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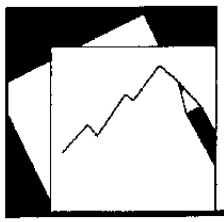

IMF Working Paper

Political Economy of Oil-Revenue Sharing in a Developing Country: Illustrations from Nigeria

Ehtisham Ahmad and Raju Singh

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Political Economy of Oil-Revenue Sharing in a Developing Country: Illustrations from Nigeria

Prepared by Ehtisham Ahmad and Raju Singh[1]

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Abstract

Control over natural resource revenues is a contentious, politically divisive issue in most developing countries—especially for oil production. A typical policy response of the center in such cases has been to introduce revenue sharing arrangements. Such measures have generally not assuaged the aspirations of the oil-producing regions and have exposed them to volatility in their revenue flows that they are generally unable to cope with.

An alternative is to assign more stable revenue bases to the regional administrations, together with a general-purpose transfer system that incorporates a floor. This acts as an insurance mechanism for the regional administrations and facilitates the stable provision of public services in the oil-production regions, as well as the possibility of redistribution. We use the recent history of oil-revenue sharing in Nigeria to illustrate the propositions.

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Authors' E-Mail Addresses: eahmad@imf.org; rsingh2@imf.org

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[1] Parts of this paper arose out of a larger team effort that also included Giorgio Brosio (University of Turin); Stuti Khemani and Victoria Kwakwa (World Bank); and Lubin Doe and Tej Prakash (IMF).

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I. Introduction

Intergovernmental relations in developing countries are complicated by the concentration of natural resources—especially, though not exclusively, oil—in particular regions. Relatively low-income levels and poor service delivery, not least in the oil-producing region, lead to competing demands for redistribution. Attempts by the center to placate separatist tendencies by sharing oil revenues often do not satisfy the producing regions, exposing them to volatility of oil revenues that may endanger the minimum level of public services within their jurisdictions.

Nigeria has been characterized by a struggle for control over the use of natural resources—with a continuing tension between demands from producing regions for a share of the resources and calls for redistribution from all other poor regions. The history of the successive arrangements has been accompanied by distrust, inadequate information flows, a lack of transparency, and uncertain accountability. The Biafra War (1966–70) broke out partly over a disagreement about how the oil proceeds should be distributed, with the oil-producing region having decided to secede.

In this paper, we examine the main economic incentives for a rich region—an oil-producing state in this case—to join or to remain in a federation. The design of intergovernmental relations plays a crucial role in this respect, and we argue that a properly designed federal transfer system can work as a risk-sharing mechanism, whereby a rich region would trade a share in volatile natural resource incomes for a more stable delivery of public services.

The paper is structured as follows. Section II provides a brief overview of the existing literature and presents a theoretical model. Section III discusses the current institutional arrangements in Nigeria. Section IV presents directions for further work.

II. Analytical Underpinnings

A number of arguments have been put forward to explain the existence of federations. One strand of the literature has emphasized the economies of scale a federation could generate in the production of a public good;[2] another builds on the idea that a federal transfer system could be seen as a risk-sharing mechanism against region-specific shocks.[3]

If preferences are similar across regions, a federation could deliver standard public goods more cheaply. It would allow the fixed cost of producing a given public good, such as a road,

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[2] See, for instance, Casella and Feinstein (1990), Casella (1992), and Le Breton and Weber (2001).

[3] See Kenen (1969) for an early presentation of the argument and, more recently, Sachs and Sala-i-Martin (1992), Persson and Tabellini (1996), and Alesina and Perotti (1998).

a telephone network or a defense system, to be spread over a greater number of taxpayers and, hence, be attractive to its component regions. However, if the population is diverse, a common public good may not satisfy the specific preferences of each region. The federation would imply in this case a loss of specificity in the delivery of public services, and the most diverse segments of its population may prefer to secede, if not appropriately compensated.

A federal transfer system could also be viewed as a risk-sharing mechanism insuring against region-specific shocks. The results presented in this literature hinge on the assumption that regional shocks are negatively correlated with each other. Pooling these regional risks decreases the level of aggregate risk and, in the presence of risk-averse individuals, increases the welfare of a federation. However, here again a trade-off may appear between the level of insurance and regional incomes. If the regions significantly differ with respect to their levels of income, the richer part may decide to leave the federation.

This paper builds on the risk-sharing strand of the literature. It shows that even in the absence of a negative correlation between regional-shocks a region with a volatile income, such as an oil producer, would still have an incentive to form a federation with regions with more stable incomes.

A. Revenue-Sharing Arrangements

In a revenue-sharing arrangement, only a fraction of the oil production would accrue to the producing region. The remaining part would go the central government and would be available for redistribution to other regions. In such a setting, the central government's incentive is to maximize its share of the oil revenue, whether for its own purposes or for redistribution.

However, this process, while reducing the revenue of the producing region, exposes it to the swings in oil prices, that would not be mitigated if the main revenue source is the oil-share. Given that subnational governments in developing countries seldom have the capability to effectively manage stabilization mechanisms, it is likely that minimum public services in the oil-producing region will be subjected to fluctuation. It is thus in the interest of the oil-producing region to push for as greater a share as possible of its oil revenue—tantamount to a major overhaul of the intergovernmental system, if not a session.

Thus, abstracting from potential costs of session, a central government decision on a revenue-sharing rule is likely to be unstable. It is also unlikely that an oil revenue-sharing arrangement on its own will assuage separatist tendencies or fully satisfy an oil-producing region. [4]

[4] Ahmad and Mottu (2002) argue that a separation of revenue bases, with more stable revenue sources for the regions (including oil production excises to address externalities), with variable bases for the center, together with an appropriate transfer system, may be an appropriate assignment of revenue instruments in countries such as Nigeria and Indonesia.

B. Risk-Sharing Arrangements

Assume now that there are two regions, Region 1 (oil producing) and Region 2 (less developed), which differ with respect to their expected income level. Each region produces an expected income $\overline{Y}$, where $\overline{Y}_1 > \overline{Y}_2$, which follows a distribution $f(1,\sigma)$, where 1 characterizes the mean of the distribution and σ its standard error. We assume that only the income of the oil producing region, Region 1, is uncertain and that the correlation between regional incomes is nil. The following equations can therefore be identified:

$$E(Y_1) = \overline{Y}_1, \tag{1}$$

$$E(Y_2) = Y_2,$$

$$\sigma_1 > \sigma_2 = 0, \text{ and}$$

$$Cov(Y_1, Y_2) = \sigma_{12} = 0.$$

Residents of a region, receive an expected level of public services, $\overline{S}$, characterized by a standard deviation, s. These services are financed either solely by their region in the case of separation, or from both regions, in case of a federation. For convenience, the population of each region will be normalized to one, so that the level of services received by a region as a whole will also be equal to the per capita level of services.

$$\overline{S}_i = (1 - A_j)\overline{Y}_i + A_j \overline{Y}_j \qquad i, j = 1,2, \tag{2}$$

$$s_i^2 = (1 - A_j)^2 \sigma_i^2 + A_j(1 - A_j)\sigma_{ij} + A_j^2 \sigma_j^2, \tag{3}$$

where A is the share of income of the other region a given region receives through transfers intermediated by the center. The BC line in Figure 1 depicts the different levels of individual income a federal transfer mechanism could deliver to Region 1 for different values of A. At point B, services provided to residents of Region 1 would be entirely financed by transfers from Region 2, that is , $A_2 = 1$. At point C, by contrast, there would not be any transfers and services delivered in Region 1 would be solely function of the income of Region 1, i.e., $A_2 = 0$. The slope of this opportunity line is:

$$\frac{d\overline{S}}{ds} = \frac{\overline{Y}_1 - Y_2}{\sigma_1} > 0. \tag{4}$$

The population of each region is composed of similar risk-averse individuals, facing the same utility function. Individuals care about the level of services they expect to receive, $\overline{S}$, and the standard deviation, s:

$$U = U\left(\bar{S}, s\right), \tag{5}$$

where $\frac{\partial U}{\partial \bar{S}} > 0$, $\frac{\partial U}{\partial s} < 0$,

$\frac{\partial^2 U}{\partial \bar{S}^2} < 0$, $\frac{\partial^2 U}{\partial s^2} \geq 0$.

