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THEORETICAL AND CONCEPTUAL ISSUES IN ECONOMIC REFORMS: APPLICATION TO NIGERIA'S DOWNSTREAM PETROLEUM SECTOR

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This paper addresses the theoretical and conceptual issues pertaining to economic reforms. It discusses the classification of economic reforms into first-generation and second-generation reforms, and examines their categories, namely, institutional, labour, financial market and product market reforms. On the speed and sequencing of economic reforms, the paper investigates two alternative paths of economic reform for an economy that has a large public sector like Nigeria. The two paths are gradual approach and "big-bang" approach. Related to the discussion about the speed of adjustment, the paper examines the economics of petroleum product pricing in Nigeria. It discusses the estimation of petroleum product subsidies in the country, and notes that domestic petroleum market regulation led to two distortions. An attempt to remove the distortions leads to an illustrative analysis of market prices of petroleum products based on the criteria of efficiency, equity, revenue raising and correction of externalities. The paper concludes that petrol and diesel should be sold at market prices while kerosene should be subsidized because of deforestation problem.

Keywords: **Theoretical and Conceptual Issues, Economic Reforms, Downstream, Petroleum, Subsidies, Border Price, Nigeria**

JEL Classification Numbers: E60, L11, L72, 055, Q41

I. Introduction

Since the 1980s, developing economies particularly the sub-Saharan African countries have launched aggressive economic reforms[1] in an attempt to trigger and sustain economic growth. This strategy is in consonance with the neo-classical theory, which asserts that a liberalized (free market) economy is more efficient than a controlled economy.

The free market economic strategy is built around the principles of macroeconomic stability, trade openness, a reduced role of government and implementation of poverty

[1] Defined to include macroeconomic adjustment policies as well as structural reforms.

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reducing strategies (Oliva and Suarez, 2003). For the free market to achieve its economic development objectives, economic reforms should traverse all the sectors of the economy including the petroleum sector.

In the economics literature, theoretical and conceptual issues on up-stream and downstream sectors[2] of the petroleum industry are discussed. Concerning the upstream sector, it is often asked whether the detrimental impact of oil on development is unique to Nigeria or the "natural resource curse" a more general phenomenon. Much of the export proceeds in Nigeria are accounted for by the oil sector. In 2003, the oil sector accounted for 96.71 percent of the nation's export proceeds (CBN, 2003:156). Although the country makes huge revenue from its exports, the nation, paradoxically, fares poor on measures of poverty, income distribution and unemployment. Why is this so? The theoretical economics literature helps us to identify four channels through which natural resource abundance may lead to lower economic growth (Martin and Subramanian, 2003).

First, natural resources generate rents – a development that leads to avaricious rent-seeking (the voracity effect). Its adverse manifestation is felt through increased corruption which adversely affects long-run growth i.e. institutional impact of natural resources. Second, natural resource ownership exposes countries to volatility, particularly in commodity prices, which could have an adverse impact on growth. Third, natural resource ownership makes countries susceptible to Dutch Disease – the tendency for the real exchange rate to become overly appreciated in response to price shocks – which leads to a contraction of the tradable sector. Finally, natural resources increase the chances of civil conflict in a country e.g. the Niger Delta crisis in Nigeria. This outcome leads to the conclusion that natural resource ownership exerts a drag on long-run growth.

However, the scope of this paper focus is not on the upstream sector where some

[2] The distinction between the two is that while the upstream sector engages in exploitation and exploration activities, the downstream sector engages in refining and marketing of processed petroleum products to the public.

pertinent issues would have been discussed. Such issues relate to: (i) management of oil revenue/transformation of Nigeria into a "non-oil" economy; (ii) creation of a Fund either to manage volatility (stabilization funds) and/or to save for future generations (savings funds); (iii) fiscal federalism; (iv) debt relief; (v) political economy; and (vi) macroeconomic consequences. Rather, the focus of this paper is on the downstream sector where discussion on economics of government involvement in petroleum product pricing is analysed.

The issue of domestic prices and taxation (subsidy) of petroleum products has important budgetary implications. For instance, domestic taxes on petroleum products provide a major source of revenue in developing countries, with their share of total revenue ranging from 7 percent to 30 percent in the early and mid 1990s (Gupta and Mahler, 1994). However, in a number of oil exporting countries including Nigeria, prices are subsidized implying governments forego a large amount of revenue as a consequence. Thus, a pertinent question to ask is, what are the appropriate levels of taxation and prices of petroleum products? Put differently, what are the relevant factors that should be considered in setting the taxes on, and prices of, such products? This is an important policy issue that has implications, not only for microeconomic or allocative efficiency but also for the design of macroeconomic policies. To address the issue of appropriate taxes and prices, a systematic approach based on economic theory and principles is essential.

