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IMPACT OF OIL AND TAX REVENUE ON CAPITAL BUDGET EXPENDITURE IN NIGERIA

ANTHONY, UNYIME ABASIDO
Department of Business Administration and Management, Federal Polytechnic Daura,
unyimeaa@fedpolydaura.edu.ng

ISMA'IL, TIJJANI IDRIS, PHD
Department of Banking and Finance, ABU Business School, Ahmadu Bello University, Zaria,
ismaildel@yahoo.com

BADARA, MUAZU SAIDU, PHD
Department of Accounting, ABU Business School, Ahmadu Bello University, Zaria,
muazubadara@yahoo.com

ABSTRACT

Capital Budget Expenditure is vital to the economic, business and social welfare of any country, especially for the fact that its importance spans across all works of life and has great impact on business proceedings. Over the years, Nigeria has recorded low implementation of capital budgets and is yet to move above 75 percent implementation within a fiscal year since the inception of her democracy (1999); with expenditure percentages staggering between 6 percent to 65 percent between 2010 to 2016. This study examined the impact of government revenue on capital budget expenditure in Nigeria between 2009 First Quarter – 2017 Fourth Quarter. The study highlighted the importance of the various revenue components, thereby testing the efficacy of wagner's theory in Nigeria. The dependent variable is capital budget expenditure, while the independent variables are oil revenue and company income tax, alongside two control variables: exchange rate and gross domestic product. The study made use of time series data; and the variables being a combination of I(0) and I(1) were subjected to ARDL model estimation in the short and long run. The Wald test showed that a long run relationship exists between government revenue and capital budget expenditure. The ECT was highly significant, with a very high adjustment speed to equilibrium after every quarter, thus concluding that government revenue influences government expenditure, recommending that all available frontiers of revenue including other forms of oil and non-oil tax should be given necessary attention.

Keywords: Capital Budget Expenditure, Oil Revenue, Company Income Tax, Wagner's Law.

1.0 Introduction

Budgets are used by different countries of the world, as a fiscal policy document that reflects the agenda of a particular government per time, detailing the projection of revenue and expenditure for a stated financial period. It is a key and vital policy instrument used by the government, for allocating public resources among competing socio-economic needs. Similarly, Ogujiuba and Ehigiamusoe (2014) opined similar

importance of the budget an important policy document in government managerial function.

The Nigerian budget is of two major components; which are the capital and the recurrent expenditure components. Edeme and Nkalu (2017) opined that the capital budget of any economy is regarded as a potent tool of capital investment and is more directly related to development than the recurrent budget because it contributes to the capital stock of economy needed to drive the growth process. Thus the study of Choudhury and Kymar (2017) clearly identified the direction of literature and was of the opinion that the need to study the relationship between government revenue and expenditure has gained prominence over the past decade. Nigeria has fully implemented its budget on only four occasions, that is; 2001, 2007, 2009, and 2013 respectively, since the inception of her democracy (Federal Ministry of Budget and National Planning (FMBNP), 2019), This statistic spans over 18 years, and the fraction of full implementation is low, not even amounting for a quarter of the years. Similarly, Adedoyin *et al.*, (2017) opined that there was noticeable fluctuations in the aggregate expenditures of government over the period of 2014 – 2016 of both capital and recurrent expenditure owing to fluctuations in government resources. Also, Ogujiuba and Ehigiamusoe (2014) opined that since the year 1999, there has never been a year where capital budget expenditure reached 75%. Thus, Olanrewaju (2016) and Olaoye, Olatunji and Oladipupo (2017) were of the opinion that these discrepancy was caused by lack of funds and focus of government expenditure. Furthermore, the quarterly reports on budget implementation of the Federal Government of Nigeria, shows that from 2010 to 2016, capital budget expenditure averaged 47.6% in these seven years. The percentages of capital budget expenditure achieved to that planned for the said period are: 50.1%, 44.4%, 55.6%, 57.4%, 53.8%, 65.06%, and 6.5%; for 2010 – 2016 respectively, showing re-occurring capital budget implementation challenges.

