

IMPERATIVE OF NATIONAL SAVINGS: A CASE FOR ADOPTION OF APPROPRIATE BENCHMARK PRICE FOR CRUDE OIL

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INTRODUCTION

Budgeting involves the design of plans that aligns expected financial resources and expenditure to accomplish specific national goals and objectives. It is usually time bound and ensures judicious use of resources for sustainable growth if the basic principles and discipline are adhered to. Nigeria's annual budget estimates are closely associated with the anticipated oil revenue flows dictated by oil prices and production targets as predetermined by Organization of Petroleum Exporting Countries (OPEC).

One of the naughty problems faced by developing oil economy like Nigeria is fluctuations of the nation's revenue resulting from volatile crude oil prices in international market. Consequently, sharp declines in oil revenue are not uncommon and it affects smooth implementation of the budget. The oil sub-sector contribution to the gross domestic product (GDP) is very significant in Nigeria (about 26.0 percent), as such a shock in international price of crude oil would adversely affect total revenue, (Nnanna and Masha, 2003).

Fluctuations in revenue invalidate most of the basic assumptions and projections usually made to facilitate the budgeting processes. This subsequently, creates challenges for policy makers, analysts and facilitators.

Recently in Nigeria, a benchmark price for crude oil was adopted for the purpose of estimating oil revenue to mitigate the unnecessary disruptions of the annual budgetary processes and stabilize the revenue. This strategy was initially experimented for the appropriation bill of 2002 and internalized in the subsequent years. The strategy of adopting benchmark price for crude oil below the market price presupposes that there was a consensus for compulsory national savings to build up a pool of funds which would cushion the effect of shocks that could result from unfavorable developments in the future as well as ensuring high quality spending.

However, method of arriving at the benchmark price for crude oil for the budget has been criticized as being highly subjective and lacking in transparency as it was not based on any acceptable and predetermined principle. This has often resulted in heated debates and intensive negotiations between the executives and the legislative arm of government which often results in delayed release of the appropriation bill and the attendant adverse impact on the economy.

It is the objective of this paper therefore to develop a simple framework for deriving an acceptable benchmark price for crude oil for budgeting purposes. It is hoped that this would remove subjectivity in budgeting process and promote understanding between all the stakeholders in order to fast track the process of passage of the appropriation bill. Following this brief introduction, the next segment of the paper examines the need for national saving fund and constitutional provisions for national savings, while section three focuses on the international experiences. Section four presents the framework for deriving appropriate benchmark price for the national budget and the last section concludes the article.

2.0 The Need for National Savings Fund and Constitutional Provisions:

2.1 Stylized Facts on Savings Behavior:

The subject of savings has attracted many empirical research works and comments in contemporary economic literature since the Keynesian era. In line with the presentation of Keynes most of the economic literature agreed that there are many varied reasons why people save. Keynes (1936) produced the following celebrated list.

Precaution: To build up a reserve against unforeseen contingencies;

Foresight: To provide for an anticipated future relation between income and the needs of the individual

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or family different from that which exists in the present;

Calculation: To enjoy interest and appreciation;

Improvement: To enjoy gradually increasing expenditure;

Independence: To enjoy a sense of independence and a power to do things;

Enterprise: To secure a masse de manoeuvre to carry out speculative or business projects;

Pride: To bequeath a fortune;

Avarice: To satisfy pure miserliness, i.e. unreasonable but insistent inhibitions against acts of expenditure as such.

Corresponding to these reasons for saving, Keynes provided a list of motives for consumption: Enjoyment, Shortsightedness, Generosity, Miscalculation, Ostentation, and Extravagance. From the above, it is clear that there are many reasons why an individual might save; and many reasons he or she might not. Similarly, for a nation as an entity, numerous factors come to bear on their savings behavior, such as political and social considerations. For instance, in Nigeria, several efforts had been made to establish national savings funds in the past, which were however, short lived with limited impact on the economy. A brief highlights on Nigeria's attempts to institutionalize national savings is given in the next section.

