THE EFFECTS OF PETROLEUM PROFIT TAX, INTEREST RATE AND MONEY SUPPLY ON NIGERIAN ECONOMY

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Abstract
The study empirically examined the effects of Petroleum Profit Tax (PPT), Interest Rate (INTR) and Money Supply (MONSPL) on Nigeria economy. Data were obtained from Statistical Bulletins of Central Bank of Nigeria (1970 to 2010). Multiple regressions were employed to analyze the relationships among variables- Gross Domestic Product (GDP) as dependent variable and Petroleum Profit Tax, Money Supply and Interest Rate as independent variables. The short run effects of Petroleum Profit Tax (PPT) was positive, while that of Interest Rate was negative and the effects of Money Supply (MONSPL) was positive on economic growth. The effects on economic growth were significant with the adjusted R² of 96.83%. The output effects of the three variables on economic growth on the long run were positive with an R² of 92.5% and adj. R² of 0.8882. That is, economic growth on the long run may be explained up to 89% by these independent variables.

It is therefore concluded that the income from petroleum had been beneficial to the Nigerian economy. Similarly, the interest rate regimes had been helpful to stimulate economic growth and the monetary policies implemented within the period had been effective in achieving regulation of money supply to spur economic growth. It is recommended that Government should transparently and judiciously account for the revenue it generates through PPT by investing in the provision of infrastructure and public goods and services. Furthermore the significance of the short run effects is for interventions to keep interest rates low to facilitate production.

Key words: Petroleum profit tax (PPT); Interest rate; Money supply; Nigerian Economy.

Introduction
Background to the study
It is the expectation of the public that government provides basic infrastructure such as good road network, bridges, airports, seaports, and other social services like education, electricity supply, pipe-borne water, housing and other services that cannot be executed by private sector. These expectations cannot be actualized except there is an enabling financial resource. It is therefore understandable that Government should search for the required funds to meet these obligations. Government raises funds from various sources such as issuing of public debt, levying of taxes, fees, fines and specific charges. Among the various sources from which Governments can raise finance, taxes are the most important and reliable. Taxation is a tool used by government in funding various aspects of economic growth.

Taxes are instruments of fiscal control and serve the purpose of raising revenue/funds for the public sector. These include the public contribution to economic investment, as well as enabling people to meet their basic needs and enjoy wider opportunities. Without taxation, government cannot create a better society. One of the ways to collect tax is through petroleum profit tax. One of the ways of generating revenue by federal government is through petroleum profit tax. The oil industries have achieved great prominence in the Nigerian economic environment since early seventies. The Government has attached importance to oil exploration and production such that the taxation of profits of companies engaging in such operations are taxable under a tax law known as Petroleum Profits Tax Act (PPTA). Petroleum is the main source of energy and shapes the political, socio-cultural, technological and economic destiny of the country. It is a source of power in international politics. From 1970 to 2009 the petroleum industry generated 82% income for Federal Government while 18% came from non-oil revenue (Appah and Ebiringe 2012). According to Azaiki and Shagari (2007) the Petroleum Industry constitutes a major source of income and occupies a strategic position in the economic development of Nigeria. For the past decades, the industry has been playing vital and dominant role to the economic growth of Nigeria, both in foreign exchange earnings and domestic income generation

Statement of the problem
The problems with Nigerian economy have been traced to failure of successive governments to use oil revenue and excess crude oil income effectively in the development of other sectors of the economy. Over all, there has been poor performance of national institutions such as power, energy, road, transportation, politics, financial systems, and investment environment have been deteriorating and inefficient. Despite the fact that crude oil has been the source of Nigerian economy, the economy is facing with high rate of unemployment, widespread oil spillage, increasing poor standard of living as a result of decreasing gross domestic product, per capita income, high rate of inflation and high level of interest rate which has led to the effect of the economic development. Therefore at this juncture, it is important to examine the effect of petroleum profit tax (PPT), interest rate and money supply on Nigerian economy.
The objectives of this study

The main objective of this study is to evaluate the impact of petroleum profit tax (PPT) on economic growth in Nigeria. Other specific objectives are:

- To examine the effect of PPT on economic growth in Nigeria
- To investigate the effect of money supply and interest rate on economic growth in Nigeria

