Political Economy of Phasing out Fuel Subsidy in Nigeria

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Abstract   One of the contentious issues in Nigeria is the removal of fuel subsidy on Petroleum Motor Spirit (PMS). The purpose of this paper is to evaluate the argument for and against subsidy removal. An empirical investigation of the impact of fuel subsidy removal on fuel consumption was conducted using Least Square method. The result of the twenty six years under review shows that subsidy removal will reduce fuel consumption which will lead to efficient fuel demand and reduction in carbon emission. The money saved can be used for transforming the economy by building infrastructure, establishing new refineries and maintaining the old ones through improved technology management among others. However, the study also shows that there are weak and non-transparent institutional frameworks which cause lack of credibility and trusts of the government by the citizens. This study therefore recommends that that fuel subsidy should be removed gradually instead of one-off and that government should provide a strong and transparent institutional framework as well as a sound infrastructure for her citizens before subsidy is totally phased out in Nigeria.

Keywords   Subsidy, Fuel, Phase-Out, Nigeria, Price

1. Introduction

Fuel subsidy is one of the critical issues that dominate public debate in oil exporting developing nations and among the G-20. In Nigeria, larger proportion of the citizens are seriously resisting the government-planned policy to remove fuel subsidy which according to them is against the Millennium Development Goals (MDGs) of the government which aim to reduce the number of people living in poverty to less than 50% by 2015. Some public analysts believed that the pressure to remove subsidy is designed by experts with insufficient understanding of the Nigerian economy or who choose to ignore the inability of client governments to effectively implement anti poverty programmes. However, the proponents of fuel subsidy removal highlighted low efficiency in energy use, wastage of huge sum of resources on subsidies which are needed to transform national development, reduction of CO_2 emissions, higher benefits for the rich with little or no benefits for the poor, and poor technology management of the refinery among others as part of the problems of oil subsidy.

This paper therefore critically reviews the pros and the cons of the fuel subsidy removal in Nigeria. The impact of subsidy removal on energy demand, standard of living and the technology management of the local refinery through turn around maintenance will also be reviewed. Section two focuses on the theoretical framework and literature review,

section three discusses the methodology and data presentation, section four analyses the data while the last section summarises the findings and make policy recommendations for the government.

2. Theoretical Framework and Literature Review

This section discusses the economic theories of government subsidy and the related literatures.
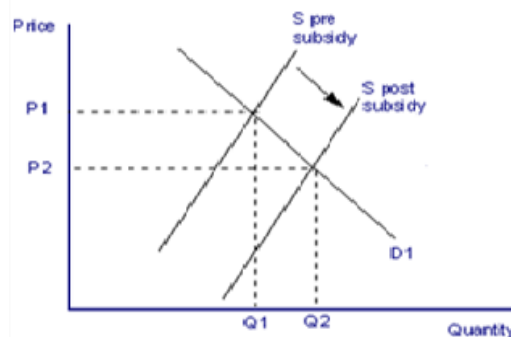

Figure 1.   Diagram showing the Effect of a Producer Subsidy

Subsidies can be referred to as the payments to producers by the government which reduce their variable costs of production and encourage them to expand their outputs. Examples are subsidies to encourage the sale of exports; subsidies on some foods to keep down the cost of living, subsidies on the fuel price, subsidies to encourage the expansion of farm production and achieve self-reliance in food production among others[1]. The focus here is the

producer subsidies. The conceptual framework will be built on the forces of interaction between demand and supply. The outcome of a subsidy with a downward sloping demand curve is to increase the quantity of goods sold and to decrease the market equilibrium price. This can be shown in the Fig. 1 below.

Fig 1 above shows that the original supply curve shifts outward because the firm's costs are reduced. This implies that more can be produced as equilibrium price falls from P1 to P2 while equilibrium quantity increases from Q1 to Q2. The level of elasticity of demand will determine the impact of such subsidy. The more inelastic the demand curve the greater the consumer's gain from the subsidy.