Figure 1 shows an indifference curve derived from this utility function. Its slope is positive and equal to :

$$\frac{d\bar{S}}{ds} = \frac{-\frac{\partial U}{\partial s}}{\frac{\partial U}{\partial \bar{S}}} > 0. \tag{6}$$

Thus, residents care not only about the absolute level of public services they may receive, but also about their reliability. They will, for instance, prefer basic education and health systems functioning year after year to more sophisticated systems that would function only sporadically. Individuals will not accept higher fluctuations in service delivery, unless they can also expect much better services.

The function is therefore concave in the $\left(U, \bar{S}, s\right)$ space.

Maximization without uncertainty

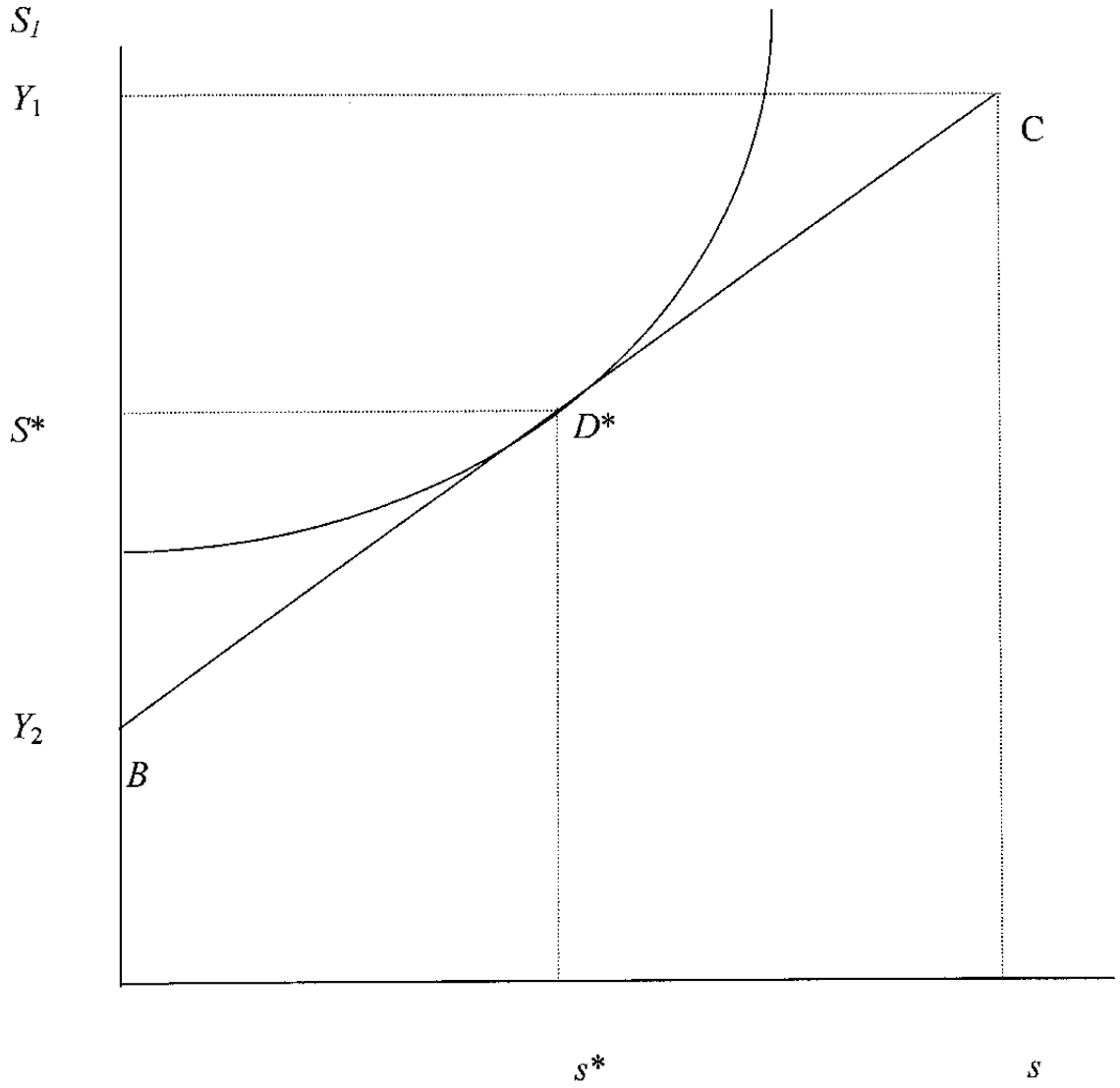
First assume that there is no uncertainty. In this case, residents will know the future level of services they will receive. Their expected level of services amounts to their actual level and its standard deviation is zero. We will take the perspective of the oil-producing region, Region 1, in the discussion below. Hence, in the absence of uncertainty, residents of Region 1 will only be interested in the level of services they receive and will maximize the following function:

$$U_1 = U\left(\left(1 - A_2\right)Y_1 + A_2 Y_2\right), \tag{7}$$

under the constraint

$$0 \leq A_2 \leq 1.$$

Figure 1. Maximization Under Uncertainty



As utility is positively linked to service delivery and as $Y_1 > Y_2$, residents will maximize their utility by maximizing the share of the services they receive financed from their own region, i.e., by choosing $A_2 = 0$. The richer region, Region 1, will be better off by not accepting to participate in a federal transfer system where it will be a net contributor. Under these conditions, any transfer mechanism that will aim at a redistribution of income within the federation will be welfare reducing for the oil-producing region—thus leading to an incentive to secede.

Maximization under uncertainty

With uncertainty in oil revenues and hence service delivery, residents of Region 1 will not only focus on the level of services they can expect, but also on the risk attached to it. While maximizing their welfare, they will therefore consider the following function:

$$U_1 = U\left(\overline{S}_1, s_1\right), \tag{8}$$

where

$$\overline{S}_1 = (1 - A_2)\overline{Y}_1 + A_2 Y_2, \text{ and}$$

$$s_1^{\,2} = (1 - A_2)^2 \sigma_1^{\,2} + A_2 (1 - A_2)\sigma_{12} + A_2^{\,2}\sigma_2^{\,2}.$$

Since only the rich region's income is volatile and the covariance between regional incomes is nil, the standard deviation of Region 1's income can simply be expressed as:

$$s_1 = (1 - A_2)\sigma_1$$

Under these assumptions, Region 1's objective function will thus be to maximize:

$$U_1 = U\left((1 - A_2)\overline{Y}_1 + A_2 Y_2, (1 - A_2)\sigma_1\right), \tag{9}$$

under the constraint

$$0 \le A_2 \le 1.$$

The first-order conditions give us:

$$\frac{\left(\overline{Y}_1 - Y_2\right)}{\sigma_1} = \frac{-\dfrac{\partial U}{\partial s}}{\dfrac{\partial U}{\partial \overline{S}}}. \tag{10}$$

Region 1 will maximize its welfare by choosing a point tangent between the opportunity line BC and its highest indifference curve, such as point $D^*(S^*, s^*)$, characterized by $A^*>0$. In this setting, a federal transfer mechanism aiming at some income redistribution between regions may be acceptable to the oil-producing region, if it ensures that a minimum acceptable level of services can be guaranteed. To assure this, the transfer mechanism could incorporate a floor that ensures the minimum level of services in Region 1, even if oil prices fall.

