Journal of Economics and Sustainable Development
ISSN 2222-1700 (Paper) ISSN 2222-2855 (Online)
Vol.14, No.17, 2023

Seigniorage and Inflation in Nigeria: A Toda-Yamamoto Granger Causality Approach

ThankGod Oyinpreye Apere (Ph.D)
Department of Economics Niger Delta University Wilberforce, Bayelsa State
thankgodapere@yahoo.com

Warlice Joel Uche (Ph.D)
Directorate of Consultancy, Entrepreneurship, Research and Development (DOCERAD)
Niger Delta University, Wilberforce Island, Bayelsa State
Warlice_joe@yahoo.com

Abstract
This study examine the relationship between seigniorage and inflation in Nigeria between 1990 and 2022. The revenue generated through currency minting for deficit financing is projected to fall short of meeting the government's desired developmental goals due to the burden of substantial debt. The analytical tool utilised in this study was the Toda-Yamamoto Granger Causality approach, utilising time series data. The findings of this study demonstrate that there is sufficient evidence to reject the null hypothesis, which suggests that seigniorage does not have a Granger-causal relationship with inflation. Additionally, the results reveal that government debt leads to an increase in the production of currency as a means to cover budget deficits. This study presents findings that indicate a robust and positive correlation between seigniorage and inflation. Additionally, it suggests that there exists a substantial association between public debt and the government's inclination to create income by monopolising the minting process in order to finance its deficit. It is recommended that the use of seigniorage as a means to compensate for deficits possesses the potential to induce an escalation in the prices of goods and services. Consequently, government policies pertaining to augmenting the money supply within the economy should be carefully considered, especially were the economy is burdened with heavy debt should be carefully selected bearing in mind that inflation is not just a monetary phenomenon but also fiscal phenomena.
Keyword: Seigniorage, Inflation, Debt Burden, Toda-Yamamoto, Budget deficit
DOI: 10.7176/JESD/14-17-06
Publication date: November 30th 2023

INTRODUCTION

In order to maximise welfare and encourage economic growth through various monetary alternatives, governments around the world need a stable economy. For effective policy implementation, it becomes important to finance important government developmental goals without distorting and upsetting the aggregate behaviour of important macroeconomic indexes like inflation, consumption, income, currency rate, unemployment savings, and investment, among others.

Deficits in the public sector are a major factor in the inflation that many emerging nations experience. This is particularly critical in nations where the governments restricted access to domestic and international borrowing forces it to rely on the central bank to finance its budget deficit. Thus, the primary driver of money creation and inflation is the monetization of fiscal deficits (Todorov, 2020).

Seigniorage is the term used historically, that is, in a society when there was commodity money, to describe the discrepancy between a coin's face value and its manufacturing and minting costs. The difference between a currency note's face value and its marginal printing cost is nearly identical to that difference. Fiat money printing is therefore a very lucrative industry that the government has closely controlled and frequently monopolised. However, in this study, we defined seigniorage as the discrepancy between the face value of money (coins and paper bills) and its production costs. As a result, seigniorage is defined as the revenue that a government generates from printing when the currency it issues is worth more than it costs to manufacture. A government may find seigniorage a convenient source of income (Bjerg, McCann, Macfarlane, Nielsen, & Ryan-Collins, 2017). It imposes what is referred to as an inflation tax on the people by giving the government more purchasing power at the price of their own purchasing power. How seigniorage can lead to price increases (Bjerg et al., 2017).

The inflation rate in Nigeria had a significant increase of 3.71% in 2021, reaching a level of 16.95%, as compared to the preceding year. The inflation rate in Nigeria for the year 2020 had an increase of 1.85% compared to the preceding year, reaching a level of 13.25%. In July 2022, Nigeria's headline inflation rate soared to 19.64% on an annual basis, the highest level since 2005. Compared to the rate of 17.38 percent that was recorded in July 2021 (NBS, 2022) this was 2.27 percent points higher. As the NBS released the inflation numbers for July 2022, they asserted that they proved the headline inflation rate rose in 2022 as compared to the

same month the year before, in July 2021. The statistics organisation claims that the most recent Q2-2022 growth rate increased by 0.44 percentage points compared to Q1 2022's 3.11 percent and declined by 1.47 percentage points from Q2-2021's 5.01 percent growth rate. But quarter-on-quarter real GDP growth in Q2-2022 was -0.37%, suggesting a drop in economic activity from the quarter before (NBS, 2022).The total nominal GDP for the period was N45.004 trillion, up from N39.123 trillion in the same period of 2021, representing a nominal growth rate of 15.03 percent annually. In comparison to the second quarter of 2021's nominal GDP growth rate of 14.99% and the quarter before, which was 13.25 percent, Q2-2022's nominal GDP growth rate was greater (NBS, 2022).

