Privatization and Enterprise Performance in Nigeria: Case Study of Some Privatized Enterprises

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AERC Research Paper 175
African Economic Research Consortium, Nairobi
February 2008

THIS RESEARCH STUDY was supported by a grant from the African Economic Research Consortium. The findings, opinions and recommendations are those of the author, however, and do not necessarily reflect the views of the Consortium, its individual members or the AERC Secretariat.

Published by: The African Economic Research Consortium
P.O. Box 62882 - City Square
Nairobi 00200, Kenya

Printed by: Modern Lithographic (K) Ltd
P.O. Box 52810 - City Square
Nairobi 00200, Kenya

ISBN 9966-778-20-9

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Abstract

Despite an impressive level of privatization activity across Africa and the upsurge in research on the operating performance of privatized firms in both developed and developing economies, our empirical knowledge of the privatization programme in Africa is limited**.** This study appraises the post-privatization performance of some privatized enterprises in Nigeria. The specific indicators examined are profitability, productive efficiency, employment, capital investment, output, prices and taxes. The study measures the change in any given indicator of performance by comparing its average value five years before and five years after privatization. Data envelopment analysis (DEA) is also deployed to assess changes in the level of technical efficiency in the selected enterprises. The results, albeit mixed, show significant increases in these indicators. Privatization is also associated with increase in technical efficiency in the affected enterprises. Reduction of politically motivated resource allocation has unquestionably been the principal benefit of privatization in Nigeria.

Acknowledgements

I wish to acknowledge with thanks the financial support from the African Economic Research Consortium. The initial part of the study was conducted during my attachment as a Visiting Fellow with the Development Economics Research Group (DECRG) of the World Bank, Washington, D.C. I appreciate the comments of Mary Shirley, Collins Xu, Jean-Claude Cosset and Robert Cull on an earlier draft. I wish to express my profound gratitude to Shanta Devarajan and Albert Zeufack for facilitating my visit to the Bank. My immense gratitude equally goes to resource persons and researchers in AERC's Group AT for the useful comments on various drafts of the paper as well as two anonymous reviewers for the very insightful and enriching comments on the Final Report. I, however, remain solely responsible for all errors.

1. Introduction

Privatization of state-owned enterprises (SOEs) has become a key component of the structural reform process and globalization strategy in many economies. Several developing and transition economies have embarked on extensive privatization programmes in the last one and a half decades or so, as a means of fostering economic growth, attaining macroeconomic stability, and reducing public sector borrowing requirements arising from corruption, subsidies and subventions to unprofitable SOEs. By the end of 1996, all but five countries in Africa had divested some public enterprises within the framework of macroeconomic reform and liberalization (White and Bhatia, 1998).

In line with the trend worldwide, the spate of empirical works on privatization has also increased, albeit with a microeconomic orientation that emphasizes efficiency gains (La Porta and López-de-Silanes, 1997; D'Souza and Megginson, 1999; Boubakri and Cosset, 1998; Dewenter and Malatesta, 2001). Yet despite the upsurge in research, our empirical knowledge of the privatization programme in Africa is limited. Aside from theoretical predictions, not much is known about the process and outcome of privatization exercises in Africa in spite of the impressive level of activism in its implementation. Current research is yet to provide useful insights into the peculiar circumstances of Africa, such as the presence of embryonic financial markets and weak regulatory institutions and the manner in which they influence the pace and outcome of privatization efforts. Most objective observers agree, however, that the high expectations of the 1980s about the "magical power" of privatization bailing Africa out of its quagmire remain unrealized (Adam et al., 1992; World Bank, 1995; Ariyo and Jerome, 1999; Jerome, 2005).

As in most developing countries, Nigeria until recently witnessed the growing involvement of the state in economic activities. The expansion of SOEs into diverse economic activities was viewed as an important strategy for fostering rapid economic growth and development. This view was reinforced by massive foreign exchange earnings from crude oil, which fuelled unbridled Federal Government of Nigeria (FGN) investment in public enterprises. Unfortunately, most of the enterprises were poorly conceived and economically inefficient. They accumulated huge financial losses and absorbed a disproportionate share of domestic credit. By l985, they had become an unsustainable burden on the budget.

With the adoption of the structural adjustment programme (SAP) in 1986, privatization of public enterprises came to the forefront as a major component of Nigeria's economic reform process at the behest of the World Bank and other international organizations.

Consequently, a Technical Committee on Privatization and Commercialization (TCPC) was set up in 1988 to oversee the programme. In the course of its operations, the TCPC privatized 55 enterprises.

Sufficient time has elapsed since the start of reforms to allow an initial assessment of the extent to which privatization has realized its intended economic and financial benefits, especially with the commencement of the second phase of the programme. This is particularly important in view of the lessons of experience revealing interesting features that may alter earlier notions as to the most appropriate way to implement privatization programmes (Nellis, 1999). Concerns about globalization, the failed privatization in some transition economies (notably the former Soviet Union and Czech Republic) and disappointment with infrastructure privatization in developing countries are spawning new critiques of privatization (Shirley and Walsh, 2000). Among the pertinent issues to be addressed are: What is the extent and pattern of privatization? What have been the results of privatization in Nigeria? Has privatization improved enterprise performance as anticipated? Finally, what policy lessons are to be learned from the privatization experience so far? These are the issues that come into focus in the study.

The study is structured in nine sections. The Nigerian privatization experience is presented in Section 2, the theoretical framework and literature review in Section 3, and the methodology in Section 4. Firm histories are the focus of Section 5, the empirical results are presented in Section 6, and Section 7 presents the data envelopment analysis (DEA) results. Section 8 evaluates the counterfactual and Section 9 concludes.

