

Trend Analysis of Fiscal Policy and Oil Price Shocks on Sectoral Output Growth in Nigeria

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Abstract

Nigeria's dependence on oil production as its primary income source has significant economic consequences. Agriculture was neglected in favour of oil, which became the country's main revenue stream and was anticipated to drive substantial economic growth and prosperity. However, there have been sequences of oil price changes over the last four decades, which has impeded Nigeria's macroeconomic objectives. This study looked at the trend analysis of fiscal policy and oil price shocks on sectoral output growth in Nigeria. This study relied on secondary data. The data were sourced from Central Bank of Nigeria (CBN) Statistical Bulletin, National Bureau of Statistics (NBS), World Economic and Financial Surveys for the period of 1981 and 2018 and trend analysis test was used to analyze the data collected. The results for agricultural sector showed that there were large random fluctuations in all the outputs except foreign exchange rate that does not appear stationary from year 2006 up till 2016. The results for industrial sector discovered that there were no sharp fluctuations in the external debt and foreign exchange rate, though above the oil shocks in value. External debt has the highest value followed by external reserves, industrial output, government revenue, government expenditure, foreign exchange rate and lastly oil shocks. The fluctuations of all the variables are inversely related to the value. Trade and services sector experienced a serious crash between late 2014 and 2017. The output fluctuated greatly and dropped greatly most especially for oil shocks till late 2018. This observation could be traced to the heavy dependence on oil sector in Nigeria. The study recommends that government should consider maximizing its revenue potential by broadening its revenue base through an effective and efficient taxation system, stabilizing exchange rates, and fostering an environment conducive to the growth of industrial sectors, thereby complementing governmental initiatives in enhancing trade and services.

Keywords: Fiscal policy, oil price shocks, sectoral output, trade and services, trend analysis, economic growth, macro-economic objectives

1.0 Introduction

Macroeconomic policies and their effects on development are highly valued in both developed and emerging nations (Andabai, 2016). The impact of fiscal policy on real sector growth in Nigeria is one area of the economics literature that can accelerate the rate of growth and development in an economy. An empirical study by Omitogun and Ayinla (2007) found that higher government spending encourages the development and growth of the real sector. Consequently, a larger portion of overall spending ought to be allocated to capital projects that support the expansion and prosperity of the real sector. Effective and efficient

fiscal policy by the government fosters real sector growth and development in every modern economy (Nzotta, 2014).

According to Alex and Ebieri (2014), government intervention in the economy has taken the form of manipulating the budget's receipt and expenditure sides in order to accomplish those national goals. Abdulrauf (2015) asserts that any civilization, but particularly LDCs, has to employ fiscal policy as a key tool for economic stabilization. Since crude oil was discovered as an energy source in the 1800s, it has played a significant role in the world economy. Gronwald (2008) asserts that the value of oil has increased to the point where, in the event of an oil-free world, all significant worldwide distribution networks that facilitate trade will fail, resulting in the collapse of the global economy.

Nigeria's main source of income and its biggest source of foreign exchange earnings is crude oil, on which the nation bases its budgeting, capital allocation, and revenue distribution systems. as a result, crude oil and Nigeria's economic progress are multiplied by changes in oil prices, whether they are rising or falling. Thus, the study looked at trend analysis of how Nigerian sectoral production growth was affected by changes in oil prices and fiscal policy.

Statement of the Problem

According to (Englama 2010) the absolute dependence on oil export revenue has made the level of Nigeria economy vulnerable to sudden oil price movements. Factors such as periods of favourable oil price shock triggered by conflict in oil-producing countries of the world, rise in the demand for the commodity by the consuming nations due seasonality factors, trading positions, and so on; enhance Nigeria favourable terms of trade. On the converse, when crude oil prices are low, occasioned by factors such as low demand, seasonality factors, excess supply, Nigerian economy experiences unfavourable terms of trade evidenced by budget deficit and slow economic growth.