III. Nigerian Revenue Sharing

A. Historical Background

Revenue sharing between different levels of government has been a contentious issue in Nigeria since colonial times. A tension existed between restituting revenue proceeds to the region of origin (i.e., derivation) and the demands for redistribution, to provide adequate resources to all disadvantaged regions to assure the delivery of minimum standards of public services. The process usually lacked transparency, and there has been a perennial deficiency in the statistical data. Under these circumstances, the implementation of successive formulae has led to doubt and mistrust between the Federation and its constituent units.

From 1914 to 1946, the country basically operated as a unitary State. The issue of revenue sharing emerged in 1946 when the 1946 Richards Constitution gave to the regions some administrative authority and responsibility. Financing the regional expenditures led to the demands for adequate revenues.

The Phillipson Commission (1946) was set up to determine a revenue-sharing formula, and provided each region with a tax base, composed of the revenues thought to be easily identifiable as originating within the region. Direct taxes, licensing fees, and mining rents, for example, were kept by the regions. Federally collected taxes (import and export duties, excise duties, company taxes) were to be shared. Although the Commission was concerned by the adverse effects that a system purely based on derivation could imply for the provision of basic needs in all regions, it was officially even more concerned to set the right incentives. In its view, derivation would provide the regions with some sense of financial responsibility. In practice, however, the calculated proportions for the sharing scheme took into account the existing levels of public spending in each region. The notion of need was thus incorporated in the system through the back door. The lack of an explicit recognition of the principle of need, although in practice it was used in the formula, led to confusion, doubt, and misunderstanding.

The 1951 MacPherson Constitution provided the opportunity to reassess the revenue sharing system, and the Hicks-Phillipson Commission (1951) was set up. This Commission reiterated the importance of providing regions with an adequate tax base of their own. Despite this intention, however, regions remained heavily dependent on shared-revenues. The new sharing system was based on three principles. Import and excise duties were to be shared on

the basis of derivation. Regions would also receive an allocation based on their population to meet their basic needs. Finally, special grants for police and education were transferred to the regions. Each principle favored a particular region. The West was happy with derivation, the North with transfers on the basis of population, while the East liked the special grants. Pressure mounted, as each region tried to tilt the system in its favor.

The 1954 Lyttleton Constitution would give full-self government to the regions. Revision of the sharing scheme for this purpose was therefore required. The Chick Commission (1953) set up for preparing the groundwork for the revision of the Constitution, decided that mining rents and royalties and the personal income tax would now be shared. The derivation principle would be applied to these resources and be expanded to export duties. Criticism developed as the statistical basis to assess derivation was questioned.

As the country approached independence (to come in 1960), the Raisman-Trees Commission (1958) was set up to prepare for this transition. On one side, the Commission tried to expand the regions' own tax base. The personal income tax thus became once again a regional tax. On the other, it established a pooling account. A portion of each major revenue item was paid to the regions on the basis of derivation, to the Federal Government and into the distributable pool for sharing among all regions. Hence, mining rents and royalties were no longer assigned through derivation only. The pooled resources were redistributed according to derivation and need. The weights attached to these principles were however never spelled out.

Up to this point, any reviews of the sharing scheme had to be linked to a revision of the Constitution. The Raisman Commission introduced the possibility for the federal government to appoint a review commission from time to time, whether the Constitution was being reviewed or not. The Binns Commission (1964) was therefore appointed under section 164 of the 1963 Republican Constitution to review the pooled account. The principle of derivation was abandoned, and regional allocations were based instead on the regions' own efforts to mobilize revenue, and on the quality of services they were providing. The Commission's work was carried out, however, in secret, leading to doubt and mistrust concerning its proposed distributions. Soon after the Binns report, the military took over and a process of recentralization started. The demands from the oil producing regions to keep all the revenues from natural resources contributed to the Biafran civil war

After the civil war, Decree No. 13 (1970) allocated the bulk of the federally collected revenue to the Federal Government. The derivation principle was put aside and regional allocation was based on need, measured by population and a lump sum transfer to cover the fixed costs of running an administration. By Decree No. 9 (1971), the Federal Government allocated itself all offshore rents and royalties. Decree No. 6 (1975) channeled all revenues to be shared by the states through the distributable pool account, with the exception of the 20 percent of on-shore mining rents and royalties due to the states of origin on the principle of derivation. Again, the process was marred by the lack of clarity and certainty in the transfer mechanism.

The Aboyade Technical Committee (1977) was set up to prepare for a distribution of resources during the transition to democratic rule. This Commission recommended a clear division in tax jurisdiction to provide all tiers of government with a tax base. It also recommended that all federally-collected revenues, without distinction, be paid into the pool account, thus becoming the Federation Account. The proceeds of this account were to be shared among the Federal Government, the states and, for the first time, local government councils. The allocation for the States was based on the need to provide for minimum standards, but taking into account their absorption capacity. These recommendations were perceived as too radical and the Constituent Assembly (1978) declined to accept them.

The Okigbo Commission (1980) was set up to pursue the work. It retained the idea that all federally-collected resources be transferred to the Federation Account and that local councils should also have a share in this revenue. To distribute resources among the States, however, it focused on needs, defined by their population, the social service they provide and a lump sum transfer to run their administration. The Okigbo Commission recommended putting aside the principle of derivation. This recommendation was, however, rejected by the Federal Government, which preferred to introduce a special fund for mineral producing areas. This fund would receive a share of the transfers from the Federation Account and would redistribute it to the producing-States according to the derivation principle.

The subsequent Decree No. 36 (1984) and the Danjuma Commission (1989) did not significantly change this structure. A further step towards the derivation principle was made by the 1999 Constitution. Currently, not less than 13 percent of oil revenue is to be transferred to the oil-producing states according to their production. Since January 2000, the practice has been to apply this derivation to on-shore oil production only.

B. Current Intergovernmental Arrangements

The federal system of Nigeria is constituted of three layers of government, namely the federal government, the states and local governments. In order to diffuse the pressures from the powerful natural resource producing regions, Nigerian governments have greatly increased the number of states, as an instrument to diffuse regional and ethnic rivalries. Hence, the four regions existing at independence have been transformed into the present 36 states (plus the federal capital). Although, the Constitution of 1999 (Section 7, (1)) recognizes implicitly local governments (there are 774 of them), it assigns most of their governance (such as establishment, structure, functions and finance) to the states. The federal government, however, has recently established direct ties with the local governments, by providing allocations for them from the Federation Account.

Spending assignments among the different layers of government broadly reflects the patterns observable in modern federations. The federal government is responsible for defense, foreign affairs, law and public order, railways, posts and communications, roads of national interest, and air and sea travel. The states are to provide education, health, and public works, and to assure the promotion of economic and social growth. As for local governments, their institutional role differs widely across the country. In most cases, local governments act

mainly as agents of their state government. In others, they are made responsible for the provision of typical urban infrastructure and related services, such as water, sanitation, and waste collection with limited participation in the provision of primary health and education.