Justification for the study

Despite compelling evidence from other developed and developing countries that privatization is viable and capable of injecting dynamism into previously dirigisme economies, only a few countries in sub-Saharan Africa have made appreciable impact in privatizing their SOEs. And although the timing, extent, technique and motivations for privatization have varied considerably across countries, there is an unacceptably low level of success in the implementation of privatization programmes in Africa. The existing body of research is yet to provide useful insights into the peculiar circumstances of Africa and the manner in which they influence the outcome of privatization efforts. The case of Nigeria is even more puzzling, given the high potential for successful privatization. Yet, current research efforts have proved inadequate in unravelling the major causes of this scenario. Nigeria's stalled privatization programme was resuscitated recently and informed inputs are being sought from various sources to enhance the success of this second attempt. Herein lies the potential benefit of this study. Giving the substantial number of enterprises that are yet to be privatized, the study would provide insights into the desirability, feasibility and sustainability of future reforms. It is envisaged that the policy recommendations from the study would assist the National Council on Privatization in correcting the pitfalls embedded in the previous endeavour.

While the underlying causes of privatization are shared globally, the relevance and benefits of privatization programmes are perceived differently in different countries. It follows then that each country has to structure a privatization programme that takes care of its socioeconomic and industrial ethos for maximum benefits. A pertinent question is

thus how has privatization fared in Nigeria? Without doubt, studies on privatization in Nigeria are still very scanty. Relevant studies include Bala (1994), Jerome (2002), Emenuga (1997) and Obadan (2000). Virtually all the studies focused on the reasons and rationale for privatization in Nigeria. Generally, they appraise privatization objectives and how the exercise was conducted. The description often includes what was sold and to whom, by what method and for how much. Studies on the operational performance of privatized firms are only just emerging (Jerome, 2004; Beck et al., 2005). This study intends to cover this lacuna in the literature.

Furthermore, microeconomic theory predicts that incentive and contracting problems create inefficiencies stemming from public ownership, given that managers of state-owned enterprises pursue objectives that differ from those of private firms and face less monitoring. Not only are the managers' objectives distorted, but the budget constraints they face are also softened. Empirical evidence shows a robust corroboration of this theoretical implication in several countries. How true is this for Africa? The study will also appraise the nature of the contracts between these firms and government in the pre- and post-reform period and show how the contracts address three interrelated problems: information asymmetry, incentives and commitment.

Overall, it is envisaged that the outcome of the study will assist international, multilateral and donor agencies to identify the felt needs, thereby facilitating the design of demand-driven policies and programmes to ensure the success of privatization in Nigeria in particular and sub-Saharan Africa in general.

Objectives of the study

The overriding objective of this study is to evaluate the first wave of the Nigerian privatization programme spanning 1988–1993. The specific objectives are as follows:

- Appraise the privatization efforts in Nigeria, by examining the antecedent, pattern, volume and status of privatization undertaken so far.
- Examine the financial and operating performance of three newly privatized enterprises in Nigeria.
- Evaluate technical efficiency in these enterprises before and after privatization.

2. The Nigerian privatization programme

In spite of its diminishing size and importance due to privatization, Nigeria's public enterprise sector is one of the largest in sub-Saharan Africa in terms of both scale and scope as reflected in the absolute numbers of enterprises and the contribution to the gross domestic product. Since the colonial era, public enterprises have assumed increasingly diverse and strategic development roles in the Nigerian economy. And this was accentuated during the oil boom of the 1970s and 1980s, when successive military regimes, buoyed by economic nationalism and massive oil windfalls, developed a large public enterprise sector encompassing a broad spectrum of economic activities. These covered large basic industries (manufacturing, agriculture, services, public utilities and infrastructure). They included telecommunications, power, steel, petrochemicals, fertilizer, vehicle assembly, banks, insurance and hotels.

Prior to the privatization wave, there were about 600 public enterprises (PEs) at the federal level and about 900 smaller PEs at the state and local levels. Shares of employment, value added and gross fixed capital formation of public enterprises generally exceeded those of other African countries. The estimated 1,500 enterprises accounted for about 57% of aggregate fixed capital investment and about 66% of formal sector employment by 1997 as indicated in Table 1. It is estimated that successive Nigerian governments invested about 800 billion naira (approximately US$90 billion equivalent) in the PE sector over two decades, which remains currently one of the largest in Africa.

Table 1: Share of public enterprises (PEs) in the development indicators of selected African countries by 1997

Country	Number of PEs	% of GDP	% of investment*	% of employment*
Nigeria	600	50%	57%	66%
Côte d'Ivoire	150	n/a	18%	n/a
Ghana	181	n/a	25%	55%
Kenya	175	n/a	21%	9%
Tanzania	420	13%	26%	n/a
Burkina Faso	44	5%	20%	n/a
Senegal	50	9%	33%	n/a

us
* = Formal sector only
n/a = Not available
Source: Obadan and Ayodele (1998).

The magnitude, scope and persistence of failure of Nigeria's public enterprises (PEs) have been extraordinary. These enterprises require continuous massive subsidies but

deliver only intermittent and substandard services; industrial enterprises typically operate at 10–35% of capacity. The returns on these large investments have generally been poor, and in a number of cases negative, with an especially low rate of return relative to the large amount of resources invested in them. It has been estimated that total investment in the public enterprise sector exceeded US$35 billion, comprising US$12.5 billion in equity, US$10.2 billion in government loans, and another US$11.5 billion in unspecified and largely unrecorded subventions to various enterprises. These investments provided meagre returns, yielding US$1.5 billion in dividends and loan repayments from 1980 to 1987 (Federal Government of Nigeria, 1986: 24). Furthermore, about 40% of non-salary recurrent expenditure and 30% of capital expenditure was expended annually on these enterprises. Net outflows from the government to the public enterprise sector have been estimated at US$2 billion annually (Callaghy and Wilson, 1988). The presence of non-performing PEs – some of which are currently mothballed, notably in the fertilizer, aluminium smelting, pulp and paper, sugar and steel industries – has effectively impeded entry by potentially more efficient private operators.