Nigeria has a long profile of fiscal imbalances, with respect to running large fiscal deficits. The imbalances have been costly to the economy, fuelling inflation problem and reducing the competitiveness of the non-oil sector, thereby restraining economic development (Kwakwa, 2003). Over the last four decades, between 1970 and 2017, for most of the years, the fiscal operations of the Nigerian government have resulted in deficits. This is as a result of the volatility in revenue generations combined with increasing expenditure profile of government, thus making the incidence of fiscal deficits unavoidable (Ezeabasili and Mojekwu, 2011). This study therefore examined trend analysis of fiscal policy and oil price shocks on sectoral output growth in Nigeria.

Objectives of the Study

The general objective of the study was to evaluate trend analysis of fiscal policy and oil price shocks on sectoral output growth in Nigeria

. The specific objectives were to:

- i. examine the extent to which fiscal policy and oil price shocks affect agricultural sector in Nigeria.
- ii. analyze the effect of fiscal policy and oil price shocks on industrial sector in Nigeria.
- iii. determine fiscal policy and oil price shocks influence on trade and services sectors in Nigeria.

2.0 Literature Review

Omitogun and Ayinla (2007) attempt to establish whether there is a link between fiscal policy and economic growth in Nigeria using the Solow growth model estimated with the use of ordinary least square (OLS) method. It was found that fiscal policy has not been effective in the area of promoting sustainable economic growth in Nigeria. This finding did not agree with the Keynesian theory which is anchored on the need for an active policy to sustain economic growth. This is a research gap on the factors capable of hampering the effectiveness of fiscal policy.

Ogbole, Sonny and Isaac (2011) focused on the comparative analysis of the impact of fiscal policy on economic activities in Nigeria during regulation and deregulation, using the econometric methods of co-integration and error correction model. The study indicates that there is a difference in the effectiveness of fiscal policy in stimulating economic growth during and after regulation period. They recommend that government fiscal policy should refocus and redirect government expenditure towards production of goods and services so as to enhance GDP growth. This study fails to determine the contribution of fiscal policy on the economy during and after regulation.

Peter and Simeon (2011) adopted vector auto regression (VAR) and error correction mechanism techniques to ascertain impact of fiscal policy variables on Nigerian economic growth between 1970 and 2009. The study revealed that there is a long-run relationship between fiscal policy variables and economic growth in Nigeria. Nevertheless, the research fails to consider other variables, such as interest rate, exchange rate, in defining fiscal policy and its influence on economic growth.

Rasheed (2010) investigated the productivity in the Nigerian manufacturing subsector using co-integration and an error correction model. The study indicates the presence of a long-run equilibrium relationship index for manufacturing production, determinants of productivity, economic growth, interest rate spread, and bank credit to the manufacturing subsector, inflation rates, foreign direct investment, exchange rate and quantity of graduate employment. This finding has research gap on the area of factors that affect manufacturing sector in Nigeria.

Nurudeen and Usman (2010) investigated the effect of government expenditure on economic growth, in a disaggregated analysis and observed that rising government expenditure has not translated to meaningful development as Nigeria still ranks among world's poorest countries. The study revealed that government total capital expenditure (TCAP), total recurrent expenditures (TREC), and government expenditure on education (EDU) have negative effect on economic growth. On the contrary, rising government expenditure on transport and communication (TRACO), and health (HEA) results to an increase in economic growth.

Theoretical underpinning

Mainstream theory: Mainstream theory of economic growth: postulates that production is the most important determinant of growth of any economy, and production which is the transformation of matter in some way, requires energy. This theory categorizes capital, labour and land as primary factors of production; these exist at the beginning of the production period and are not directly used up in production (though they can be degraded or added to). While energy resources (such as; oil and gas, fuels, coal) are categorized as intermediate inputs, these are created during the production period and are entirely used up during the production process. In determining the marginal product of oil as an energy resource useful in determining economic growth, this theory considers in one part its capacity to do work, cleanliness, amenability to storage, flexibility of use, safety, cost of conversion and so on, it also considers

other attributes such as; what form of capital, labour or materials it is used in conjunction with. The theory estimates the ideal price to be paid for crude oil as one that should be proportional to its marginal product (Oriakhi and Osazee, 2013).