According to Al-Marhubi (2000) and Haider, Din, and Ghani (2011), high inflation is a factor that causes income loss for both individuals and groups, deterioration in the income distribution, a rise in rent-seeking behaviours, and the emergence of economic uncertainty. Within this context, inflation reduces the real wage level, which has a detrimental impact on people's and groups' purchasing power (Tosun, 2002). Despite their declining purchasing power, individuals and communities must nonetheless meet their requirements. Because people and organisations may turn to illicit means, corruption may arise (Al-Marhubi, 2000). In a similar vein, inflation, which also results in a decline in the purchasing power of money, lowers the actual wages of public sector employees, messes with the distribution of income, and benefits huge capital owners. The unequal distribution of money inherently encourages corrupt behaviours. The excessive expenditures of governments are another significant factor in how inflation is increasing corruption (Elkamel, 2019).

It is worthwhile to know that the revenue generated through the minting of currency in financing deficit will fail to meet the developmental projects targeted by the government in the face of heavy debt. Most especially in the Nigerian economy where funds generated through seigniorage and borrowing are diverted to private pockets as result of corruption and servicing of debt incurred previously by the state that were channeled to unproductive investments, that were unable to provide employment and increase social welfare of the citizens (Sassi & Gasmi 2017).

Governments are typically predisposed to printing money and inflating the economy as a means of generating revenue. The seigniorage channel is used to describe this. This seigniorage could be more relevant in a nation where there is a lot of tax evasion. Therefore, monetary growth and inflation will increase in direct proportion to levels of corruption. According to the second argument, which connects inflation to corruption, corruption may result in capital flight, which lowers the tax base and, as a result, lowers government revenues than are necessary. Large governmental deficits will result from the rise in expenditure and decline in tax collection. Due to this, the government runs out of liquid assets, thus the quickest solution—which the government frequently chooses—is to manufacture fiat currency. According to Yousefi (2015), this is particularly common in underdeveloped nations with weak deep financial markets.

LITERATURE REVIEW

2.2 Theoretical Framework

The quantity theory of money (QTM), which states that a sustained increase in the quantity of money is a necessary condition for sustained inflation, summarises the relationship between the money supply and inflation in large part. This famous adage was coined by Milton Friedman in 1956. This provides additional support for the theoretical underpinnings of the QTM, which has two variations: Fisher's Transaction Approach and the Cash Balance Approach (CBA), which is the version popularised by Cambridge economists. Below are described the transaction and cash balance approach to the QTM and the fiscal theory of price level. The 'Fiscal theory of price level' is the foundation of this study, nevertheless.

This section outlines a monetary model of inflation that links inflation and money growth in accordance with classical monetary theory. The QTM is most frequently expressed as follows: MV = PYIn the context of monetary economics, the variable M represents the aggregate currency and various other forms of money that are actively circulating within an economy. These forms of money are typically categorised into three distinct measures: M1, M2, and M3. Additionally, the variable V denotes the velocity of money, which signifies the rate at which money is exchanged or used in transactions. Moving on, the variable P represents the prevailing price level in the economy, while the variable Y signifies the total output of goods and services, commonly referred to as the Gross Domestic Product (GDP). It is important to note that the variable Y is assumed to remain constant once the economy has achieved full employment. In the equation, the supply of money is on the left, while the demand for money—which results from transactions—is on the right. The equation of exchange is another name for this one.

Equation (2.1) has the following percentage change expression:

$$\Delta M + \Delta V = \Delta P + \Delta Y \quad 2.2$$

Rearranging:

$$\Delta P = \Delta M - \Delta Y + \Delta V \quad 2.3$$

Assuming constant money and production velocity, so that $V = 0$, and $Y = 0$, get:

$$\Delta P = \Delta M \quad 2.4$$

On the assumption that ΔV is constant, if ΔM is positive ΔP will rise, and where ΔM is negative ΔP will crumble. That is, assuming the velocity of money remains constant, the inflation rate should equal the excess of the money growth rate, resulting in a direct and proportionate connection.