2.2 Nigeria's Experience in National Savings

Attempt at institutionalizing national savings crystallized in the establishment of stabilization fund in 1990s where proceeds of excess budgeted revenue were kept. The main objectives of the fund were to provide buffer financial resources to the budgeted revenue in the case that the oil prices fall below a specified level, and in addition, the scheme was

meant to support and sustain long term growth initiatives and investments in the economy. Other efforts at establishing saving fund include the proposed national savings certificate. In the same mould as the stabilization fund, the proposed national saving certificate has remained on the drawing board till date. Currently, Nigeria is operating excess crude account, a semblance of the defunct stabilization fund with a new name.

Stabilization fund was initiated during the military era without the appropriate enabling laws, and therefore, the design of the scheme lacked key success features that could have sustained the scheme, such as a clear policy on determination of the appropriate benchmark price for the budget, and policy on withdrawal from the fund. Moreover, the schemes were established to address exigencies and meet urgent national concerns after which the zeal to continue waned as the situation normalized. The operations of the funds were therefore, perceived to encourage corruption and fiscal indiscipline and thus their operations were suspended. Furthermore, it appears that establishment of national savings contradicts the provisions of the 1999 Nigerian constitution. Section 162 of the constitution stipulates that all revenues collected by the Government of the Federation shall be paid into the Federation Account, and shared to the federating units, except the independent revenue of the Federal Government. Probably, the constitutional stance worked against the actualization of national savings which the Fiscal Responsibility Act would be expected to address.

2.3 The Need for Sustainable Source of Funds In Nigeria:

Given the Nigerian government's ambitious growth targets, and the need in the present global environment to generate investable resources internally, the desire to establish sustainable pool of funds becomes paramount. It therefore, follows that contemporary policy designs and research agenda directed at enhancing saving should occupy the front burner in the scheme of priorities.

A saving fund is designed to create a store of wealth for future generations by converting a deplorable revenue stream into a perpetual income flow (Devlin and Titman, 2004). Nigeria as a political entity needs such income flows for more than one reason, perhaps the following may suffice:

Recently, Nigeria went through horrific experience in external debt management; ranging from debt rescheduling; to debt repayment, and eventually securing debt forgiveness. It should be underscored that during the heydays of external debt burden, the political machineries as well as the treasury was fully stretched by accepting to pay a proportion of the total indebtedness which was a staggering lump sum to the foreign creditors, before the debt relief was secured. Following this bitter experience, the appetite to acquire foreign loans and advances as a nation in the nearest future would be dampened, as any move in this direction to secure foreign loans would be vehemently resisted by the citizenry, as well as the national assembly and the labour union. This implies that there must be a well structured mechanism to generate fund internally; to cushion the effect of shocks in the system, to enjoy sustained increase in expenditure as well as a sense of independence and empowerment to create wealth. Savings funds would serve simply as

a place to bank excess crude oil revenues until they can be efficiently invested. Since our revenues are largely generated from a commodity with a very volatile price, implementing an investment plan that increases slowly and smoothly overtime becomes much more challenging. An important role of savings funds is to allow the country to smoothen out investment expenditures and this increases the efficiency of investment by minimizing cost adjustments. Fiscal surpluses tend to be more inefficient and create more distortions that are also more vulnerable to political economy pressures evidenced by the wasting of the revenue windfall realized from crude oil sales during "Operation Desert Storm" the Iraqi invasion of Kuwait.

2.3 Constitutional Efforts at Establishing National Savings:

The quest for a sustained funding of the national budget was reechoed in the National Assembly and crystallized into the drafting of the Fiscal Responsibility Bill. The bill proposed a shift from annual budgeting to a medium term expenditure framework (MTEF) of three financial years. MTEF is a rolling process repeated every year and aims at reducing the imbalance between what is demanded by ministries, departments and agencies.

The proposed Fiscal Responsibility Bill advocates for development of a macroeconomic framework for the economy which makes adequate provisions for national savings. It was entrenched in the Bill that the underlying assumptions as well as evaluation and analysis of the macro economy should be clearly stated. Furthermore, it was spelt out that where the reference commodity price rises above the predetermined level,

the excess funds derivable should be saved in the Central Bank on behalf of all the federating units. An extension of this provisions barred access to the funds unless the price of the reference commodity falls below the bench mark level for a period of three consecutive months, and places the authority to release the fund on the national assembly.