The reasons for the poor performance are well documented and not surprisingly bear a uniform pattern globally. These include among others, the lack of residual claimant to profits, the presence of multiple and conflicting objectives determined by politicians, and the prevalence of incomplete contracts and government subsidies that protect internal inefficiencies and perpetrate soft budget constraints. The scale of corruption in the Nigerian case, however, was unprecedented. For example, employees of the Nigerian External Telecommunications (NET) set the company's 37-storey previous headquarters building ablaze rather than risk seizure of records revealing fraud. Furthermore, political expediency rather than economic viability govern key project parameters such as plant location, capacity planning, implementation timeframe, employment and product/service pricing. Some of the large-scale projects especially in agriculture and industrial sectors have been on the drawing board for periods ranging from 10 to 35 years. A case in point is the Ajaokuta steel plant, which remained uncompleted for as long as 30 years. Inefficiencies were also perpetrated due to misuse of monopoly powers, notably in infrastructure, resulting in unreliable delivery and availability of services, including for the poor. Other contributions to this dismal picture have been excessive bureaucratic controls and government intervention; inadequate policy and regulatory frameworks that impede competition, discourage private entry and private investment; weak capacity to implement reform; and gross mismanagement and nepotism. These were compounded by a control and management structure that was extremely complex, opaque and prone to political capture.

The result was that Nigeria under-achieved its growth potential as a result of a huge public enterprise sector weighed down by inefficiency and massive corruption. For example, the unreliable power supply from the National Electric Power Authority (NEPA) is estimated to impose an additional cost of around US$1 billion annually on the economy.

Public enterprise deficits have been a major source of fiscal problems and a drag on growth (World Bank, 1995). In the wake of the economic recession that began in 1981 following the collapse of oil prices, the activities of public enterprises attracted more attention and underwent closer scrutiny, much of it centring on their poor performance and the burden they impose on government finance.[1] The poor financial returns from

these enterprises, against the background of severe macroeconomic imbalance and public sector crisis, precipitated the concern of government towards privatization.[2] In fact, by 1984 the World Bank and International Monetary Fund (IMF) were increasingly advocating for privatization as a policy tool in Nigeria. The privatization programme was subsequently adopted as part of the structural adjustment programme embarked on in July 1986 by Ibrahim Babangida, who assumed power in 1985 in a bloodless military coup. On assuming power, Babangida made clear his resolve to scrap the moribund economic policies of his predecessor and resumed negotiations with the IMF. Cognisant of the hostility surrounding the negotiations, he initiated a three-month national debate on acceptance of the IMF loan and its attendant conditionalities. Then, following widespread support for a rejection of the loan, Babangida launched an economic reform programme dubbed "the structural adjustment programme" (SAP) in July 1986 as an alternative to the IMF stabilization programme. The programme in its entirety met and even in some cases surpassed IMF stipulations.

In his 1986 New Year budget speech, Babangida announced a halving of statutory allocations to all economic and quasi-economic parastatals and the intention of government to divest its holdings in a number of non-strategic enterprises. Between 1986 and 1998, the regime[3] impetuously liquidated agricultural commodity boards and the Nigerian National Supply Company (NNSC), and divested various units of the Nigerian Livestock Production Company and a commercial agricultural concern with various assets in the North. However, this was not backed by policy or institutional framework for implementation.

The first genuine effort in the implementation of the programme was the inauguration of study groups to review and classify all public enterprises in Nigeria under the guidance of the World Bank. The Babangida regime in July 1988 subsequently promulgated Decree No. 25 on privatization and commercialization after about two years of dilly-dallying. The decree gave legal backing to and formally initiated Nigeria's privatization and commercialization programme, thus marking the first comprehensive approach to divestiture, embodying an institutional focus and a clearer programme. The decree listed 145 enterprises to be affected by the exercise. A total of 111 enterprises was slated for full and partial privatization, while 35 others were to be commercialized. The list was later amended in order to convert five enterprises from partial privatization to full commercialization; those five were:

- Nigerian Industrial Development Bank Limited;
- Nigerian Bank for Commerce and Industry Limited;
- Federal Mortgage Bank Limited;
- Federal Super Phosphate Fertilizer Company Limited; and
- National Fertilizer Company of Nigeria.

According to the decree the programme is expected to:

- Restructure and rationalize the public sector in order to lessen the preponderance of unproductive investments;
- Reorient the enterprises towards a new horizon of performance improvement, viability and overall efficiency;
- Ensure positive returns on investments in commercialized public enterprises;
- Check absolute dependence of commercially-oriented parastatals on the treasury and encourage their patronage of the capital market; and

- Initiate the process of gradual cessation of public enterprises that can be best managed by the private sector.

The decree had several defects. It focused on issues of share valuation, issuance and distribution, making only passing measures of institutional changes and management reforms. The fiscal and institutional arrangements entailed by partial or full privatization and commercialization were also not elaborated, and organizational details were lacking.

In conformity with the provisions of the decree, an 11-person Technical Committee on Privatization and Commercialization (TCPC) was inaugurated on 27 August 1988 with a broad mandate to coordinate the rehabilitation of government enterprises and oversee Nigeria's privatization programme. The actual divestiture commenced in the early months of 1989 with the shares of four firms (Flour Mills of Nigeria, African Petroleum, National Oil and Chemical Company, and United Nigeria Insurance Company) being issued in the market. The shares were successfully sold with each issue reportedly oversubscribed.