Literature Review

Petroleum Profit Tax in Nigeria

Petroleum profit tax, according to Attamah (2004), is a legislation which imposes tax upon profits from the mining of petroleum in Nigeria and provides for the assessment and collection thereof and for the purposes connected therewith. One of the sources of petroleum income is the Petroleum Profit Tax. Accounting for income from oil and gas producing activities according to Gallun and Stevenson (1986), differ in many respects from financial accounting. The purpose of tax accounting is to gather information for the efficient preparation of income tax returns according to rules established by the Federal Board of Inland Revenue Code and Regulation (now Federal Inland Revenue Services). Besides the petroleum profit tax, Nigeria needs to meet its export commitment or quota approved by the Organization of Petroleum Exporting Countries (OPEC), scheduled dates of each supply agreement and resolve all necessary regulatory issues between government agencies and oil companies as operators of oil fields.

According to Ojudu (2006), petroleum profit tax (PPT) is a tax applicable to upstream operations in the oil industry. It is particularly related to rents, royalties, margins and profit sharing elements associated with oil mining, prospecting and exploration leases. It is the most important tax in Nigeria in terms of its share of total revenue contributing 95 and 70 percent of foreign exchange earnings and government revenue, respectively. Due to the importance attached to oil exploration and production by the Federal Government of Nigeria, the taxation of profit of companies engaging in such operation became inevitable under a tax act different from the companies income tax act (Success et al 2012). According to them, this act became effective 1st January, 1959 since export of oil to the international market started in 1958. This ordinance under which petroleum profit is taxed is referred to as the petroleum profit tax act (PPTA). It was first amended in January 1967 by the Federal Military Government through decree No 1 of 1967.

There have been further amendments since the last amendment in 1967. The principal act governing the taxation of profits from petroleum in Nigeria is the Petroleum Profits Tax Act 2007. Section 2 of the PPTA defines petroleum operations as “the winning or obtaining and transportation of petroleum chargeable oil in Nigeria by or on behalf of a company for its own account by any drilling, mining, extracting or other like operations or process, not including refining at a refinery, in the course of a business carried on by the company engaged in such operations and all operations incidental thereto and any sale of or any disposal of chargeable oil by or on behalf of the company”.

The purpose of this legislation is to regulate and control the procedure of taxation of petroleum companies which involves petroleum exploration, development, production and sale of crude oil. Section 8 of Petroleum Profit Tax Act (PPTA) states that every company engaged in petroleum operations is under an obligation to render return, together with properly audited annual accounts and computations, within a specified time after the end of its accounting period. Petroleum Profit Tax involves the charging of tax on the incomes accruing from petroleum operations (Nwezeaku, 2005). It was further noted that the importance of petroleum to the Nigerian economy gave rise to the enactment of a different law regulating the taxation of incomes from petroleum operations. The petroleum profit tax is charged, assessed and payable upon the profits of each accounting period of any company engaged in petroleum operations during any such accounting period, usually one year (January to December) (Anyanwu, 1993). The profits of a company in relation to the accounting period is the aggregate of

a) the proceeds of sale of all chargeable oil during that period;
b) the value of all chargeable oil disposed of in that period;
c) the value of all chargeable natural gas in that period; and
d) all income of the company of that period incidental to and arising from any one or more of its petroleum operations (i.e. winning or obtaining and transportation of petroleum or chargeable oil in Nigeria by or on behalf of a company, for its own account by any drilling, mining, extracting or other like operations or process, not including refining at a refinery, in the course of a business carried on by the company engaged in such operations, and all other operations, incidental there to and any sale of or disposal of chargeable oil by or on behalf of the company.

Oremade (2006) indicated that for Petroleum Profit Tax purposes, crude oil sales valued at the prices actually realized by the oil producing company in the world oil market. On the other hand, this value has to be compared with the value at the posted price and if the posted price is higher, tax is then based on the posted price. Sales of crude oil for local refining and sales of gas are valued for petroleum profit tax purposes at the actual amount realized on sale. According Ofe, Onyemachi and Caroline (2008), the administration of PPTA is under the care and management of the Federal Board of Inland Revenue. The tax laws according to Adekanola (2007) have vested the authority to assess, administer and collect all taxes from corporate entities on the Federal Inland Revenue Services. Taxes administered at the Federal level include the Petroleum Profits Tax, Companies Income Tax, and the Value Added Tax as well as the Capital Gain Tax, when such capital gains are generated by corporate entities. The administration of taxes in Nigeria has also been focused on revenue generation to the detriment of stimulating economic development.