States and local governments are financed through three sources of revenue: (a) their own revenues, (b) the revenue they share with the federal government, and (c) transfers from the Federation Account. The assignment of revenue responsibilities is broadly consistent with international practice. The legislation and collection responsibilities of taxes whose bases are mobile belong to the central authorities, while revenues assigned to the states or the local governments have usually a link to the services these entities provide. The main exception is personal income tax (PIT). Although its base is mobile, the PIT is assigned to the states.[5]

In addition to the PIT, revenue assigned to the states includes stamp duties, road taxes, business registration fees and lease fees of state lands. While fees and other levies are determined by the states, the bases and rates of the main taxes are however determined at the national level. The states only have administrative responsibility. As for local governments, their assigned revenue includes property tax, fees charged for the use of motor parks, fees for sewage and refuse collection. The Constitution identifies 20 groups of items that can be taxed by local governments. The bases and rates of virtually all these taxes and levies are locally determined, either by the state or the local government itself. However, while this list of taxes and fees is extensive and varied, the value of their bases is generally small and the administrative costs relatively high. As a result, local governments tend to rely heavily on transfers from the Federation Account and their shares of the value-added tax (VAT).

The proceeds of the VAT are shared between the three layers of government. The states get 50 percent of the VAT and the local government 35 percent. Half of the VAT allocation is distributed according to population, 30 percent in equal amounts for all governments; and 20 percent is distributed between these entities according to the derivation principle, i.e., on the basis of the actual collection made in each individual jurisdiction.

Intergovernmental transfers come from the Federation Account (see Figure 2). This account is financed by oil revenues, by the proceeds of the company income tax, and by custom duties and excise taxes. The sharing of oil revenues currently dominates intergovernmental relations in Nigeria. In 2000, revenues from oil represented approximately 82 percent of total public sector income (40 percent of GDP).

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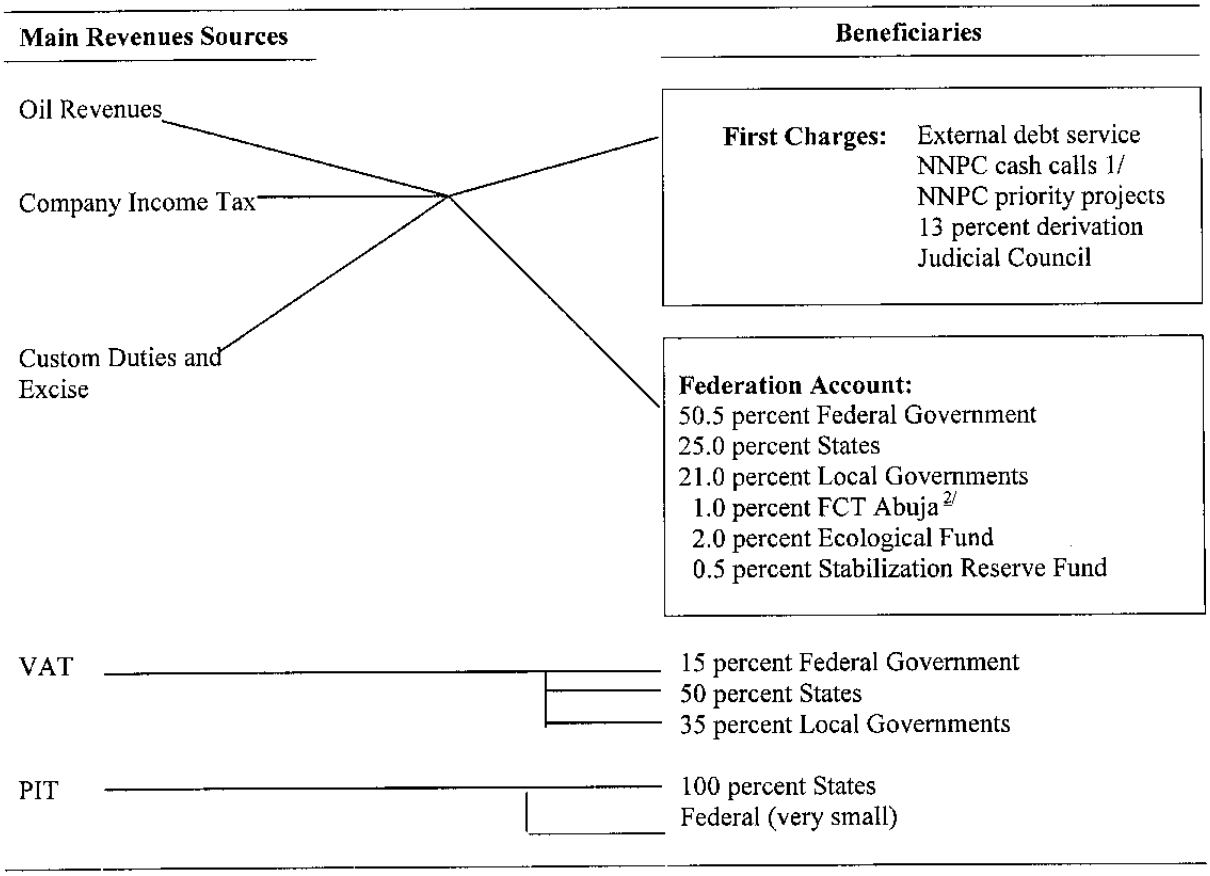
[5] The proceeds of the PIT are assigned to the states, with the exception of the share paid by a few selected groups (members of the armed forces, the police, residents of the Federal Capital Territory of Abuja, the staff of the Ministry of Foreign Affairs and non-resident individuals). This share is collected and used by the federal government.

Figure 2. Nigeria: Intergovernmental Financial Flows, 2001 Budget



1/ Nigerian National Petroleum Company.
2/ Fiscal Capital Territory.

First charges are deducted from the natural resource revenues accruing to the Federation Account. The composition of these first charge expenditures has varied over the years, reflecting changes in economic priorities of the government. Currently, the first charges are composed of the government share in the production cost of oil (known as cash-calls), the external debt service, the cost of government-sponsored projects, and the expenditure of the National Judiciary Council. Since the 1999, the first charges also include the allocation of a share of oil revenue to the oil producing states (known as the 13 percent derivation). These deductions accounted for approximately 22 percent of total revenues during 2000.[6]

[6] In April 2002, the Supreme Court ruled that these first charges were unconstitutional, but decided to keep the 13 percent derivation rule which should apply to on-shore oil production only.

Transfers to states and local governments from the Federation Account are distributed according to a single formula. The formula uses 10 indicators, but 47.5 percent[7] of the total allocation is made as a lump sum transfer. The resources are then distributed according to population, with a weight of 30 percent, to geographical area (10 percent), and to revenue effort (2.5 percent). The remaining 10 percent is allocated according to six social development indicators, namely the absolute and inverse number of pupils enrolled in primary schools (2.4 percent), the number of pupils enrolled in secondary schools (0.8 percent), the number of hospital beds (3.0 percent), an index of access to clean water (1.5 percent) and, finally, the quantity of rainfall (1.5 percent).

C. Assessment of the Nigerian Intergovernmental System

Lower levels of government in Nigeria are not required to report their budgets or their final accounts to higher levels of government. There is therefore no source of comprehensive and reliable data on general government or on its different tiers. The Central Bank of Nigeria (CBN), however, carries out an annual survey on the accounts of states and local councils. The results based on this database should be handled with caution, as surveys cannot guarantee comprehensiveness and exactitude.

Cross-checks with data from others sources (that is, the Office of the Accountant General of the Federation and data gathered from local authorities) tend to show that the results of the survey are roughly consistent. In some years, however, important discrepancies were noted, especially on the revenue and on the capital expenditure side. Keeping these limitations in mind, the current Nigerian revenue sharing system is assessed using data on the 36 States of Nigeria. Because of its special status, the Federal Territory of Abuja is excluded. The simulations used 1998 data, considered by the CBN as the most recent and reliable data available. In 1999, indeed, the CBN changed its questionnaire. This change was followed by a significant decline in responses, making the 1999 results questionable.