In Nigeria, revenue from other resource base such as agriculture and tax; have grown in government attention over the years, classifying government revenue in Nigeria into oil and non-oil; with taxable revenue as a form of non-oil revenue (Adedoyin *et. al.*, 2017). Achieving the budgeted capital expenditure is still challenging despite the presence of political will, good leadership and an extensive fight against corruption

(Medium Term Expenditure Framework (MTEFF), 2016 & FMBNP, 2019). Thus, Dagwom and Bala (2014) opined that taxation of all forms is very important to national development because it provides the funding for government expenditure and its effect on the composition of government revenue for budgeted expenditure.

To the best of the researcher's knowledge, most researches on budgeting have not focused on the financial implications of budgeting and how revenue does influence government ability to spend, leaving much to be done in understanding the relationship between government revenue and budget expenditure in the Nigerian context. The very few researches such as that of Amin and Jannat (2017) and Adedoyin *et al.*, (2017) were more focused on aggregated estimates with little emphasis to variations during the budgeting year. Thus, this study found intriguing the spike in expenditure affected by quarterly disbursement, suggesting the use of quarterly data for analysis. This study makes use of secondary data, however; out of all the studies that have made use of secondary data, none of them made use of quarterly data; as most of their data were annual. A focus on this individual aggregates with a shorter frame of time would help identify possible causes of delayed expenditures and provide empirical solutions; thereby enriching the literature in public finance.

Against this background, the Research Questions driving this study are as follows:

- To what extent does Oil Revenue affect Capital Budget Expenditure in Nigeria?
- To what extent does Company Income Tax affect Capital Budget Expenditure in Nigeria?

The specific research objectives and hypotheses were drawn from the research questions above; with the hypotheses stated in the null form. The study focuses on the Nigerian economy within the period of 2009 – 2017. This an eight-year period of 36 quarters of which quarterly data is available from FMBNP for the said period; underpinned with Wagner's theory. The study has one dependent variable (capital budget expenditure), two independent variables (oil revenue and company income tax); and two control variables (exchange rate and economic growth). FMBNP (2019) recognize company income tax, value-added tax, and custom and excise duties as major components of non-oil revenue. The use of

quarterly data is very beneficial because it provides detailed changes within the year and can be used for predictions (Lorek, 1979).

2.0 Literature Review

2.1 Capital Budget Expenditure in Nigeria: Capital Expenditure is expenditure on capital projects and are usually capital intensive. Nwosu and Okafor (2014) is of the opinion that capital expenditure has been on the rise in Nigeria since the Nigeria/Biafra War in 1970 because of the need to reconcile, rehabilitate and reconstruct. Thus, government intention is to make its capital expenditure higher than it's recurrent, due to the importance of capital expenditure on infrastructure.

Ojo (2012) is of the opinion that capital budgeting involving building of highways, dams, purchase of heavy duty machinery and equipment, supply of water, electricity, transport, health, and educational facilities; aids in developing the economy. Thus, the capital budget ensures orderly governance, as governance without sound budgeting will definitely result into haphazard deployment of government resources and development. Without the capital budget, government expenditure would be left to the bias dictate of its officials.

2.2 Oil Revenue: There are many sources of energy, some renewable and other non-renewable. According to Basnet and Upadhyaya (2015), oil has been a major source of energy since last century. They opined that the importance of oil as a source of energy grew over decades due to its multifaceted usage. Factors that cause volatility in oil revenue includes: international crises, industrial breakdown, discovery of other forms of energy, and discovery of new oil wells in other countries. Nigeria is an oil producing country, and oil plays a very significant role in the working of the Nigerian economy, as it has been a major source of revenue. Nigeria, alongside 30 other countries accounts a significant amount of the Worlds GDP, through the proceeds from oil.

