

Goddy Kpon

Leading Issues in Macroeconomic Management and Development

Edited by

Abdul-Ganiyu Garba

Festus Egwaikhide

Adeola Adenikinju

© Nigerian Economic Society, 2004
All rights reserved.

ISBN: 978-2984-02-7

Typeset in Nigeria by
BookBuilders • Ibadan
2 Awosika Avenue
Bodija Estate
UI PO Box 20222
Ibadan, Nigeria
Tel: 234-2-8101113
Email: abb@infoweb.com.ng

Printed in Nigeria by
Daily Graphics Nigeria Limited
Victory House, ODK Street,
Isebo-Alakia, Ibadan
P. O. Box 12668, G.P.O. Ibadan.
Tel: 0803-3108965, 0803-3263532,
0803-3449198, 0804-4104608
Email: dailygrapfix@yahoo.co.uk

FISCAL ALTERNATIVE FOR GOVERNMENT PARTICIPATION IN PETROLEUM RESOURCE EXPLOITATION: Nigeria's Policy Direction for the 21st Century

Godwin E. Akpan

1. Introduction

THE operation of invisible market forces in the allocation of resources has regained the support which it had lost to the messianic belief in the direct participation of government in economic activities. The failure of the market was the argument put forward to justify government's direct intervention in the economic production and distribution of goods and services. Worse performance by government, has given cause for a return to the market system. Now, more than ever, government has seen the need to support the market approach, recognizing the need for the maximization of results from limited resources. This can only be effectively achieved if inefficiency is promptly penalized. Such penalties can be better enforced in the market system and could affect the fate of a government.

Natural resource exploitation has been of special interest to successive governments in Nigeria. Petroleum has been the mainstay of Nigeria's economy and has accounted for an average share of 73.8 per cent of the total federally collected revenue between 1980 and 1997.

Government direct investments in the petroleum industry (both upstream and downstream) have been the cause of the poor performance of the oil sector, leading to sub-optimal investment activities and low revenue returns. This is particularly so because of the weak performance of government direct investments in the sector. In some instances, government has withheld part of the oil earnings required for maintenance, repairs and replacement of capital stock in the joint venture investments. Government officials involved in such investments behaved like agents and tended to be prodigal with public property.

This inefficiency, apart from generating investment failures, is also responsible, at least in part, for the unsightly environmental problems of the Niger Delta region. If the government can afford to default on the terms of economic investment where profit is expected in a joint venture, such a government will not care for the environment that they see as only generating social returns and will therefore not be interested in the removal of negative externalities. The position of government as investor with respect to the environmental impact of oil production might change if an alternative mode of participation that would make government an unbiased arbiter is designed.

The fiscal approach for government involvement in petroleum production activities is an indirect participatory process. Taxation tools are employed to generate revenue for government, to create incentives for optimal investment and to block antisocial outputs from the sector. This presents a policy direction that will facilitate optimal resource exploitation, revenue generation and improved environmental quality from oil production in Nigeria during the 21st century. The rest of this paper is divided into four sections. Following this introduction is section 2 which presents a theoretical exposition of petroleum resource exploitation and taxation policy, while section 3 discusses some of the policies adopted in the petroleum sector. Section 4 focuses on the policy scenarios available to government – fiscal versus direct investment policies, and finally, section 5 presents the conclusion and some suggestions for policy and research directions.

2. Petroleum Resource Exploitation and Taxation Policy

This section deals with the optimization of petroleum resource exploitation and the taxation policy adopted to expropriate the rental gains from the extraction of petroleum. It has two sub-sections: the first deals with the classical optimization rule for petroleum extraction and the second treats the taxation policies on petroleum extraction activities.

2.1 Classical rule of petroleum resource extraction

This sub-section provides the economics of depletable natural resource extraction in a pure classical analysis of extraction upon which government intervention is built. The extraction of petroleum resources follows some natural economic principles. The rate of depletion of these resources is determined by various economic price levels that include the prices of factors utilized in the extraction process, the price of the extracts, and the prices of other goods and services in the society. In kernel form, the rate of depletion of petroleum resources depends on the internal rate of returns on extraction relative to other investment activities. This involves the comparison of returns on investment activities.

Petroleum resources, like other mined products, are different from other economic activities because they belong to the group described as depletable resources in economics. Their reserves are fixed in such a way that, on the whole, the net rate of depletion will be equal to the rate of extraction, less new discovery due to exploration activities. Since the level of deposit of these resources is finite, implying that exploration cannot infinitely lead to new discovery, the rate of depletion is ultimately determined by the rate of extraction of the resources.

This situation can be expressed as:

$$\dot{R}(t) = X(t) - q(t) \quad \text{reserve}$$

where \dot{R} = rate of change in reserve over time
 X = rate of change in discovery over time
 q = extraction level
 t = time

In a deterministic model as $t \rightarrow \infty$, $\frac{\partial \dot{R}}{\partial R} \rightarrow 0$
meaning that,

$$\dot{R}(t) = -q(t)$$

This implies that the rate of depletion is directly equal to the level of extraction. Indeed, as exploration and discovery proceed over time, it becomes increasingly difficult to make new discoveries (Pindyck, 1978; Conrad and Clark, 1987).