2.3 Empirical Review

Measurement of seigniorage in Romania since the fall of communism and possible gains from adopting the euro were both topics of interest to Bodea & Sanxhez-Santos' (2020) research. For a period of 27 years, we estimated these levels of seigniorage starting from the central bank's balance sheet. Our data imply that this source of income was at very high rates during the 1990s, mostly because of the extremely high rates of protracted inflation. Since the central bank's independence, these amounts of seigniorage have decreased and remained stable at 1% to 2% of GDP. We also calculated the potential benefits of the adoption of the euro. We demonstrated that Romania's prospective seigniorage profits from adopting the euro decrease as it moves closer to the rest of the Eurozone. We contend that the effects of giving up one's own currency are not budgetary in nature because these gains are only negligibly modest in comparison to national revenue.

By examining corruption as a potential risk factor associated with high inflation in the ECOWAS using a panel logit model, Ayodeji (2020) gave a political explanation of inflation rates dynamics. Between 1995 and 2019, researchers identified and examined each of the 15 ECOWAS members. Estimates showed that over the long term, historical inflation shocks, the degree of corruption, real GDP, and exchange rates greatly influenced ECOWAS inflation; the relationship between inflation and money supply growth had actually eroded over time. Results in particular demonstrated that, taking other factors into account, a unit increase in corruption raised the chance of high inflation by 82.6%. Additionally, the findings suggested that seigniorage was insufficient to account for the pointing to the possibility of additional channels through which corruption may influence inflation. Additionally, despite the outlier observations from Liberia and Guinea, the logit model was able to reconstruct all instances of high inflation that occurred in ECOWAS by using 0.5 as the benchmark for forecast probabilities. The study comes to the conclusion that, among other things, the chance of experiencing high inflation increases with the degree of corruption among ECOWAS members.

While most Central European nations had switched to market-based monetary policy by the middle of the 1990s as a result of realising the inflationary potential of money creation, Belarus continued to use money emission, gaining seigniorage and inflation tax, according to Korosteleva's (2002) research. By contrasting the revenue generated by the inflation tax with the revenue that could have been generated if the amount of money had increased at a steady rate, the productivity of the inflation tax can be evaluated. The study comes to the conclusion that inflationary financing is a result of monetary policy efficacy.

Governments may pay their expenses via a variety of methods, according to Elkamel (2019), but seigniorage and borrowing are the most prevalent. According to the authors, when there is corruption, using public funds may have an inflationary effect, raising the level of inflation, which then has an impact on the entire economy. This study examines whether variations in seigniorage and borrowing, along with variations in corruption levels, explain for variations in inflation rates. This study makes use of panel data from 72 nations from 1995 to 2011. Results - According to the author, seigniorage and borrowing in public finances, together with corruption, all contribute to higher inflation rates. The misuse of these public financing mechanisms, where corruption is rampant, can be addressed by this finding. The joint impact of corruption and two alternative public financing strategies, seigniorage and borrowing, on the rate of inflation in 72 nations from 1995 to 2011 is captured in this article.

METHODOLOGY

Data for the analysis are annual time series data covering the period 1990-2022, which will be obtained from various publication of CBN statistical bulletin World Bank Financial Outlook and National Bureau of statistics.

3.3 Model specification

Deficits in the public sector are a major factor in the inflation that many emerging nations experience. This is particularly critical in nations where the government's restricted access to domestic and international borrowing forces it to rely on the central bank to finance its budget deficit. Consequently, the primary driver of money creation and inflation is the monetization of fiscal deficits. Remembering Cagan's research on hyperinflation, variations in the demand for real balances are mostly caused by sharp price swings during high inflation. The optimal tax theoretical framework, on which this study will be based, states that countries with high levels of spending and taxes will also experience high inflation and nominal interest rates.