Chris and Amujiri (2015) opined that Nigeria is one of the few oil producing countries that have enacted laws to initiate corporate transparency in the oil sector. This was done with the establishment of the Nigeria Extractive Industry Transparency Initiative (NEITI), saddled with the responsibility of monitoring the consistency of oil revenue as

against production quotas. Ugbede, Lizam and Kaseri (2016) in his article pointed out the strong relationship between oil price and the Nigerian economy, stating that the oil price adjsument in the Global market is treated severe in Nigeira, because of the importance of oil revenue on the Nigerian economy, which is the leading cause of the advocation for diversification of the economy. However the case, Oil still plays a vital role in the revenue of the Nigeria and is a function of sales and price.

2.3 Company Income Tax (CIT): Company Income Tax is a form of direct tax. Dagwom and Bala (2004) opined that it is tax on the profit of all companies including oil and gas companies operating in the downstream sector. CIT is tax levied on a resident company's worldwide income being its profits accruing in, derived from, brought into or received in Nigeria. For companies that are not resident in a locality, e.g. Nigeria – the tax is levied on only that income derived from its local operation. Afintinni and Ibukun (2016) opined that Company Income tax revenue generated over the years has fueled the growth of the economy. Furthermore, Ahmad and Loganathan (2016) opined that higher corporate tax tends to raise production costs and reduces the profitability of firms and their capacity to incur investment expenditure.

Oxford Committee for Famine Relief (OXFAM), (2016) held similar conceptual positions by describing the importance of tax as an important part of government revenue. Excerpts from the publication describes that "almost a third (30%) of rich Africans' wealth – a total of $500bn – is held offshore in tax havens which in estimate cost African countries $14bn a year in lost tax revenues. This is enough money to pay for healthcare that could save the lives of 4 million children and employ enough teachers to get every African child into school". Okoye and Afuberoh (2014) opined on the importance of tax as a revenue item by describing its predictability, its assurance no matter the circumstance, because government has the sole authority of increasing or reducing the tax bracket.

2.4 Wagner's Law of Increasing State Activities: This study makes use of the Law of Increasing State Activities also known as Wagner's Theory; propounded by Adolph Wagner (1835 – 1917), as the underpinning theory in this study. Several studies have studied the relationship between public expenditure and national income and have

come out with various views on the extent of relationship that exist between them, i.e. the direction and the duration.

The major assumption of this law is that a rise in public expenditure does not result to a rise in public income, making public expenditure an effect rather that a cause. In addressing this Amin and Jannat (2017) opined that Economists over the years have made use of Wagner's law alongside other empirical evidences to describe the causal relationship between government expenditure and national income. In Nigeria, Babatunde (2011) could not prove the existence of Wagner's law while Ahmad and Loganathan (2016) found out that a bidirectional and a unidirectional relationship exist between both variables.

2.5 Empirical Review: Revenue and Expenditure relationship was studied in researches of Obioma and Ozughalu (2010), Aregbeyen and Ibrahim (2012), Elyasi and Rahimi (2012), Al-zeaud (2014), Ravinthirakumaran (2015), Choudhury and Kymar (2017) and Kiminyei, (2018). They recommended the need to study the relationship between government revenue and expenditure as a result of the varying opinions of the strength and direction of the relationship. To Obioma and Ozughalu (2010), and Aregbeyen and Ibrahim (2012), the relationship is unidirectional and skewed towards the tax-spend hypothesis. Meanwhile, studies of Elyasi and Rahimi (2012), and Choudhury and Kymar (2017), Al-zeaud (2014), Ravinthirakumaran (2015), and Kiminyei (2018); found the relationship to be bidirectional at some point and unidirectional at another. Thus Narayan and Narayan (2005) opined that the failure in achieving consistency in findings should not discourage further researches because the study of the relationship is important in understanding the relationship between government revenue and expenditure.