In any market structure, the rate of depletion (extraction) depends on both factors from the supply side determining the costs, and/or factors from the demand side impacting on revenue. Thus, the profit level of extraction determines whether to exploit the resource now or later, and therefore determines the level of reserve at any particular time. The assumption concerning the costs of producing (extracting) the crude petroleum ($Cr(R)$) is that it increases and approaches infinity as the level of reserve approaches zero. That is,

$$Cr(R) \rightarrow \infty \text{ as } R \rightarrow 0$$

The level zero might never be reached in practice since the costs of getting to the last drop of crude petroleum will be prohibitively high. Thus, we often talk about the level of economic exhaustion of the resource rather than complete physical exhaustion, where economic exhaustion means the level beyond which it is no longer cost-efficient to continue the business of crude extraction given the current state of technology employed.

Therefore, the producer's optimization problem in the presence of exploration is of the form:

$$\text{Max}_{q, w} W = \int_0^\infty [qp - C_1(R)q - C_2(W)]e^{-\alpha t} dt \quad (1)$$

subject to:

$$\dot{R} = \dot{x} - q \quad (2)$$

$$\dot{X} = f(w, x) \quad (3)$$

$$\text{and } R \geq 0, q \geq 0, w \geq 0, x \geq 0$$

where: w = the level of exploratory effort, evaluated as the number of exploratory wells, etc. These equations are statements of optimal profit. The first entry on the RHS of equation (1) is the revenue from the extraction, the second is the cost of extraction, while the third is the cost of exploration. Equations (2) and (3) are statements of the rate of change of reserves over time as extraction, q , and active exploration, x , take place side by side.

Where the resource rent tax is completely neutral, it can be treated as an element in the costs of production. The marginal rule for optimization will be the same as those for costs of exploration and extraction.

The solution to the optimization problem can be obtained using the Hamiltonian multiplier function and solving the first differentials with respect to the level of extractions, q . Thus, the Hamiltonian, H , function is represented as:

$$H = gpe^{-\alpha} - C_1(R)ge^{-\alpha} - C_2(w)e^{-\alpha} + \lambda_1[f(w, x) - q] + \lambda_2f(w, x) \quad (4)$$

The first differentials of equation (4) are used to analyse several economic decision rules and have been given expository evaluation in Pindyck (1978) and Conrad and Clark (1989). However, the first differentials with respect to the level of extraction depletion, q , is relevant to this study and is represented as:

$$\begin{aligned} \frac{\partial H}{\partial q} &= pe^{-\alpha} - C_1(R)e^{-\alpha} - \lambda_1 = 0 \\ \Rightarrow [p - C_1(R)]e^{-\alpha} - \lambda_1 &= 0 \end{aligned} \quad (5)$$

Since the discounting factor $e^{-\alpha}$, and the change in the present value of future profits of additional reserve discovered from exploratory activities, λ_1 , cannot be zero, it means that p (marginal price of extracts) must be equal to $C_1(R)$ (marginal cost of extraction). This by extension makes λ_1 equal to zero since the profit is zero (or normal profit). At equilibrium, the producer in the oil extracting industry will charge prices that are equal to the marginal cost of extraction and earn normal profit, assuming a perfectly competitive market structure. Equation (5) can be rewritten as,

$$P - C_1(R) - \lambda e^{-\alpha} \quad (6)$$

This means the net price or the marginal profit of extracts – arguments in the LHS of (6) is equal to the rent on extracted resources (represented in the RHS of (6)). These values are often positive because the market structure in the oil extracting industry is not perfectly competitive given entry barriers in the form of legal restrictions on oil activities in most oil exporting developing countries, and the price setting activities by the OPEC cartel. When this is added to rental gains from international trade, it becomes obvious that the marginal profit from oil extraction activities will be very high. It should also be pointed out that the classical optimization position does not consider the fundamental issue of environmental effects of oil exploitation.

Several variables can, however, be admitted into equation (6). The price of output might be regarded as exogenous to the firm, but key variables in the cost function are endogenous to the firm. Factors affecting the cost of extraction include factor prices and the technological level of the extracting firm. If the technological knowledge/power is fairly

distributed among firms (assuming the cost of accessing such information is zero), then the problem of cost minimization becomes that of output (extraction and exploration outcomes) maximization. Moreover, if it is assumed that the firms raise funds from the capital market to finance their costs, it would follow that ultimately the optimization behaviour of the firms merely entails comparing the unit price of extract (output) with the interest rate. The optimal level of activities is attained when net marginal price of extracts is equal to the interest rate.