In order to circumvent the general time series estimation problem caused by a bivariate model's omitted

variable problem, we alter Elkamel's (2019) model specification. We do this by drawing on the fiscal price level theory. In terms of function, we say:

INFLR = *f*(SEIGN, GTD, GDPGR) 3.1

Equation 3.1 can be transformed as:

$INFLR_t = \Omega_0 + \Omega_1 SEIG_t, + \Omega_2 GTD_t + \Omega_3 GDPGR_t + \varepsilon_t$ 3.2

Where:

INFLR = Inflation rate; SEIGN= Seigniorage; GTD = Government total debt; GDPgr = Gross and Domestic Product Growth Rate. Ω_0= Intercept term; Ω_1, Ω_2, and Ω_3,are Parameters to be estimated. The behavioural assumptions, the a priori, or the presumptive signs are stated as follows: $\Omega_1>0$ $\Omega_2>0$ and $\Omega_3>0$ By the VAR system of Augmented Granger Causality Test developed by Toda and Yamamoto, (1995) equation 3.2 can be specify as:

$$INFLR_t=\Omega_0+ \sum_{j=1}^{k+dmax} \Omega_{1j} INFLR_{t-j} + \sum_{j=1}^{k+dmax} \Omega_{2j} SEIGN_{t-j} + \sum_{j=1}^{k+dmax} \Omega_{3j} GTD_{t-j} + \sum_{j=1}^{k+dmax} \Omega_{4j} GDPgr_{t-j} + \varepsilon_{1t} \quad 3.3$$

$$SEIGN_t=\varphi_0+ \sum_{i=1}^{k+dmax} \varphi_{1j} INFLR_{t-j} + \sum_{j=1}^{k+dmax} \varphi_{2j} SEIGN_{t-j} + \sum_{j=1}^{k+dmax} \varphi_{3j} GTD_{t-j} + \sum_{j=1}^{k+dmax} \varphi_{4j} GDPgr_{t-j} + \varepsilon_{2t} \quad 3.4$$

$$GTD_t = \chi_0 + \sum_{i=1}^{k+dmax} \chi_{1j} INFLR_{t-j} + \sum_{i=1}^{k+dmax} \chi_{2j} SEIGN_{t-j} + \sum_{j=1}^{k+dmax} \chi_{3j} GTD_{t-j} + \sum_{j=1}^{k+dmax} \chi_{4j} GDPgr_{t-j} + \varepsilon_{3t} \quad 3.5$$

$$GDPgr_t = \phi_0 + \sum_{i=1}^{k+dmax} \phi_{1j} INFLR_{t-j} \sum_{i=1}^{k+dmax} \phi_{2j} SEIGN_{t-j} + \sum_{i=1}^{k+dmax} \phi_{3j} GTD_{t-j} + \sum_{i=1}^{k+dmax} \phi_{4j} GDPgr_{t-j} + \varepsilon_{4t} \quad 3.6$$

Where In this study *seigniorage* (SEIGN) is measured by the difference of annual minted currency and the cost of mintage, thus seigniorage is the revenue that government collects from printing money; which is the definition of seigniorage in this study, while government total debt (GTD) comprises of both internal and external debt incurred by the government over the period under study and GDP growth rate (GDPgr) is included as a control variable.

k is the lag length, (k + dmax) is the order of VAR; Ω_j's, ω_j's, χ's, and ϕ_j's are parameters to be estimated; and ε_{1t}, ε_{2t}, ε_{3t}, and ε_{4t} are error terms that are assumed to be white noise.

Pre-tests for unit root and cointegration may exhibit size distortions, which might indicate the use of an imprecise model for the non-causality test (Clarke & Mirza, 2006). To mitigate these issues, the Toda-Yamamoto test was developed, which utilises enhanced VAR modelling and introduces a Wald test statistic. This statistic exhibits an asymptotic chi-square (c2) distribution, regardless of the characteristics of the variables in relation to their order of integration or cointegration.

RESULTS AND DISCUSSION

Conducting pre-tests to assess the statistical qualities of variables, such as performing non-stationarity tests on time series data, is crucial in order to prevent the occurrence of false findings. Thus the Augmented Dickey-Fuller and Phillip-Perron unit root tests were employed in this study. The presentation of the unit root test findings for the variables utilised in this study is provided.