In the case of a fuel subsidy where there is a guaranteed payment to the suppliers, the government will pay the subsidy per unit to the supplier on top of the new market price. Fig. 2 shows that subsidy decreases equilibrium price from P2 to P1. Consumers gain from consuming more at a lower price P1 instead of the original price P2. Producers will receive price P1 + the subsidy (P1P3). The total amount spent by the government on the subsidy will be Q1 x (P1P3). This is shown in the diagram below.
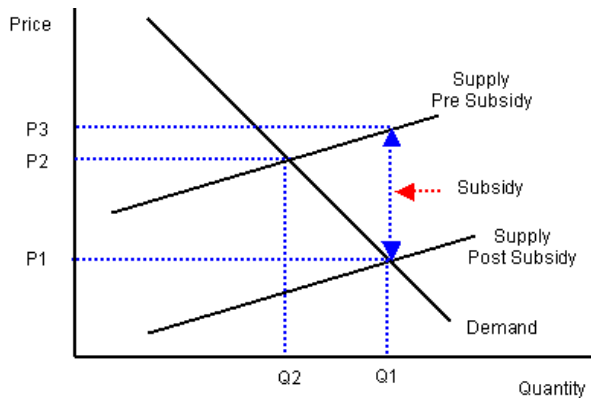

Figure 2.　Diagram showing the amount spent on Subsidy

Though the explanations above show that subsidy increases production; however, there are various controversies over the externalities (positive and negative) emanated from government subsidies. There is therefore a need to always evaluate the efficiency of government subsidy as regards those who benefits vis-à-vis those who pays (through taxes), and the opportunity cost of such subsidies.

In order to further examine the effect of subsidy in fig 2 above, the fig. 3 below therefore presented the Cost-Benefit Analysis of subsidies.

The initial price, quantity, supply and demand are represented by P, Q, S and D. This generate Consumer surplus = a + b, and a Producer surplus = e + i. Once there is government subsidy, supply shift outward from S to S¹ with new equilibrium price P¹ which is lower than the original price and new equilibrium quantity Q¹ which is more than the original quantity. However, if there is no subsidy, the corresponding price of new equilibrium quantity would have been P¹¹.
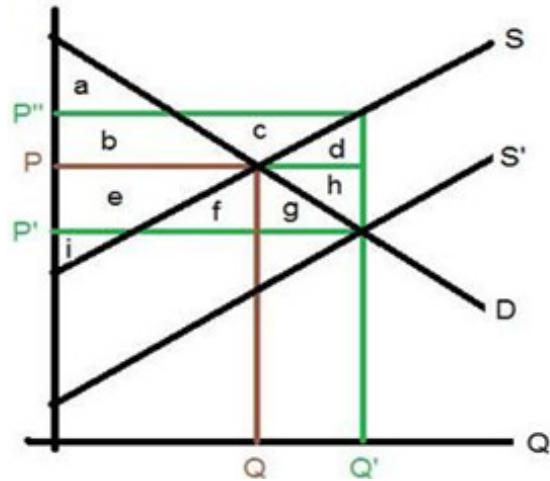
Figure 3.　Diagram showing the Cost-Benefit Analysis of subsidies

The benefits and costs of the subsidy can be assessed by changes in consumer surplus and producer surplus. Since price falls and quantity increases consumers of fossil fuel are made better off , that is
 • Change in consumer surplus = e + f + g

The price that business firms receive increases since the seller's price is equal to market price (P') plus the subsidy (P" - P'). Since the seller's price rises and quantity sold rises suppliers of fossil fuel are made better off:
 • Change in producer surplus = b + c

So, considering simply the market impacts, the subsidy looks like a great idea. However, the government sector is involved as well. The cost of the subsidy to the government and taxpayers is equal to the product of the subsidy payment (P" - P') and the number of units the subsidy is applied to (Q'):
 • Subsidy payment = b + c + d + e + f + g + h

The overall affect on welfare is the difference between the benefits of the policy and the costs:
 • Net benefits equal change in consumer surplus plus change in producer surplus minus subsidy payment = -(d + h) < 0

The overall net benefits of a subsidy are negative. In other words, the gains to the market participants are worth less than the cost to taxpayers. This section of d+h is referred to as Deadweight loss. Kemp[2] also used fig. 4 below to illustrate oil price subsidy.