Vertical and horizontal imbalances

As described in Table 1, the current system generates a large vertical imbalance in favor of the center, which then redistributes to lower levels of government. Such imbalances are common in large federations that undertake a redistribution role for their constituent units. In Australia, for instance, roughly 80 percent of total revenues initially go to the center. The surpluses thus accumulated allow the center to perform a stabilization function, as well as an equalization role.

[7] This is 40 percent from the general allocation plus 7.5 percent from the revenue equalization.

Table 1. Nigeria: Vertical Imbalances, 1994–98
(In million naira)

	1994	1995	1996	1997	1998
Federation/federal					
Own revenue	224,980.0	441,919.0	553,217.4	585,126.0	802,594.2
Total expenditure	165,477.0	249,056.0	294,303.0	398,688.0	541,949.0
Current	120,867.0	145,200.0	147,004.0	173,167.0	249,669.0
Capital	44,610.0	103,856.0	147,299.0	225,521.0	292,280.0
Balance	59,502.8	192,863.0	258,914.4	186,438.0	260,645.2
States/local councils					
Own revenue	13,135.9	21,378.0	24,704.6	34,267.0	36,479.8
Total expenditure	74,693.0	102,853.0	107,278.0	122,750.0	156,674.0
Current	52,521.0	71,210.0	72,017.0	81,001.0	84,903.0
Capital	22,172.0	31,643.0	35,261.0	41,749.0	71,771.0
Balance	-61,557.1	-81,475.0	-82,573.4	-88,483.0	-120,194.2
Memorandum item					
Own revenue/current spending					
States (in percentage)	32	34	39	51	43
Local councils (in percentage)	8	17	17	19	41

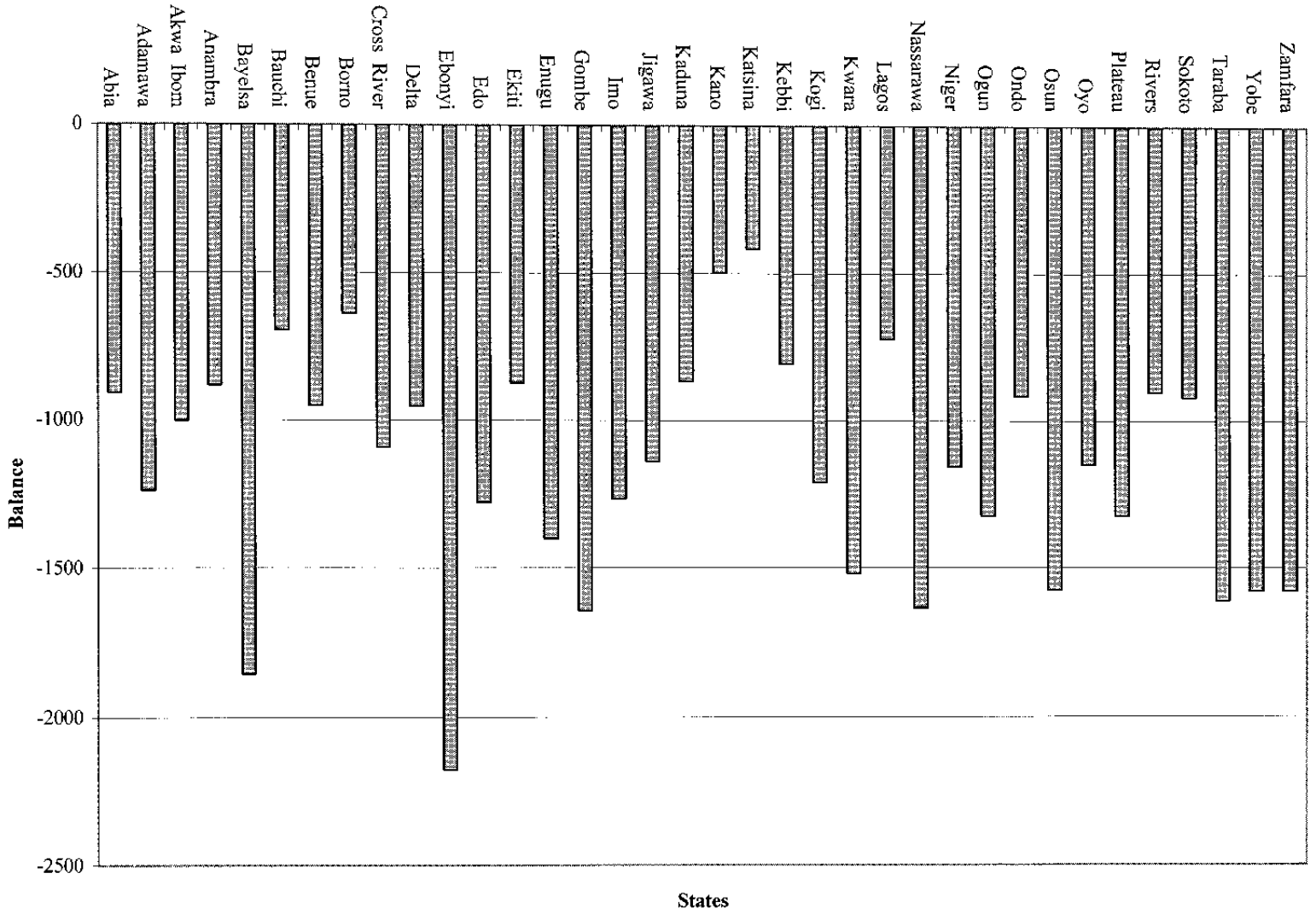
Source: Nigeria, Federal Ministry of Finance.

To measure the extent of the vertical imbalance in the case of Nigeria, the level of spending of each tier of government is compared with its own resources (i.e., internal revenue plus the derivation part of the VAT). Over the period 1994–98, 95 percent of total revenues accrued to the center. During this period, states and local governments have been able to cover only 40 and 20 percent of their current spending respectively. A steady improvement in this regard, especially at the local levels, has however taken place over the recent past.

Nigeria's system is also characterized by important horizontal imbalances. Figure 3 presents the horizontal imbalances in per capita terms calculated for 1998. The largest imbalance is more than four times the size of the smallest. These differences may be due to differences in the efficiency with which each state conducts its fiscal policy. They may, however, also reflect discrepancies in need or in cost to meet these needs. Furthermore, states differ with respect to their ability to mobilize internal revenue. For example, in 1998, Lagos' internally generated revenue and revenue from the derivation of the VAT in per capita terms amounted to 27 times that in Bauchi.

Local expenditure needs also differ vastly across states and the costs to deliver a similar service may also vary. For instance, according to the weights used for the revenue sharing formula, the primary enrollment rate in Zamfara would only be a tenth of that of Kano. Zamfara would also have only a quarter as many hospital beds per capita than Ogun.

Figure 3. Nigeria: Horizontal Imbalances, 1998
(Per capita, in naira)



Sources: Central Bank of Nigeria; World Bank.

Under such circumstances, it is not surprising to find wide differences in horizontal imbalances in Nigeria. Figure 3 suggests that the largest appears to be more than four times the size of the smallest.[8] Thus, the federal government clearly has a role to play in ensuring that states (and local governments) have the capacity to provide a similar level of public services with a similar level of tax effort.

The current revenue-sharing formula favors states that already have social infrastructure in place. The number of beds, or primary enrollment, is positively correlated with the amount to be transferred from the federation to a state. Theoretically, the formula also takes into account the states' effort to mobilize internal revenue. In practice, however, an equal weight is given for this variable to all states. Therefore, one should not expect the federation transfers to have a significant equalization effect across states.