Table 1. Stationarity Test

Augmented Dickey-Fuller Unit Root					Phillip-Perron Unit Root						
Variable	Level	Prob	1st Diff	Prob	Level	Prob	1st Diff	Prob	Lag(s)	Model	Integrati order
SEIG	-2.5578	0.3005	-4.6881***	0.0064	-2.6594	0.2601	-4.8570***	0.0039	1	Trend & Int	1(1)
GTD	-1.6421	0.7515	-5.7105***	0.0000	-1.4090	0.8375	-9.5982***	0.0000	1	Trend & Int	1(1)
GDPGR	-2.7295	0.2322	-7.4586***	0.0000	-2.7063	0.2408	-14.8967***	0.0000	1	Trend & Int	1(1)
INFLR	-2.7006	0.2431	-4.7349***	0.0182	-3.0287	0.1409	-3.9812**	0.0206	1	Trend & Int	1(1)

Source: Eviews Output

The outcomes of the ADF unit root test presented in table 1 indicate that, subsequent to undergoing differencing once, all of the choice variables exhibited stationarity. This is further supported by the Phillips-Perron test, which indicates that the variable exhibits stability and lack of trend after being differenced once (I(1)).

The Toda-Yamamoto Granger Causality

The study utilises the Toda-Yamamoto Granger Causality approach to ascertain the causal association between seigniorage and inflation in the context of Nigeria. The first step in the Toda-Yamamoto approach involves determining the greatest order of integration (dMax) inside the system. The results of the unit root test, as shown in Table 1, indicate that the level of integration is I (1), indicating a single unit root. This suggests that the VAR Models will include an extra time delay. After determining the greatest order of integration, the final step

involves computing the optimal lag time, as explained in the methodology section.
Table 2: VAR Lag Length Selection Criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	192.6229	NA	8.75e-13	-16.42026	-15.82515	-16.28007
1	220.5954	38.14430*	3.21e-13	-17.50867	-16.12007*	-17.18156
2	230.8913	10.29597	7.29e-13	-16.99012	-14.80804	-16.47609
3	265.8023	22.21604	2.94e-13*	-18.70930*	-15.73373	-18.00834*

* indicates lag order selected by the criterion

Source: EView Output

The selection of the ideal lag length was determined by using various lag length criteria, including Akaike's Information Criterion (AIC), Schwarz Information Criterion (SC), Final Prediction Error (FPE), and the Hannan Quinn (HQ) Information Criterion. Table 2 presents the outcomes of the various lag duration selection criteria. According to the findings shown in Table 2, the various selection criteria employed in this study consistently point towards a lag time of 3.

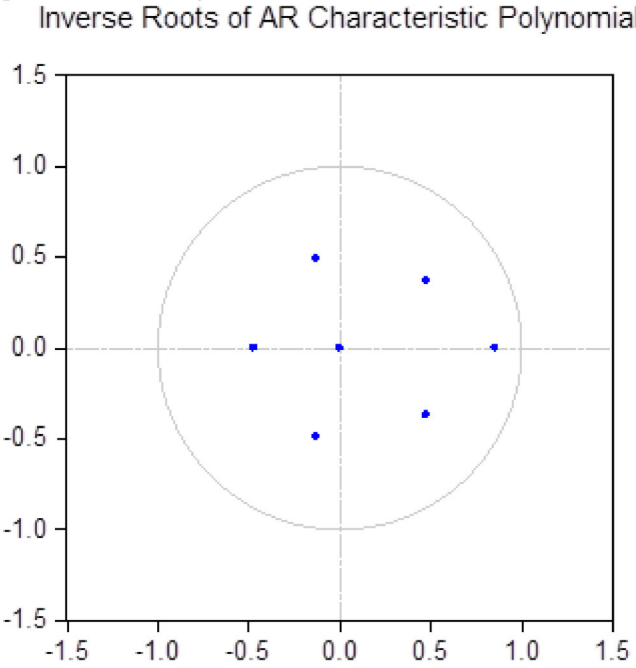

Fig. 1: AR Characteristic Polynomial

The stability of the VAR model was assessed by examining the inverse roots of the characteristic AR polynomial. It was seen that all the values fell within the circle, indicating that the VAR model exhibited satisfactory stability. The modulus values were found to be smaller than 1, therefore satisfying the VAR stability criteria.