From the diagram above, the demand curve is downward sloping while the supply curve is constant. Government subsidy reduces the equilibrium price to Po-s from Po but increases the equilibrium quantity from Qo to Q1. Loss of government/ export revenue from subsidisation is area A+B+C and the deadweight loss is area C. Generally, Subsidies can therefore be said to be inefficient because it leads to wastages from both the consumers who engage in unnecessary fuel consumption and the government which spends large sum of resources on subsidy that favour the rich than the poor.
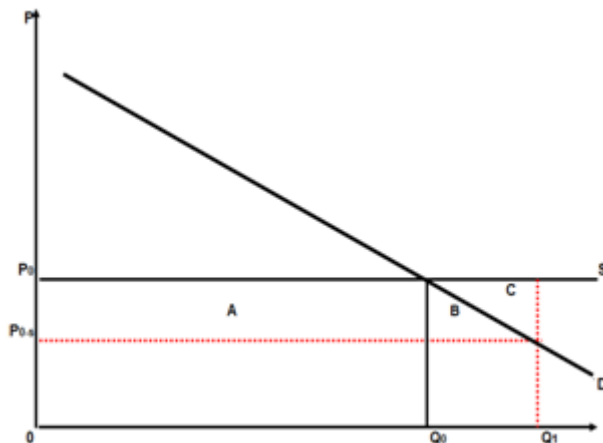
Figure 4. Oil Price Subsidy

2.1. Literature Review on Fuel Subsidy Removal in Nigeria

There have been diverse views about the fuel subsidy removal in Nigeria and other parts of the world. Some of these views are base on emotions while others are based on empirical findings.

According to Strategic Union of Professionals for the Advancement of Nigeria (SUPA) there is no subsidy on the price of fuel after carrying out a cost determination analysis that the actual cost of fuel is lower than the current retail price[3]. Also,[4] claimed that subsidy removal will further deepen poverty in Nigeria, thus, it is more sensible to delay the removal of subsidy until the government delivers on the electricity supply required to service industries and may be the citizens must have developed confidence in accountability and good governance. This will ensure a more transparent privatisation process that will respond to the market magic of enterprise and 'trickle down' effect. Alexander Oil and Gas Connections[5] also argued that the current price of fuel in Nigeria covers the cost of producing it. He concluded that there is no subsidy in the prevailing official prices of fuel in Nigeria. Also[6] in the sun newspaper argued that though the subsidy removal of the Nigeria's government sound beneficial but Nigerian citizens do not trust the government as corruption, mismanagement of fund, poor maintenance of refineries and all forms of ill practices still persist in petroleum agencies like NNPC and the country. For instance, about 50 percent of the oil exploration activities in the country are unaccounted for, while bunckering and other illegal activities are taking place across the Nigerdelta creeks on daily basis.

One other major challenge to the oil sector is the failure of the local refineries over the years. All efforts to ensure the revival of Nigeria's four refineries in the past years have failed, as the installations have turned to drain pipes on the economy they are meant to support[7]. Instead, the feedstock, which are sold at ridiculous prices to the cartel, are refined into marketable petroleum products in other countries and imported to Nigeria at prevailing international market price[8]. It is on this note that those people belonging to the anti-subsidy removal school of thought posited that the call for subsidy removal is the greatest acts of insensitivity on the part of the government[9]. As an alternative, it was advised that the federal government should block all loopholes of corruption in the fuel and power sector and other areas as its constitutional responsibilities rather than passing the burden to the poor citizens.

In the last 33 years, the price of petroleum has gone up from nine kobo to sixty-five naira. It thus defies comprehension that the subsidy has remained unremoved. It is indeed apparent to everybody, except to the political and powerful elites, that the problem has nothing to do with the subsidy but with the (mis) management of the oil wealth. The present administration has consistently agreed that the so-called subsidy does not get to the ordinary people it is meant for, and it's equally aware of the existence of a cartel whose stranglehold on fuel importation frustrates its objectives on fuel subsidy, yet it has not done anything substantial to address these.