Another dimension to the use of the interest rate as a decision variable in the non-renewable resource production activities stems from the fixity of explorable reserves. If extraction must be carried out, the current level of profit from the sales of the extracts must be able to generate enough income in perpetuity throughout the period when the threshold of depletion is reached. This means that the current price of the extracted mineral should not only pay for exploration and extraction costs, it must be sufficient to meet the user cost of depletion, which is equal to the profits that could have been earned if the resources were extracted in future (Kula, 1992). The exploration and extraction cost components of the price are easy to determine, since it is the historical costs of inputs used in the production process, but the cost of the mineral follows more economic principles as it has to do with the evaluation of the time-value of the extraction. It is concerned with generating enough profit from the extraction to make adequate provision for the time when the resource would have been exhausted.

The production decision rule in this classical model entails the comparison of the net price of resources with the market rate of interest or rate of commercial returns on investment. The rule:

- i. If the net price of the resources is less than the market rate of interest, the resource owner should extract and sell his resource endowment and invest the proceeds since he will make investment gains over time; and
- ii. In contrast, capital gains through capital appreciation will be made leaving the reserve underground when the net price is more than the current market rate of return on investment, and is expected to remain so over time.

The classical decision rule does not cater for the situation where the owner of the resource is the government of a country such as Nigeria whose development needs are different from the needs of private persons. Thus, the funding requirement of development might demand the exploitation of the resources with little regard for market valuations. For a good government-controlled extraction, the expected returns might be greater than the private returns, since in addition to pure private returns there are pure social returns. In the case of government-controlled extraction, it is the maximization of the present value of the social gains from the depletion of the mineral endowment over time that matters. The social profit function will involve the net pure economic returns, plus the pure social profit function. The pure social gains function contains variables on good governance, an

environmental purity index, equitable distribution of the gains to population and a quality of life index that can be attained using revenue from the exploitation of oil resources.

There is also the assumption that the equilibrium level of investment, where it will not pay any investor to reshuffle his investment portfolio, has been attained in the economy where this classical resource extraction model applies. Unfortunately, developing economies have not attained that level of equilibrium. The reality in developing economies is differential returns even in the same line of investment within the same location and time. This is due to the prevalence of information asymmetry in the system. The inadequacy of investments in a developing economy can be traced by the magnitude of inter-investment (intra-sectoral) and inter-sectoral differences in returns on investments.

2.2 Taxation policy and petroleum resource extraction

Government participation in the exploitation of petroleum may or may not change the decision rule of investors, depending on the role of the government. If, for instance, the government comes on the scene purely as an economic partner with the private investors, without the imposition of taxes and other regulatory policies, then the theoretical construct above will follow without adjustment. Such a hypothetical situation cannot be found in real life. Government might come in through a joint-venture (partnership) arrangement but still impose fiscal policies and other legislation on the activities of petroleum investors. It is this type of participation that expands the pure economic decision rule. The nature of petroleum resource as regards depletion and the effect of its production activities on the environment make the goal of government participation in this sector different from others, such as the manufacturing and banking sectors. At every stage of active extraction, the resource is being depleted, and through its production cycle the environment is endangered. Since government's partnership participatory activities are somewhat similar to the profit-seeking private investors (although government's intention is also loaded with political interests such as achievement of sovereignty), the consideration here is concentrated on the fiscal activities of government in the sector.

Taxation in the petroleum resource industry is different from that of others in some perspectives; the similarity is in the income tax levied on the profits of the operators. The difference stems from the ownership rights to the mineral which is social in many countries. The investment activities in the sector are therefore subject to the resource rents tax, which is the levy on the resource rents over and above the levies that are specified by income taxes. Since the minerals are natural endowments rather than the result of any economic effort, it follows that all should be given a fair share in them. Resource rent tax is, therefore, levied to ensure equity in the distribution of resources to all within the country. The base of the tax is natural economic rents that exist in the industry since the deposits of the mineral are costless.

There are two fiscal objectives, which are fundamentally conflicting, that must be optimized in the implementation of tax policies on petroleum activities. The first is the maximization of government's revenue from the depletable resource, and the second, the preservation of appropriate, but not excessive incentives for the exploration and

development of petroleum resources. This entails balancing these objectives at optimal levels. An excessive revenue-seeking tax level will lead to overtaxation which will discourage investments in exploration, development and extraction and will eventually lead to a fall in government's future revenue. Similarly, excessive incentives will reduce government's revenue, which will negatively affect government's development efforts in the entire economy. Excessive incentives will also encourage wild and uneconomic exploration. An optimal tax policy should maximize government revenue while simultaneously reducing the investor's perception of risk (Stauffer and Gault, 1981; Boadway and Flatters, 1993).

