the products were sold at #80 and #85 respectively between 2000-2015 and Nigerians were told that the subsidy would guarantee product availability at a very low competitive prices determined by the forces of demand and supply and further discourage damage to oil pipelines, smuggling and diversion of petroleum products to neighboring countries but despite all that, the situation became worst without any proper check and balances. Today, these two petroleum products are sold at more than #1,000 per litre and no longer within the reach of the common man. Kerosene is the only petroleum products consumed by the majority of the rural and urban poor, yet the price of this product is not within the reach of such a common man in Nigeria and this has further inflicted more hardship on the economy.

Due to the inherent high-level corruption in the system, all the four refineries were virtually grounded. Subsidy and the method of financing exposed the inherent weaknesses in the system that ensured that there was continuous and declining investment in the refineries overtime.

Because of the lack of required investment, production began to decline and queue began to appear at the pumps, starting in the late 1990's till date.

The findings of this study is that fuel subsidy removal has been compounded by the collapse of the refineries, the price of crude oil was going up in the international market and those corrupt Nigerians within the petroleum industry ensured that the importing fuel was the only healthy option for Nigeria and never wanted the refineries to work till date. The questions, therefore, are; does petroleum subsidy removal entail a further pain and hardship on the masses or was it meant to alleviate their sufferings? For how long should fuel subsidy be removed in Nigeria before Nigerians could enjoy the benefits from oil? Does fuel subsidy removal depend on production or consumption? Does appropriate pricing of petroleum products guarantee product availability and discourage smuggling? If so, how many of such smugglers have the government security agencies arrested and reprimanded?

The cost to the economy is even greater. What started as a way of ensuring that Nigerians enjoy the resources that they have, has become an albatross on the economy because since the refineries have been ruined, for which we cannot completely disentangle the effects of subsidy, the petroleum subsidy continues to grow and certain few privileged Nigerians within the corridors of power in collaboration with petroleum major marketers have been benefitting from the deal at the expense of the majority of Nigerians. As no tangible refined production takes place, the cost of subsidy to the economy include the opportunity cost of the investments that would have been made if petroleum products were correctly priced or at marginally, it includes the lost employment to

other countries we import from, loss of foreign exchange earnings, loss in capacity building and the waste in the industry

The major objective of the study therefore is to critically examine the implication of the petroleum subsidy removal on the standard of living of Nigerians.

2.0 Literature Review and theoretical framework

2.1 Conceptual Review

2.1.1 Politics of Oil Subsidy

Since the economy of any nation depends on politics to function, corruption has created a wide gap between politics and economic performance driven by economic policies made by political considerations. Buhari (2015) during his campaign tour across the nation said that there was nothing like petroleum subsidy in Nigeria. Subsidy is a fraud and the same Mohammadu Buhari who doubled as the Minister of Petroleum had at different times within his administration removed subsidy ten times between 2015-2023 without fixing the four refineries in Nigeria. Before he left office in 2023 he borrowed 800 million dollars from the World Bank and paid 250 million dollars to the consultants who facilitated the loan syndication for Nigeria as palliatives to poor Nigerians to cushion the effect of subsidy.

From 2009 to 2023, the pump price of petroleum products had been increased severally without apology to Nigerians by the administrations of president Olusegun Obasanjo and Mohammadu Buhari respectively, yet the scarcity of petroleum products and long queues at petroleum filling stations became a nightmare, with diversion of petroleum products on the increase, refineries not yet working and corruption seriously hitting the oil sector from all angles.

Though late President Umaru Yar'Adua reduced the pump Price of premium motor spirit (PMS) by 50 percent and the increase on kerosene was reversed entirely due to the sufferings Nigerians were undergoing. Obviously, it is the same corrupt government officials within NNPC and their collaborators that never wanted the refineries to function making Nigeria to depend on importation of refined products to meet the domestic needs and sometimes transport the crude to be refined in Russia and brought back to sell to Nigeria at a high cost. Even Late Sani Abacha agreed that subsidy removal was more political than economic gain and this prompted him to reverse the price increase at time he was in power.