The rest of this paper is divided into four sections. Following the introductory section is Section 2 which classifies economic reforms into either first generation or second generation, and categorises them into their various components. In Section 3 we examine the speed and sequencing of economic reforms. In this section, besides clarifying the concepts of speed of adjustment and sequencing of economic reforms, we examine the arguments for fast reforms and arguments for gradual reforms in terms of adjustment costs, credibility, feasibility and risks. Section 4 discusses the economics of petroleum product pricing in Nigeria by examining its analytical framework and the relevant components for setting prices. In addition, we discuss, among others, the process of estimating subsidies, and an illustrative empirical analysis of determining

market prices for Nigeria's petroleum products. Section 5 provides the concluding remarks.

II. Classification and Components of Economic Reforms

II.1 Classification

Economic reforms are classified according to their purpose and the sequence in which they are typically implemented (Oliva and Suarez, 2003; Holden & Rajapatirana, 1995). They are classified into first-generation and second-generation reforms. First-generation reforms are geared towards opening the economy to foreign competition, giving market forces the leading role in allocating resources, and reducing the public sector's role in productive activities. First-generation reform efforts typically start with trade reform to open the economy to international markets. This process requires reducing tariffs, eliminating non-tariff constraints, diminishing differences in tariff structures across sectors, and eliminating artificial incentives to promote exports.

The second-generation reforms, on the other hand, aim to complete the transformation of the role of the state and develop accountable government institutions that will guarantee the rule of law and support private sector initiative and activity. They include reforms to the judicial and regulatory systems, which increase confidence that contracts will be enforced and that rights and property will be protected, while ensuring equal access to markets.

II.2 Categorisation of Economic Reforms

Macro-economic reforms can be classified into the following categories:

- *Institutional reform*

This reform involves actions like scrapping the licensing authorities, making law

enforcement agencies more transparent and accountable, transforming the financial sector to be the "engine of growth" of the economy, and strengthening of the judiciary.

Bates and Krueger (1993: 462) found that at least in the initial stages, macro-economic reforms lead to increase in the power assumed by the government. Therefore, expansion of market reform seems to require strengthening of the state, particularly of its bureaucracy, in order to ward off pressures from different interest groups and to implement reforms in a non-partisan manner. They call this the "institutionalization" of policy reforms through creation of powerful economic bureaucracies. Thus, it is argued that institutional reform is a crucial component of the politics of economic policy reform.

- *Stabilization*

This involves keeping inflation in check through fiscal and monetary instruments. This is a major requirement for the monetary cooperation in the West African region. Inflation rate is one of the four primary convergence criteria for the creation of the second West African Monetary Zone (WAMZ). It is expected to be a single digit figure and specifically not more than 5 percent by 2005. On the fiscal side, this involves the cutting down of budget deficits (excluding grants) to at most 5 percent of GDP. On the monetary side it usually means keeping money growth at reasonable level (based primarily on the real growth in demand).

- *Product Market Reform (Industrial Policy)*

This usually involves delicensing while providing selective protection (strategic promotion) to some industries in the initial stages. The second major component of this is privatization of public sector industries in order to ensure efficiency and economic growth. A third component is technology liberalization whereby favourable terms are provided for foreign collaboration. Foreign Direct Investment (FDI) to domestic firms to provide competition is the fourth component of product market reform.

- *Labour Market Reform*

This involves the change in attitude toward workers who should be seen as partners and not as "labour" alone. It entails providing a conducive workplace and adequate motivation for workforce. It also involves providing the right to "restructure", "re-engineer" or "right size" an industry by firing excess workers, as well as providing an exit policy to industry, i.e., the right to file for bankruptcy. The final objective is to achieve classical flexible wages.

- *Financial Sector Reform*

This includes capital market, banking and insurance market reforms, among others. For example, competition can be provided in these areas through admitting foreign banks. The reserve ratio for banks can be reduced, thus increasing the risk they face [which will ensure that their lending policies become more careful], and promoting venture capital. Denationalization of the banking and insurance sectors can provide the much needed competitive spirit to these natural oligopolies. Capital markets can be exposed to foreign investment through portfolio investment and thus exposed to the global trends in the product markets and technology.

- *External Sector Reform*

This is targeted toward a stable current account position. Its components are usually the minimization of non-tariff barriers, the reduction in tariffs, and exchange rate reform - making the latter more flexible. Other parts of external sector reform would be capital account liberalization, involving fully open FDI and portfolio investment, as well as foreign borrowing by the domestic private sector.

III Speed and Sequencing of Economic Reforms

There are two alternative paths of economic reform for an economy with a large public sector like Nigeria that aims to transform to a market economy. In the first, the country

moves gradually by selectively introducing reforms and spacing them over time. In the second, the country pursues a "shock", "big-bang" or "cold-turkey" approach, by which the government immediately and simultaneously introduces all the reforms. The two approaches constitute the speed of adjustment.