Linear/Symmetric: The Linear/Symmetric relationship theory of growth: which has as its proponents, Hamilton (1983), Gisser (1985), Goodwin (1985), Hooker (1986) and Laser (1987) postulated that shock in GNP growth is driven by oil price shock. They hinged their theory on the happenings in the oil market between 1948 and 1972 and its impact on the economies of oil-exporting and importing countries respectively. Hooker (2002), after rigorous empirical studies demonstrated that between 1948 and 1972 oil price level and its changes exerted influence on GDP growth significantly. Laser (1987), who was a late entrant into the symmetric school of thought, confirms the symmetric relationship between oil price shock and economic growth. After an empirical study of her own, she submitted that an increase in oil prices necessitates a decrease in GDP, while the effect of an oil price decrease on GDP is ambiguous, because its effects varied in different countries. Oriakhi and Osazee (2013).

Asymmetry-in-effects theory of economic growth: Asymmetry-in-effects theory of economic growth used the U.S economy as a case study. The theory posits that the correlation between crude oil price decreases and economic activities in the U.S economy is significantly different and perhaps zero. Mark *et al.* (1994), members of this school in a study of some African countries, confirmed the asymmetry in effect of oil price shock on economic growth. Federer (1996) another member of this school explained the asymmetric mechanism between the influence of oil price shock and economic growth by focusing on three possible ways: Counter-inflationary monetary policy, sectoral shocks and uncertainty. He finds a significant relationship between oil price increases and counter-inflationary policy responses. Balke (1996) supports Federer's position/submission. He posited that monetary policy alone cannot sufficiently explain real effects of oil price shock on real GDP (Oriakhi and Osazee, 2013).

3.0 Methodology

This study empirically examined the trend analysis of fiscal policy and oil price shocks on sectoral output growth in Nigeria between 1981 and 2018. The research designs adopted in this study was historical research design. It was used to study and appraise the chronological trend of fiscal policy and oil price shocks on sectoral output growth in Nigeria. For the purpose of this study, the researcher made use of secondary data obtained through from Central Bank of Nigeria (CBN) Statistical Bulletin, National Bureau of Statistics (NBS), World Economic and Financial Surveys. In order to achieve the stated objectives of the study, the time series statistics of the variables was carried out.

Model Specification

Model 1

To determine trend of fiscal policy and oil price shocks on agricultural sector in Nigeria.

$$\begin{aligned} \text{AGRICQ} &= f(\text{GREV}, \text{GEXP}, \text{EXTREV}, \text{FEXR}, \text{EXTDEBT}, \text{OPS}, \mu) \dots \dots \dots (1) \\ \text{AGRICQ} &= \alpha + \beta_1 \text{GREV} + \beta_2 \text{GEXP} + \beta_3 \text{EXTREV} + \beta_4 \text{FEXR} + \\ &\beta_5 \text{EXTDEBT} + \beta_6 \text{OPS} + \mu \dots \dots \dots (2) \end{aligned}$$

Model 2

To analyze trend of fiscal policy and oil price shocks on industrial sector in Nigeria. .

$$\text{INDSTQ} = f(\text{GREV}, \text{GEXP}, \text{EXTREV}, \text{FEXR}, \text{EXTDEBT}, \text{OPS}, \mu) \dots \dots \dots (3)$$

$$INDSTQ = \alpha + \beta_1 GREV + \beta_2 GEXP + \beta_3 EXTREV + \beta_4 FEXR + \beta_5 EXTDEBT + \beta_6 OPS + \mu \dots\dots(4)$$

Model 3

To determine trend of fiscal policy and oil price shocks on trade and services sectors in Nigeria.

$$TRADSEVQ = f(GREV, GEXP, EXTREV, FEXR, EXTDEBT, OPS, \mu) \dots\dots\dots (5)$$

$$TRASEVQ = \alpha + \beta_1 GREV + \beta_2 GEXP + \beta_3 EXTREV + \beta_4 FEXR + \beta_5 EXTDEBT + \beta_6 OPS + \mu \dots\dots\dots(6)$$

Where:

- GREV= Government Revenue
- GEXP = Government Expenditure
- EXTREV = Foreign external reserve
- EXTDEBT = External debt
- FER = Foreign exchange rate
- INDSTQ = Industrial Output
- AGRICQ =Agriculture Output
- TRADSERV= Trade and Services Output
- OPS = Oil Price Shock

4.0 Results and Discussion

4.4.1: Trend analysis of agricultural output, government revenue, expenditure, oil price shocks, external debt, foreign exchange rate, external reserves.