On the revenue front; Dagwom and Bala (2014), Ojong, Anthony, and Arikpo (2017) and Fasanya and Ogundare (2018) opined that oil revenue and tax of all forms are a major and worthy routes in financing government expenditure in Nigeria. The size and composition these revenue streams cannot be neglected.

3.0 METHODS

3.1 Research Design, Population and Sources of Data Collection: The study made use of the ex-post facto research design. Ex-

post facto research is an after-the-fact research, used mostly in social sciences as close substitute to pure science experimental research. The population of this study is the Federal republic of Nigeria, and the source of data is the quarterly budget implementation reports of the Federal Ministry of Budget and National Planning is used as the source of secondary data showing government expenditure between the year 2009Q1 – 2017Q4.

3.2 Model Specification and Tools of Data Analysis: The econometric model for this study is highlighted below, as well as a summary of measurement of variables.

Where: LPCEX is the Log of Public Capital Expenditure, LOILREV is Log of Oil Revenue, LCIT is LOG of Company Income Tax, LEXR is Log of Exchange Rate, LGDP is Log of Gross Domestic Product and t is time, is the coefficient, and is differencing factor.

This study used the E-views statistical package to carry out regression analysis, similar to the regression technique employed by Babatunde (2011), Aregbeyen and Ibrahim (2012), and Elyasi and Rahimi (2012).

4.0 RESULTS AND DISCUSSIONS:

4.1 Correlation Matrix and Pre-Estimation Test The correlation coefficients between variables included in the model are presented in table 4.1 above, noting that the correlation matrix should range from 1 to -1; with the sign showing whether the correlation is positive or negative. Thus Table 4.1 shows that GDP has the highest correlation coefficient of 0.55. The Unit Root Test is also carried out to test each of the series for stationarity, as seen in Table 4.2 where only PCEX (the dependent variable) is stationary, while OILREV, CIT, EXR, and GDP (independent and control) are difference stationary after first differencing. Thus, with the null hypothesis which states that the variables have a unit root, the results will guide in accepting or rejecting the null hypothesis. The dependent variable (PCEX) is the only variable having a p-value of less than 0.05 at levels; thus is order I(0); while the other variables are of order I(1). Thus, the dependent, independent variables and the control variables are all integrated of either order one or zero, i.e. either I(0) or I(1), which is one of the criteria for using the ARDL Technique.

Table 4.1: *Correlation Matrix*

Var.	t-Statistic	Prob.	Order	Stat.
LOGCIT	-1.3915	0.5740	I(0)	No
D(LOGCIT)	19.1450	0.0001	I(1)	Yes
LOGEXR	-2.9678	0.7607	I(0)	No
D(LOGEXR)	-2.9511	0.0029	I(1)	Yes
LOGGDP	1.3106	0.6120	I(0)	No
D(LOGGDP)	-4.6193	0.0009	I(1)	Yes
LOGOIL R.	-1.8018	0.3735	I(0)	No
D(LOGOIL.R)	-6.0215	0.0000	I(1)	Yes
LOGPCEX	-3.8469	0.0065	I(0)	Yes
D(LOGPCEX)	-8.0626	0.0000	I(1)	Yes

VAR.	CIT	EXR	GDP	OIL R.	PCEX
CIT	1.00				
EXR	0.39	1.00			
GDP	0.55	0.60	1.00		
OIL R.	-0.01	-0.41	0.13	1.00	
PCEX	0.14	-0.31	-0.29	0.24	1.00

Table 4.2: *Unit Root Test*

Note: PCEX – Public Capital Expenditure, CIT – Company Income Tax, OIL R. – Oil Revenue, EXR – Exchange Rate, GDP – Real Gross Domestic Product, VAR. – Variable, STAT. – Statistic, All t-statistics are at 5% significance.
Source: Researcher's Analysis, 2021.

4.2 Lag Selection and Short Run Model

In selecting the appropriate lag, VAR is estimated by before getting the appropriate lag. The lag selection is not an arbitrary selection process, but is done using the statistical tool and guided by different lag selection criterion, in which this study makes use of the AIC criterion.