Table 3: Toda –Yamamoto Causality (modified WALD) Test Results

Dependent variable: INFLR				
Excluded	Chi-sq	df	Prob.	Causality
GTD	4.767422	2	0.0922	No Causality
SEIG	**7.436017**	**2**	**0.0243**	**Causality**
GDPGR	5.890496	2	0.0526	No causality
All	13.74063	6	0.0327	
Dependent variable: GTD				
Excluded	Chi-sq	df	Prob.	
INFLR	4.508045	2	0.1050	No Causality
SEIG	**8.516898**	**2**	**0.0141**	**Causality**
GDPGR	2.900559	2	0.2345	No causality
All	20.31452	6	0.0024	
Dependent variable: SEIG				
Excluded	Chi-sq	df	Prob.	
INFLR	2.703437	2	0.2588	No Causality
GTD	**6.106681**	**2**	**0.0472**	**Causality**
GDPGR	0.084878	2	0.9584	No causality
All	12.46258	6	0.0524	

Source: EView Output

Table 3 presents the outcomes of the Toda-Yamamoto Granger Causality analysis, specifically employing the MWALD test. The findings suggest that the test adheres to the chi-square distribution with 2 degrees of freedom, aligning with the suitable lag duration. The findings of the Toda-Yamamoto Granger Causality test suggest that we can reject the null hypothesis, which states that seigniorage does not have a Granger causal effect on inflation, at a 5% level of significance. The test results indicate the presence of a unidirectional relationship between seigniorage and inflation in Nigeria, as evidenced by a Chi-squared value of 6.106 and a statistically significant probability value of 0.047. These results suggest that seigniorage has a significant influence on inflation in Nigeria.

Similarly government debt burdens granger causes seigniorage following the Toda-Yamamoto Granger Causality with a Chi-sq value of 6.106 and a significant probability value of 0.047 indicate that we can reject the null hypothesis that government debt burdens does not Granger cause seigniorage at 5% level of significance and affirm that government debt causes increase mintage of currency to finance budget deficit.

The place of inflation in Nigeria economic discuss is one that has a link to diverse monetary variables, such as money supply, cash balances, credit as well as a link to other fundamental macroeconomic index. Base on the result of this study seigniorage from our analysis demonstrated a positive significant impact on inflationary pressure in Nigeria as increase cost of mintage in that face of heavy government debt leads to increasing the level of money supply most especially on an overheated economy with too much money in circulation within the people and not in the designated financial (DMBs). With the monopoly of mintage by the government, mintage has resulted over the period studied, in price rises mostly due to the huge prolonged inflation rates As a result, borrowing and seigniorage used in public financing raise the degree of inflation. This study is consistent with the work of Elkamel, (2019) The usage of public funds in Oman, just as when corruption is present, may have an inflationary effect that raises the level of inflation, which then has an impact on the entire economy. The usage of public funds in Oman, just as when corruption is present, may have an inflationary effect that raises the level of inflation, which then has an impact on the entire economy.

Table 4: VAR Residual Serial Correlation LM Test Results

Lags	LM-Stat	Prob
1	20.58375	0.1951
2	13.82349	0.6119
3	23.02814	0.1130
4	12.91343	0.6791
5	23.23786	0.1075
6	14.79257	0.5399
7	17.37551	0.3617
8	12.51768	0.7076
9	11.40092	0.7841
10	10.32556	0.8491
11	15.95330	0.4562
12	14.76526	0.5419

Probs from chi-square with 16 df.

Source: EView Output

Upon analysing the residuals and doing the LM test for serial correlation, it was seen that there is no existence of serial correlation at the selected lag duration even up to the 12 lag.

Table 5: VAR Residual Heteroskedasticity Test Results

Joint test:

Chi-sq	df	Prob.
201.1412	200	0.4640

Individual components:

Dependent	R-squared	F(20,2)	Prob.	Chi-sq(20)	Prob.
res1*res1	0.995496	22.10157	0.0441	22.89640	0.2939
res2*res2	0.785914	0.367101	0.9101	18.07601	0.5824
res3*res3	0.969038	3.129817	0.2699	22.28789	0.3251
res4*res4	0.891267	0.819684	0.6837	20.49914	0.4271
res2*res1	0.863346	0.631773	0.7699	19.85695	0.4669
res3*res1	0.998804	83.52878	0.0119	22.97250	0.2901
res3*res2	0.763559	0.322939	0.9326	17.56187	0.6162
res4*res1	0.994128	16.93061	0.0572	22.86495	0.2955
res4*res2	0.977465	4.337481	0.2038	22.48169	0.3150
res4*res3	0.895781	0.859518	0.6673	20.60296	0.4208

Sources: EView Output

The VAR residual normality test of the Orthogonalization of the Cholesky test shows that the residuals are multivariate normal.