Ofe et al (2008) brought out further that the Board may do all acts as may be deemed necessary and expedient for the assessment and collection of the tax and shall account for all amounts so collected in a manner to be prescribed by the Federal Minister of Finance. Whenever the Board shall consider it necessary with respect to any tax due, it may acquire, hold and dispose of any tax or of any judgment debt due in respect of any tax and shall account for any such property and the proceeds of sale thereof in a manner to be prescribed by the Minister. The Board may sue and can be sued in its
official name. In the exercise of the powers and duties conferred upon it, the Board shall be subject to the authority, direction and control of the Minister of Finance.

Any written direction, order or instruction given by the Minister after consultation with the chairman of the Board shall be carried out by the Board. However, the Minister shall not give any such direction in respect of any particular company which would have the effect of requiring the Board to increase or decrease any assessment made or to be imposed upon or any relief given, tax penalty or judgment debt due by such company or which would have the effect of altering the normal course of any proceeding, whether civil or criminal, relating either to the recovery of any tax or penalty or to any offence relating to the tax. Any Act, matter or thing done by or with the authority of the Board in pursuance of the provisions of PPTA shall not be subject to challenge on the ground that such was or was not proven to be in accordance with any direction, order or instruction given by the Minister (Ofe et al 2008).

Oil companies that only market petroleum products including companies engaged in refining of crude oil such as petrol do not fall into the category of companies engaging in petroleum operations and they are therefore taxable under CITTA. Where a company is involved in both petroleum operation and marketing of petroleum product, the trading results from the petroleum operations would be subject to Petroleum Profits Tax while the results from the marketing activities will be taxed under the Companies Income Tax Act. All reference to companies in this paper relates to companies engaged in petroleum operation except where otherwise stated.

Effect of Petroleum profit tax on the economy

The tax system in Nigeria is made up of the tax policy, the tax laws and the tax administration. All of these are expected to work together in order to achieve the economic goal of the nation. According to the Presidential Committee on National Tax Policy (2008), the central objective of the Nigerian tax system is to contribute to the well being of all Nigerians directly through improved policy formulation and indirectly though appropriate utilization of tax revenue generated for the benefit of the people. In generating revenue to achieve this goal, the tax system is expected to minimize distortion in the economy. Other expectations of the Nigerian tax system according to the Presidential Committee on National tax policy (2008) include:

i. Encourage economic growth and development.
ii. Generate stable revenue or resources needed by government to accomplish laudable projects and or investment for the benefit of the people.
iii. Provide economic stabilization.
iv. To pursue fairness and distributive equity
v. Correction of market failure and imperfection.

Azaiki and Shagari (2007), brought out that countries blessed sufficient to have petroleum, can base their development on this resource. Azaiki and Shagari (2007) also point to the potential benefits of enhanced economic growth and the creation of jobs, increased government revenues to finance poverty alleviation, the transfer of technology, the improvement of infrastructure and the encouragement of related industries. Ogbonna (2009) expressed the view that the administration of Petroleum Profits Tax in Nigeria has mainly been focused on revenue generation to the detriment of stimulating economic growth and development. According to Nwete (2004) the following are the objectives of petroleum taxation in Nigeria

- To achieve government’s objective of exercising right and control over the public asset, Government imposes very high tax as a way of regulating the number of participants in the industry and discouraging its rapid depletion in other to conserve some of it for future generation. This in effect will achieve government aim of controlling the petroleum sector development.
- The high profit profile of a successful investment in the oil industry makes it a veritable source for satisfying government objective of raising money to meet its socio-political and economic obligations to the citizenry.
- To re-distribute wealth between the wealthy and industrialized economic represented by the multinational organizations, who own the technology, expertise and capital needed to develop the industry and the poor and emerging economies from where the petroleum resources are extracted.
- The high potential for environmental pollution and degradation stemming from industry activities makes it a target for environmental taxation, as a way of regulating its activity and promoting government quest for a cleaner and healthy environment.
- Cleaner production may be achieved by imposing tax on it for pollution and environmental offences. Under the petroleum Profits Tax Acts of 1959 an oil company, in computing its taxable profits from petroleum operations, is entitled to deduct all outgoings and expenses which are wholly, exclusively and necessarily incurred by such company for the purpose of such petroleum operations.