Appropriate pricing of petroleum products has always been the excuse and some person would ask what should be the appropriate price of oil any point in time and what are the key drivers of such appropriate pricing. The oil industry and particularly the Nigeria National Petroleum Corporation (NNPC) used to look at the oil price in relation to import parity. That is, the prevailing price of oil in the world market. If ever there was going to be anything that would be given up in form of discount, it would just be a little money to reflect the fact that Nigeria is a producing country. But when you have the international price of oil at a certain level and the price level in Nigeria is just about a quarter of what is obtainable elsewhere, then NNPC would start to talk about subsidy. However, one basic feature of public enterprises the world over and in particular the less developing countries is inefficiency. Inefficiency leads to waste of economic resources, corruption, slow growth, debt overhang and over dependence on government support even when the activity is apparently a profitable one. This might be as a result of the already agreed fact in some quarters

that there is a tendency for government ownership to bring about laziness, fraud, bureaucracy, corruption and social vices among others.

The economics of subsidy, centers on its effectiveness, implications for poverty and economic growth nexus. The absence of functional refineries, productive facilities at home, lack of investment in the economy, the huge sums of money wasted on failed turn-around maintenance, corruption in the name of subsidy and inefficiency in production clearly showed signs and symptoms of a prostrate economy. The argument has been that the removal of subsidy will escalate poverty in Nigeria. The link between subsidy and poverty include the effect of the increase in petroleum products on transport costs, increase in cost of doing businesses, energy bills for those that rely on petroleum powered generators and the cost of intermediate inputs that rely on transportation between places.

Assuming the four refineries were functional and NNPC is refining locally, the price would not be as much as it is now. The question now is what should be the price of petroleum products if it is refined locally. That is considering all the various factors which are cost of crude oil, processing, transportation and handling at the pump price. Subsidy is based on production and not consumption. If the government is very much sincere with their economic policies of subsidy removal, the four refineries must first be made to be functional, producing and refining locally and private refineries allowed to come on board, this will then justify the removal of subsidy and petroleum products will be distributed at a cheaper and competitive rate which will in turn have a positive multiplier effect on the standard of living in Nigeria. Even the ministry of petroleum admitted at a time that if we were refining crude oil

locally, the price would not be as high as it is today. When Olusegun Obasanjo came to power, he advocated for a private refinery, which was conceived in good faith. But the problems were just there which is corruption and poor governance structure. And it was not driven in such a way as to encourage people to establish new ones. A new refinery would cost about \$500million for a 50,000 barrel per day refinery. But if it is one that is dismantled and rebuilt here in Nigeria, a 50,000 barrel per day refinery cannot cost more than 300,000 million depending on the age of the refinery and these were what gave rise to modular refineries in the Niger Delta illegally refining adulterated fuel and selling to consumers.

If we look at the present situation in Nigeria, nobody can deny the fact that Nigerian consumers are not enjoying the so-called gift of nature because fraudulent key stakeholders in collusion with some government officials and major petroleum marketers have been able to manipulate the government to insist that the price of oil should be kept at a very high level.

All over the world the issue of the price of oil is a major issue. In the United State, it has become one of the issues in the last election campaign. There are so many other countries that are battling the price of oil largely because the motorists and consumers are paying through their nose to be able to buy a litre of petrol as the case may be. But looking at certain macroeconomic variables in such countries especially poverty and standard of living, they are better off than Nigeria because money generated from subsidy is reinvested into the key sector of the economy to effectively fight poverty and stagnation.

In Nigeria, due to corruption and lack of good governance structure, some privileged Nigerians

are enjoying what is meant for the entire Nigerians because the government has been putting a lot of money into importation of products and they are benefitting from the fraud without fixing our existing refineries. Petroleum products are some of the most important sources of energy and one of the key drivers of economic growth in any modern nation. No modern industrialized nation will survive without them, nor will a developing nation attain a meaningful level of development without these petroleum products. Industrial plants and processes need full oil, diesel, kerosene, lubricants, hydraulic fluids and so forth, while both manufacturing industries and domestic consumers require gas and kerosene for heating and cooking respectively. Without petroleum products, service industries will be grounded, commercial transportation either in the form of vehicular transportation, commercial aviation, or mass transportation of goods and people either by rail, road and sea, will be unthinkable.