However, there are other authors who believe oil subsidy only creates deadweight loss. Kemp (2011) argued that petroleum product should be priced to reflect its full values to the economy (i.e market price), the nation should obtain benefit from production through tax revenues and assists the poor consumers through direct financial assistance schemes. An empirical analysis was conducted by[10] whether fuel subsidy is a fact or fallacy, and they concluded that fuel subsidy is a fact and that government should control the level of fuel subsidy prevailing in the country. Kojima and Bacon[11] argued that subsidizing fuels has high costs. More so, universal price subsidies always favour high income households more than the poor, because richer households consume more energy. The undesirable consequences include rampant abuses in fuel markets and an inefficient downstream petroleum sector languishing for need of reform. Subsidies only give the consumers financial incentives to over consume the subsidised commodity which leads to deadweight loss. Also,[12] concluded, after reviewing some developing countries, that fuel price subsidies though help the poor but place a large cost on the society and governments. They therefore advise the governments to move away from fuel subsidies as rapidly as possible and substitute them with targeted aids to the poor. An efficient ways to identify the targeted beneficiaries and deliver such aids to them should be given an utmost priority.

Some members of staff in International Monetary Fund (IMF) projected that global consumer pretax subsidy to reach $250 billion in 2010 from $60 billion in 2003; and the tax-inclusive subsidies are estimated to reach $740 billion in 2010, which is 1% of the global GDP[13]. Meanwhile, G-20 countries account for 70% of tax-inclusive subsidies with emerging countries among the G-20 account for the sizable share. Thus, cutting tax-inclusive subsidies by one-half could reduce projected fiscal deficits by one-sixth in subsidizing countries and could reduce greenhouse emissions by around 15 percent over the long run. Revenue generation and environmental degradation should be put into considerations; hence, petroleum products should be taxed at

a rate that reflects the marginal environmental damage caused by their consumption. They concluded by suggesting subsidy reform such as compensating the poor, transparency in government accounts among others.[14] also studied the impact of subsidy phase out in oil exporting developing countries specifically Algeria, Iran and Nigeria. They confirmed that fuel subsidies bring about excessive demand and supply by the consumers and the producers respectively which lead to wastages. The outcomes of their investigations showed that policy geared at more rational use of energy lead to energy-efficiency. This, according to them, will enable these countries to save enough oil to meet future increases in demand while maintaining stable production capacity which would enhance their economic development.

According to World Energy Outlook[15], the annual level of fossil-fuel consumption subsidies fluctuates with changes in international prices, domestic pricing policies, exchange rates and demand. Iran was identified as the country with the highest subsidies in 2008 which stood at $101 billion and the value was around a third of the country's annual central budget. This has placed a major burden on the economy that is forcing reliance on imports of refined products.
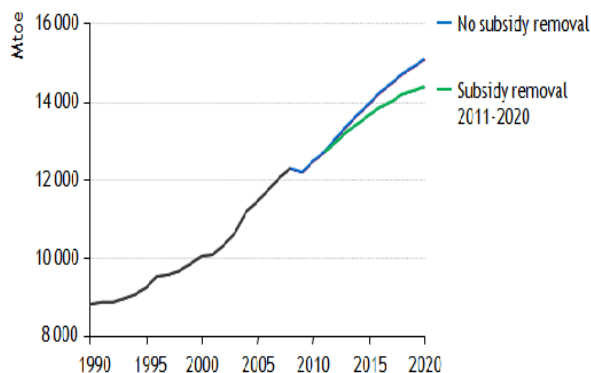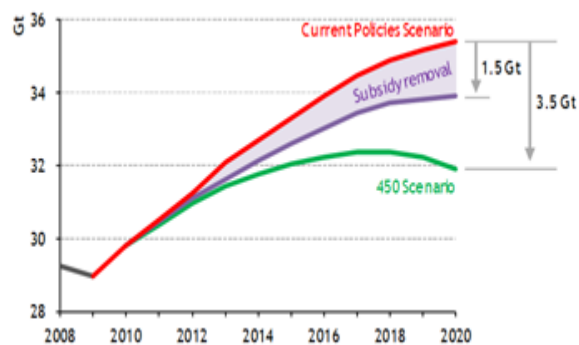

Figure 5.   Impact of subsidy phase-out on global primary energy demand

Fig. 5 shows that the global primary energy demand will be cut by 5% by 2020 if fuel subsidy is phased out in 2011.