From 1988 to 1993 when the privatization process was suspended, 55 firms had been privatized by the TCPC. In the course of its operation, the TCPC adopted five methods of privatization:

- ***Public offer of equity shares for sale:*** This was done through the Nigerian Stock Exchange for enterprises that qualified for listing on the exchange. Thirty-five PEs were privatized through this approach.
- ***Private placement of equity shares:*** To benefit here were institutional investors, core groups with demonstrated management and/or technical skills, and workers of specific enterprises, organized as a cooperative or limited liability company. This method was used mainly where the shareholdings of government were very small and the TCPC could not persuade shareholders to make a public offer of shares. Seven enterprises were eventually privatized using the private placement method.
- ***Sale of assets:*** This approach was resorted to after rigorous examination had shown that the affected PEs had unimpressive track records and their future outlook seemed hopeless. Consequently, they could not feature under the public offer of shares or private placement as they did not possess the listing requirements. Such enterprises were liquidated, and their assets sold piecemeal to the public through public tender. Twenty-six enterprises were sold through the sale of assets approach. However, 18 out of them had been sold by the Federal Ministries of Agriculture and Transport prior to the inauguration of the TCPC in 1988.
- ***Management buy-outs:*** Under this approach, the entire affected enterprise or a substantial part of its equity capital was sold to the workers. Only one enterprise was privatized using this method, namely, National Cargo Handling Company Limited.
- ***Deferred public offer:*** This method was used where it was felt that if some viable PEs were sold by shares, the expected revenue would be lower than the real values of their underlying assets. It was adopted in order to revalue assets and sell the enterprise on a willing buyer/willing seller basis, at a price that was more reflective of the current value of affected PEs' assets. The new owners were required to sell not less than 40% of the equity to the Nigerian public within five years of takeover. Four hotel enterprises were privatized through the deferred public offer method.

Five enterprises had earlier been converted from privatization to commercialization, while for 18 others it was decided that no further action was required for various reasons ranging from duplication in the provisions of the decree to non-readiness for the exercise (TCPC, 1993: 25). The 22 enterprises left to be privatized were said to be under active preparation for the exercise.

The predominance of public offer was to ensure wider share ownership and the desire to extend the frontiers and depth of the Nigerian capital market. In all, the TCPC sold about 1.5 million shares,[4] resulting in the creation of over 800,000 new shareholders. Market capitalization of the Nigerian Stock Exchange increased from ₦8 billion to over ₦30 billion by September 1992. The privatization programme yielded gross revenue of about ₦3.7 billion from the 55 enterprises privatized by the TCPC. The original investment in these enterprises according to MOFI records was ₦652 million, indicating a capital gain of ₦3.1 billion or nearly 600%. The government also relinquished about 270 directorship positions in these companies, reducing the scope for wasteful political patronage.

The programme was truncated in 1993. This is not surprising, considering the stiff opposition and considerable controversy that surrounded it. For example, there were allegations of structural imbalance in the distribution of shares particularly between the north and the south. The government promulgated Decree No. 78 of 1993, establishing the Bureau for Public Enterprises (BPE), which replaced the TCPC although the bureau did not effect the privatization of any enterprise. Government subsequently opted for a new scheme of contract management and/or leasing of public enterprises to private concerns in 1995 but the proposal was criticized by foreign creditor institutions as being a poor substitute for outright privatization. Thus, it was never implemented.

Towards the end of 1998, General Abdusalam Abubakar, who came to power in June following the death of his predecessor, General Sanni Abacha, reaffirmed his commitment to the privatization programme and launched the current (second-round) privatization drive that promises to be one of the biggest in Africa. Resumption of the privatization programme has been one of the pre-conditions set by the IMF for renegotiating an interim programme that would pave way for a medium-term economic strategy agreement for Nigeria. In his national broadcast of October 1998, General Abubakar announced that his government would privatize refineries, petrochemical and bitumen production, and tourism in addition to the spillovers from the first-round privatization. The legal framework of the second privatization programme was put in place with the promulgation of the Public Enterprises (Privatization and Commercialization) Decree No. 28 of 1999. This decree provides for a reorganized institutional framework that included the establishment of the Bureau of Public Enterprises as the main organ for the execution of the privatization and commercialization programme, full privatization of 25 public enterprises in oil, cement, banking, agro-allied, motor vehicle assembly and hotel businesses, and partial privatization of 37 enterprises in sectors ranging from telecommunications to sugar companies. However, the responsibility for implementing the programme was left to the incoming civilian administration.

On assuming office in June 1999, the Obasanjo administration signalled its strong commitment to privatization of state-owned enterprises as a critical element of its strategy for economic recovery and accelerated growth. Under the 1999 Privatization and

Commercialization Act, the federal government established the National Council on Privatization (NCP) to oversee the privatization programme. The Act made the Bureau of Public Enterprises (BPE) the implementing agency and secretariat of NCP. The NCP is chaired by the Vice President of the Federal Republic of Nigeria. Its members include all Cabinet ministers and top government officials with overall economic policy functions. These include the Minister of Finance, the Chief Economic Adviser and Minister of Planning, and the Governor of the Central Bank. The NCP also co-opts the concerned sector minister responsible for a given PE when decisions are made on the privatization of that enterprise and on related sector policies.

Under the three-phase privatization programme announced by President Obasanjo in July 1999, the FGN has set the goal of divesting about 100 PEs through privatization or commercialization. These include major PEs in the productive sectors, in services and in infrastructure. They cover the following sectors: (a) Manufacturing: cement, vehicle assembly, machine tools, pulp and paper, sugar mills, aluminium smelting, steel, petrochemicals, and oil refineries; (b) Services: hotels, oil marketing, and financial institutions and banking; and (c) Infrastructure: telecommunications, power, ports, railways, air transport, airport passenger handling and freight forwarding.

Significant progress has been made with implementation of phase one of the privatization programme, with the sale of government shareholdings in eight PEs, including two cement companies and two banks. The FGN has made important progress in preparation of the telecommunications and electric power reform programme. This includes adoption of a new National Telecommunications Policy, opening the sector fully to competition in 2001, and a National Electric Power Policy.