According to Word Bank (2017), a sizeable number of private firms depend on petroleum powered generating sets for their energy supply as electricity supply is grossly inadequate and or unreliable. The first two effects on the firm translate into higher cost of doing business which will affect the cost of intermediate and finished goods. This increase in the cost of doing business will also affect the output level and profitability of firms as they operate within their budget constraint. In addition to private generating sets the power holding company of Nigeria (PHCN) also depends on petroleum products to carry out some of its operations so electric energy bill may also be affected.

Finally the effect on the different firm's behavior causes changes in the growth rate of the different

sectors and GDP. The effect on growth rate is that Nigeria has created more job losses from subsidy removal. Private concerns are the engines of economic growth and depend on petroleum products to enhance their operations. With the high cost of petroleum products, these firms will spend more resources powering their operations which will in turn have adverse effect to the performance of such firms, making them unsustainable, thereby increasing the poverty rate, preventing expansion and investments, thus, negatively affecting our economic growth.

Therefore, the solutions to Nigeria's socioeconomic and political problems lie in the hands of the leaders and the people. To reduce the costs material inputs and basic necessities, the government must sincerely deregulate the downstream petroleum industry. The belief was that transferring state enterprises to the private management will enhance efficiency, output expansion and meet the high request for the provision of their services. The downstream sector is involved with the production, supply, transportation, storage, marketing, distribution, and training. The high cost of petroleum products has negative distributive consequences on the economy because oil is used in the manufacturing and distributions of other goods and services.

Presently the federal government has almost full ownership and management of this sector. And this has curtailed competition; deregulation without real competition would not bring down the prices of commodities. Innovation in technology should get priority attention; and new and more efficient refineries should be constructed, and the four existing refineries privatized. Nigeria may not progress beyond its current level if it does not change the way it conducts its affairs especially as

it concerns advice from foreign powers (such as Nigeria membership of OPEC) and we must begin to learn on how to conduct our domestic affairs in a manner that will guarantee equity, sustainability and improved standard of living.

2.2. Empirical Review

The issue of fuel subsidy had generated wide debate, concerns have been raised by certain persons in discussing fuel subsidy removal. Zainab (2023), the honorable minister of Finance under former President Mohamadu Buhari administration said that it will be more appropriate for the government to begin the implementation of its fuel subsidy removal in the second quarter of the year and Nigeria has budgeted 3.6 trillion naira for petroleum subsidy removal and has also recently received 800,000,000 dollars from the world Bank to share as palliatives to the 50,000,000 Nigerians who are poor in order to cushion the effect of the proposed subsidy removal in June 2023. It was also reported that 23.3 billion dollars was paid as consultancy fee for intervention fund received from the World Bank. The author presented the position of the government but the question here is, with the 130 million Nigerian living below poverty line and the current excruciating pains many Nigerians are passing through to earn a living, what methodology did the Nigerian government use to determine those who are poor in Nigeria?. How was the data of poor Nigerians generated and analyzed? How much will each person get to actually cushion the effect of poverty?. The Minister did not also explain to the general public if the objectives of the previous subsidy removal was achieved and how such achievement was made especially as it concerns diesel and Kerosene. If yes, who benefits from the

subsidy removal? She did not tell Nigerians what the government has done about the collapsed of four refineries for years and why such refineries could not be fixed in order to facilitate local refining of crude oil. All these constituted the gap this study intends to address.

CSEA (2023), following the presidential declaration of the removal of fuel subsidy in Nigeria, the Nigerian National Petroleum Company Ltd. (NNPC) has increased its retail gasoline prices after the formal pronouncement of the subsidy removal by at least 200 percent, to between N488 and N555 per litre nationwide. This has resulted in higher cost of transportation and can considerably affect the cost of manufacturing, the overall price level and ultimately, the standard of living. Therefore, improving refineries and lowering the imports of refined petroleum, creating a reliable transportation infrastructure for the populace, and utilizing more public-private partnerships should be the government's next top priority in order to mitigate these consequences. The nation's poorest and most vulnerable people should be given safety nets in the form of social protection programs, as well as a reassessment of the minimum wage. Policymakers must carefully evaluate their efforts to carry out the required effective policies in order to guarantee that the money saved by removing subsidy is allocated to vital sectors, such as education, agriculture, energy, health sector, etc. Only if the government eliminates income leakages and assures that all current and future borrowing are directed towards viable capital projects that would strengthen the economy and provide higher Returns on Investments (ROI) would this be possible. The author was totally in agreement with the position of this study but did not further interrogate how previous subsidies had favored Nigerians.