The above figure shows that wasteful consumption that was brought by energy subsidies will be removed if subsidy is phased out. The report also suggests that phasing out energy subsidies would cut global oil demand by 4.7 mb/d by 2020, with savings predominately in the transport sector (i.e. 60% of the energy saved is from transport sector).

The CO_2 emissions will be reduced by 6.9% in the year 2020 if subsidy is phased out, as this is equivalent to the current emissions of France, Germany, Italy, Spain, and the UK combined[16]. Fig. 6 below shows the impact of subsidy phase-out on global energy related CO_2 emissions.

Fig. 6 above implies that the phase out of fossil-fuel subsidies by 2020 would provide over 40% of the abatement that is needed by 2020 to move from the Current Policies Scenario to the 450 Scenario. Also, the commitment by the G-20 countries and the Copenhangen Accord pledges on subsidy will reduce emissions by the percentage needed to be on track to meet the $2^{0}C$ target by 2020.

Source: WEO 2010

Figure 6.   Impact of Subsidy phase-out on global energy-related CO_2 emissions

Ellis[17] investigated that the consumption-related fossil-fuel subsidies have exceeded 2 percent of GDP for many countries, particularly the developing countries with low GDP per capita. Some of these countries are Bangladesh (3.0% of GDP), Ecuador (8.7% of GDP), Turkmenistan (15.2% of GDP in 2008), Egypt (8.4% of GDP), and Ukraine (3.3% of GDP).   The study also revealed that expenditures on subsidisation in some of these countries are larger than expenditures on their health and/or public education.

While the above facts proved convincing, the nature and behaviour of Nigerian ruling elites and class does not give room for any optimism regarding the decision to remove subsidy on fuel. For instance,[18] argued in Nigeria Vanguard newspaper that there are so many inconsistent and non-transparent activities prevailing in Nigeria on the issue of petroleum subsidy. He stated that the Executive director of Petroleum Product Pricing Regulatory Agency in Nigeria (PPPRA) estimated that the gross amount spent on fuel subsidy from 2006 to September 2011 stood at N3.655 trillion which contradicted that of NNPC. The list of over one hundred beneficiaries also showed that some of them do not qualify while some are even construction companies. It was also discovered that some of the companies did not import the quantities they claim to import. All these and many other issues generate lack of confidence in the mind of Nigerian citizens.

One of the major challenges that lead to subsidisation of fuel price in Nigeria is the inefficient operation of refineries. Jesuleye et al.[19] analysed the energy demand of Port-Harcourt refinery and used the result as the benchmark for other refineries in Nigeria since it has the newest and the most efficient factory-built modern facilities. The results of their analysis showed that there was a poor performance of the refinery during the 16-year period investigated which translated to an average daily wastage estimated to be $56,196 based on the 2003 OPEC basket price of $28.0213 per barrel. The paper concluded that poor optimal fuel utilization mix and non-compliance with the Turn-Around-Maintenance schedules were attributed to the refinery's inefficient energy demand pattern. This has warranted the large importation of the refined products

which gulps the fuel subsidy.

3. Methodology and Empirical Analysis

This section focus on the methodology adopted for the study and the explanations of the results.