Considering the deteriorating infrastructure, poor welfare facilities and other social indicators, the question that readily comes to mind is, do we really need to save for the future in the face of these decaying lots? We are aware that individuals as well as economic units have optimum absorptive capacity, a situation where there is too much money in the economy chasing few goods and services results in inflation pressure. Secondly, it has been established that too much resources in the hands of government promotes recklessness as most of the funds would be diverted, embezzled and at best spent on white elephant projects, which usually are abandoned when the sources of funding receded. The cost of completion of such projects on resumption normally escalates due to inflationary factors resulting from cost overrun.

3.0 International Experiences

Saving funds has been practiced in many economies with different variance and at different terms as dictated by economic environment. The pioneers in this field are Alaska, Alberta and Papua New Guinea in the 1960's and 1970's. Other countries that came into the scene in early 1990's are Algeria, Ecuador, Iran, Norway and Venezuela. In an attempt to ascertain the effectiveness of saving funds, Davis and others (2001), using a pooled cross-sectional and time series data for 71 countries for 1970-2000, suggests

that the funds have a dampening effect on government spending as a percentage of the GDP. In the same study, they maintained that the funds appear to raise fixed capital investment as a share of GDP by nearly three percentage points and that there is a positive relation between the balances held in the fund and fixed capital investment.

In his study of commodity stabilization funds, Fiess (2002) reported a favourable outcome in Chile, Norway and Oman. They indicated that the fund moderated significant volatility in government spending and delivered higher shares of gross fixed capital investment. Based on their result, they concluded that country specific circumstances matter a lot, in particular the use of fiscal rules and targets to guide spending decisions over a longer time horizon.

Norway's success story could be linked to strong mechanisms that break the cord between oil price behaviour and fiscal expenditure, generally in a form of fiscal rule. The saving fund is treated as central governments net cash flow and transferred to the treasury to finance the non oil deficit. Linking the fund accumulation to fiscal surpluses would help to avoid the problem of an overall deterioration in the government's net asset position. In the case of Chile, withdrawals from the fund are subject to the fiscal rule with the structured balance calculated by factoring out the cyclical component of the copper price and other cyclical factors (Fiess, 2002). In both cases, transfers to and from the fund require parliamentary approval.

Concerning the optimal size of funds to be accumulated, results of studies conducted in this area appear to be inconclusive. However, Crain and Devlin (2002), indicated that larger

funds created management problem especially if the design of saving funds is not transparent. In addition, they maintained that political pressure on the government usually results in mismanagement of the funds and recommended that there must be an inbuilt mechanism for control reporting and evaluation of fund resources and operations. In his contribution on the management of the funds, Heilbrum (2002), stressed that the funds should be professionally managed with oversight by the Ministry of Finance or Central Bank. Cited the example of Norway, he indicated that the Ministry of Finance supervises the activities of the fund and sets guidelines or investments and reporting requirements.

Economic literature seems to be silent about the appropriate formula applied to determine the level of savings required. However, most studies mentioned in the passing the basis for deriving funds for national savings funds accumulation of excess above a target price as in the case of Chile's Copper Stabilization Fund; revenue contingent a set percentage of commodity revenues, as in the case of the Alaska's Permanent Fund; and a mixture of both, a set percentage of commodity revenue and a reference price as in the case of Venezuela's Stabilization Fund, are very common in the literature.

This study adopts price contingent to

derive a scheme for benchmarking crude oil prices for the annual budgeting process and indirectly building up a pool of national savings funds. This would reduce the rancor that follows the annual ritual of fixing routinely this all important benchmark price.

4.0 Factors that Determines International Oil Prices and Trends of Spot Price:

4.1 Determinants of International Oil Prices

Temporary and permanent factors have been identified to influence crude oil prices in the international market. Oil prices fluctuate unpredictably because of temporary changes in global economic and political conditions that affect the supply and demand for oil. For instance, political crises in Nigeria, Iran, or Iraq could lead to temporary disruption of oil supplies, and cause prices to rise. In an attempt to stabilize prices, OPEC would direct their members to step up production quota in order to make up for the shortfall depending on the magnitude of the crises and the quantity of production involved in the trouble spot. Prices subsequently fall again as the problem is resolved. Similarly economic recession could lead to oil glut, a situation of over production resulting in a temporary oversupply that generates price declines.