From the figure 4.1, there were large random fluctuations in all the outputs except foreign exchange rate that does not appears stationary from year 2006 up till 2016, i.e., each series appears stationary, meaning that the nature of its random variation was constant over time. In particular, the series fluctuate about means that are constant, or nearly so. There was also volatility clustering, because there are periods of higher, and of lower variation within each series. Volatility clustering does not indicate a lack of stationarity but rather can be viewed as a type of dependence in the conditional variance of each series.

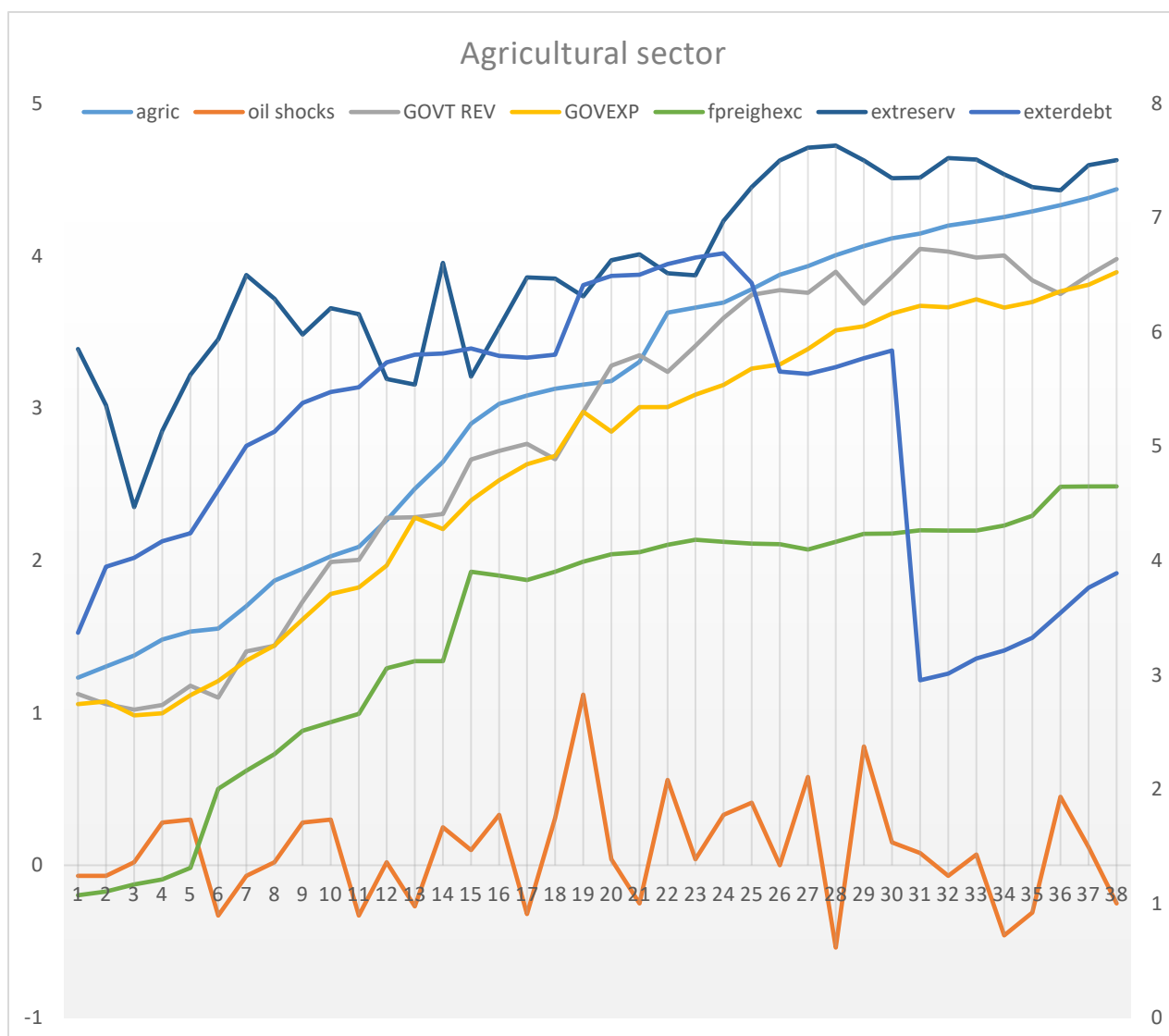


Figure 4.1: Trend analysis of agricultural output, government revenue, expenditure, oil price shocks, external debt, foreign exchange rate, external reserves.

Source: Author’s Computation (2024)

4.4.2: Trend analysis of industrial output, government revenue, expenditure, oil price shocks, external debt, foreign exchange rate, external reserves.

From the figure 4.2, there are large random fluctuations in oil shocks when compared to others, i.e., it appears stationary, meaning that the nature of its random variation is constant over time. In particular, the series fluctuate about means that are constant, or nearly so. There is also volatility clustering, because there are periods of higher, and of lower variation within this particular output. Merely looking at the graph, it was discovered that there were no sharp fluctuations in the external debt and foreign exchange rate, though above the oil shocks in value. External debt has the highest value followed by external reserves, industrial output, government revenue, government expenditure, foreign exchange rate and lastly oil shocks. The fluctuations of all the variables are inversely related to the value.