According to[20], research methodology considers and explains the logic behind research methods and techniques. This research method and techniques include the procedures, modalities adopted in the collection of data, determination and identification of the population, sample size, sampling procedures, validity and reliability of data collected during the study. Also the sources of data used and methods of analysing the data collected for the purpose of the study. In pursuant of this study, the Ordinary Least Squares method (OLS) of multiple regressions is adopted in estimating a specified model. This statistical technique seeks to determine the nature of relationship between selected variables[21]. This aims to examine whether changes in one variable leads to changes in other variable(s). Linear Multiple regression is employed as a result of more than one independent variable that is involved. This statistic is necessary when occasion is such that the objective is to investigate the possibility that movement in the dependent variable are caused by several independent factors.

The data used in this study were obtained from secondary sources. The data were collated from different sources such as Annual statistical bulletin of the Central Bank of Nigeria (CBN), National Bureau of Statistics (NBS), Nigeria National Petroleum Corporation (NNPC) and World Bank Development Indicator (WDI) reports. The study focused on time series data between 1980 and 2005. The scope was selected because the price of fuel prior to 1980 was extremely small while the fuel consumption data beyond 2005 and the time series data for fuel subsidy per litre for the period under review were not available in any of the NNPC, CBN, NBS and WDI statistical reports as at the time of this study.

The econometric model is stated as follow:

$$PETCONS\_H = \beta_o + \beta_1 RPETPRICE\_H + \beta_2 RINCOME\_H + ut$$

Where:

PETCONS_H = Petrol Consumption per head
RPETPRICE_H= Real Petrol price per head, and
RINCOME_H = Real Income per head

$\mathbf{Bo}$ = constant factor
β_1 = Coefficient of real petrol price
β_2 = Coefficient of real income per head
u_t = error term

The model explains the relationship between petrol consumption per head which is a dependent variable and real petrol price (specifically PMS in this case) and real income per head which are independent variables. One of the relationships will show the impact of fuel subsidy removal on fuel consumption which is proxy by the increase in petrol price. The other will show the impact of increase in income

per head on petrol consumption. Two hypotheses will be formulated to examine whether changes in petrol price and income per head have significant effect on household petrol consumption. These hypotheses are:

Hypothesis 1   Ho : $\beta_1 = 0$; H_1 : $\beta_1 \neq 0$
Hypothesis 2   Ho : $\beta_2 = 0$; H_1 : $\beta_2 \neq 0$

Ho which represent the Null hypothesis stated that price of fuel and income per head have no significant effect on petrol consumption   while the Alternative hypothesis H_1 means that price of fuel and income per head have a significant effect on household petrol consumption .

Table 1.   Real GDP, Fuel Price, Fuel consumption and population in Nigeria from 1980-2005

YEAR	Real GDP (=N=m illion)	FUEL PRICE (=N=/L itre)	Fuel Consumptio n (in metric tonnes)	Population
1980	31546.76	0.15	5,284,570	74522934
1981	205222.06	0.15	6,573,007	76643423
1982	199685.25	0.2	4,300,647	78726910
1983	185598.14	0.3	4,244,798	80806944
1984	183562.95	0.3	4,012,041	82935721
1985	201036.27	0.39	3,787,895	85150639
1986	205971.44	0.39	3,597,356	87461350
1987	204806.54	0.42	3,625,220	89853441
1988	219875.63	0.6	3,103,079	92311753
1989	236729.58	0.6	3,256,442	94812363
1990	267549.99	0.7	3,302,808	97338277
1991	265379.14	0.7	3,380,049	99886789
1992	271365.52	5	3,969,275	102465464
1993	274833.29	3.25	3,336,215	105079844
1994	275450.56	11	3,015,634	107738753
1995	281407.4	11	2,735,700	110449331
1996	293745.38	11	3,454,328	113212070
1997	302022.48	15	4,461,348	116026774
1998	310890.05	15	2,792,112	118899179
1999	312183.48	20	4,475,565	121836150
2000	329178.74	22	4,752,568	124842371
2001	356994.26	26	5,397,577	127917961
2002	433203.51	30	6,556,676	131060791
2003	477532.98	40	6,585,614	134269942
2004	527576.04	49	7,308,099	137543599
2005	561931.39	52	8,644,263	140878575

Source: CBN, NBS, NNPC and WDI statistical bulletin and reports.