According to El-Rufai (2021), during the National Economic Council (NEC) committee he chaired to work out a framework on what to do with the resources if the subsidy was removed in collaboration with the world Bank in 2021, he said that the federal government's budget for roads was N200 billion in 2021 and the government was projecting to spend N1.2 trillion on subsidies and this necessitated the call for removal of subsidy. In November 2021, government announced its plan to remove the fuel subsidy and replace it with a monthly N5,000 transport grant for poor Nigerians. From the position of the National Economic Committee, it is very clear the problem of Nigeria is leadership and poor governance structure. Having removed subsidy, the proceed was shared as transport palliative to poor Nigerians. The author did not tell Nigerians, who are the poor Nigeria, how were the data for poor Nigerians generated and the methodology adopted in disbursement. All these constituted the gap.

In a paper presented by Mustapha (2016) in Abuja, in reaction to the much-debated subsidy removal. He said that it was difficult to resist the raging oil subsidy debate as arguments are both logical and idiotic. He pointed out that the beneficiary of any subsidy removed in a country should be the ultimate consumer and not the middlemen and their collaborators within NNPC and the government. Because of the frustration with NNPC's inability to make its refineries functional and government's own inability to deregulate the downstream sector, the idea of setting up the Petroleum Products Pricing and Regulatory Agency (PPPRA) became imperative. The PPPRA introduced a formula by which any one can produce or import products and be paid the difference between what is determined as

reasonable cost of the product and what discounted price government wants the product to be sold to Nigerians, thus the subsidy. Under this arrangement, NNPC began to pay commercial rates to the federation account for its daily crude oil lifting. And consequently, the monopoly of producing or importing refined products was broken and other petroleum marketers could bring products into the market and expected to be reimbursed the subsidy as determined by PPPRA. But given the step taken by NNPC, corruption had enveloped NNPC and the process was circumvented to benefit only the few rich individuals. This study agreed with the position of the author as the issues raised in his discussion was the problem that instigated this study as the gap. Eme (2011) observed that the Nigerian downstream oil sector is characterized by underfunding, nationwide shortage of petroleum products, product adulteration, vandalism and poor maintenance of the few facilities, especially the turnaround maintenance (TAM) of the nation's four refineries. The oil pipelines and depots also suffered many years of neglect and the vandalism negatively impacted on the operational efficiency of the oil industry, giving rise to the call for the deregulation of the petroleum industry. In a similar circumstance, Fawenhinmi (2009) opined that this situation has unleashed untold hardship on Nigerians and affected prices of agricultural products as well as manufactured goods, and retarded economic growth in Nigeria. He observed that the prices of domestic commodities in the market was hitting the roof beyond the reach of the common man and many people have therefore resulted to hoarding of fuel in their homes. The consequence of this practice is the rampant fire outbreaks which destroy lives and properties each time there was scarcity of fuel in

the country. The fallout of the above scenario was incessant fuel shortage, fuel price hike, and rise in the prices of essential commodities.

The study was anchored on the New Growth Theory, otherwise called endogenous growth theory developed by Paul Romer in (1986) and Robert Lucas (1988). It provides a theoretical framework or microeconomic foundations for analysing macroeconomic model, persistent GNI growth that is determined by the system governing the production process rather than by forces outside that system. Time series analysis has shown that economic and commercial activities and GDP co-integrate when additional variables such as energy prices or other production inputs are included. The primary driving force of economic growth is the growth of productivity, which is the ratio of economic output to inputs (capital, labour, energy, materials and services (KLEMS). Endogenous growth theory holds that investment in human capital, innovation, and knowledge are significant contributors to economic growth. The principal motivations of the new growth theory are to explain both growth rate differentials across country and a greater proportion of the growth currently observed. Endogenous growth theorists seek to explain the factors that determine the size or the rate of growth of the GDP that is left unexplained. Moreover, economic growth in developing countries is frequently impeded by inefficiencies arising from poor infrastructure, inadequate institutional structures, and imperfect capital and goods markets. Endogenous growth theory overlooks these very influential factors, its applicability for the study of economic development is limited, especially when country-to-country comparisons are involved. All economic processes require energy. Therefore,

energy is always an essential factor of production and it is capital intensive and if provided could stimulate the economy and improve standard of living in Nigeria.