In the economic literature, there is no consensus on whether the big-bang or the gradual approach is the superior one. There are cases where big-bang (or fast) and gradual reformers have succeeded and where they have failed. Moreover, the order in which reforms are undertaken (or sequencing of reforms) remains in debate. The debate on the speed of adjustment and sequencing of reforms is often carried out in a vacuum. In agreement with Nsouli et al (2002), articles typically do not fully define the concepts; hence, their analyses are not always comparable. It is therefore important to clarify the conceptual issues on the speed and sequencing of economic reforms.

III.I Definitions

(a) Speed

The speed of adjustment can be defined as the time elapsed between the move from an initial set of macroeconomic variables to a targeted set of such variables. If in period zero, for example, the rate of inflation is set at X_0 percent, and it takes t time periods to reach a targeted rate of inflation set at X_t, then the speed of adjustment refers to the number of periods to go from X_0 to X_t.

It also refers to the time elapsed in moving from one organizational economic structure to another. For example, in a broad sense, the speed of adjustment refers to the time involved in moving from a centrally planned to a market-oriented economy. In a narrower sense, it refers to the time involved in reducing price controls, changing the tariff structure, privatizing public enterprises, introducing financial sector reforms, and establishing the relevant institutions.

Thus, the speed refers to the total time required to move from one set of macroeconomic variables to another and to introduce economic reforms and make them operational.

(b) Sequencing

The sequencing of reforms refers to the order in which either macroeconomic policy actions or specific reforms are introduced. Sequencing involves the order in which reforms are undertaken across sectors (for example, whether fiscal adjustment or stabilization should be a prerequisite for introducing current account liberalization or decontrolling prices) and the order in which reforms are undertaken within sectors (for example, whether in the case of capital account liberalization, foreign direct investment or short-term capital flows should be liberalized first). The sequencing across sectors and within sectors, to the extent that it requires time, will necessarily impact on the speed of adjustment.

III.2 Speed of Adjustment

The case for fast reforms is made on the basis of four main arguments. First, fast reform increases the incentives to relocate resources, resulting in a more rapid relocation of resources and, therefore, lower adjustment costs than if the relocation was prolonged. Second, it affords better coordination in the implementation of the reforms. Third, full-scale reforms implemented rapidly help establish credibility in the reform process, leading the private sector to relocate resources rapidly and increase investment. Fourth, a fast introduction of reform can overcome the political resistance to prolonged reforms, leading to an effective implementation of the reform package.

The opposing views of the gradual reformers are based on equally valid arguments. First, in the real world resources cannot be moved instantaneously and without cost to different sectors of the economy, and different markets adjust to policy changes and price signals at different speeds. Thus, gradualism can minimize adjustment costs. Second, to the extent that the use of certain instruments can be incompatible with certain targets, a gradual approach to reforms is needed. To buttress this argument, McKinnon (1973) asserts that the use of exchange rate policy conflicts with the simultaneous introduction of trade and capital account liberalization, as the former requires a depreciation and the latter an appreciation. Third, credibility can be enhanced

by gradual and successful reforms, while broad and drastic reforms carry the danger of overall failure if there is a problem in one area. Fourth, to the extent that the costs of adjustment can be spread out, there is likely to be more political support for a gradual approach. Finally, it is just not practical to try to introduce many reforms at once and, even then, it takes time to implement them. The main arguments of the opposing camps are summarized in Table 1.

Table 1. The Speed of Adjustment: Contradictory Views?

Categories	Fast Approach	Gradual Approach
Adjustment Costs	Rapid reforms lead to lower adjustment costs, because rapid reforms increase incentives to relocate resources (Mussa, 1984)	Gradualism can minimize adjustment costs, because it generates lower short-term costs and thus less political opposition (Little, Scitovsky, and Scott, 1970).
Credibility	Credibility can be better established through full-scale reforms (Hiemenez, Nunnenkamp, and others, 1992).	Gradualism could enhance credibility if the short-term results are sufficiently favourable (Rodrik, 1987 and 1989).
Feasibility	It is almost impossible to design a detailed sequence of reforms; therefore, reforms should move ahead as quickly as possible (Funke, 1993)	It simply takes time to implement reforms (Fishcer and Gelb, 1991). Gradualism is dictated by the competition of instruments (McKinnon, 1973).
Risks of the other approach	Partial reforms undermine the efficient allocation of resources, resulting in reduced output and welfare (Murphy and others, 1992). Partial reforms may fail to lead to the creation of real markets (Lipton and Sachs, 1990)	In the case of a fast approach, short-run increases in unemployment may weaken political support and force the authorities to abandon reform efforts (Agenor and Montiel, 1999). Broad reforms may increase the risk of contagion (Rodrik, 1989).

Source: Nsouli, S.M., M. Rached, and N. Funke (2002) "The Speed of Adjustment and the Sequencing of Economic Reforms: Issues and Guidelines for Policymakers" IMF Working Paper WP/02/132.