In practice, no pure rent collecting measure is ever implemented. Fiscal policy measures that target rents may also surtax resource firms to raise more revenue, thus, introducing some distortions. Two measures that the government can adopt to divert a share of the resource rents to the public sector are levying a tax on the rents, and making the resource firms bid for the rights to exploit resources. With competitive bidding and adequate information, the value of the bid will be equal to the expected future net value of the rents (which is equal to the net expected future taxes) corrected for the risk factor. The bid is likely to yield better results than the tax rate on rents on two grounds. First, the net value of expected future rents can be completely paid up-front, thus forcing firms to bear the risk associated with resource exploitation. Second, the tax alternative spreads the risks in such a way as to make the government a party in the risk-bearing and thus lose some revenue. However, risk perception in bid auctioning can affect the bid price; and the public sector can also obtain a share of the rents by acquiring a share of equity in the petroleum firms. Apart from the rent levy, there are other payments that the government imposes on the petroleum industry, such as the usual income tax levied on petroleum profits, cash bonuses, and production-sharing arrangements. Royalties are basically treated as taxes because they are based on the actual extraction. Royalties are immediate payments made to the owner of the sub-surface in exchange for the right to exploit a field, and it does not feature in the computation of profit. The payment is made from the first year's extraction and may be in cash or kind (in the form of a share of crude petroleum). The amount charged is based on a percentage of the posted price, ranging on the average between about 12 to 15 per cent over the years, with the exception of the early 1980s when it hit an all-time high of 20 per cent (Masseron, 1990).

Income tax on the petroleum profit, is ubiquitous and the rate is also higher than the income tax rate for other sectors. In some countries, it is 50 per cent of the profit, thus making a case for 50-50 profit sharing between the extracting companies and the host government. Beyond that, issues arise from accounting procedures and entries, which affect the ultimate level of profit. For instance, there have been serious arguments about whether the computation of profits should include the postings related to the cost of exploration, especially of unproductive explorations; the amortization rate of a field; and the issue of deducting the value of the cash bonuses and royalties from sales. This is often opposed by the host countries. Problems concerning which price to use in evaluating profits and taxes are often resolved using the posting (or order) price of the crude.

Most of these issues are related to the level of neutrality of mineral taxes and levies. The tax's acceptability by the petroleum firms depends on the extent to which they are allowed to deduct costs from the taxable sales income. A tax will be regarded as neutral if all costs can be deducted against taxable income. The effect of neutrality of oil production and exploration depends on the level of risk perception by the oil firms. If a firm is risk-neutral, the imposition of a resource rent tax, for instance, will not affect the exploration and production efforts, provided the taxation rule allows for a full offset of exploration and other costs against taxable income.

However, under the same condition of risk-neutrality, if exploration costs can only be partially offset against taxable income, resource tax will cause a reduction in exploration of deposits expected to be profitable. In the case of risk-averse firms, Campbell and Lindner (1985) show that when taxation guarantees to offset full losses, the firm will devote less effort to the exploration of 'promising' deposits and put more effort on 'unpromising' deposits. Therefore, to ascertain the impact of taxation on mineral exploration and production activities, two major factors must be determined: the level of neutrality of the tax on the cost of production activities and the risk perception attitude of the investors.

In essence, the depletable nature of petroleum resource production entails the creation of a resource endowment gap between the present generation involved in the production (and depletion of the stock) and posterity. This question of balancing the inter-generational equation for depletable resource endowment can be answered in two ways. First, by leaving the stock of resources in the earth's crust so that every generation could have the resource balance credited to their account and carried forward to the account of the next generation. The problem here is that the benefits of the wealth in terms of impact on the economic welfare of the people will not be felt, even though all generations will be at least equally endowed – when adjusted for the time value of the wealth. The environment is also likely to remain intact with respect to the effects of resource exploitation on the ecosystem. The weakness of this solution is however greater when the investment and development opportunities that the stream of income generated from exploitation would have brought to the society are considered. The solution is basically a nonsensical one that is better imagined than experienced!

This leads to a favourable disposition to the second solution, which involves exploiting the resources at present, if it is economically profitable to do so, and then reinvesting the rental income in projects that will generate streams of benefits in perpetuity. In this way, the depletion now will adequately compensate the future generation through the reinvestment processes. This has been the justification for current exploitation of natural resources in the less-developed countries for investment in economic development. Complaints often arise when there is a deviation from the main objective of this solution, which is reinvestment. There may be a preference for current consumption of the gains from the exploitation, thus making the future generations worse off. Again, the environment might be endangered if its preservation does not enter the cost function of exploration, development and exploitation of the mineral. The appreciation and ubiquity of the application of this second solution call for the maximization of the future stream of gains from resource exploitation. All major

decisions of investment in the petroleum industry take time, and so do exploration, development of oil/gas fields and exploitation. Thus, at any point, it will be expedient to consider the present value of the future costs and gains from such activities rather than the current value (Boadway and Flatters, 1993). Government fiscal expectations on resource rents also need to be evaluated in terms of the net present value of the fiscal revenue expected from the future stream of rental income.

3. Policies in the Petroleum Sector in Nigeria

Petroleum activities started as normal private economic activities in Nigeria when Shell D'Arcy Exploration Parties prospected for oil in the Niger Delta region, currently the Rivers and Bayelsa States. Crude petroleum in commercial quantity was discovered in 1957 in Oloibiri near Port Harcourt. The activities were never devoid of government interest and interference. For instance, oil prospecting by Shell was made operational through a prospecting licence that was granted to the company by the colonial government in 1937. After the commencement of production in 1958 by Shell, the Federal Government of Nigeria granted oil prospecting licences to five other companies to carry out oil prospecting in the continental shelf of Nigerian shores on the payment of ₦1 million each. Appropriate laws were also passed by government to regulate the production and sale of oil.