3.0 Methodology

The study was designed to be a documentary research and was analyzed using content analysis technique based on the various information and data generated from the field and among stakeholders. As earlier indicated in the research methodology, the study adopted content analysis technique. This technique is justified on the ground that despite the densely well written publications in the news media and government policy documents on the issues of subsidy removal, the focus of the study was based on the cause and effect relationship which is based on qualitative data collection methodology and findings based on description of situation on ground.

3.1 Data presentation and analysis of economic implication of fuel subsidy removal

Nigeria is an import dependent economy, despite her abundant natural and human resources, she practically imports virtually everything. Nigeria was once the sixth but now had declined to be the fifteenth largest producer of crude oil in the world even overtaken by Angola, but the country remains largely a net importer of fuel and other petroleum products such as petrol (PMS), kerosene (HHK), diesel (AGO) and aviation kerosene (ATK). The huge demand for these products and inadequate supply has led to successive governments in Nigeria subsidizing these products and such subsidy has not translated to the benefits of the poor masses.

A critical review and analysis of the pump price

increase of petroleum products in Nigeria as shown in table 1, clearly indicates that since 1973 fuel subsidy was kick started by General Yakubu Gowon, thereafter, gradual increase in the pump price of the products followed. He made a 40.83% increase from 6k-8.45k and since then the situation has gone worse without any meaningful development to show for such percentage increase. Gen. Murhutama Mohammed in 1976 made an increase of 6.5% from 8.45k to 9k. In 1978, Gen. Olusegun Obasanjo made a 70% increment from 9k to 15.3k and Alhaji Shehu Shagari in 1982 took it up from 15.3k to 20k which accounted for 30.72% increase. Even under the Shagari regime, despite this increase, Nigeria did not benefit from his agricultural program called Green Revolution and the economy became worse.

Between March 1986 and March 1991, the Babangida administration increased the pump price of petrol four times. Even the interim government of Chief Ernest Shonekan that spent six months in power took up the price of petrol from 70k to N5 in November 8, 1993 which was about 614.29% increase and the economy became more unstable within this period while Gen. Sani Abacha on assumption of office reduced the price in November 1993 and October 1994 respectively and increased it once in October 1994. He agreed that subsidy removal was more political than economic. But the economy was paralysed with massive protest across the country. Gen. Abdulsalami Abubakar increased it once in December 1998, reduced it in January 1999.

From June 1, 2000, Obasanjo increased the pump price of petrol, reduced it on June 8, 2000 and thereafter increased it five times between January 2, 2002 and May 27, 2007. Chief Goodluck Jonathan in Jan 1, 2012 increased the pump price

from N65 to N141 which was accounted for 116.92% and later reduced the price twice between January 17, 2012 and February 2015. Within the period under review, the Nigeria economy was relatively stable with key macroeconomic indicators showing steady growth of the economy measured by the gross domestic product (GDP).

During the electioneering campaign of Gen. Muhammadu Buhari in 2014-2015, he said fuel subsidy was a fraud but when he was sworn in as the President and Commander-in-Chief, fuel subsidy removal became a torn in the flesh of Nigerians. He increased the pump price seven times, almost a yearly increase which translated to sufferings by Nigerians under his leadership and only reduced the price once in March 19, 2020 from N145 to N125 which was 58% decrease and finally in May 29, 2023 during the presidential inauguration Alhaji Ahmed Bola Tinubu, subsidy was again removed as the first welcome gift to Nigerians. This practically took the price of fuel to over N500.00.