III.3 Sequencing of Reforms

The following considerations are important for determining sequencing of economic reforms:

i. Macroeconomic Policies

Given that the alignment of aggregate demand with available resources is critical for financial stability, the adoption of sound fiscal, credit, and exchange rate policies needs to be given priority.

ii. Compatibility

Structural reforms need to be introduced in a manner compatible with the reestablishment of macroeconomic stability. For example, although the rationalization (and reduction) of tariff structures are essential to reduce distortions, they can also have immediate adverse effects on revenue and the budget deficit. Although tax reforms are essential for reducing financial imbalances, they can take time to be introduced; and although increased emphasis on credit to the private sector is essential to finance investment for improving the incentive structure, increased credit could also be incompatible with an acceptable rate of monetary expansion.

iii. Complementarity

The complementarity of policies should determine the timing of actions. The positive effects of liberalizing trade restrictions are reaped only if domestic prices are deregulated. However, an ensuing sharp rise in prices can be limited only if restrained fiscal and monetary policies are put in place.

iv. Lead time

Structural reforms should be phased in, taking into account the time needed for the

requisite preparatory work, the implementation, and where applicable, the gestation period. For example, if tax reforms are needed to improve the fiscal position in order to reduce excess demand pressures, the phasing will depend on the time required to prepare the studies, recruit or train the requisite personnel, prepare and adopt the legislation, put in place a functioning institutional structure, and generate the requisite revenue.

v. Distribution Effects

The phasing of reforms to achieve convertibility should take into account income distribution effects. Reforms that in the short run adversely and simultaneously affect large segments of the population or the most vocal and politically influential segments may lead to social tensions that would derail the reforms and lead to higher adjustment costs.

IV. Economics of Petroleum Product Pricing in Nigeria

IV.1 Analytical Framework for Petroleum Pricing

The analytical framework for examining petroleum pricing can be viewed from the theoretical discussion of efficiency price, externalities and equity as well as an investigation of the elements of petroleum pricing in a market economy.

(a) Efficiency Price, Externalities and Equity

The modern theory of public economics, as enunciated in the seminal work of Diamond and Mirrles (1971), provides us with a very useful framework within which to analyse taxation and public pricing issues. It is postulated that two critical conditions are required for public policy to achieve production efficiency. The conditions are: (i) production efficiency must be feasible, and (ii) any resulting profits are either negligible or can be taxed fully. The feasibility condition would be met if competitive conditions prevailed in the economy and externalities would be corrected or internalized. The second would

be met if it is assumed that government has unrestricted tax tools i.e. all goods can be taxed fully. The basic rule of public pricing could therefore be stated as follows: set producer (input) prices at an efficient level and then choose the appropriate level of taxes or subsidies based on equity criterion to get the consumer (final) prices.

However, a number of features of developing countries make it difficult to implement the basic rule. Many sources and types of externalities cannot be corrected easily because of restrictions on the tax tools or other instruments available to the government. Even if it is possible to separate the producer and consumer prices of particular petroleum products, the existence of taxes on other inputs to production, and pervasive distortions and externalities elsewhere in the economy that cannot be addressed directly, makes it difficult to compute the appropriate prices for the producers.

Assuming that the public authorities can always choose the appropriate level of taxes and tariffs for non-petroleum inputs, the theory of public economics suggests that input prices for petroleum prices should be set equal to the efficient prices. If there are no trading constraints in the international market, the efficient price for a fully traded good would be the international or border price (import or export parity price[3]), suitably adjusted for quality differences and the domestic transport and distribution margins. The rule is applicable to all traded goods, including petroleum products.

(b) Components of Petroleum Product Prices

Hossain (2003) identifies six components that should be considered while setting market prices of petroleum products:

$$P = P^* + t_1 + t_2 + t_3 + t_4 + t_5 \quad \ldots\ldots(1)$$

where

P = market price

P* = international (border) price,

t_1 = road user charges (to address road damage externality),

t_2 = tax/subsidy to address environmental externality,

t_3 = tax/subsidy to reduce variability in price,

t_4 = tax/subsidy set for distributional (equity) considerations, and

t_5 = tax for revenue considerations.

Tax authorities impose taxes (t_5) on final consumption purely to raise revenue based on revenue requirements. It could take the form of VAT (value added tax) or other taxes. Taxation of petroleum products for revenue reasons should be based on same general tax principles as in the case of taxation of other commodities. A traditional guide to raising revenue has been the Ramsey tax rule, which suggests that commodities that are relatively insensitive to changes in prices (low price elasticity of demand) should be taxed more than commodities that are sensitive to changes in price (high price elasticity of demand). However, the Ramsey tax rule is rather inegalitarian in that it appears to direct commodity taxation toward "necessities" that are fairly insensitive to price. Where income distributional or equity considerations are important and authorities have limited income tax and transfer systems to address distributional concerns, the rule needs to be modified. In general, to raise revenue, the imposition of a VAT (or general sales tax) or a general increase in VAT rates is preferable to arbitrary taxes on individual commodities. A VAT is a non-discriminatory and neutral tax that avoids distortion associated with taxation of inputs to production.