Even before the discovery of crude oil in Nigeria, trade in petroleum products was highly regulated by government, though it never participated directly in the trade. Such laws include the Mineral Oil Ordinance of 1914, followed by the Motor Spirit (Returns) Ordinance of 1952, and the Mineral Oils (Amendment) Ordinances of 1958 and 1959. These laws were concerned with the importation, marketing, taxing and safe handling of petroleum products in Nigeria. As with other legislation, during the colonial era, these laws were a reflection of the British legal system. The ordinances were largely guidelines on the powers of the Governor General and the House of Representatives to actually legislate.

3.1 Oil Pipelines Ordinance, 1956 (amended, 1965)

Following the hope for success in Shell oil prospecting, the government in 1956 enacted the Oil Pipelines Ordinance for the establishment and maintenance of pipelines provided that each licence was issued to authorize the construction, maintenance and operation of only one pipeline. This ordinance granted the following rights:

- i. The holders of an oil prospecting licence or of an oil lease who discovered mineral or natural gas in commercial quantities shall be entitled to the grant of a permit to survey the route for an oil pipeline for the transport of such oil or gas to a refinery in Nigeria or to any other point of destination to which such holder requires product to be transported for purpose connected with oil trade or operations.
- ii. The holder of a permit to survey is entitled to enter with his officers, agents, workmen or other servants, and with any equipment or vehicle into any land upon the route specified in the permit or reasonably close to such route for purposes of surveying and taking levels of land; digging and boring into the soil and subsoil;

cut and remove such trees and other vegetation as may impede the purpose specified here; and doing all other acts necessary to ascertain the suitability of the land for the establishment of an oil pipeline or ancillary installations. The holder, with such persons, equipment or vehicles, is entitled to pass through land adjacent to such a route to the extent that such may be necessary or convenient for gaining access to land upon the route specified.

- iii. Holders of such a licence shall pay compensation to the person(s) that suffer(s) losses due to the activities related to the operations of the licence that cannot be made good. The amount of such compensation must be acceptable to the person and the holder of the licence, otherwise it shall be fixed by a court at contestation.

The Oil Pipelines Ordinance, like other oil-related laws, is more concerned with the overriding state interests and only attaches minor importance to the rights and welfare of the individuals that are affected by oil production activities. The oil companies are more protected than (and at the expense of) the poor Nigerians whose access to justice through the court process might be impeded by poverty and long drawn out, frustrating judiciary processes. Again, the law as it stands has no economic value for land. It seems to say that the land is free. This makes the control of the holders of such licences, with respect to economical use of land and insistence on environmentally clean techniques of operations, difficult. Although several innovative and humane clauses were introduced into the act during the amendment in 1965, they still did not take care of the economic value and use of land.

3.2 Petroleum Profits Tax Ordinance, 1959 (amended in Decree No.3, 1979)

This law specifies in clear terms the constituents of chargeable profits derived from sales of chargeable oil and gas, and deductions allowable as current expenditure for charge against income and expenditure items not allowable in the profit and loss account. The deductions allowed had to be directly connected to the petroleum operations of such companies in Nigeria, whether such expenditure was incurred within or outside the country. The deductions include rents on land (this is outside the land approved for petroleum activities which is usually freely acquired by law) and buildings incurred by the company, and compensation paid for disturbance of the surface rights; interest paid on borrowed funds used for petroleum operations (provided the Board of Inland Revenue (BIR) is satisfied); cost of repair of premises, plants, machinery, etc; collectable bad and doubtful debts in the current accounting period (subject to approval by the BIR); expenditure on drilling appraisal for the development of wells not covered under other expenses; and contributions to pension and other approved funds in the current accounting period.

Certain disbursements and expenses that can easily be exploited to cause a reduction in the value of profits, but that are not necessarily connected to petroleum operations are not accepted into the account. Such entries include capital employed (as different from costs of repairs and interests payable in the current period); value of expenditure recoverable under

an insurance or contract of indemnity; amount incurred as income or profit tax; cost of depreciation, savings, royalties; and interest payable on borrowed funds not directly connected to oil operations of the company. All deductions allowed should not reduce the level of profit accruable to the BIR as tax revenue to less than 15 per cent of the company's gross income (sales) in the current accounting period. The tax rate for petroleum profit in the ordinance is 50 per cent of the company's chargeable profits. Nigeria's tax system gives incentive to investment in the petroleum sector, since the tax rate of 50 per cent is one of the lowest in the sector (as in Venezuela) compared to that of other countries (e.g., those in the Middle East, where the petroleum profit tax rate ranges between 65 and 80 per cent (Masseron, 1990). The difference may be in the items allowed to be charged to the account and those excluded. For example, the exclusion of depreciation from the account (as stated in section 11, (1), (g) can induce bookkeeping malpractices since provision will always be made for this item. This in itself is a precautionary measure, because the heavy capital intensity of the industry could drastically reduce profit, sometimes to a negative figure. In fact, this exclusion seems to be a common and acceptable practice in all the petroleum producing countries. Thus, capital cost might be posted as interest on loaned capital in the current period.