Eviews7 statistical package was used to run the multiple linear regressions of the model. Table 1 below shows the petrol consumption (PMS), petrol price, real GDP and Population which are the data from which the regression data were obtained.

Phimister[22] made use of the similar technique to predict the role of income per head and price on fuel consumption between 1983 and 2009 in USA, albeit his analysis was based on monthly data. The result of the regression analysis generated by the Eviews7 is shown in the table 2 below.

Table 2. Relationship/impact of change in price and income per head on petrol consumption

Dependent Variable	PETCONS_H			
Sample	1980:2005			
Observations	26			
Variable	Coefficient	Std error	t-stat	P-Value
RINCOME_H	7.06E-06	2.46E-06	2.8708	0.0086
RPETPRICE_H	-0.002635	0.0012	-2.075	0.0493
C	0.028012	0.0059	4.7038	00001
R-Squared	0.5678			
Adjusted R^2	0.505			
F-Statistic	4.205			
Prob(F-statistic)	0.02776			

Source: Authors' calculation/ extracted from e-views7

This result shows that while price of petrol has a negative relationship with petrol consumption, income per head has a positive relationship with petrol consumption. This implies that if petrol subsidy is removed and the price of petrol goes up by =N=1 (one naira), the petrol consumption reduces by less than 1 litre. However, if the income per head increases by =N=1 (one naira), the petrol consumption will also increase but less than 1 litre as shown by coefficient β_2 in table 2. The coefficient of determination R^2 also shows that the proportion of variation in petrol consumption explains by both petrol price and income per head is approximately 57% which is above average.

The two hypotheses using 5% level of significance show that both petrol price and income per head have significant impact on petrol consumption. The P-values of the two hypotheses are lesser than 5% which means the null hypotheses that the independent variables are not significantly related to the dependent variable are rejected. The observed P-value of the F-statistic also show that the joint hypothesis of petrol price and income per head play some roles in determining petrol consumption. The results therefore suggest that removal of subsidy will lead to reduction of unnecessary and careless consumption of petrol, and money saved from such subsidy can be utilised to improve the life of the poor masses. Oil subsidy in Nigeria has moved from being an implicit subsidy to explicit cost. Subsidy rose from =N=261 billion in 2006 to over =N=1.7 trillion in 2011 which exceeded total capital allocation to priority sectors in 2011 budget[23].

However, an average Nigerian has lost confidence and credibility in the government. There had been so many pledges by Nigerian government in the past assuring the citizens of better welfare but most of the pledges were not fulfilled. This is as a result of lack of transparency and corruption which perpetuate the Nigerian government.

4. Policy Recommendations

This paper suggests few recommendations to the government base on its findings.

The Nigerian government should firstly focus on various ways to improve the performance of the local refineries since none of them is working at optimum. The private sectors should be allowed to invest in the refineries' operation so that the necessary technology management can be harnessed. Also, government should provide a conducive environment and policies that will motivate the development of various renewable energies.

Furthermore, there should be an effective publicity campaign that lasts for a long period sensitising the citizens about the benefits of removing petrol subsidy and the cost of leaving subsidy. The campaign should cut across the Academic Staff Union of Universities, polytechnics, all the labour unions and the entire ministries. This should then be followed by the transparent policy on how the government will spend the money saved from subsidy on infrastructure such as good roads, on targeted education, on health care, on job creation, on electricity provision among others that will benefit the no/low income earners. Afterwards, the subsidy can then be removed gradually before it is finally phased out.

Nigerian government should engage independent consultant who will audit the activities surrounding the price of fuel and also how the money saved is spent. The consultant will then publish its reports regularly for public accessibility.

5. Conclusions

This paper has critically reviewed the pros and cons of fuel subsidy in Nigeria. The empirical result shows that phasing out fuel subsidy will reduce indiscriminate fuel consumption which will lead to reduction in carbon emission, and money saved could be channelled towards infrastructural development, revitalising the local refineries among other factors that will transform Nigerian economy.