IV.2 Structure of the Petroleum Downstream Sector in Nigeria

Nigeria imports and exports some petroleum products because the product composition of the refinery output does not exactly match the composition of domestic demand. Consumption data show that the middle distillates, like petrol and diesel, dominate the demand structure; Nigeria is often a net importer of these products (Hossain, 2003). The low regulated price of petroleum products led to cross-border smuggling of petroleum products into neighbouring countries such as Cameroon, Niger, Chad and Benin. In addition, due to low level of capacity utilization of the refineries, domestic production levels fell short of total demand, leading to shortages of products, and as a result, to high levels of petrol and diesel imports.

The import, distribution, and storage infrastructure is dominated by the Pipelines and Product Marketing Company (PPMC), which is a subsidiary of the Nigerian National Petroleum Corporation (NNPC). Most of the infrastructure investments began late in the 1970s, spurred on by Nigeria's growing oil production capacity and oil revenue after the oil price hikes in 1973 and 1979.

Nigeria has five jetties for imports, the Apapa and the Atlas Cove terminals near Lagos, Escravos in the Western Delta, Okirika near Port Harcourt, and Calabar near the border with Cameroon. The two main import terminals are Atlas Cove and Port Harcourt close to the Port Harcourt refinery. These are deep sea ports.

Nigeria has four refineries, two in Port Harcourt (Rivers State), one in Warri (Delta State), and one in Kaduna with a total nominal refining capacity of 440 thousand barrels per day (kbd). The four refineries are characterized as follows:

- the oldest unit in Port Harcourt is decrepit and not producing, although it has a nominal capacity of 60 kbd;
- a new refinery was commissioned in Port Harcourt in 1989 with a processing capacity of 145 kbd of crude oil per day;
- the Warri Refinery was commissioned in 1978 and upgraded to a capacity of 125 kbd in 1987;
- the Kaduna Refinery was commissioned in 1980 and expanded to 110 kbd of processing capacity in 1986; crude oil to the refinery is delivered through a 700 km pipeline from the Escravos Terminal in Delta State.

It is on record that the refineries have never been operating at their nominal capacities. In recent years, as noted by the IMF (2004), capacity utilization has been at 30-40 percent. This performance gap is only partly explained by the deterioration of equipment of the old Port Harcourt refinery, supply disruptions at the Kaduna refinery (vandalization of the pipeline), and social unrest in the area around the Warri refinery. More importantly, however, under the pricing regime prevailing before September 2003, there was a clear incentive to export rather than refine crude oil in order to finance NNPC's losses in downstream petroleum distribution.

Apart from the crude oil pipeline that feeds the Kaduna refinery, Nigeria is criss-crossed by more than 4000 km of petroleum product pipelines, which deliver products to strategic storage depots in the regions. About 20 pumping and booster stations keep

petroleum products flowing through the pipelines. The current configuration dates back to the early 1990s, when the last phase of the Pipelines and Depot Project worth $600 million was completed. Despite this investment, many pipelines and other pieces of equipment are run down. The functioning of the system is further hampered by vandalization and theft.

Following the refining process, petroleum products are first deposited in large storage depots at the refineries. From there, they are shipped through the pipelines to 15 storage depots strategically located in the various regions. A large percentage of the storage depots are old and leaking, which results not only in financial losses, but also in significant groundwater pollution.

The retail end of the petroleum product market was 100 percent private, until the NNPC opened fuel filling stations in Abuja and Lagos in 2001 and 2002. Seven major marketers dominate the sector with a combined share of more than 60 percent, led by Total with about 16 percent market share. Other international oil companies (IOCs) include ExxonMobil, ChevronTexaco, and Agip. A large number of small, independent marketers satisfy nearly 40 percent of demand.

Transportation of products between strategic storage depots and filling stations is provided by a fleet of road tankers owned primarily by the major marketers. Due to the low margins that have prevailed over the recent past, the retail sector has suffered from insufficient investment in maintenance and new equipment.

Storage tanks, road tankers, and filling stations have deteriorated precipitously. Pumps at filling stations are often out of order, storage tanks leak, and road tankers are accident prone and break down often. Petrol queues occur frequently, not only because of shortages in product availability, but also because of the insufficiency and slow operation of petrol pumps.

IV.3 Economic Effects of Government Involvement in Pricing

The government was involved in the downstream petroleum sector not only through ownership of infrastructure, but also through regulation of wholesale and retail prices. Liberalization at end-September 2003 ended the retail price regulation, and marketers started setting prices to cover their operating costs. Until September 2003, the government through its Petroleum Product Pricing and Marketing Committee (PPPMC) set wholesale and retail prices for petroleum products, and also fixed the margin for the private retailers. The rationale for price fixing was that Nigerian consumers should have access to cheap fuel at a uniform price across the country.