Redistribution

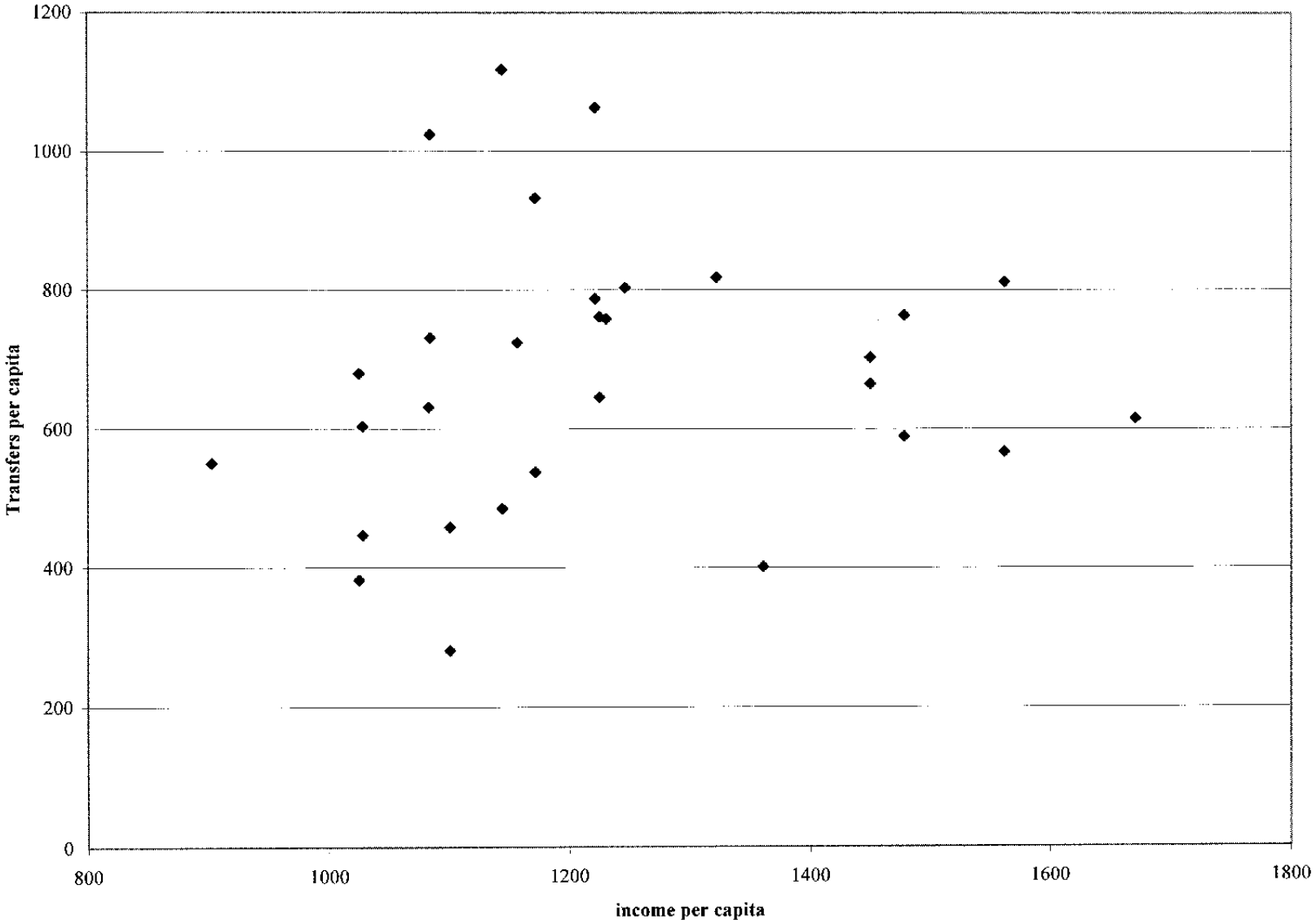
To assess the redistribution provided by the current system, transfers from the Federation account to the states are ranked in relation to indicators of their relative need (income per capita and the number of hospital beds per capita).[9] Figures 4 and 5 describe this relation for the year 1998. As can be seen, the correlation between these variables is rather tenuous. The correlation coefficient for transfers and per capita income is 0.11 and 0.43 for transfers and hospital beds. Furthermore, the current mechanism does not provide for any distinct pattern of geographical redistribution. Using 1998 data, Table 2 does not show any clear pattern of redistribution between the regions. Differences in transfers per capita are much greater within states in the three large regions than between the Eastern, Northern, and Western States.

The redistributive role of the system has been further hampered by the introduction of the 13 percent derivation. The 1999 Constitution requires that not less that 13 percent of mineral revenues be transferred back to the states producing this oil. This change has increased the amount of resources allocated from the Federation Account to middle- and high-income states. To fully assess the implication of this Constitutional requirement, Figure 6 simulates what would have been the Federation transfers to the states in 1998, if the 13 percent derivation had applied at the time. The figure plots transfers before and after the oil derivation in per capita terms and ranks the states by their income level per capita. The states that benefit the most are located in the middle and on the right side of the plot—showing that the middle- and high-income states receive higher transfers.

[8] The estimations are illustrative and should be repeated with more reliable data, which should also be extended to include local governments.

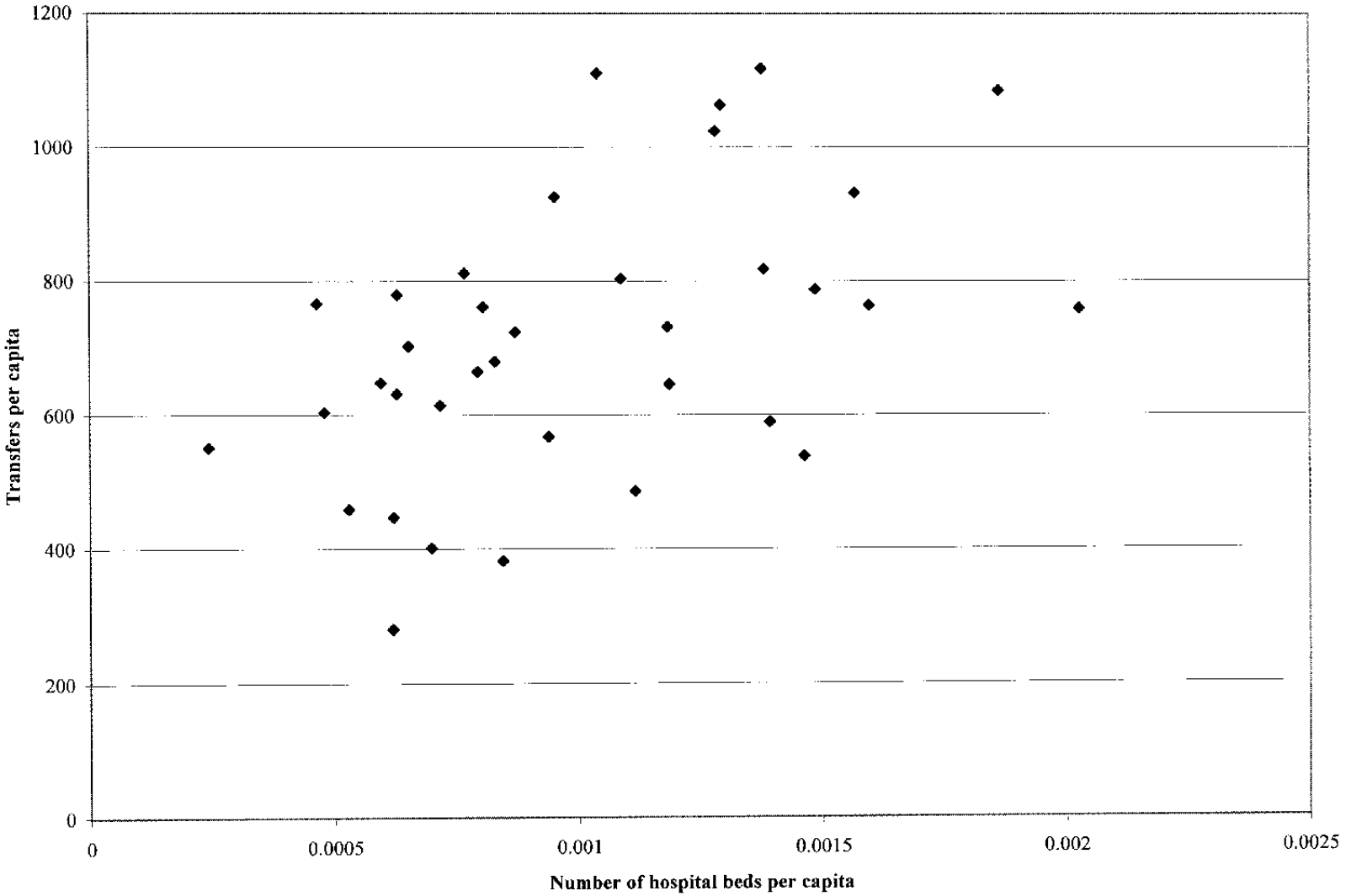
[9] These indicators were estimated on the basis of data provided in Ogwumike and Aromolaran (2000).