Table 6: VAR Residual Normality Test Results

Component	Skewness	Chi-sq	df	Prob.
1	-0.005159	0.000102	1	0.9919
2	-0.116893	0.052379	1	0.8190
3	0.141188	0.076414	1	0.7822
4	0.415981	0.663322	1	0.4154
Joint		0.792217	4	0.9395

Component	Kurtosis	Chi-sq	df	Prob.
1	2.195161	0.620775	1	0.4308
2	2.446629	0.293460	1	0.5880
3	2.135528	0.716174	1	0.3974
4	2.344492	0.411786	1	0.5211
Joint		2.042195	4	0.7280

Component	Jarque-Bera	df	Prob.
1	0.620877	2	0.7331
2	0.345839	2	0.8412
3	0.792587	2	0.6728
4	1.075109	2	0.5842
Joint	2.834412	8	0.9443

Source: EView Output

The VAR residual normality test of the Orthogonalization of the Cholesky test shows that the residuals are multivariate normal

CONCLUSION AND RECOMMENDATIONS

The investigation aimed to ascertain the impact of seigniorage on inflation in Nigeria over the period 1990 to 2022. This study concludes that seigniorage has a strong and positive relationship with inflation, and public debt has a strong relationship with government wanting to generate revenue to finance her deficit through the monopoly of mintage. This is because in fiat money economies, the difference between the face value of a currency note and its marginal printing cost are almost equal to the face value of the note – marginal printing costs are effectively zero. Printing fiat money is therefore a highly profitable activity one that has been jealously regulated and often monopolized by the state We recommends that the use of seigniorage to make-up for deficit has the potential to cause increase in the price of goods and services as such government policy relating to increase the money supply in the economy most especially were the economy is burdened with heavy debt should be carefully selected bearing in mind that inflation is not just a monetary phenomenon but also fiscal phenomena.

Acknowledgement: We sincerely wants to appreciate the Department of Economics and the School of Post graduate studies Niger Delta University for the contributions in terms of structural arrangement of this paper.

REFERENCES

Al-Marhubi, F.A. (2000). Corruption and inflation. *Economics Letters*, 66 (2), 199-202.

Ayodeji, I. O (2020). Panel logit regression analysis of the effects of corruption on inflation pattern in the Economic Community of West African states. *Published by Elsevier Ltd*. Pp. 1-10

Bodea, A., and Sánchez-Santos, J. M. (2020). Seigniorage and inflation tax in Romania. What is the executive giving up by adopting the Euro? *Scientific Annals of Economics and Business*, 67 (1), 75-91.

Cagan, P., (1956). The Monetary Dynamics of Hyperinflation. In M. Friedman (Ed.), *Studies in the Quantity Theory of Money.* Chicago: University of Chicago Press. pp. 25-117.

Central Bank of Nigeria. (2021). Statistical Bulletin,. Abuja: Central Bank of Nigeria.

Central Bank of Nigeria. (2022). Statistical Bulletin,. Abuja: Central Bank of Nigeria.

Clark, J. A, & Mirza, S. (2006). A Comparison of some Common Methods for Detecting Granger Non-causality,

Journal of Statistical Computation and Simulation 76(3), 207-231.

Elkamel, H. (2019). The effect of corruption, seigniorage and borrowing on inflation. PSU Research Review, 3(1), 1-15.

Sassi, S., and Gasmi, A. (2017). The dynamic relationship between corruption—inflation: Evidence from Panel Vector Autoregression. *The Japanese Economic Review, Springer*, 68(4), 458-469.

Todorov, K., (2020). Quantify the quantitative easing: Impact on bonds and corporate debt issuance. *Journal of Financial Economics, 135*(2), 340-358.

Tosun, M. U. (2002). A Public Failure Product: Corruption. In S. Cingi, C. Guran & M. U. Tosun (Ed.), *Corruption and Efficient State*. Ankara: Ankara Chamber of Commerce Publication.

World Bank (2021). World Development Indicators. Available from: http://www.data.worldbank.org/data-catalog/world-development-indicators.CD1

Yousefi, D. (2015). Comprehension breakdown: a review of research on learners' reading difficulty and problems. *International Journal of Language and Applied Linguistics*, 1(5), 58-72.