In recent years, the price set by the government did not cover refining, import, and distribution costs. The NNPC became therefore the only wholesale supplier of petroleum products, both through refining and imports. The goal of supplying cheap petroleum products to the country was also not achieved: demand was not met, large quantities of subsidized Nigerian products were smuggled to neighbouring countries and outside of Lagos and Abuja, petroleum products were for the most part only available in the informal market at higher prices.

To cover the difference between NNPC's costs of supplying petroleum products and wholesale prices it could charge when selling them, the government allocated to it crude oil below the export parity price. The domestic allocation crude was in part exported, while the remainder was refined domestically. Exports of crude financed imports of petroleum products. The NNPC made a trading profit by exporting rather than refining, because of the domestic allocation price advantage. The trading profit served to cover losses in refining and wholesale distribution.

The domestic petroleum market regulation led to two distortions, namely: (i) implicit subsidies on domestic retail prices for petroleum products, defined as the difference between market prices and administered prices, and (ii) implicit subsidies to cover NNPC's operating losses in the form of foregone government revenue from the domestic allocation of crude oil.

IV.4 Estimation of Petroleum Subsidies

In attempting to set the market price of petroleum product, it is important to derive the international (border) price. The international (border) price of a commodity represents its opportunity cost if the product is fully traded in international market as in the case of petroleum product. The prices of Nigeria's major oil products – gasoline or petrol (premium motor spirit – PMS), diesel and kerosene – are quoted on a daily basis in the international market with standard quality specification. The average border prices refer to the monthly average price quoted in Rotterdam or Mediterranean (Italy), the nearest source of supply for Nigeria. The exchange rate used to convert the dollar value of imports into domestic currency is the interbank exchange market rate, which is market determined. A freight charge (including insurance margin) is added to the value to get the landed cost. Import duty, domestic distribution, storage, marketing, and transport margins are then added to obtain the border price at the retail level. However, the border price does not include the domestic tax or subsidy to address externalities such as road damage, congestion, pollution and deforestation.

The difference between the international (import or border) price and the official price constitutes the economic subsidy. In the case of Nigeria, the estimated domestic economic subsidy of gasoline (petrol) has been substantial. In the IMF (2004) estimation, although the domestic subsidy as percentage of GDP has been declining since 2001, the absolute figures have been fluctuating (Table 2 and Figure 1). At about 220 kbd domestic consumption, which is equivalent to 35 million litres, domestic petroleum subsidies, measured by the difference between official prices and import parity costs, were estimated by the IMF (2004) to amount to N123.4 billion in 2003 or 1.6 percent of GDP although in the previous year the percentage of domestic subsidies to GDP was 2.1. Assuming that retail prices are allowed to adjust fully to import parity costs, subsidies would be eliminated in 2004.

Table 2. Nigeria – Subsidies and Foregone Government Revenue from Domestic Allocation of Crude, 2001-04 (N billion)

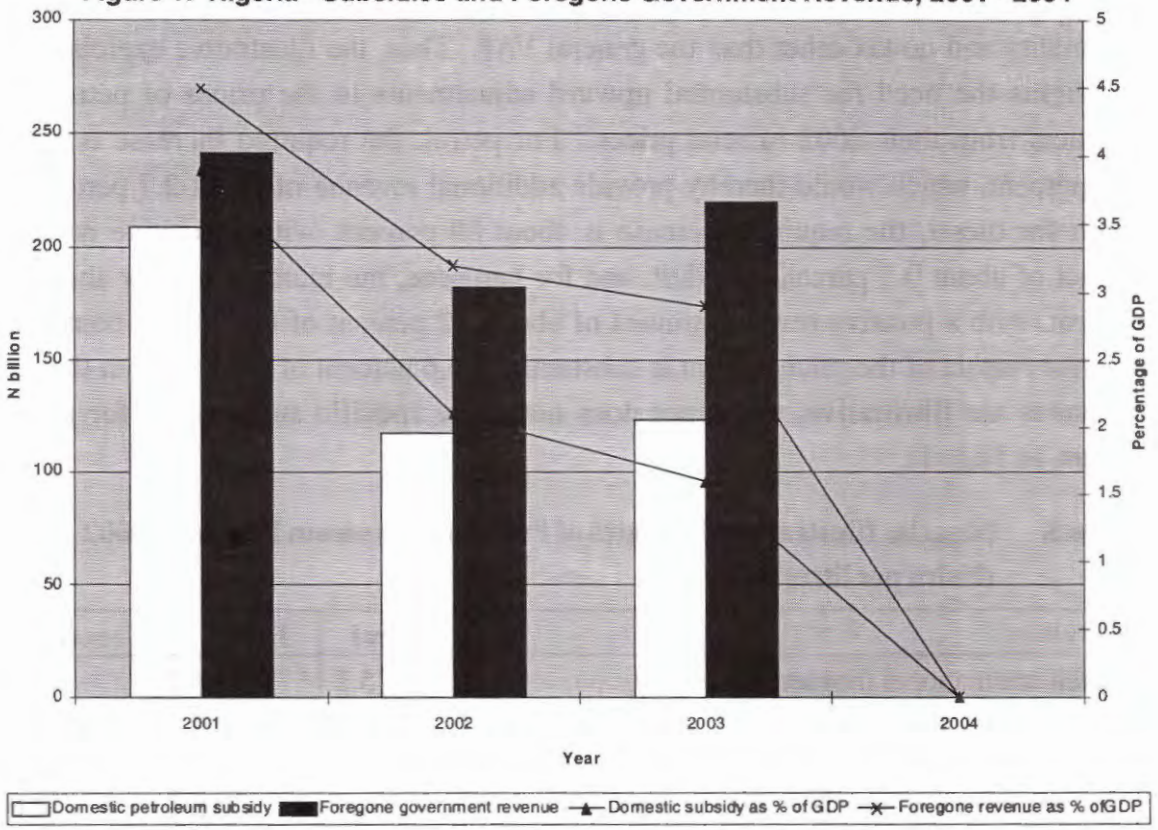
Item	2001	2002	2003 Estimated	2004 Projected
Domestic Petroleum Subsidy	209.0	117.1	123.4	0
Foregone government revenue	241.5	182.6	220.5	0
Domestic subsidy as % of GDP	3.9	2.1	1.6	0
Foregone revenue as % of GDP	4.5	3.2	2.9	0