The Effect of Money Supply on Nigerian economy

The Central Bank of Nigeria defines money supply in two ways: narrow and broad money i.e M₁ and M₂, there is excess money supply when the amount of money in circulation is higher than the level of total output of the economy. When money supply exceeds the level the economy can efficiently absorb, it dislodges the stability of the price system, leading to inflation or higher prices of goods. Money Supply is the life wire of all economic activities and so has powerful effects on the economic life of any nation. An increase in Money Supply puts more money in the hands of producers and consumers and thereby stimulating increased investment and consumption. Consumers increase purchases and business firms respond to increased sales by ordering for more raw materials and other resources to achieve more production, the spread of business and capital goods. As the economy goes buoyant, Stock Market prices rise and firms issue more equity and debt instruments. As the Money Supply expands, prices begin to rise, especially if output growth reaches full capacity. Lenders insist on higher interest rates to offset expected decline in purchasing power over the life span of their loans. Opposite effects occur when the Money Supply falls or when there is decline in its growth rate, economic activities decline and disinflation (reduced inflation) or deflation (falling price) results (Umeora 2010).
The CBN changes the level of money supply to control base money. Base money is made up of currency and coins outside the banking system plus the deposits of banks with the Central Bank. If the Central Bank perceives that there is too much money in circulation and prices are rising (or there is potential pressure for prices to rise), it may reduce money supply by reducing the base money. To reduce the base money, the Central Bank sells financial securities to banks and the nonbank public so as to reduce the ability of deposit money banks to create new money. The Central Bank can reduce the money supply by also raising the cash reserve deposits that banks are required to hold with the Central Bank. The larger the deposit balances on bank balance sheet, the higher their ability to create more money. Central bank monetary policy therefore, targets the growth in those deposit balances so as to control the expansion in money supply which could precipitate price distortions. Monetary stability can contribute towards price stability in the Nigerian economy since the variation in price level is mainly caused by money supply.

A reduction in money supply affects the ability of banks to create new money through giving loans to their customers. In this way, the central bank could be said to be pursuing a contractionary monetary policy. When investors cannot get new loans to expand their investments, it reduces the level of total output in the economy. A reduction in output affects the level of employment and prices as less money is available for purchasing goods. In this way, prices remain stable or fall. The central bank can also pursue an expansionary monetary policy when it reduces the cash reserve ratio and buy securities from the open market. In this case, the reverse of the analysis above holds.

**The effect of interest rate on Nigerian economy**

Adebiyi (2002) defines interest rate as the return or yield on equity or opportunity cost of deferring current consumption into the future. Some examples of interest rate include the saving rate, lending rate, and the discount rate. Interest is also defined as the price which equates the supply of ‘Credit’ or savings plus the net increase in the amount of money in the period, to the demand for credit or investment plus net ‘hoarding’ in the period (Jhingan 2003). The behaviour of interest rates, to a large extent, determines the investment activities and hence economic growth of a country. Investment depends upon the rate of interest involved in getting funds from the market, while economic growth to a large extent depends on the level of investment (Obute, Adyorough and Itodo,2012). If interest rate is high, investment is at low level and when interest rate falls, investment will rise. There is therefore a need to promote an interest rate regime that will ensure “inexpensive” spending for investment and consequently enhancing economic growth at low financial cost (Jhingan 2003). Financial repression arises mostly where a country imposes ceiling on deposit and lending nominal interest rates at a low level relative to inflation. The resulting low or negative interest rates discourage savings mobilization and channeling of mobilized savings through the financial system (Mckinnon 1973). According to Chris and Anyingang (2012), in Nigeria, interest rate is determined by the following factors:

- The investment demand: The higher the level of investment demand the higher the level of interest rates. On the other hand, the lower the investments demand, the lower the level of interest rates.
- The level of savings (or conversely the level of consumption): The higher the level of savings the lower the interest rate while, the lower the level of savings, the higher the level of interest rates,
- Demand for money or the liquidity preference: The higher the money demand, the lower the interest rate while the lower the money demand the higher the interest rates,
- The quantity of money or money supply: In the Keynesian parlance as we increase money supply the interest rate will reduce

**Methodology**

Economic growth (proxied by Changes in Gross Domestic Product) was used as the explained variable in this model, while the explanatory variables include Petroleum Profit Tax (PPT), Interest Rate, and Money Supply. Data for this study were obtained from Central Bank of Nigeria (CBN) Statistical Bulletin and Federal Inland Revenue Service Bulletin.

The duration covered was 1971-2010 which is in the range of 40yrs. This study employs annual data on the rate of Petroleum Profit Tax (PPT), Interest Rate, Money Supply and Economic Growth (proxied by Gross domestic products) in Nigeria. Data were obtained from the CBN Statistical Bulletin.

**Data Analysis Techniques**

Regression analysis technique was used to measure the relationship between a dependent variable and independent variables. Regression models in the following variables:

\[ Y = f(X_1, X_2, X_3, \mu) \]

A regression model relates \( Y \) to a function of \( X \) and \( \mu \)

Where:

- \( Y \) - Dependent variable
- \( X_1, X_2, X_3 \) - Independent variables
- \( \mu \) - Error term

**MODEL SPECIFICATION**

\[
\begin{align*}
GDP &= a_0 + a_1 \text{PPT} + a_2 \text{INTR} + a_3 \text{MONSPL} + \mu \\
\log GDP &= a_0 + a_1 \log \text{PPT} + a_2 \log \text{INTR} + a_3 \log \text{MONSPL} + \mu
\end{align*}
\]

Where:
Presentation and Analysis of Data

The analysis of the effects of petroleum profit tax (PPT), interest rate (INTR) and money supply (MONSPL) on Nigeria’s economy (GDP) from the period of 1970 to 2010 are presented below.

Table 1 - The short run effects of petroleum profit tax (PPT), interest rate (INTR) and money supply (MONSPL) on Nigeria economy

| Dependent Variable | Independent Variables | Coefficient. | Standard Error | T     | P>|t | [95% Conf. interval] |
|--------------------|-----------------------|--------------|----------------|-------|-----|---------------------|
| GDP                | ppt                   | .0132346     | .0077093       | 1.72  | 0.096| -.0024687          | .028938             |
|                    | intr                  | -.1335.034   | 21099.99       | -.06  | 0.950| -44314.3           | 41644.23            |
|                    | monspl                | 4.90e-06     | 5.73e-07       | 8.56  | 0.000| 3.74e-06           | 6.07e-06            |
|                    | constant              | 120945       | 295935.5       | 0.41  | 0.685| -481855.9          | 723745.9            |

R-square = 0.9683  Adj R-square = 0.9653  Root MSE = 7.3e+05  Prob > F = 0.0000  F( 3, 32) = 325.43

Source: Regression using STATA 10

The above table is represented by regression plots below:

Table 1 shows the result of the output effects of PPT, INTR and MONSPL on Nigerian economy (proxied by GDP) in the short run. 1% increase in the petroleum profit tax (PPT) increases economic growth (GDP) by 0.1 percent. This suggests a positive relationship between the rate of PPT and the GDP in Nigeria. The result is also significant. 1% increase in the interest rate (INTR) reduces GDP by 13.3%. This means that the relationship between INTR and GDP is negative suggesting that if INTR increases GDP reduces. The relationship between MONSPL and GDP is also positive suggesting that if MONSPL in Nigeria increases, the GDP also increases that is 1% increases in MONSPL increases GDP by 4.9%. Given the adjusted R² significant 96.8%, it presages the independent variables incorporated into this model have been able to determine variation of GDP to 96%. The F and probability statistics also confirmed the significance of this model.