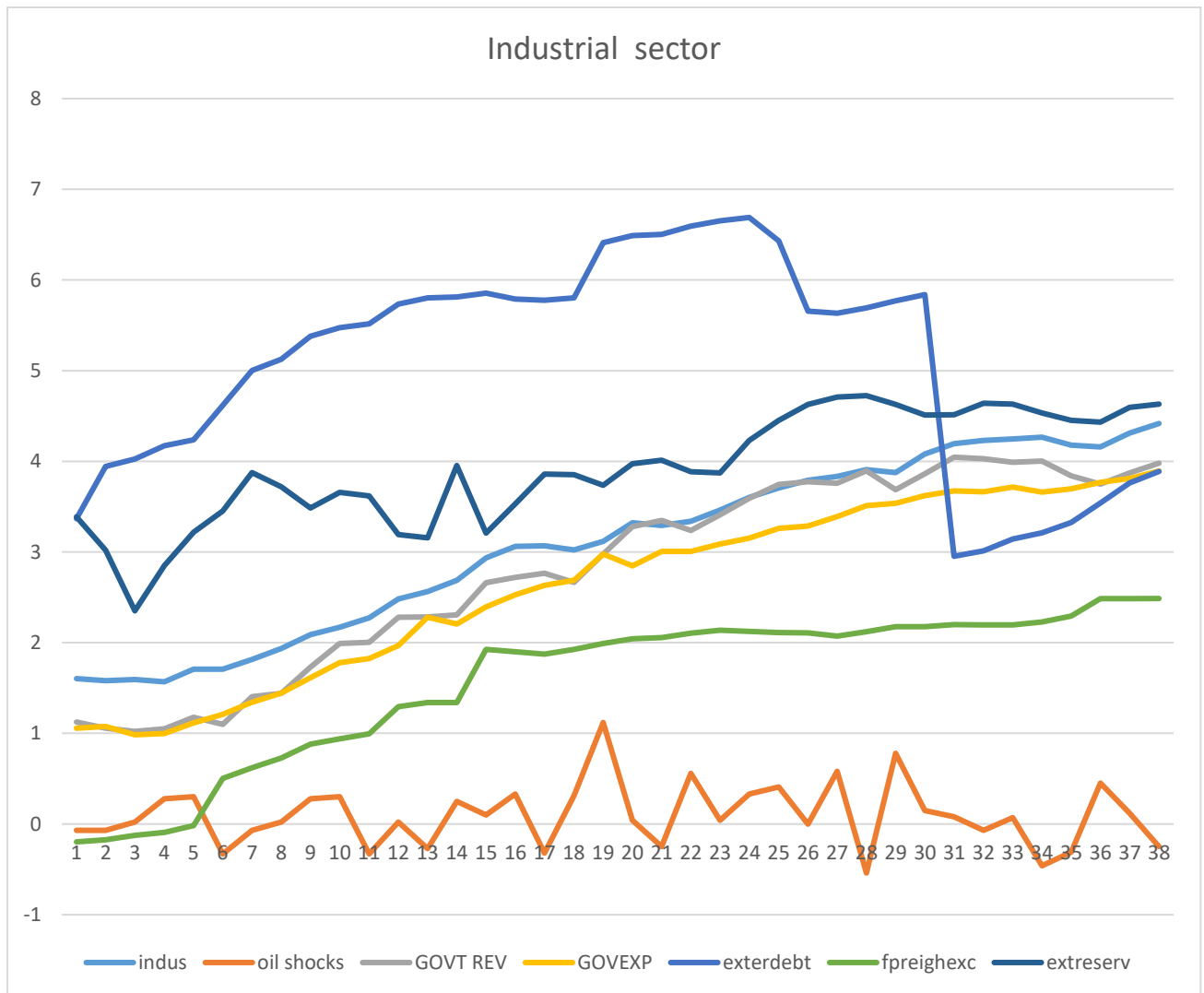


Figure 4.2: Trend analysis of industrial output, government revenue, expenditure, oil price shocks, external debt, foreign exchange rate, external reserves
 Source: Author's Computation (2024)

4.4.3: Trend analysis of trade and services output, revenue, expenditure, oil price shocks, external debt, foreign exchange rate, external reserves.

The movement of sectoral output was further examined graphically to show how the output of each sector moved for the period of thirty eight years. Looking at Figure 4.3 , there was a high rate of change in output, noticed by all the sectors between early 2009. This could be as a result of change of government policy in Nigeria which took place in May, 2009. A change of government policy may either increase or decrease the output since the expectations of sectors will also change. Considering the rate of increase experienced at the early months of 2009, one could attribute it to positive expectations from the in-coming government and its impact on the output. Observing these graphs again, most of the sectors experienced a serious crash between late 2014 and 2017. The output fluctuated greatly and dropped greatly most especially for oil shocks till late 2018. This observation could be traced to the heavy dependent on oil sector.