It was only Alhaji Umaru Musa Yar'Adua as the president who did not increase pump price of fuel. He reduced it from N75 to N65 and the economy was relatively stable within that period.

The historical chain below is a scary reality in Nigeria. It is incredible to see how the prices of petrol per liter has increased from 6k in 1973 to over N500 in 2023, just in a space of 50 years and yet Nigeria as the former sixth and now tenth largest producer of crude oil in the world could not account for the various monies realized from the removal of subsidies with poor standard of living and hyperinflation over 23.9% in Nigeria.

In the recent pronouncement by the President Bola Ahmed Tinubu during his inaugural speech on May 29, 2023 he said, petroleum subsidy was not captured in the 2023 budget, and therefore petroleum subsidy was gone. Immediately, petroleum filling stations adjusted their pump prices and queues resurfaced at the filling stations. The table 2 shows the different prices of fuel across different cities in Nigeria in 2023.

Table 1: showing the various subsidy regimes in Nigeria from 1973-2023

S/N	President	Year	Price	Percentage Increase	Percentage Decrease	Reasons for the increase
1	Gen. Yakubu Gowon	1973	6k to 8.45k	40.83%	-	Uniform pricing
2	Gen. Murtala Mohammed	1976	8.45k to 9k	6.5%	-	Uniform pricing
4	Gen. Olusegun Obasanjo	Oct 1, 1978	9k to 15.3k	70%	-	To cut wastage on fuel consumption
5	Alhaji Shehu Shagari	Apr 20, 1982	15.3k to 20k	30.72%	-	To ensure austerity measures
6	Gen. Ibrahim Babangida	Mar 31, 1986	20k to 39.5k	97.5%	-	To fund education
7	Gen. Ibrahim Babangida	Apr 10, 1988	39.5k to 42k	6.33%	-	To check smuggling and diversion
8	Gen. Ibrahim Babangida	Jan 1, 1989	42k to 60k	42.86%	-	To review the tier uniform pricing

9	Gen. Ibrahim Babangida	Mar 6, 1991	60k to 70k	16.67%	-	No reason given
10	Chief Er Shoneka	Nov 8, 1993	70k to N5	614.29%	-	Survivor of the industry
11	Gen. Sa Abacha	Nov 22, 1993	N5 to N3	-	Price decreased to 35%	To stop smuggling
12	Gen. Sa Abacha	Oct 2, 1994	N3.25k to N15	-	361.54%	To stop smuggling and diversion
13	Gen. Sa Abacha	Oct 4, 1994	N15 to N	-	Price decrease to 26.67%	Subsidy removal had been planned for the health of the economy
14	Gen. Abdusalam Abubakar	Dec 20, 1998	N11 to N25	127.27%	-	Forces of demand and supply to drive prices
15	Gen. Abdusalam Abubakar	Jan 6, 1999	N25 to N	-	Price dropped 25%	To deregulate downstream sector
16	Chief Oluasegun Obasanjo	June 1, 2000	N20 to N	50%	-	To reduce smuggling and avoid fuel shortages in Nigeria
17	Chief Oluasegun Obasanjo	June 8, 2000	N30 to N	-	Price decrease to 26.67%	To stabilize the economy
18	Chief Oluasegun Obasanjo	Jan 1, 2002	N22 to N	18.18%	-	Discipline and control of Nigerian fuel consumption
19	Chief Oluasegun Obasanjo	June, 2003	N26 to N	61.54%	-	Discipline and control of Nigerian fuel consumption
20	Chief Oluasegun Obasanjo	May 29, 2004	N42 to N	19.05%	-	Discipline and control of Nigerian fuel consumption
21	Chief Oluasegun Obasanjo	Aug 25, 2004	N50 to N	30%	-	Discipline and control of Nigerian fuel consumption
22	Chief Oluasegun Obasanjo	May 2, 2007	N65 to	15.39%	-	To reduce smuggling and diversion
23	Alhaji Umaru Adhara	June, 2007	back to	-	Price decrease to 15.39%	To reduce smuggling and Nigerian
24	Chief Goodluck Jonathan	Jan 1, 2011	N65 to	116.9%	-	To stabilize the economy
25	Chief Goodluck Jonathan	Jan 17, 2012	N141 to	-	Price decrease to 31.2%	To provide infrastructure
26	Chief Goodluck Jonathan	Feb.,	N97 to	-	Price decrease to 10.3%	To stabilize the economy
27	Alhaji Mohamadu Buhari	May 1, 2016	N87 to	66.67%	-	To adjust the template of competitive market components
28	Alhaji Mohamadu Buhari	Dec 20, 2017	N97 to 145	49.5%	-	To deregulate downstream sector
29	Alhaji Mohamadu Buhari	Mar 20, 2020	N145 to	58%	-	Due to reduction in oil price
30	Alhaji Mohamadu Buhari	May 2, 2020	N125 to 121.50	23.5%	-	Recovery in oil price
31	Alhaji Mohamadu Buhari	July 2, 2020	121.50 to 140.8	16%	-	To fund the economy
32	Alhaji Mohamadu Buhari	Aug 20, 2020	N140.8 to 145.8	45.9%	-	To fund the economy
33	Alhaji Mohamadu Buhari	Sept 2, 2020	N145.8 to 151.5	51.5%	-	No reason given
34	Alhaji Mohamadu Buhari	Oct 20, 2020	N151 to 161	61%	-	No reason given
35	Alhaji Ahmed Tinubu	May 23, 2023	N195 to	400%	-	Not captured in the 2022