Permanent factors that influence oil price movement are development that

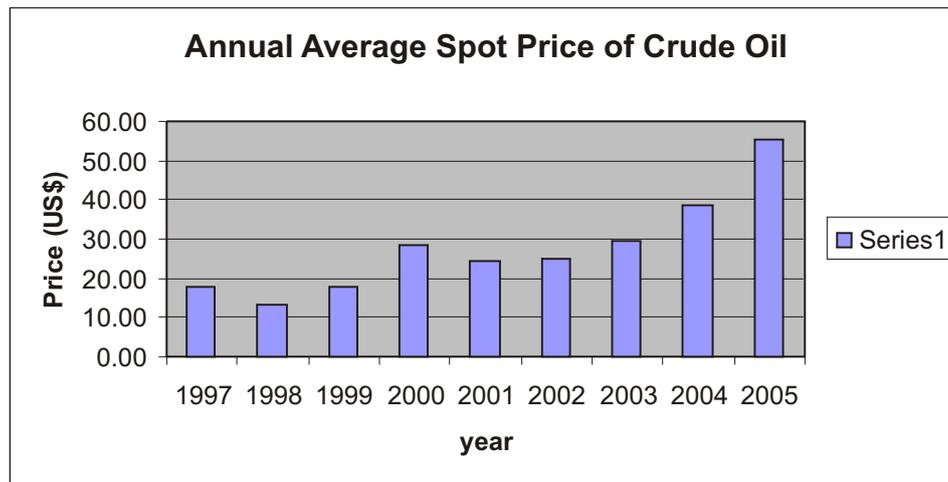
culminated in sustained increase in demand or supply of crude oil in the market. Permanent changes can arise because of longer-lasting changes in demand arising from emergence of substitutes for fuel or stronger incentives for conservation of energy leading to less consumption of fuel. Other situations that could lead to sustained increased demand include technological changes and new discoveries that increase the supply of oil (Devlin & Titman, 2004). In summary, crude oil prices depend on the interplay of demand and supply as dictated by global politics, intricacies and perhaps technological advances and sometimes weather changes.

4.2 Trends in Oil Prices

Prices of crude oil fluctuate sometime with wide swings. For instance, the price of crude oil was as low as \$10.0 per barrel in February 1997, however, at end-December, the same year, the price increased to \$26.0 per barrel (Table 1).

The low price was traceable to economic recession in the Asian economy which resulted in suppression of demand for oil in the first of the year. While the extreme cold weather condition during the third and the forth quarters of the year increased demand for heating oil and thus the price of crude oil increased sharply.

Chart 1



On average, the price of crude oil was fairly stable at \$17.96, \$13.08 and \$17.96 in 1997, 1998 and 1999, respectively.

Table 1 SPOT PRICE OF CRUDE PETROLEUM 1997-2005 (US\$)

Months	1997	1998	1999	2000	2001	2002	2003	2004	2005
January	11.35	15.29	11.35	25.62	25.09	19.64	31.86	31.77	44.83
February	10.22	14.14	10.22	28.06	27.53	20.26	32.9	30.99	45.69
March	12.53	13.10	12.53	27.97	24.57	23.54	31.09	34.13	53.42
April	15.47	13.63	15.47	23.05	25.74	25.78	29.54	34.40	51.90
May	15.24	14.56	15.24	27.9	28.45	25.26	26.1	38.32	49.11
June	15.99	12.93	15.99	29.78	28.03	24.01	27.94	35.55	54.99
July	18.57	12.35	18.57	28.52	24.89	25.92	28.52	38.42	58.54
August	20.73	12.24	20.73	29.48	25.94	26.9	30.05	43.53	66.42
September	22.48	13.4	22.48	33.15	25.93	28.38	27.49	43.71	65.32
October	22.36	12.77	22.36	30.81	20.51	27.97	30.01	50.39	60.43
November	24.76	12.15	24.76	32.63	18.99	24.5	29	42.8	56.74
December	25.81	10.4	25.81	25.95	18.65	28.38	29.85	40.7	57.76
Average	17.96	13.08	17.96	28.58	24.53	25.05	29.53	38.73	55.43

Source: CBN Statistical Bulletin and Reuters

Similarly, in 2000, the average price increased to \$28.55 per barrel from \$17.96 in 1999, and edged upwards gradually to \$25.05 and \$29.53 in 2002 and 2003, respectively. The price of crude oil once again bounced back to \$38.73 and \$55.43 in 2004 and 2005 in the respective years. The recent increase in price of crude is attributable to increase in demand resulting from shortages precipitated by disruption of production in OPEC

member states and in the Russian Federation.