Table 4.3: *Lag Selection Criteria*

Lag	Log L	LR	FPE	AIC	SC	HQ
0	-37.40	NA	1.359	3.141	3.381	3.212
1	-37.24	0.251	1.451	3.203	3.491	3.288
2	-33.17	6.018*	1.162*	2.976*	3.312*	3.076*

Source: Researcher's Analysis, 2021.

After estimating the model at short run, it was discovered that the model has an R-squared of 0.864537, showing that the variables explains a large portion of the relationship in the model. CIT and EXR are both significant at 5%, at both lag 1 and 2. Thus, in the short run, they have a significant relationship with the dependent variable. More so, from the coefficients, it can be observed that in the short run, a 1% increase in CIT will lead to a 210.23% increase in PCEX and 1% increase in EXR will lead to a 157.062% decrease in PCEX respectively. To cross check the short run estimates, two post estimation test were carried out. Firstly, a serial correlation test was carried out to establish the existence or not of serial correlation using the null hypothesis that say, no serial correction correlation exists. The f value is 0.0971 so the study fails to reject the null hypothesis. Secondly, the Heteroscedasticity Test is carried out to test the null hypothesis of homoscedasticity. The p-values of 0.6534, 0.5196 and 0.9982; are insignificant. Thus the study fails to reject the null hypothesis that says that no heteroscedasticity.

Table 4.4**:** *Short Run Estimation Output*

Var.	Lag	coefficients	p-value
CIT	-1	3.5261	0.0142
	-2	2.1023	0.0422
EXR	-1	-15.7062	0.0070
	-2	-14.6829	0.0503
GDP	-1	-0.7335	0.7660
	-2	2.5155	0.2582
OILREV	-1	0.3030	0.8144
	-2	-1.1406	0.3119
R-squared			0.8292

Var.	Lag	Coefficents	p-value
CIT	-1	0.6744	0.0456
	-2	-0.1012	0.8200
EXR	-1	-14.0375	0.0067
	-2	-10.8316	0.0905
GDP	-1	0.1615	0.9369

	-2	-0.4116	0.8019
OILREV	-1	-0.3544	0.7438
	-2	0.3759	0.6159
ECT	-1	-0.9830	0.0182
		R-squared	0.8645

Note: CIT – Company Income Tax, OIL REV – Oil Revenue, EXR – Exchange Rate and GDP – Real Gross Domestic Product, ECT – Error Correction Term. Source: Researcher's Analysis, 2021.

To estimate the long run relationship, Wald test is carried out to ascertain the existence or not of long run relationships and to specify the boundaries of the model which would be checked against a critical value table developed by Pesaran, Shin, & Smith (2001) on f-values for restricted intercepts and no trend with critical values 2.27 and 3.28 for I(0) and I(1). The f-value for this study is 2.553 and is within the range, indicating a long run relationship exists. The long run estimates output is used to generate residuals that will be used in estimating the ECT. Table 4.5 shows output of the ECT with Long Run estimates. CIT and EXR are significant at 5%, at lag 1 and the coefficient shows that in the long run a 1% increase in CIT will lead to a 67.4% increase in PCEX and a 1% increase in EXR will lead to a 140.4% decrease PCEX. Also the ECT term should be between 0 and -1 and may involve any value above -1, but not lesser than -2. Thus, an ECT coefficient of -0.9830 shows the rate of conversion of the variables to equilibrium and a stable long run relationship that exist in the model. The ECT probability of the model is a statistically significant p-value of 0.0182 which is less the 0.05 level of confidence, showing significance (reject the null hypothesis). Thus, a long run relationship thus exists. The R-square of 0.8645 is high and shows that the exogenous variables explain 86.45% of the variation in the endogenous variable (PCEX).