Some Nigerians are opposed to the programme, however. As the World Bank (2001: 22) notes:

> While the Obasanjo administration is strongly committed to an accelerated privatization programme, significant stakeholder groups are resisting the reforms. These include PE [public enterprise] managers and employees, senior government officials and civil servants, notably in sectoral ministries, who perceive that their current power and perquisites will be reduced as the privatization programme is implemented. In the National Assembly, a range of politicians view privatization as a threat to national sovereignty, and an unwarranted reduction in the role of the state.

The strongest opposition has emerged from labour unions, particularly in the utilities sector. In part, such opposition is due to adherence to often-outmoded economic thinking. This situation is further complicated by the deep-seated ethnic and regional differences in Nigerian society, which can complicate the sale of public enterprises generally, and in particular of PEs located in different regions, unless it is fully supported by the local elite and local population. The situation was heightened by the lack of a credible privatization process, absence of a popularly acceptable regulatory framework and total neglect of issues relating to social safety nets among others.

3. Theoretical framework and review of related literature

Privatization and public sector reform marks what have been termed "second generation" adjustment policies, an attempt at distinguishing them from "'first generation" policies, which focused almost exclusively on economic stabilization. The vast literature on privatization however, reveals a lack of clear-cut definition. Privatization has become a generic term often employed to describe a range of policy initiatives designed to alter the mix in ownership and management of enterprises away from government in favour of the private sector. It covers a continuum of possibilities, from decentralization to market discipline. Narrowly defined, privatization implies permanent transfer of control, as a consequence of transfer of ownership right, from the public to the private sector. This definition is perhaps the most common usage of the term. A broader definition entails any measure that results in temporary transfer to the private sector of activities exercised hitherto by a public agency. This may be accompanied by a radical relocation of available productive resources, restructuring of the existing institutional setting in which production takes place, and the introduction of new forms of corporate governance devoid of political interference (Shirley, 1999; Jerome, 1996).

Privatization can also entail a transfer of the provision of a good or service from public to private sector, with the government retaining the ultimate responsibility for providing the service. The prime examples of this type of privatization are subcontracting, management contracts, leases and concessions, as well as build, operate and transfer schemes. It is even possible to envisage privatization taking place without a transfer of ownership of assets. For example, liberalization or deregulation is regarded as the abolition of restriction on entry, prices, output, market, profits, etc. The public enterprise remains in existence, but is required to adopt a more commercial approach. The preoccupation of this study is the narrow definition.

Theoretical framework

Despite the extensive adoption of privatization, it has from the outset been highly controversial and politically charged. This relates to the agency and credibility problems that are unleashed by the exercise as well as its income distribution implications. In managing state-owned enterprises, politicians and bureaucrats enjoy rents and are also able to exercise political patronage, for example, creation of jobs for their supporters as well as targeting credit and other benefits to them. In turn they are assured of re-election or the means of retaining power. Why then would politicians who are pursuing group-interest, and under them bureaucrats with discretionary powers, be willing to commit

to a privatization policy that does not favour particular groups or agree to the establishment of an impartial regulatory mechanism post-privatization? The answer from the positive theory is that privatization only goes ahead when politicians see in it clear-cut economic and political benefits. In their application of the model on sub-Saharan Africa, Laffont and Meleu (1999) conclude that the speed of privatization is directly related to the shares that politicians or their relatives can fetch in the privatized firms to compensate themselves for the loss of the rents previously enjoyed under state ownership. Similarly, interest groups or constituencies, depending on the amount of political influence they wield, can also affect the speed and sequence of privatization as shown in Table 2.

Table 2: Interest groups, threats and benefits in the privatization process

Interest groups	Potential threats/benefits
1. Government leaders and their representatives on boards of the state owned companies, as well as bureaucrats in the line ministries	Threats include possible loss of political patronage and income. On the other hand, privatization reduces the fiscal burden and sends positive signals to the donor community.
2. Parastatal managers and employees	Risk of loss of employment and income during privatization and post-privatization restructuring.
3. Influential domestic groups including political parties, religious leaders, labour unions, parliamentarians, academics, etc.	The unequal distribution of privatization benefits as well as "foreignization" are seen as threats by a large number of this group ex ante. Still, an expanding private sector soon begets its own support groups and views change rapidly ex post.
4. Donors and multilateral agencies	On the whole, donors and multilateral agencies see no threats in privatization, only benefits. To them privatization signals commitment on the part of national policy makers to economic reform and to efficiency in government.

Source: Adapted from Kayizzi-Mugerwa (2002).

Several theoretical and survey articles propose alternative reform measures other than privatization. They opine that competition and deregulation are more important than privatization, putting ownership at the lower rung of the hierarchy of policy prescriptions (Bishop and Kay, 1988; Vickers and Yarrow, 1988), while others are decisively in favour of privatization (Vining and Boardman, 1992; Boycko et al., 1996; World Bank, 1995; Shirley and Walsh, 2000). In a comprehensive survey of ownership and firm efficiency, Vickers and Yarrow (1988), for example, conclude that private ownership was superior to public ownership only in firms where healthy competition existed. In markets without competitive forces, the introduction of competition through the elimination of statutory monopolies or regulatory measures that mimicked competitive forces provided higher efficiency gains than could be expected from the transfer of ownership to the private sector. Substitution of a private monopoly for a public one could

only produce limited gains in efficiency due primarily to a reduction of employment and the restriction of services to financially rewarding markets. Shleifer and Vishny (1994), however, argue against partial privatization using the political perspective as explanation. While partial privatization could solve the monitoring problem, it is incapable of solving the problem of political intervention through "side payments" – a situation through which government can achieve political objectives at the cost of efficiency. The failed privatization in some transition economies and the progress made in reforming SOEs in China have apparently added fillip to this argument for alternatives to privatization in recent times (Shirley and Walsh, 2000).