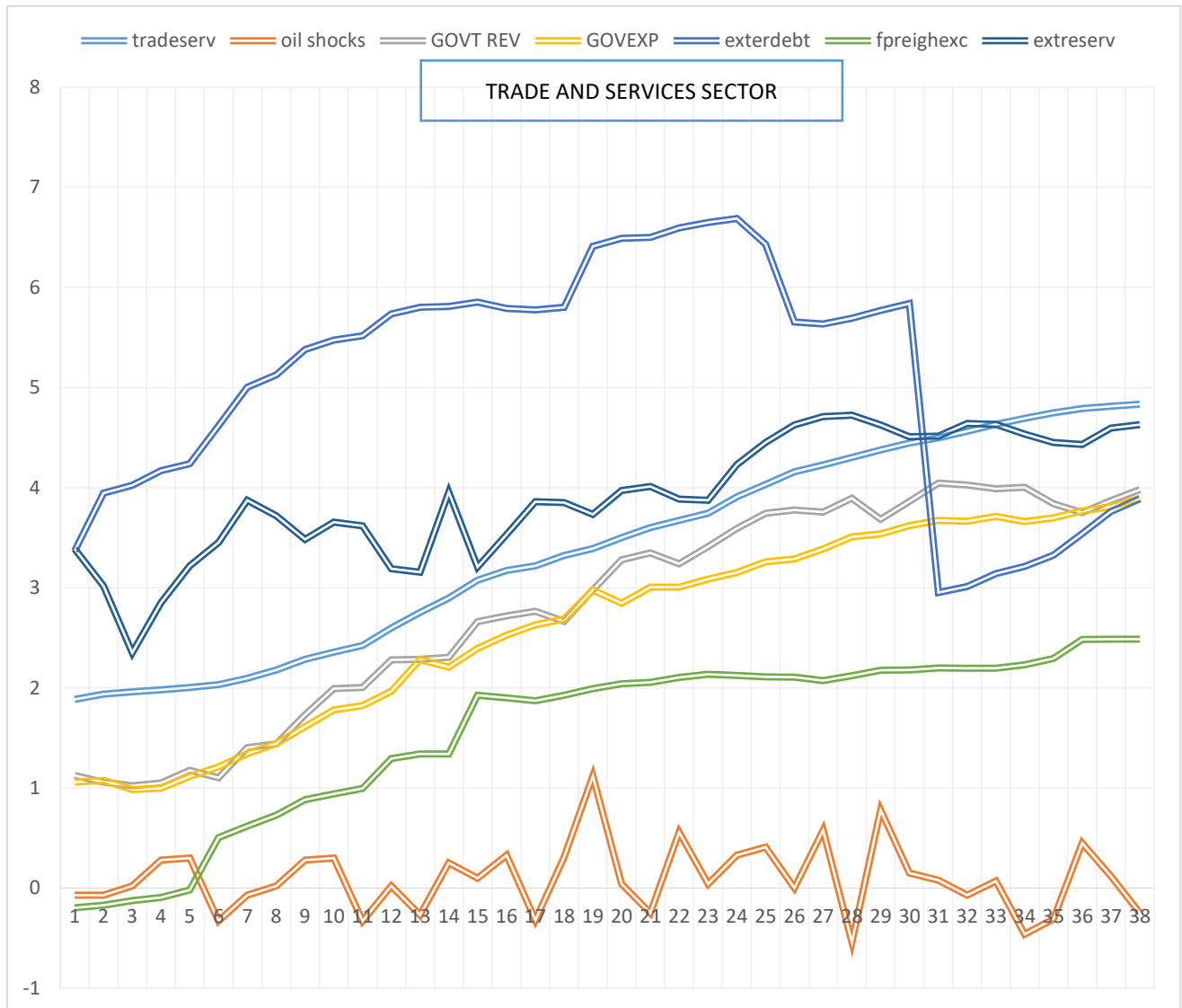


Figure 4.3: Trend analysis of trade and services output, government revenue, expenditure, oil price shocks, external debt, foreign exchange rate, external reserves. **Source: Author's Computation (2024)**

5.0 Conclusion And Recommendations

This study was able to examine the trend analysis of fiscal policy and oil price shocks like government expenditure, revenue public debt, external reserve, foreign exchange rate on sectoral output growth using trend analysis. The following sectors were examined: agricultural, industrial, trade and services. It was deduced that public expenditure have a positive impact on Agricultural output growth. The empirical result shows that Foreign exchange rates and external debt both have a negative significant effect on the industrial sector in Nigeria. The implication for Nigeria was that the unstable foreign exchange rates damages investments flows into the country, and reduces return to capital in the industrial sector which ultimately reduces the level of investment thereby creating unemployment problem and lack of confidence by investors. But other components of fiscal policy impacted industrial sector positively in Nigeria. Oil price shocks have a negative effect on the industrial sector in Nigeria. government

revenue and expenditure increase trade and services sector in the country, this shows that taxation and expenditure on the sector was not counter-productive to the growth of the sector. Based on the findings in the course of this study, the following recommendations were suggested:

- i. Nigerian government and policy makers should implement structural reforms aimed at eliminating inflexibility, boosting production, and promoting the global competitiveness of our products and services.
- ii. Nigerian government and policy makers should implement flexible policies that foster a conducive environment for the industrial sector to thrive, thereby supporting and enhancing its efforts in trade and services development.
- iii. Nigerian government and policy makers should enact structural reforms aimed at stabilizing exchange rates in the country, creating a favourable environment for the industrial sector to thrive and complementing its efforts to enhance trade and services.
- iv. The government and policy makers should also look into maximizing its revenue potential by broadening its revenue base through an effective and efficient taxation system, as well as diversifying Nigeria's income sources by leveraging the country's solid minerals and agricultural resources.

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