Again, in Nigeria, the value of land is not given any cost entry. The value of profit is, therefore, bloated with uncharged rents which should have accrued to the land owner. This has been a major reason for the careless use of land in the petroleum sector in Nigeria, since the operators regard it as a free good. Besides, the government often gives explicit support to the oil companies by the generous parcelling out of land to them. For instance, Oil Terminal Dues Decree No.9 of 1969 parcelled out 1354 acres of Bonny land, Rivers State to Bonny Offshore Oil Terminal for use by an oil company. The Offshore Oil Revenue Decree No.9 of 1971 does not include any rent charge for land acquired and so no fiscal gains will accrue to the Bonny government from the land seizure. Similarly, the same Decree No.9 of 1969 has been used to parcel out 810.04 acres of land in Ibeno (Ibuno in the Gazette) in Akwa Ibom State for the Qua Iboe Terminal owned and managed by Mobil Oil Company, whose operations were mostly offshore. Ughelli/Forcados Oil Terminal uses 61.96 acres in Delta State. There are other such liberal donations of land to the oil companies, all without the consent of the oil producing communities. These lands are not provided for in the accounting and petroleum tax processes.

3.3 Hydrocarbon Oil Refinery Act No. 17, 1965

This act specifies the requirements for the licensing and operation of hydrocarbon oil refineries by private persons. In its original state, the requirements for licensing were simple, but the act had inbuilt disincentives to investment and instability, which did not encourage private sector commitment of funds for the hydrocarbon oil refinery. For instance, section 5 of the act gives unlimited power to the government agent (the Board of Customs and Excise) to revoke the licence granted to any person upon its 'satisfaction' to do so; and that is done by simply writing to notify a licence-holder of such revocation. In doing this, the investor is not given any chance to make a case for the defence of his

investment. The licence granted only lasts for a period of one year and is subject to renewal every year through re-application and reconsideration by the government board (section 6 of the act). With the long-term investment required in the industry, this acts as a disincentive to investors since they are not certain of being granted a renewal, given the long red tape of bureaucracy and the corruption that may mark such processes.

These unfavourable conditions are reasons why private investors are reluctant to invest in the refinery business in Nigeria. These fears were reinforced by the way government sometimes interfered and forcefully acquired shares in some oil companies as it did in the 1970s. Potential investors in the refineries have found it more reassuring and profitable to become contractors and technical partners to the government-owned refineries. Only government-owned refineries have operated in Nigeria in the 35 years since the Hydrocarbon Oil Refineries Act was passed.

3.4 Nigerian National Petroleum Corporation Decree No. 33, 1977

Apart from indirect participation through using tax and other regulatory measures, the government of Nigeria directly participates in all petroleum activities – exploration, prospecting, and production of petroleum oil and associated products – through a government body, the Nigerian National Petroleum Corporation (NNPC). The corporation was set up in 1977 by Decree No. 33 and empowered to participate in all petroleum activities (as do private sector investors) and to represent federal government interests in the petroleum sector. Thus, the corporation, according to section 4 of the decree, is charged with the duty of exploring, prospecting, refining, processing and handling petroleum for the manufacture of petroleum products and its derivatives; providing and operating pipelines, tanker-ships, etc. for transportation and distribution of crude oil, natural gas and their products; carrying out research in connection with petroleum for purpose of enhancing the output of petroleum; and carrying out any other activities as may be directed by the federal government, or as may be in the overall interests of Nigeria.

Given the unwieldy specification of activities for the NNPC, it is easy to envisage that there would be inefficiency. The rivalry of interests between the corporate goals of the corporation and the private objectives of the individual managers has often led to subversion of corporate interests. Besides, since the NNPC is responsible for inspection and for overseeing compliance with government's requirements of oil companies, it follows that the NNPC inspects, supervises and oversees its activities in the joint venture investments with the private oil companies such as Mobil, Shell and Chevron. Even if public enterprises were destined to be efficient and effective in direct economic activities, the lack of a clear-cut source of control to its activities can lead to inefficiency. This can be worsened by the private investors' pressure on the corporation, which could have the effect of corrupting and negating its corporate goals. In either case, the government stands to lose some revenue to such inefficiency. Unlike the loss of revenue in an inefficient tax collecting board where no government direct investment activities take place and only one aspect of loss is borne by the government, the case with an inefficient direct government investment organization

involves a higher magnitude of loss marked up by capital losses and low returns on investments.

In addition, direct government involvement in petroleum production through the NNPC has been the vent for enormous subsidies on petroleum products. The ownership of the NNPC also represents a large fiscal burden on the revenue of the government, irrespective of whatever minor profits the governments may be recording from its activities. When assessed against the returns per unit of government's equity, alongside the weight of losses in subsidies, the effects of insider interests of the workers, and the instability created by government's attempts to remove petroleum subsidies or privatize some aspects of NNPC, the gains pale to nothingness beside the losses.