Although the theoretical debate is currently heavily tilted in favour of privatization, the true measure of SOEs' effectiveness must be based on empirical research. The weight of empirical research is now decidedly in favour of the proposition that privately-owned firms are more efficient than state-owned firms. Shirley and Walsh (2000) conducted a comprehensive survey covering 52 major studies spanning the period from 1971 to 2000 and different market structures ranging from statutory monopoly to competitive firms. They concluded that the ambiguity about ownership is more in theory than in the empirical literature. The results of the survey are decisively in favour of private and privatized firms in both developed and developing countries. Of the 52 studies, 32 confirm the superiority of private and privatized firms, 15 are ambiguous or find no significant relationship between ownership and performance, and only 5 conclude that publicly-owned firms perform better than private firms.

Given this ambiguity in the literature especially theoretical studies, it seems logical to appraise the performance of African privatization programmes and their contribution to the success of market-based reforms.

Empirical literature

From an empirical standpoint, the phenomenal increase in the number of privatization programmes in both developed and developing economies has generated a lot of research interest. Guriev and Megginson (2007) survey the burgeoning literature of the last decade. These authors reviewed 71 empirical studies on the extant firm-level empirical research on how privatization affects productivity and employment.

Prior to the privatization wave of the 1980s and 1990s, most empirical studies on privatization focused on the ownership debate and relied on cross-sectional comparisons of SOEs and private companies. They attempted to prove or refute the idea that in competitive environments, ownership does matter. Boardman and Vining (1989) and Vining and Boardman (1992) survey this earlier literature and they summarize the results in tables grouped by sectors, which highlight the main conclusions of these studies (whether the results favour private or public ownership, or if they show no difference or ambiguous results). Although many studies find that private companies are more efficient, a good number of them conclude either that ownership does not matter or that public companies exhibit superior performance.

Nonetheless, these studies face common methodological problems. Apart from ownership being endogenous, it is well established that public enterprises often operate in less than competitive environments. The validity of the results crucially depends on controlling for companies' differences in market structure, in regulatory regime, and in

degree of competition in both product and input markets, which are very difficult to control for in a cross section. As pointed out by Vining and Boardman (1992), rarely did these older studies properly control for such factors.

More recent academic works focuses on privatization per se rather than the ownership debate. An extensive literature looks at the impact of privatization on firm performance and excellent surveys are presented in Meggison and Netter (2001) and Djankov and Murrell (2002) for transition economies. These studies can be grouped essentially into two: case studies of a small sample of firms, and country specific or multi-country studies utilizing larger and sometimes international samples of firms. Most empirical privatization studies make an explicit trade-off between depth and breadth of coverage.[5] The case studies are usually very comprehensive, taking advantage of access to consistent datasets, while multi-country and inter-industry comparisons almost inevitably settle for the lowest common denominator – data that are universally available.

Since a full survey of these papers is presented in Megginson and Netter (2001) among others, we review them only briefly in what follows, beginning with the case studies.

Case studies of a small sample of firms

The major single industry and/or country specific studies that are relevant for our study are summarized in Table 3, which presents the sample description, methodology and major findings of each study. A majority of these studies examine econometrically how privatization affects the performance of a single firm or a small number of firms in a single industry.

The study by Galal et al. (1994), for example, represents probably the most comprehensive and influential analysis of the impact of privatization on efficiency and state budget. The study examines the welfare consequences of privatizing 12 large firms mostly in regulated sectors in Chile, Malaysia, Mexico and the United Kingdom. The selected enterprises were in telecommunications (three firms), airlines (four firms) electricity (two firms), a lottery company, and a port and transport company. The authors compare the post-divestiture performance of the selected enterprises with the predicted performance of these enterprises had they not been divested. Thus, for each enterprise, a counterfactual scenario is identified and the difference between the level of welfare under divestiture and that under the counterfactual scenario is attributed to divestiture. The welfare implications are measured in terms of the impact of divestiture on major economic actors: the government, consumers, buyers of firms and competitors. The study documents net welfare gains in 11 of the 12 cases, which equal on average 26% of the firms' pre-divestiture sales. They find no case where workers are made significantly worse off and three cases where workers actually benefit.

Informative as it is, however, this study is deficient on several grounds. First, it omits countries typical of Africa that are characterized by low per capita income, highly distorted markets and relatively weak institutional capabilities. Second, despite the scope and subtlety of the methodology employed, the underlying assumptions are highly tenuous and do not relate to the environmental realities, thus becoming incompatible with the policy-oriented nature of the study.

Table 3: Summary of case studies dealing with a small sample of firms

Study	Sample description and study period	Methodology	Empirical findings
Galal, Jones, Tandon and Vogelsang (1994)	Examines the welfare consequences of privatizing 12 large firms mostly regulated in Chile, Malaysia, Mexico and United Kingdom	Compares actual post-divestiture performance of the selected enterprises with the predicted performance of these enterprises had they not been divested	Documents net welfare gains in 11 of the 12 cases except Mexican airlines
Martin and Parker (1997)	11 British firms privatized between 1981 and 1988	Return on capital employed Value-added per employee Data envelopment analysis	Mixed performance
Eckel, Eckel and Singal (1997)	Impact of British Airways privatization on US airlines	Seemingly unrelated regression (SURE) Labour and capital productivity Efficiency measures Control for changes in the market environment	Stock prices of rival firms fall significantly following announcements signalling the likelihood of privatization Airfares in international markets fall by 14.3% Fall in fares is accompanied by lower costs of operations after privatization
Ramamurti (1997)	Ferrocarilla Argentinos, the national railroad	Descriptive analysis and labour productivity	370% improvement in labour productivity and a 78.7% decline in employment. Expanded and improved services delivered at lower cost to consumers
Claessens and Djankov (1999)	Ownership concentration and corporate performance in 706 Czech firms privatized through voucher over the period 1992–1997	Ordinary least square and random effects estimations	Profitability and productivity changes are positively related to ownership concentration
Anderson, Lee and Murrell (2000)	Effect of competition and ownership on the performance of 211 newly privatized firms in Mongolia	Ordinary least square and instrumental variable techniques	Competition exerts a decisive force on enterprise performance Enterprises with residual state ownership perform better than private ownership