However, the strong and transparent institutional framework that could transform the money saved from subsidy removal to economic growth is very weak in Nigeria. Nigeria government should ensure that policies that will improve the welfare of the low income citizens, strong institutional framework and improved refinery technology are enforced before fuel subsidy is totally phased out.

REFERENCES

[1] Todaro, M., and Smith, Stephen C., 2009. Economic Development. 10th ed. Addison Wesley. p. 839

[2] Kemp, A., 2011. Issues in Energy and Petroleum Economics. University of Aberdeen Business School.

[3] S.U.P.A report, 2010. Petroleum product prices and subsidies in Nigeria. Available at http://www.supanigeria.org/index.php?option= com_content&task=view&id=21&Itemid=35. (Accessed on 15/11/2011).

[4] Gyor, S., 2009. The case against removal of fuel subsidy and the argument for deregulated petroleum sector in Nigeria. Available at: http://awarenessfordevelopment.org/index.php?option=com_content&view=article&id=66:nigeria-fuel-subsidy. (Accessed on 23/11/2011).

[5] Alexander Oil and Gas Connections, 2004. Deregulation of Nigerian oil sector: most contentious issue. Available at http://www.gasandoil.com/goe/news/nta11972.htm. (Accessed on 23/11/2011)

[6] Okah, E., 2011. Fuel Subsidy: Nigeria can't trust FG. Available at Nigeria Vanguard newspaper on 6/11/2011.

[7] Nigerian Tribune (2011) Senate: Challenges before petroleum committee. Politics and Policy. Sept. 29, Pp 42.

[8] Atike, E., 2011. How Saboteurs feed fat on Kaduna refinery. This Day, Sept. 5, Vol. 16, Pp 1

[9] Oladipupo, F., 2011. No to planned removal of fuel subsidy. The Nation, Sept. 7, Pp 20

[10] Chike, H., and Nwachukwu, M., 2011. Fuel subsidy in Nigeria: Fact or fallacy. Energy journal, volume 36, pp 2798-2801

[11] Kojima, M., and Bacon, R., 2001. Abuses in Fuel Markets: How to Protect Consumers and Public Health. Viewpoint series, Note 237. World Bank Group.

[12] Kojima, M., and Bacon, R., 2006. Phasing Out Subsidies: Recent Experiences with Fuel in Developing Countries. Viewpoint series, Note 310. World Bank Group.

[13] Coady, D., Gillingham, R., Ossowski, R., Piotrowsky, J., Tareq, S., and Tyson, J., 2010. Petroleum Product subsidies: Costly, Inequitable and Rising. IMF Staff Position Note 5.

[14] Birol, F., Aleagha, A., and Ferroukhi, R., 1995. The economic impact of subsidy phase out in oil exporting countries: a case study of Algeria, Iran, and Nigeria. Energy Policy, Volume 23.

[15] World Energy Outlook 2010. Focus on energy subsidies. Chapter 19-20.

[16] International Energy Agency 2010. Energy Subsidies: Getting the Prices Right.

[17] Ellis, J., 2010. The effects of fossil-fuel subsidy reform: a review of modelling and empirical studies. The Global Subsidies Initiative.

[18] Umoru, H., 2011. Senate unmasks fuel subsidy beneficiaries. Nigeria Vanguard newspaper on 3/12/2011.

[19] Jesuleye, O., Siyanbola, W., Sanni, S., and Ilori, M., 2007. Energy demand analysis of Port-Harcourt refinery, Nigeria and its policy implications. Energy policy, Volume 35,=pp 1338-1345.

[20] Welman, C., Krauger, F., and Mitchel., B., 2005. Research Methodolgy. 3rd Edition. Cape Town: Oxford University Press, South Africa.

[21] Brooks, C., 2008. Introductory Econometrics for finance. 2nd ed. London: Cambridge University Press.

[22] Phimister, E., 2011. Multiple Regression Model. University of Aberdeen Business School.

[23] Adenikinju A., 2011. Energy pricing and subsidy reforms in Nigeria. Available at http://www.oecd.org/dataoecd/58/61/42987402.pdf (Accessed on 21/11/2011)