5.0 Conclusion and Recommendation

Premised on the findings from the results, this study concludes that there exist a revenue and expenditure relationship in Nigeria, with CIT being significant; supported by Wagner's theory of Increasing State Activities. CIT is significant in diversifying the components of Government because the heavy reliance on sales from crude may

major cause of shortfall in funds for expenditure when the forces in the international market and foreign exchange affects. This does not imply that oil revenue is not significant; it only shows that the benefit of oil revenue will be further strengthened with the availability of other forms of non-oil revenue. The study recommends that government should pay attention to other non-resource revenue and reprioritize expenditure for more capital gains in other to give the Naira a welcoming face value amongst other currencies.

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APPENDIX

CORRELATION MATRIX

Covariance Analysis: Ordinary
Date: 11/09/21 Time: 09:57
Included Observations: 33
Sample: 2009Q1 2017Q4
Balanced sample (listwise missing value deletion)

Correlation	LOGCIT	LOGEXR	LOGGDP	LOGOILREV	LOGPCEX
LOGCIT	1.000000				
LOGEXR	0.388469	1.000000			
LOGGDP	0.550797	0.602261	1.000000		
LOGOILREV	-0.010668	-0.409351	0.131823	1.000000	
LOGPCEX	0.138969	-0.307956	-0.292568	0.235236	1.000000

UNIT ROOT TEST RESULTS TABLE (ADF)

Null Hypothesis: the variable has a unit root

	At Level	LOGCIT	LOGEXR	LOGGDP	LOGOILREV	LOGPCEX
With Constant	t-Statistic	-1.3915	-2.9678	-1.3106	-1.8018	-3.8469
	Prob.	***0.5740***	***0.7607***	***0.6120***	***0.3735***	***0.0065***
		n0	n0	n0	n0	***
With Constant & Trend	t-Statistic	-1.9828	-1.3235	-4.5071	-2.7974	-4.2966
	Prob.	***0.5882***	***0.8616***	***0.0059***	***0.2087***	***0.0100***
		n0	n0	***	n0	**
Without Constant & Trend	t-Statistic	2.2466	1.9803	1.6938	-0.0274	-0.8372
	Prob.	***0.9927***	***0.9869***	***0.9755***	***0.6668***	***0.3435***
		n0	n0	n0	n0	n0
	At First Difference	d(LOGCIT)	d(LOGEXR)	d(LOGGDP)	d(LOGOILREV)	d(LOGPCEX)
With Constant	t-Statistic	-19.1450	-2.9511	-4.6193	-6.0215	-8.0626
	Prob.	***0.0001***	***0.0029***	***0.0009***	***0.0000***	***0.0000***
		***	***	***	***	***
With Constant & Trend	t-Statistic	-18.9307	-1.5418	-3.7220	-6.0526	-7.8857
	Prob.	***0.0000***	***0.7909***	***0.0357***	***0.0001***	***0.0000***
		***	n0	**	***	***
Without Constant & Trend	t-Statistic	-17.7955	0.4250	-4.4469	-6.1076	-8.1456

Prob.	***0.0000***	***0.7990***	***0.0001***	***0.0000***	***0.0000***
	***	n0	***	***	***

LAG SELECTION

VAR Lag Order Selection Criteria
Endogenous variables: D(LOGPCEX)
Exogenous variables: C D(LOGCIT) D(LOGEXR) D(LOGGDP) D(LOGOILREV)
Date: 11/08/21 Time: 20:08
Sample: 2009Q1 2017Q4
Included observations: 27

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-37.39792	NA	1.359385	3.140586	3.380556	3.211942
1	-37.23649	0.251116	1.451164	3.202703	3.490666	3.288329
2	-33.17447	6.017805*	1.161973*	2.975886*	3.311844*	3.075784*