Source: Author's Compilation

Martin and Parker (1997) assess the impact of privatization on 11 major firms privatized in the UK in the 1980s, using several performance indicators that include profitability (measured as return on capital employed), efficiency (annual growth in value added per employee) and technical efficiency (data envelopment analysis – DEA). The evidence indicates that privatization had mixed results in Britain. While most of the enterprises record increased productivity growth after privatization, the result is disappointing in some of the cases. The same is true for other performance measures. According to the authors, the rationale for the use of several performance indicators is the need to overcome measurement bias. The DEA approach is gradually gaining currency in privatization evaluation studies and will, to a considerable extent, be adopted in this study. The technique has also been used to assess the UK's electricity privatization (Burns and Weyman-Johnes, 1994), Argentina's telecommunications privatization (Mautino, 1999) and the efficiency of banking institutions (Siems, 1992; Yue, 1992; Sobodu and Akiode, 1998).

Eckel et al. (1997) examine the effect of the British Airways (BA) 1987 privatization on the stock prices of competitors and on fares charged in those routes where BA competes directly with foreign airlines. They find that stock prices of US competitors fall on average by 7 percentage points, implying that stock traders anticipated a much more competitive BA upon privatization. Furthermore, airfares on routes served by BA fall by 14.3% relative to those on other transatlantic routes around the time of privatization. As a check on the results, the authors also appraise market reactions to Air Canada's two-phase privatization (first from 100% state ownership to 57%, then to zero). Air Canada's fares do not decline after the first privatization, but fall a significant 13.7% after complete divestiture. Unlike BA, however, there is no significant competitor stock price effect since Air Canada does not compete with other carriers in many routes.

Ramamurti (1997) in a very comprehensive albeit descriptive study appraises the impact of the 1990 restructuring and privatization of Ferrocarilla Argentinos, the Argentine railroad, then the largest in Latin America. The author documents a 370% improvement in labour productivity, decline in operating subsidies to almost zero and a massive decline in employment from 92,000 to 18,682 workers (78.7%). Consumers also benefit from expanded and better quality services delivered at lower costs. Freight rate declines by 20% in real terms over 1991–1994 as a concessionaire competes more aggressively with trucks.

Claessens and Djankov (1999) examine ownership concentration and corporate performance in a cross section of 706 Czech firms privatized through voucher over the period 1992 through 1997. The authors find that profitability and productivity changes are positively related to ownership concentration. A 10% increase in concentration leads to a 2% increase in labour productivity and a 3% increase in profitability. However, the results are weakly robust to alternative econometric and data specifications. A major weakness of this study, perhaps, is the failure to address the precise mechanism through which ownership concentration affects performance.

Anderson et al. (2000) examine the effect of competition and ownership on the performance of 211 newly privatized firms in Mongolia. They find the effects of competition on efficiency to be considerable. Furthermore, enterprises with residual state ownership perform better than those with other owners. This unusual result is attributable to underdeveloped institutions in Mongolia. While government involvement

in corporate governance is pronounced, non-state diverse outsider owners require institutional support to be able to exert their influence, and the support is not available.

The African Economic Research Consortium (AERC) has also sponsored several innovative studies on privatization. Jerome (2002) appraised the qualitative and quantitative evidence relating to allocative and productive efficiency in the telecommunication sector in the wake of commercialization and deregulation in 1992. It was found that the reforms undertaken resulted in increased profitability of the incumbent operator, network expansion and modernization, and productivity gains. The reforms have proved impossible to sustain, however, and the industry is still characterized by underinvestment and large unmet demand. Asante (1998) assessed the privatization of Ashanti Goldfields Company Limited, which was then Africa's largest privatized enterprise, and Ghana Commercial Bank using several accounting ratios. Most of the performance indicators increased after privatization, although some were statistically insignificant. In the same vein, Oyieke (2002) used Kenya Airways as a case study to examine the effects of privatization on public sector borrowing requirements. The study documents substantial improvements in the public sector and the net worth of Kenya Airways as a result of privatization.

Country specific or multi-country studies

The second stream of literature consists of single country and multi-country studies utilizing large samples of firms that have been privatized through initial public offers (IPOs). They examine whether the mean and median firms improve financial and operating performance, measured in various ways, after being divested. The first published study in this regard is Megginson, Nash and Van Randenborgh (1994) – herein after referred to as MNR. Since then at least 20 studies have used the MNR methodology in various settings.

The MNR methodology has become the standard methodology of choice for several privatization studies. In spite of obvious drawbacks – principally relating to possible selection bias (governments may only privatize their "best" SOEs via share offerings) and the need to rely on simple, universally-available accounting data – studies employing the MNR methodology have two key advantages. First, they are the only studies that can examine and directly compare large samples of economically significant firms, from different industries, privatized in different countries, over different time periods. Since each firm is compared with itself (a few years earlier) using simple, inflation-adjusted sales and income data (which produce results in simple percentages), this methodology allows one to efficiently aggregate multi-national, multi-industry results. Second, while focusing on IPOs or share issue privatization (SIPs) yields a selection bias, it also yields samples that encompass the largest and most politically influential privatizations: SIPs account for more than two-thirds of the over US$1 trillion of total revenues raised by governments since 1977.

The original MNR (1994) study examines the pre- versus post-privatization financial and operating performance of 61 companies from 18 countries (6 developing and 12 industrialized) and 32 industries that are fully or partially privatized through public share offerings during the period 1961 to 1990. The authors present strong evidence that following privatization, their sample firms become more profitable and efficient and also

increase real sales and capital expenditures. Furthermore, these companies significantly lower their debt levels and increase dividend payments. In addition, MNR find no evidence that employment levels decline after privatization. Instead, they find an increase in employment levels for a significant 64% of the sample companies.