Figure 4. Nigeria: Income and Federation Transfers to States, 1998
(Per Capita in Naira)



Sources: Own estimates based on Central Bank of Nigeria, Ogwumike and Aromolaran.

Figure 5. Nigeria: Hospital Beds and Federation Transfers to States, 1998
(Per capita)



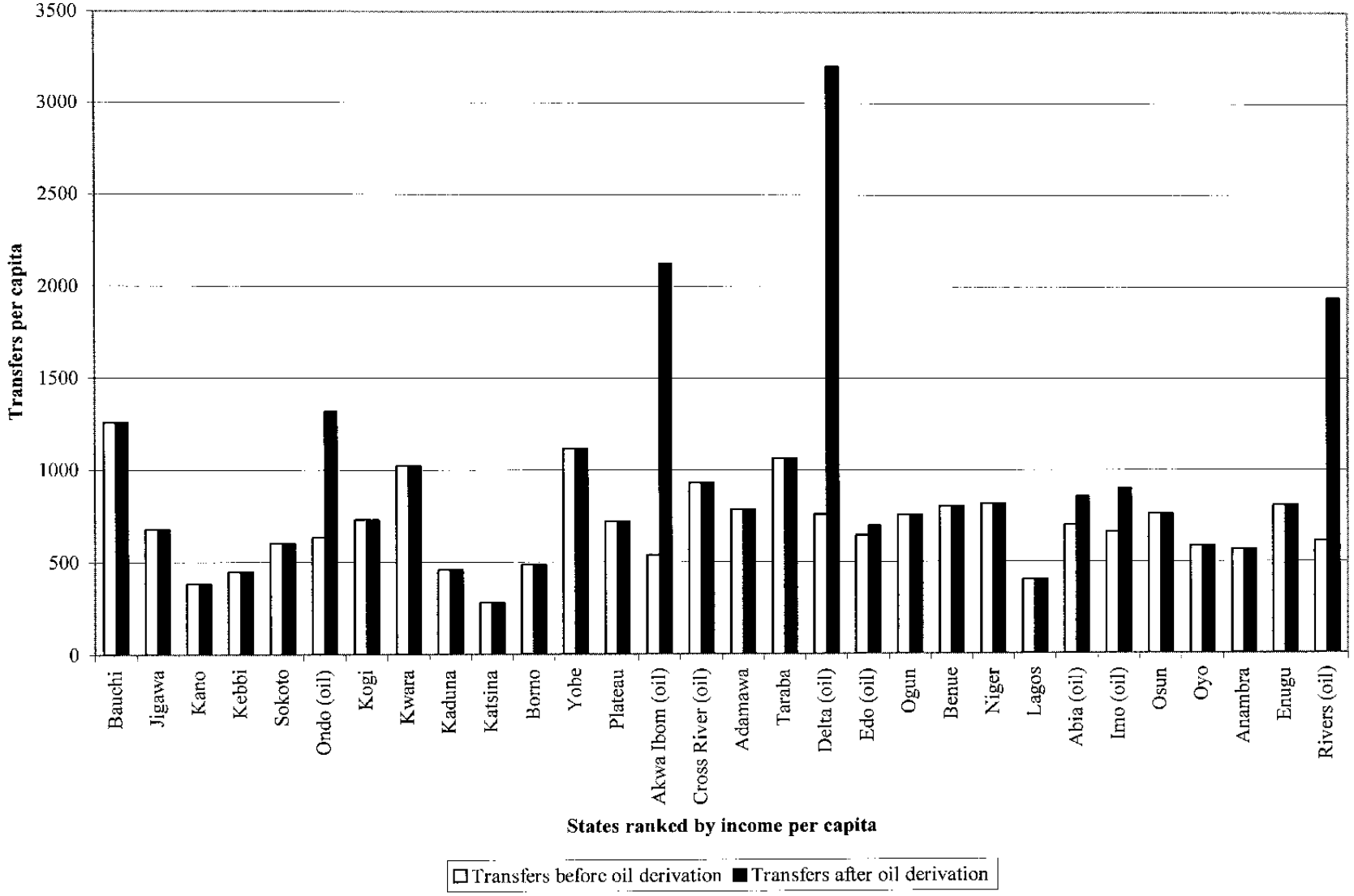
Sources: Own estimates based on Central Bank of Nigeria, Ogwumike and Aromolaran (2000).

Table 2. Nigeria: Distribution of Federal Transfers by Regions
(Per Capita in Naira, 1998)

	Allocation
East	
Abia	702
Akwa Ibom	538
Anambra	567
Bayelsia	476
Cross River	932
Ebonyi	779
Enugu	811
Imo	665
Rivers	615
Average	**676**
North	
Adamawa	787
Bauchi	1,257
Benue	803
Borno	485
Gombe	925
Jigawa	680
Kaduna	459
Kano	382
Katsina	280
Kebbi	447
Kogi	731
Nassarawa	1,110
Niger	818
Plateau	724
Sokoto	604
Taraba	1,063
Yobe	1,118
Zamfara	766
Average	**747**
West	
Delta	761
Edo	646
Ekiti	648
Kwara	1024
Lagos	401
Ogun	758
Ondo	632
Osun	763
Oyo	589
Average	**691**