Source: IMF (2004) Nigeria: Selected Issues and Statistical Appendix. IMF Country Report No. 04/242, August, p. 15.

Moreover, evidence shows that revenue foregone by government, through NNPC's preferential price for the domestic allocation of crude, amounted to 3.2 percent of GDP in 2002[4]. In 2003, the crude subsidy was estimated at 2.9 percent of GDP because of a widening gap during the first half of the year between the official price charged, and international prices for crude. Assuming that the NNPC pays market prices for the domestic allocation in 2004, the domestic allocation advantage would be eliminated (Table 2 and Figure 1).

[4]Based on the official price purchase price of $18, minus the exchange rate advantage of $1.80, and dated Brent crude price of $25.

Figure 1: Nigeria - Subsidies and Foregone Government Revenue, 2001 - 2004



IV.5 Illustrative Estimation of Market Prices for Petroleum Products

A consideration of the different pricing components of petroleum products may result into a divergence between the market price and the official price. Hossain (2003) provides illustrative estimates of final prices of three petroleum products in Nigeria for year 2002, namely gasoline (petrol), diesel and kerosene (Table 3). In the illustration, the table indicates that in 2002 petrol should be about ₦56 per litre – much higher than its international (border) price due to the inclusion of a road user charge, distribution tax, and VAT for revenue reason. Similarly, the price of diesel should be about ₦49 per litre – much higher than its border price – but the divergence is somewhat smaller than in the case of petrol, as the fuel is not subject to distributional tax. However, the price of kerosene should be around ₦33 per litre, only moderately

lower than its border price as it includes a subsidy element to address the deforestation externality and no tax other than the general VAT. Thus, the illustrative exercise also highlights the need for substantial upward adjustments in the prices of petroleum products from their 2002 official prices. For petrol, the required increase is about 115 percent, which would thereby provide additional revenue of about 2.7 percent of GDP; for diesel, the required increase is about 89 percent, with a positive revenue impact of about 0.7 percent of GDP; and for kerosene, the increase is only about 37 percent, with a positive revenue impact of about 0.2 percent of GDP. The combined revenue impact of the price reform is substantial – 3.6 percent of GDP. Given that the estimates are illustrative, the paper does not make specific suggestions for policy reform in Nigeria.