Source: Adapted from Moregas 2020, reviewed and updated by the author, 2023

4.2 Discussion of findings

The issue of fuel subsidy debate has been in the front burner for decades and had captured the attention of elder statesmen, researchers, politicians, the government, Nigeria Labour Congress and the civil society organization. The debate has generated wide logical and idiotic arguments within and among Nigerians.

1. From this study, it is an open secret that bulk of the petroleum products we are consuming in the country are imported. It has been established even the four refineries have gone moribund and not working at their fully installed capacities; and thus, we would be unable to meet the local consumption demand level if the refineries are not fixed. The economic implication of this is that of give and take, we still have to

Table 2: Showing the current prices of fuel in Nigeria

City	State	Current Price
Abakaliki	Ebonyi	N6 3 7litre
Abeokuta	Ogun	N6 1 7litre
Abuja	FCT	N6 8 4litre
Ado Ekiti	Ekiti	N6 1 7litre
Akure	Ondo	N6 1 7litre
Asaba	Delta	N6 2 8litre
Awka	Anambra	N6 3 7litre
Bauchi	Bauchi	N6 6 7litre
Benin	Edo	N6 2 8litre
Birnin Kebbi	Kebbi	N6 6 2litre
Calabar	Cross River	N6 2 8litre
Damaturu	Yobe	N6 7 4litre
Dutse	Jigawa	N6 5 7litre
Enugu	Enugu	N6 3 7litre
Gombe	Gombe	N6 6 7litre
Gusau	Zamfara	N6 5 7litre
Ibadan	Oyo	N6 1 7litre
Ilorin	Kwara	N6 3 2litre
Jalingo	Taraba	N6 6 7litre
Jos	Plateau	N6 5 4litre
Kaduna	Kaduna	N6 5 7litre
Kano	Kano	N6 5 7litre
Katsina	Katsina	N6 5 7litre
Lafia	Nasarawa	N6 5 4litre
Lagos	Lagos	N6 0 5litre
Lokoja	Kogi	N6 5 4litre
Maiduguri	Borno	N6 7 4litre
Makurdi	Benue	N6 5 4litre
Minna	Niger	N6 5 4litre
Osogbo	Osun	N6 1 7litre

Source: Adapted from Vanguard Newspaper, June 9, and updated by the author based on second phase of increase within three months in Nigeria, 2023

import petroleum products to supplement domestic consumption. When a product is imported and while selling it locally it has to be at less than 50 per cent of the price, it then means that the gap between what one is paying to bring the products here locally and the price at which is being sold domestically is what is considered as subsidy which must be addressed because the suffering and hardship Nigerians are undergoing is quite alarming.