SHORT RUN ESTIMATES

Dependent Variable: D(LOGPCEX)
Method: Least Squares
Date: 11/08/21 Time: 20:22
Sample (adjusted): 2009Q4 2016Q2
Included observations: 27 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	70.47505	50.50546	1.395395	0.1882
D(LOGPCEX(-1))	-1.111953	0.210395	-5.285060	0.0002
D(LOGPCEX(-2))	-0.879743	0.217396	-4.046737	0.0016
D(LOGCIT(-1))	3.526071	1.230983	2.864435	0.0142
D(LOGCIT(-2))	2.102296	0.925056	2.272614	0.0422
D(LOGEXR(-1))	-15.70623	4.834607	-3.248710	0.0070
D(LOGEXR(-2))	-14.68292	6.748960	-2.175583	0.0503
D(LOGGDP(-1))	-0.733462	2.408629	-0.304514	0.7660
D(LOGGDP(-2))	2.515494	2.119225	1.186988	0.2582
D(LOGOILREV(-1))	0.303031	1.262850	0.239958	0.8144
D(LOGOILREV(-2))	-1.140555	1.080391	-1.055688	0.3119
LOGCIT(-1)	-4.340835	1.764532	-2.460049	0.0300
LOGEXR(-1)	1.897643	3.866128	0.490838	0.6324
LOGGDP(-1)	2.997868	1.531153	1.957915	0.0739
LOGOILREV(-1)	-0.636293	0.805613	-0.789824	0.4450

R-squared	0.864537	Mean dependent var	-0.055960
Adjusted R-squared	0.706496	S.D. dependent var	1.212737

S.E. of regression	0.657013	Akaike info criterion	2.297954
Sum squared resid	5.179986	Schwarz criterion	3.017863
Log likelihood	-16.02237	Hannan-Quinn criter.	2.512020
F-statistic	5.470340	Durbin-Watson stat	2.158815
Prob(F-statistic)	0.002738		

SERIAL CORRELATION TEST

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.097128	Prob. F(2,10)	0.9083
Obs*R-squared	0.514498	Prob. Chi-Square(2)	0.7732

Test Equation:
Dependent Variable: RESID
Method: Least Squares
Date: 11/08/21 Time: 20:25
Sample: 2009Q4 2016Q2
Included observations: 27
Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-4.551316	55.91786	-0.081393	0.9367
D(LOGPCEX(-1))	0.072538	0.377975	0.191911	0.8517
D(LOGPCEX(-2))	0.055287	0.267192	0.206920	0.8402
D(LOGCIT(-1))	-0.178336	1.611209	-0.110685	0.9141
D(LOGCIT(-2))	-0.179845	1.200507	-0.149807	0.8839
D(LOGEXR(-1))	1.022738	5.746599	0.177973	0.8623
D(LOGEXR(-2))	0.905702	7.614644	0.118942	0.9077
D(LOGGDP(-1))	0.583813	2.930041	0.199251	0.8461
D(LOGGDP(-2))	-0.187005	3.256246	-0.057430	0.9553
D(LOGOILREV(-1))	-0.256992	1.501224	-0.171188	0.8675
D(LOGOILREV(-2))	0.150091	1.593290	0.094202	0.9268
LOGCIT(-1)	0.178125	2.123621	0.083878	0.9348
LOGEXR(-1)	0.235797	4.273919	0.055171	0.9571
LOGGDP(-1)	-0.157783	1.813002	-0.087029	0.9324
LOGOILREV(-1)	0.048742	0.889812	0.054777	0.9574
RESID(-1)	-0.218817	0.524623	-0.417093	0.6854
RESID(-2)	-0.014028	0.617265	-0.022726	0.9823

R-squared	0.019055	Mean dependent var	-1.38E-14
Adjusted R-squared	-1.550456	S.D. dependent var	0.446352
S.E. of regression	0.712831	Akaike info criterion	2.426862
Sum squared resid	5.081279	Schwarz criterion	3.242760
Log likelihood	-15.76264	Hannan-Quinn criter.	2.669471
F-statistic	0.012141	Durbin-Watson stat	1.985148