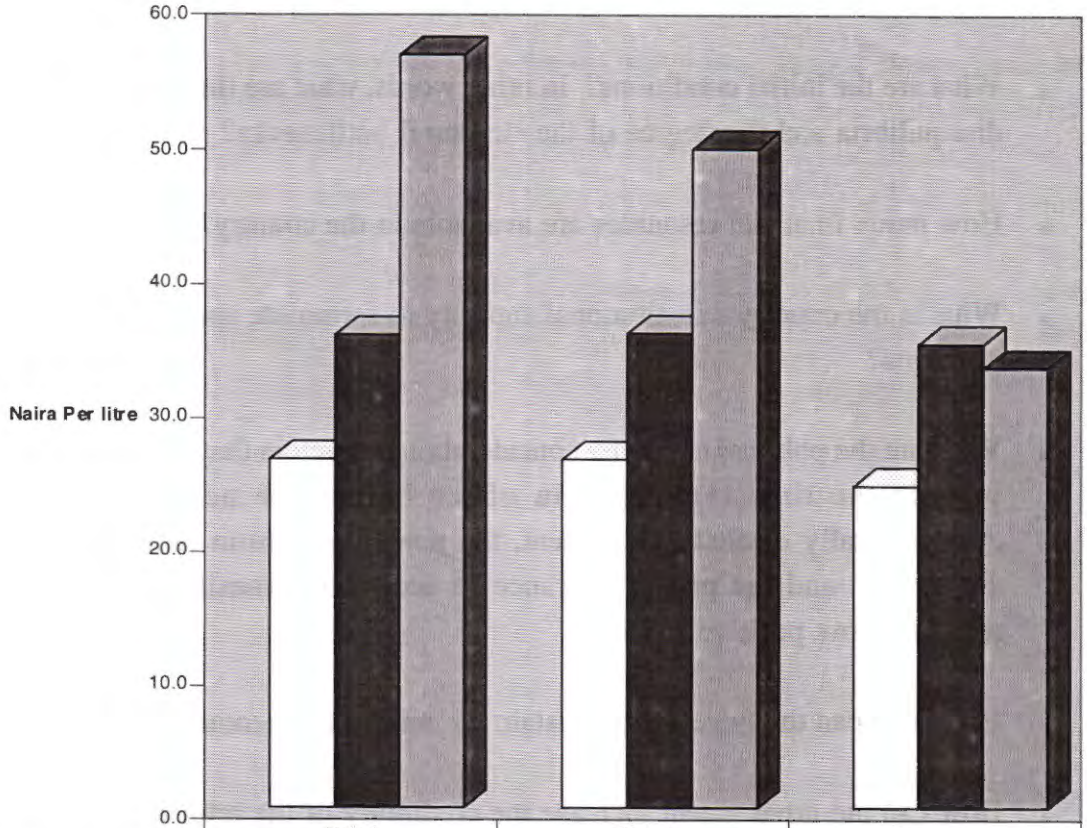
Table 3. Nigeria: Illustrative Estimates of Prices of Petroleum Products, 2002 (Naira per litre)

	Petrol	Diesel	Kerosene
Retail international (border) price (P*)	35.2	35.4	34.6
Estimated road user charge (t_1)	12.0	12.0	0.0
Environmental tax/subsidy (t_2)[5]	---	---	-3.5
Tax/subsidy to reduce variability in price (t_3)	0.0	0.0	0.0
Distributional tax (20 percent) (t_4)[6]	7.0	0.0	0.0
Tax (5 percent VAT) to raise revenue (t_5)[7]	1.8	1.8	1.7
Suggested retail price (P)	**56.0**	**49.1**	**32.8**
Memorandum Items:			
Revised price effective January 2002	26.0	26.0	24.0
Required increase in prices (in percent)	115.4	89.0	36.8
Revenue impact of price increase (in billions of naira)	142.4	38.1	12.5
Revenue impact of price increase (in percent of GDP)	**2.7**	**0.7**	**0.2**

Source: Hossain (2003)

[5] *It is suggested that kerosene prices be moderately subsidized (10 percent) to address deforestation externality.*
[6] *Tax proposed to address distributional or equity concerns.*
[7] *It is suggested that the current 5% VAT be applied to all petroleum products.*

Figure 2. Nigeria: Prices of Petroleum Products in 2002



	Petrol	Diesel	Kerosene
Retail Official Price	26.0	26.0	24.0
Retail International Price	35.2	35.4	34.6
Retail Market Price	56.0	49.1	32.8

Petroleum Product

V. Concluding Remarks

Economic reforms are very crucial to any country transforming to a market economy. Although there are two schools of thought regarding the speed of adjustment, the arguments favouring a fast or a gradual approach are not absolute. Each country has to choose the proper speed of adjustment and sequencing of reforms by examining its country-specific factors.

In order to determine the appropriate speed of adjustment and sequencing of reforms, policymakers need to examine the following major questions:

- What are the initial conditions? In other words, what are the extent of financial disequilibria and the degree of the structural bottlenecks?
- How much financial resources are available to the country?
- What is the country's institutional capacity to formulate and implement policy packages?
- What are the political economy considerations? Factors that may be considered include the time remaining in office before the next election for a democratically elected government, the perceived reform mindedness of the authorities, and the public tolerance to accept the transitional costs before reforms show positive results.
- How well can the government sustain the reform momentum?
- How can the government increase the credibility of the reform programme?
- How ambitious are the reform objectives in terms of quality and quantity?
- What are the policy options?
- What are the contingency provisions needed to address potential reform slippages or unforeseen shocks?

As regards petroleum product pricing, the key criteria guiding the framework of price setting are efficiency, equity, revenue raising and the correction of externalities in situations where instruments to correct the externalities are limited. Application of the criteria requires a clear separation of consumer (final demand) price and producer (input) price. An illustrative empirical analysis indicates that prices of petrol and diesel

should reflect their opportunity costs as measured by the import parity price, as well as a road user charge to recoup the road damage and congestion externality imposed by automobiles. Kerosene, however, should be subsidized on environmental ground as its high cost may exacerbate deforestation in the country.

Nonetheless, theory assumes that the proceeds from the deregulated downstream petroleum sector, paid into the nation's federation account, will be judiciously used by all the three tiers of government for economic development at the various levels of government.

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