4. Policy Scenarios: Fiscal versus direct investment policies

Nigeria's current policy issues in the oil sector have to do with the dual problem of the usual existence of unpaid social costs of oil production and the introduction of additional but avoidable costs by the activities of officials of the government agency. The social costs stem from the unwillingness of the private producers to internalize adverse externalities generated by their activities as part of their production costs. Agency costs in government direct participation come from contradicting interests between government's policy objectives and the personal interests of government agents, that lead to the subversion of government's policy goals. These conflicting interests, therefore, introduce additional elements such as agency costs, into the production cost function in the Nigerian petroleum sector. Agents' personal interests are represented in the forms of: diversion of corporate gains to personal use; demand for bribes from clients and the associated delays if such demands are not met in time; inefficient performance due to the pursuit of personal businesses by employees; collaboration with private investors in the sector to manipulate accounting records, to lower environmental controls, and to inflate costs in joint venture projects; etc.

The production costs and demand situation in the presence of the combined existence of private and public sector failures is demonstrated in figure 1 below.

The pure private producer in the petroleum sector with average cost AC , and supply function $MC=S$, is said to operate below the socially acceptable and environmentally friendly cost function, AC_p , that has $MC_p = S_p$ as its supply curve. Given Q, P as the market clearing levels of output and price with the environment problem, the government can intervene and use taxation as a tool to enable her reduce (or even remove) the externality. The tax TT' will be shared between producers and buyers at the ratio of TC/CT' . This tax solution is possible for two reasons. First, under the free market competition, consumer's and producer's surpluses guarantee the effectiveness of taxation.

Second, taxation intervention is a market friendly policy tool that can easily be absorbed through the price mechanism, given the free operation of price-sensitive market operators.

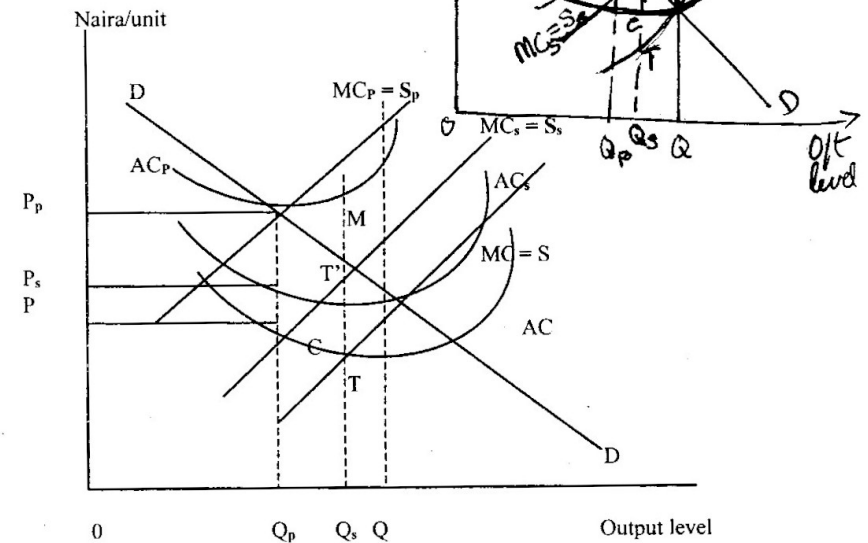


Figure 1. Failure of Private and Public Sectors and Externalities

A different scenario will result if the government decides to go into direct production as a way of solving the same problem. Such direct intervention is often observed to be inefficient, due to reasons related to agency interests enumerated earlier. Thus, the cost per unit of output will rise significantly (see AC_p), even above what would have been socially efficient under private organization production. The level of output will be lower at every price level (as indicated in the supply function $MC_p = S_p$) than would have been in either the pure or regulated private production.

Now the issue is not only the presence of externalities but the excessive high costs (and prices) and drastic reduction in output, consumption and welfare level associated with government direct production. To get to the level of output and consumption, Q_p , that was socially efficient under regulatory intervention, the government will have to subsidize the extra production, $Q_p - Q$, passing through the consumers to the tune of $T'N$, since there is neither consumer nor producer surplus. However, being a government-owned enterprise, the subsidy per unit may be reduced to $T'M$, forcing them to take the average-cost price. Given that the rate of environmental degradation is directly related to the rate of output expansion (Atkinson et al., 1996), if the government subsidizes increased production and consumption, it is indirectly voting for or funding increased environmental degradation. The situation here generates more problems for the government, namely, raising tax revenue from other sectors to finance production and consumption in this sector, social welfare issues and the management of government's size. With government direct production, the

output level Q will require an unthinkable level of subsidy! More importantly, however, there is no assurance that direct government production will ever seriously consider the removal of externalities when considering the more pressing concerns for an increase in output, and possibly the removal or minimization of agency costs through anti-corruption bills and campaigns. On the other hand, environmental issues of production can be well handled by the government, with revenue yielding taxes on both consumers and producers in a regulated private arrangement.