Table 2 - The output effects of petroleum profit tax (PPT), interest rate (INTR) and money supply (MONSPL) on Nigeria economy in the long run

| Dependent Variable | Independent Variables | Coefficient. | Standard Error | T     | P>|t | [95% Conf. interval] |
|--------------------|-----------------------|--------------|----------------|-------|-----|---------------------|
| logGDP             | logppt                | .1340732     | .0757255       | 1.77  | 0.086| -.0203699          | .2885164            |
|                    | logintr               | .3833431     | .4551948       | 0.84  | 0.406| -.5450327          | 1.311719            |
|                    | logmonspl             | .5725171     | .1822296       | 3.14  | 0.004| .2008574           | .9441769            |
|                    | constant              | -3.769495    | 2.885039       | -1.31 | 0.201| -9.65357           | 2.11458             |

R-square= 0.9256  Adj R-square = 0.8882  Root MSE = .61205  Prob > F = 0.0000  F( 3, 31) = 128.51

Source: Regression using STATA 10
Table 2 shows the result of the output effects of petroleum profit tax (PPT), interest rate (INTR) and money supply (MONSPL) on Nigeria economy (proxied by GDP) in the long run. 1% increase in the petroleum profit tax (LOGPPT) increases economic growth (LOGGDP) by 1.3 percent. This suggests a positive relationship between the rate of PPT and the GDP in Nigeria in the long run. The result is also significant. 1% increase in the interest rate (INTR) also increase logGDP by 3.8 %. This means that the relationship between INTR and GDP is positive suggesting that if INTR increases GDP also increases in the long run. The relationship between LOGMONSPL and LOGGDP is also positive suggesting that if MONSPL in Nigeria increases, the GDP also increases in the long run that is 1% increases in LOGMONSPL increases LOGGDP by 5.7%. Given the coefficient of determination ($R^2$) to tune of 92.5% and Adj R-squared to be 0.8882 (89%), it connotes that independent variables incorporated into this model have been able to determine variation of LOGGDP to 89%. The F and probability statistics also confirmed the significance of this model. The results indicate that the coefficient of LOGGDP is statistically significant and the constant is statistically significant.

Summary and Conclusions

This study has reviewed the effects of petroleum profit tax (PPT), interest rate (INTR) and money supply (MONSPL) on Nigeria economy. The links between PPT and economy growth has assessed. PPT has a positive impact on growth after a considerable lag. All the variables are statistically significant. The countries that performed PPT have a more per capita GDP level and are less dependent on the international trade. Estimated results suggest that petroleum profit tax (PPT), interest rate (INTR) and money supply (MONSPL) impact positively on gross domestic product.

In addition, it was discovered that interest rate has negative significant on economic growth in the short run but has positive significant on economic growth in the long run. Results also showed that PPT revenue contributed positively to the development of the respective sector. The huge revenue earned by the government through the PPT helps government to fund public expenditure that stimulates the national economy and improve economic growth. Increasing oil revenue benefits the Nigerian economy in the sense that when oil revenue is on the increase, prices of goods and services reduce. There is also a positive relationship between money supply and economic growth in Nigeria. PPT and money supply are closely related, that is oil revenue and money supply move in the same directions. For every 1% increase in oil revenue will cause an increase in gross domestic product (GDP). Monetary stability can contribute towards price stability in the Nigerian economy since the variation in price level is mainly caused by money supply.

This study also showed that petroleum incomes have a positive effect on the economy of the producing nation, and this agrees that per capita income in Nigeria grew over the period under review. There is evidence that petroleum income has a significant positive impact on the Nigerian economy for the period under review. Lastly, the findings of this study pointed out that the abundance of petroleum and its associated income has been beneficial to the Nigerian economy for the period 1970 to 2010. Income from a nation’s natural resource has a positive influence on economic growth and development.

Policy Recommendations

Based on the findings made in the course of this study, the following recommendations are hereby suggested

1. It is recommended that Government should transparently and judiciously account for the revenue it generates through PPT by investing in the provision of infrastructure and public goods and services. It is expected that the more effectively and efficiently revenue is utilized by Government to create growth, employment opportunities and wealth in the economy, the more willing taxpayers would be to meet their obligations to the Government and discharge their duties in the overriding goal of achieving National Development.
2. For the PPT policy to have a more significant impact on the revenue and economic development of Nigeria, Government should minimize or find ways of eliminating totally the widespread corruption and leakages in the petroleum profit tax administration.

The above table is represented by regression plots below:

![Regression Plots](image-url)
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