4.0 Derivation of Appropriate Benchmark Price for Crude Oil

The process of arriving at acceptable price for crude oil is a contentious issue shrouded by political intrigue and interest. Several countries such as Chile and Russia have engaged in prolonged discussions and disputes over methods of determining

appropriate benchmark price. In this study, a simple descriptive scheme which makes use of historical trends of prices of crude and the prevailing economic situation to arrive at the benchmark price. The strength of this approach is that inflationary factor can easily be built into the system as against the outdated incremental budgeting. The framework of the derivation is presented in the following equations.

$$\frac{(x_i \dots x_N)}{N} * SF \dots \dots \dots (1)$$

X_{min} = Lowest crude price in the same period

However, the drivers of the international price of crude could be a very reliable reference point for the choice of saving factor. For instance, if the global random process that determines the oil price in the preceding year is perceived to be temporary, it is a signal that the prices of oil may probably remain higher. The present value of future revenues is not very sensitive to changes in spot prices. A close watch of global dynamics would enhance fixing an appropriate level of the saving factor for a fiscal year.

$$\frac{(x_{max} \dots x_{min})}{2} * SF \dots \dots \dots (2)$$

SF = Saving factor whose value lies between zero and one.

This method assumes favourable price of crude oil in the international market and that the annual average crude oil price remains above the predetermined benchmark.

Where

X_i = Spot price of crude oil at month one,

X_N = Spot price of crude oil at end-December,

N = No of months,

X_{max} = Highest crude price obtainable in the period, and

4.1 Saving Factor

The choice of saving factor depends on the fiscal stance and the level of savings desired by the nation.

Table 2

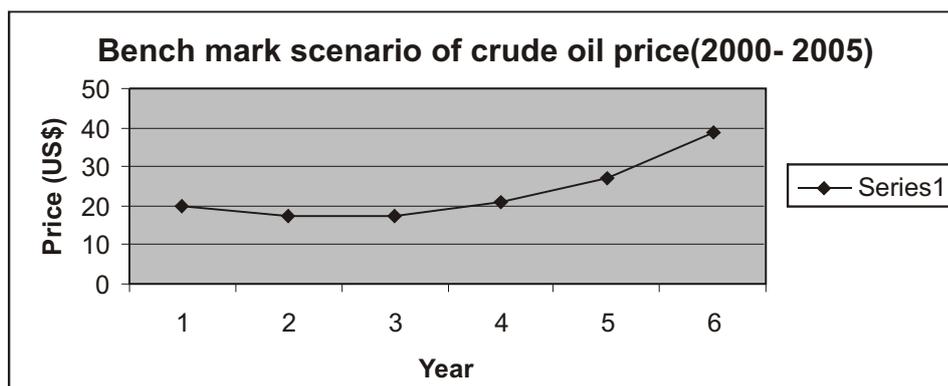
Price	2005	2004	2003	2002	2001	2000
Lowest	44.83	30.99	26.10	19.64	18.65	23.05
Highest	66.42	50.39	31.86	28.38	28.45	33.15
Average	55.63	40.69	28.98	24.01	23.55	28.10
S/Factor 1	0.60	0.60	0.60	0.60	0.60	0.60
Result 1	33.38	24.41	17.39	14.41	14.13	16.86
S/Factor 2	0.65	0.65	0.65	0.65	0.65	0.65
Result 2	36.16	26.45	18.84	15.61	15.31	18.27

Note: S/Factor = Sacrificial Factor i.e the present benefit foregone for future gains

Table 3

Price	2005	2004	2003	2002	2001	2000
Average Price	55.43	38.73	29.53	25.05	24.53	28.58
S/Factor 1	0.60	0.60	0.60	0.60	0.60	0.60
Result 3	33.26	23.24	17.72	15.03	14.72	17.15
S/Factor 2	0.65	0.65	0.65	0.65	0.65	0.65
Result 4	36.03	25.17	19.19	16.28	15.94	18.58