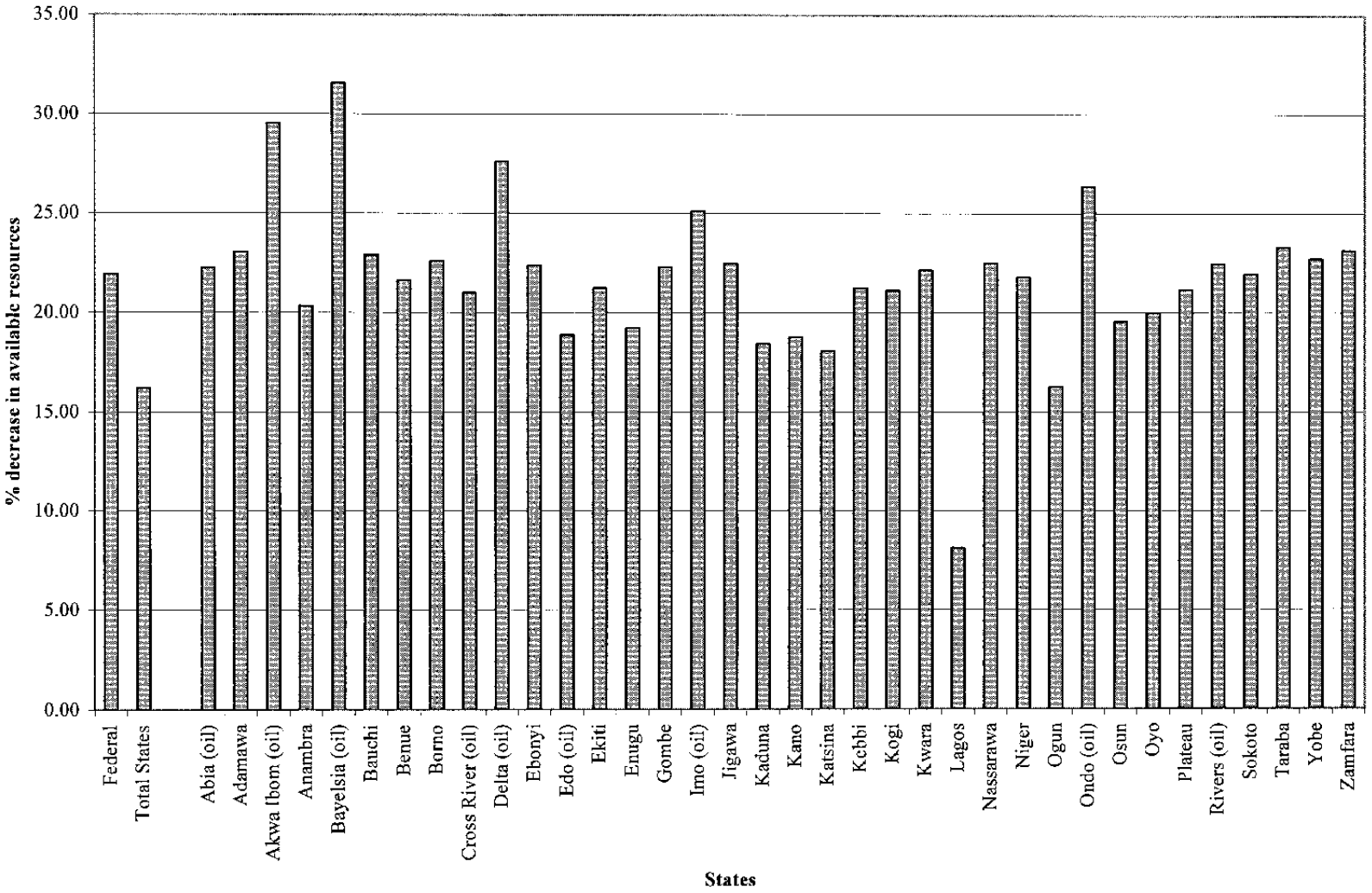
Sources: Central Bank of Nigeria; World Bank staff estimates.

Figure 6. Nigeria: Federation Transfers and Oil Derivation
(Per capita, in naira)



Sources: Own estimates based on Central Bank of Nigeria, Ogwumike and Aromolaran (2000).
Note: The sample includes only 30 states, as income per capita income could not be estimated for 6 of them.

Figure 7. Nigeria: Effect on State Resources of a US$2 Decrease in the Oil Price



Sources: Own estimates based on Central Bank of Nigeria, Ogwumike and Aromolaran (2000).

Sensitivity to swings in the oil price

Finally, the sensitivity of subnational jurisdictions to swings in oil prices is assessed. As explained above, most of the resources financing the Federation account are oil revenues, exposing the whole revenue sharing mechanism to the fluctuations of oil prices. The 13 percent oil derivation in the 1999 Constitution has only exacerbated the vulnerability of subnational governments to oil price variations. The effects of a US$2 decrease in the price per barrel (10 percent) on the total available resources at the federal level, at the level of the states taken as whole, and in each state individually are shown in Figure 7. Total available resources are defined as the federation transfers a state would receive, its share of VAT, its internal revenue, and its share of the 13 percent oil derivation.[10]

As can be seen from Figure 7, the 10 percent oil price shock causes a 20 percent fluctuation in Federal oil revenues. However, what is striking are the wide discrepancies in the impact across states. Lagos with its high share of non-oil revenue is the best protected against the volatility of oil prices, while oil-producing states, by contrast, see their resources decrease sometimes by more than a third.

Large swings in revenue entail uncertainty for revenue projections and hamper a sound budget process. A proper budget, carrying through spending plans and assuring the delivery of minimum standards in public services all become more difficult to achieve in the face of highly fluctuating revenues. In a macro-economic perspective, narrow (non-oil) own-tax bases coupled with unforeseen transfer shortfalls from the Federation Account may led to significant deficits or arrears at subnational levels, jeopardizing efforts from the center to follow sound macro-economic policies.

The existing system does not deliver significant geographical redistribution nor does it provide income equalization. Furthermore, far from dampening any price shock and allowing states to assure a stable delivery of public services, the system tends to amplify the effects of price fluctuations on the revenues and expenditures of the states.

IV. Directions for Further Work

The present revenue-sharing arrangements impose a considerable degree of uncertainty on the producing regions. Although multiple instruments are used, the transfer mechanisms neither provide greater certainty to the regions nor any significant redistribution. The own-revenue bases are also inadequately identified, and there are insufficient incentives to use them.

[10] For the purpose of the simulation, the 13 percent derivation is applied only to the on-shore oil revenue net of first charges.

There is a lack of clarity and inadequate information, particularly about the operations of subnational governments but also the content and management of oil revenues by the Federation. Attitudes are increasingly polarized, with the oil-producing regions clearly dissatisfied with their shares of the oil pie, and by the poorer (albeit more populous) regions just as dissatisfied with the transfer mechanism, which also imposes uncertainty and exposes them to the fluctuations in oil revenues. The federal government has a difficult balancing act with its regions, and a difficult overall macroeconomic situation and overall indebtedness. It has attempted to mop up excess revenues when the prices are high but to impose revenue cuts on the subnational governments when the prices drop below the budget estimates.

The analysis above suggests that it is the revenue sharing system combined with the lack of transparency in the management of public finances, which predisposes the Nigerian intergovernmental arrangement to inherent instability.

The theoretical analysis suggests that the oil-producing regions would be better off and inclined to remain within the federation, if the federal transfer system could deliver a more stable revenue stream. They would trade an assured floor on the transfers/revenue system for the revenue-sharing arrangement. In practice this would translate into a combination of instruments, such as a relatively stable-revenue base (for example, production excises linked explicitly to environmental damage) and predictable transfers.

The crux of the alternative arrangement would be to ensure that the transfer system is relatively immune to the fluctuations in the oil price and delivers "lump-sum" payments (these are untied and permit local decisions to predominate). Assured transfers are justified on the grounds that the subnational governments perform essential public services that should not be allowed to vary with the oil price. In this framework, the central government would effectively take on the stabilization function[11]—not only when oil prices are high.

A critical element in an alternative intergovernmental fiscal solution for Nigeria would be to establish minimum expenditure standards, a transfer system that assures that these standards would be met, and a center with the ability and willingness to play the role of buffer. Overlying all the above would be greater clarity of information on government operations to alleviate the perennial climate of mutual distrust.

[11] An oil stabilization fund could be one way the center could play this role. Without discussing this type of funds, one should note however that such instruments are problematic and their appropriate design is of particular importance. They should for instance be effectively integrated within the budget and soundly managed and full transparency and accountability should be assured.

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