Prob(F-statistic)	1.000000

HETEROSKEDASTICITY TEST: BREUSCH-PAGAN-GODFREY

F-statistic	0.806424	Prob. F(14,12)	0.6534
Obs*R-squared	13.08841	Prob. Chi-Square(14)	0.5196
Scaled explained SS	3.358237	Prob. Chi-Square(14)	0.9982

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 11/08/21 Time: 20:26
Sample: 2009Q4 2016Q2
Included observations: 27

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	21.54214	25.59393	0.841690	0.4164
D(LOGPCEX(-1))	-0.047837	0.106619	-0.448674	0.6617
D(LOGPCEX(-2))	-0.132114	0.110167	-1.199221	0.2536
D(LOGCIT(-1))	0.537151	0.623808	0.861085	0.4061
D(LOGCIT(-2))	0.523594	0.468778	1.116935	0.2859
D(LOGEXR(-1))	1.422014	2.449964	0.580422	0.5724
D(LOGEXR(-2))	-1.885594	3.420073	-0.551331	0.5915
D(LOGGDP(-1))	-2.310356	1.220586	-1.892825	0.0827
D(LOGGDP(-2))	0.745843	1.073929	0.694499	0.5006
D(LOGOILREV(-1))	1.301725	0.639957	2.034084	0.0647
D(LOGOILREV(-2))	-0.811558	0.547494	-1.482314	0.1640
LOGCIT(-1)	-0.794936	0.894187	-0.889004	0.3915
LOGEXR(-1)	-1.579293	1.959182	-0.806098	0.4359
LOGGDP(-1)	0.834893	0.775921	1.076004	0.3031
LOGOILREV(-1)	-0.238404	0.408249	-0.583967	0.5701

R-squared	0.484756	Mean dependent var	0.191851
Adjusted R-squared	-0.116362	S.D. dependent var	0.315115
S.E. of regression	0.332945	Akaike info criterion	0.938501
Sum squared resid	1.330227	Schwarz criterion	1.658410
Log likelihood	2.330238	Hannan-Quinn criter.	1.152568
F-statistic	0.806424	Durbin-Watson stat	1.659444
Prob(F-statistic)	0.653367		

WALD TEST:
Equation: Untitled

Test Statistic	Value	df	Probability
F-statistic	2.552791	(4, 12)	0.0935

Chi-square	10.21117	4	0.0370

Null Hypothesis: C(12)=0, C(13)=0, C(14)=0, C(15)=0
Null Hypothesis Summary:

Normalized Restriction (= 0)	Value	Std. Err.
C(12)	-4.340835	1.764532
C(13)	1.897643	3.866128
C(14)	2.997868	1.531153
C(15)	-0.636293	0.805613

Restrictions are linear in coefficients.

LONG RUN AND ECT

Dependent Variable: D(LOGPCEX)
Method: Least Squares
Date: 11/08/21 Time: 20:50
Sample (adjusted): 2009Q4 2016Q2
Included observations: 27 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.119812	0.203630	0.588381	0.5650
D(LOGPCEX(-1))	-0.298011	0.281548	-1.058471	0.3066
D(LOGPCEX(-2))	-0.333367	0.233266	-1.429128	0.1735
D(LOGCIT(-1))	0.674383	0.309376	2.179814	0.0456
D(LOGCIT(-2))	-0.101248	0.437230	-0.231568	0.8200
D(LOGEXR(-1))	-14.03750	4.462383	-3.145741	0.0067
D(LOGEXR(-2))	-10.83156	5.985890	-1.809516	0.0905
D(LOGGDP(-1))	0.161530	2.007245	0.080474	0.9369
D(LOGGDP(-2))	-0.411582	1.611840	-0.255349	0.8019
D(LOGOILREV(-1))	-0.354416	1.064354	-0.332987	0.7438
D(LOGOILREV(-2))	0.375934	0.733768	0.512333	0.6159
ECT(-1)	-0.982961	0.371013	-2.649395	0.0182