Chart 2:



Application of the Derived Formula

Application of the derived formula to the spot prices of crude oil from 2000-2005, is presented in tables 2 and 3. Results show that in 2000 using equation 1 and assuming that a saving factor of 65 percent was adopted the benchmark price for the budget should have been \$16.86 per barrel, while the \$14.13 and \$14.41 per barrel for 2001 and 2002 respectively. In 2005 benchmark should be \$33.38 per barrel in same scenario. However, a saving factor of 65 percent results in \$36.16 per barrel in 2005 compare to the \$35.0 which was eventually adopted for the 2005 appropriation bill. Similarly, application of formula two (Table3) indicates a benchmark price of \$36.03 per barrel.

Comparing results (1-4), show that the result of each scenario (Saving Factor, 60,65 %) are similar with no significant difference. For instance, in 2005, the benchmark price using formula one is \$33.38, while formula two gives \$33.28 per barrel. This implies that any of the two formula

could be used for the purpose of deriving appropriate benchmark price of crude oil for budgeting. However, formula one which incorporates the annual average price is more appealing in that a sharp increase in price in one period could result in a higher average price between the maximum and the minimum price implicit in equation one. Notwithstanding the bottom-line is adoption of a consistent framework which would reduce time wasting and rancor in the budgeting process.

Recommendations:

Attempt has been made to present a scheme for deriving a benchmark for crude oil price for the appropriation bill. It is envisaged that this approach will facilitate budgeting process and enthroned transparency. This strategy will lead to creation of a pool of funds that can absorb shock arising from unfavourable development in the international crude oil market. Adoption of this scheme will reduce wasteful spending and instill fiscal discipline as well as smoothening government revenue.

It is evident that previous efforts at institutionalizing national savings were not very successful because they were not backed by the enabling laws. It is apparent that constitutional provision does not favour national savings as such efforts should be made to address this issue. Probably, the passage of the Fiscal Responsibilities Act would address this and add value to this strategy as well as accelerate its implementation.

Concluding Remarks:

The nation has passed through bitter experience in the management and servicing of its external debt burden, it is about time we internalized national savings as a culture. The current favourable crude oil price could be a good starting point to build up national savings by setting aside a portion of our proceeds from oil sales. However, the method adopted to arrive at appropriate savings formula, has to be transparent and credible to earn acceptability by all the stakeholders.

BIBLIOGRAPHY:

- Crain, M. and Devlin, J. (2002). "Nonrenewable Resources Funds: A Red Herring for Fiscal Stability?" Draft Working paper. World Bank, Washington, D.C.
- Davis, J., Ossowski, R.; Daniel, J.; and Barnett, S.; (2001). "Stabilization and Savings Funds for Nonrenewable Resources: Experience and Fiscal Policy Implications." IMF Occasional Paper 205. International Monetary Fund, Washington, D.C.
- Devlin, J. and Titman, S. (2004). Managing Oil Price Risk in Developing Countries. The World Bank Research Observer. Vol.19, no.1
- Fiess, N. (2002). Chile's New Fiscal Rule." Draft. World Bank, Washington, D.C.
- Hellbrunn, J. R. (2002). "Governance and Mineral Funds." Working paper. Colorado School of Mines, Golden, Colo.
- Jenkins, G. (1989). Oil Economists Handbook. 2 vols. 5th ed. New York: Elsevi
- Horioka, C. Y. and Okui, M. (1999). 'A US-Japan comparison of the Importance of Determinants of Retirement Savings' Economic letters, Vol.65, No.3 (Dec) pp.365-371
- Keynes, J. M. (1936). The General Theory of Employment, Interest, and Money. London: McMillan and Co Chapter 9.
- Maddison, A; (1992). A long Run Perspective on Savings, Scandinavian Journal of Economics 94:2, 181-196.
- Nnanna, O.J. and Masha, I. (2003). Oil Price Fluctuation, Macroeconomic Behaviour and Policy Response in Nigeria: A VAR Specification (A Memo)
- Shusaku Y. (2004). Why Do Some Countries Save More Than Others? Centre of Policy Studies, Monash University. General works. Paper No. G-142 February.