2. Petroleum subsidy existed because Nigeria as a key player in the oil and gas sector in Africa, and it should enjoy petroleum products at prices lower than the international market price especially in the gasoline, Premium Motor Spirit, (PMS), household kerosene (hhk) and electricity among others. Therefore, Nigeria should allow subsidy to remain and reduce fiscal spending because this discount (called subsidy) is usually incurred by the government on behalf of the consumers in order for the petroleum major marketers to recover their operational cost arising from importation and landing cost and sell at a cheaper rate to the consumers in Nigeria. But the reverse is the case as the measures alleged to have been put in place to cushion the effect of sufferings of Nigerians in the consumption of petroleum products, have done little or nothing to benefit the poor masses. Even the price of kerosene in Nigeria today is beyond the reach of the common man, despite the various subsidies removed and all the empty promises made by the government.
3. On the issue of whether we should be paying what we are now paying largely depends on the fact that this is a natural endowment deposited in Nigeria and we should not be paying the high price non-oil producing countries are paying. Secondly, when we tried to look at the rent by taking into consideration the actual cost of production, in other words, the difference between actual cost of production and the market price is a rent the producing countries are enjoying, it should be paid by the government of the producing countries and not by poor masses in Nigeria. If the cost of a barrel of crude oil is \$20 per barrels and the barrel is being sold at about \$100 per barrel, therefore the economic implication is that the difference is rent which is accounted for either in terms of taxes or royalty as the case may be. If this can be justified for some foreign countries that import our crude, why should Nigerians be made to pay same rate? This has been the argument of some of the labour unions and civil society organizations. This simply implies that the price charged by the NNPC is quite high and unnecessary.
4. The outcome of the various debate, always predetermined, often underscores the deceit, misrepresentation and intentions of those that benefit from the confusion the debts throws up and this kind of arguments are described as idiotic because their arguments are not based on current realities on ground and without the interest of the poor masses. The Nigeria Labour Congress and the Civil Society Organization have argued that when

price of oil is being considered, we should not be looking at import parity because there have been some unnecessary costs which should not have been added or accounted for as part of the price. It is believed that the NNPC and the major marketers are actually inflating some of these costs and until NNPC is properly sanitized corruption may likely kill Nigeria.

In a nut shell, the productive capacity of the Nigerian economy depends to a large extent on petroleum products. It is a key input to production and facilitator of all economic and commercial activities in an economy. It is also an alternative energy source to private and public sector operations. Any high cost of purchase of petroleum products for stimulating economic and commercial activities, the burden of such increase will be transferred to the consumers in order to recover their high cost of operations, thereby affecting the performance of the economy in so many ways. That is why the cost of these products to the public is very important especially in recent time. Oil prices have been skyrocketing mostly due to Organization of Petroleum Exporting Countries (OPEC) regulations on production to regulate prices in the international market, disruption of production by various community crises and militancy attacks on oil facilities in the Niger Delta as well as crises in the major oil producing nations in the Middle East (Kuwait, Iraq, Libya etc) and rising demand from growths in economies like China and India.

5.0 Conclusion and Recommendation

5.1 Conclusion

In conclusion, if subsidy on petroleum products must be removed, the four existing refineries in Nigeria must be fully functional to raise local production and further reduce cost of importation of petroleum products because subsidy is anchored on production and not consumption. Having recently

commissioned Dangote refinery in Lagos, the Nigeria government should further encourage more private investors into establishing refineries in Nigeria.

5.2 Recommendation

The study therefore made the following recommendations

1. Nigeria government should allow subsidy to remain and reduce fiscal spending because the cost of running government in Nigeria is very high.
2. The level of corruption in the oil and gas sector is quite alarming. Therefore, it is recommended that a comprehensive audit of the finances and operational modalities of NNPC should be carried out and the anti-graft agencies must be equipped with modern technological software that could enable them step up the game in the fight against corruption in Nigeria.
3. The government through the various agencies within the Ministry of petroleum resources should liberalize the downstream sector to encourage private investment in the oil and gas sector, fully commercialise NNPC while PPPRA can still remain as a watchdog over products marketing activities in order to protect the consumer from the antics of greedy marketers. These will further guarantee efficiency, increased productivity and reduce waste of economic resources for the benefit of Nigerians.

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