The question that now begs for an answer is, what should be the direction of government policy regarding the petroleum sector in the twenty-first century with the benefit of hindsight of our past performance and experiences?

5. Conclusion: Policy and research direction

In the face of current deregulation by the government, it is only wise to undertake policies that are supportive of a market-oriented economy. The trend of resistance to deregulation policies, which started in 1989 with the anti-SAP riot in Lagos and progressed into series of instantaneous protests against the removal of subsidies (including the June 8, 2000 indefinite nationwide strike by the Nigeria Labour Congress against removal of petroleum products' subsidies) and privatization of government-owned companies calls for a re-evaluation of the direction of government policy in the petroleum sector. Direct government investment in the sector could have increased the domestic capital base and welfare of the citizenry but that has now become history given the relics of ineffective refineries and repeated protests at deregulated pricing of the domestically consumed petroleum products. Besides, between 1977, when the NNPC was established, and 1997, oil revenue accruing to the federal government totalled \$218,967.21 million. NNPC might not have been responsible for up to 20 per cent of this amount, and if the huge subsidies enjoyed by its production and distribution activities are set against its contributions to revenue, its net returns to the tax payers' investment might even be negative! This in itself is a researchable assertion given the huge investments in the NNPC. For instance, the Federal Government (FGN) still gives subventions to the NNPC in the form of budgetary allocations. In 1990, FGN allocated ₦90 million, ₦100 million in 1991, ₦80 million in 1992, ₦57 million in 1993. In 1994, because of the cumulative depreciation in the refineries and high exchange rate of the naira to the dollar, an allocation of ₦2 billion was made to the NNPC (World Bank, 1996). Though these allocations may appear meager relative to total government expenditure, the question is, should such allocations have been made at all in view of the advantageous sector in which the NNPC operates?

The policy direction points more favourably towards market-orientated indirect government participation in economic activities using fiscal measures both as a way of raising revenue and as regulatory measures on the sector's activities. This is because such policies are less costly to operate in terms of financial demands, compared to direct investment. Review of fiscal policy is also less marked with political and social crises than is the case with review of direct government investment. Again, inefficiency and resulting losses to the government are minimized in the fiscal approach. Direct government

investment may lower government's ability to control environmental standards in the sector, since the government, now behaving as a private investor, might not be interested in levying the Pigouvian tax against its operations in the sector. This might be the reasoning behind the Nigerian government's reluctance to sign into law the Niger Delta Developing Commission Bill and the hesitation by the federal executive to implement it even after it was passed as a legislative act in June 2000.

There is need to begin a review of the legislation in the sector to remove fears in the legal system and permit increased private participation in the sector. This will enhance competition and efficiency in the downstream investments of the sector, which are currently inefficient under the captivity of direct government control. Also, before political interests become too prominent in the Liquefied Natural Gas Company, which has newly begun production, it should be privatized with the proviso that the controlling shares should be given to investors from the state of location. Similarly, the process of privatizing refineries and NNPC marketing organizations should be commenced. The government will gain more by the use of fiscal measures to tax and regulate the activities of these organizations. Government equity holdings in the NNPC joint ventures should be reduced through privatization, while the inspectorate unit of the NNPC should be revitalized to ensure that it effectively discharges its function as a true supervisory and regulatory body in the sector.

Meanwhile, there is the need to carry out an empirical analysis of comparative efficiency and effectiveness of private and public investments in the Nigerian oil sector. It will also be interesting to compare the net effects of direct government investment with the use of fiscal measures in the sector.

References

- Atkinson, B., P. Baker and B. Milward. 1996. *Economic Policy*. Macmillan, London.
- Boadway, R. and F. Flatters. 1993. *The Taxation of Natural Resources: Principles and policy issues*. World Bank Policy Research Working Papers. WPS 1210.
- Campbell, H.F. and R.K. Lindner. 1985. A model of mineral exploration and resource taxation. *The Economic Journal* 95: 146-160.
- Central Bank of Nigeria. *Annual Report and Statement of Accounts*. CBN, Lagos. Various Issues.
- Conrad, J.M. and C.W. Clark. 1987. *Natural Resource Economics: Notes and problems*. Cambridge University Press, Cambridge.
- Constitution of The Federal Republic of Nigeria (1979, 1989, and 1999).
- Constitutional Rights Project (CRP). 1999. *Land, Oil and Human Rights in Nigeria's Delta Region*. CRP, Lagos.
- Kula, E. 1992. *Economics of Natural Resources and the Environment*. Chapman & Hall, London.
- Masseron, J. 1990. *Petroleum Economics*. Editions Technip, Paris.
- Pindyck, R.S. 1978. The Optimal Exploration and Production of Non renewable Resources. *Journal of Political Economy*: 841-861.

- Stauffer, T.R. and J. Gault. 1981. Effects of Petroleum Tax Design upon Exploration and Development. A paper presented at the 1981 Economic & Evaluation Symposium of the Society of Petroleum Engineers (AIIME) held in Dallas, Texas, February 25-27.
- World Bank. 1996. *Nigeria: Federal Public Expenditure Review*. Report 14447.