While the study overcame the difficulty of obtaining comparable pre- and post-privatization data for large, multinational, multi-industry sample of countries, it unfortunately is limited mostly to Organization for Economic Cooperation and Development (OECD) and other developed countries. Since most of the cases reviewed came from industrialized settings, and since the IPO method is usually applied to high-quality candidates, the positive findings might not apply in non-industrialized countries, or to firms divested by methods other than share issuing.

Table 4 only highlights the sample description, methodology and major findings of some of these studies, as elaborate surveys are presented in Megginson and Netter (2001).

Table 4: Summary of country specific or multi-country studies

Study	Sample description and study period	Methodology	Empirical findings
Megginson, Nash and Van Randenborgh (1994)	Compares the pre- and post-privatization financial and operating performance of 61 fully and partial privatized firms through public share offerings from 32 industries in 18 countries between 1961 and 1990	Several financial indicators including profitability, sales level, operating efficiency, capital investment, leverage (gearing) ratios and dividend payout figures	Documents strong performance improvements without sacrificing employment security
D'Souza and Megginson (1999)	Compares the pre- and post-privatization performance of 78 firms from 25 countries privatized through public offering between 1990 and 1994	Mean and media level profitability, sales level, operating efficiency, capital investment, leverage (gearing) ratios and dividend payout figures	Profitability increases significantly although the increase is more in regulated or non-competitive industries, whereas operational efficiency increases less in those cases
Boubakri and Cosset (1998)	Transactions in 21 developing countries – mainly middle-income countries	Mean and media level profitability, sales level, operating efficiency, capital investment, leverage (gearing) ratios and dividend payout figures	Privatized firms record significant increase in profitability, operating efficiency, capital investment spending, real sales, employment levels and dividends, but a decline in leverage

Continued

Table 4, continued

Study	Sample description and study period	Methodology	Empirical findings
La Porta and López-de-Silanes (1997)	218 non-financial enterprises privatized in Mexico between 1981 and 1988	Several performance indicators and regression analysis Control for macroeconomic and industry factors	Firms achieve a 40-percentage point increase in profitability eliminating the need for subsidies, equivalent to 12.7% in GDP Output of privatized firms' increases by 54.3% while employment declines by half
Sachs, Zinnes and Eilat (2000)	Using a panel of 24 countries in transition economies from the start of transition through 1998, examines whether a change in title alone is enough to guarantee the gains associated with privatization	Initial condition cluster typology of countries Ordinary least squares and fixed effect estimations	Change of title alone is not sufficient to generate economic performance gains The real gains of privatization come from combining change of title reforms with other structural reforms

Source: Author's compilation.

The foregoing review, although skeletal, suggests that there is now a growing body of research on all aspects of privatization. These studies provide concrete evidence that privatization "generally" works, both for the firms that are privatized and for privatizing economies as a whole. The benefits of privatization, however, depend on market institutions being in place. The countries that manage to ensure property rights protection and the rule of law, impose hard budget constraints, increase competition, and improve corporate governance reap the largest benefits. If appropriate institutions are not in place, privatization often fails to improve performance at the firm level and for the economy as a whole.

These studies also reveal that a country's policies and institutional make-up strongly affect both the way in which privatization is designed and carried out, and the outcomes that one can expect from the process. They confirm that country conditions are important, and that private ownership has to be placed in an enabling environment of proper policy and institutions for it to produce the benefits of which it is so clearly capable. Finally, restructuring enterprises prior to privatization is unlikely to yield appreciable results.

4. Methodology

The evaluation of the economic impacts of privatization is no doubt a difficult task owing to several methodological constraints.[6] In line with several other studies (La Porta and López-de-Silanes, 1997; Boubakri and Cosset, 1998; Dewenter and Malatesta, 2001), a variant of the MNR (1994) methodology is adopted in the first part of the study.

We rely on seven broad indicators of performance, including (1) profitability, (2) operating efficiency, (3) capital expenditures and (4) output. Others are (5) employment, (6) capital structure and (7) dividend policies. We use the same ratios as in MNR (1994) and Boubakri and Cosset (1998).

To measure the effects of privatization on firm performance, we first calculate performance measures for every firm for the years before and after privatization. The mean of each measure is computed for each firm over the pre-privatization (years -5 to -1) and post-privatization (years +1 to +5) periods. Because the year of privatization includes both public and private ownership phases for many firms, it is eliminated from our analyses.

We then test whether a statistically significant change occurred after privatization. To do so, we apply two tests, the standard test for differences in the mean of two populations as well as the Wilcoxon signed rank test, which is a parameter free test and especially well suited for cases with small sample sizes. For the test for differences in the mean of two populations, we identify the period prior to privatization as one population and that after privatization as the second one. While the assumptions underlying the Wilcoxon test are always satisfied, the proper application of the test for differences in the mean of two populations requires the assumption of normal distributions.

The data utilized for the analysis are primarily accounting data that were sourced from annual reports, the Nigerian Stock Exchange and direct information from the enterprises included in the study.

We use local currency data in all our analyses, and whenever possible we compute ratios using nominal data in both the numerator and denominator. We express all nominal figures in thousands of naira. We use the consumer price index (CPI) to adjust the values of all nominal quantities.

In reality, economic conditions are constantly changing, and therefore any observed changes in enterprise performance could be driven by changes in the economic environment rather than by privatization. To handle the counterfactual scenario of what would have happened in the absence of privatization, we intend to compare the

performance of these enterprises with that of a "control group", namely a public firm. Where this is not available, the industry average will be utilized as the control group. The selection of our three enterprises is non-random. The choice is predicated on several considerations. Paramount is the need to capture varied experiences with the execution programme and gain a better understanding of the sector-specific determinants of the outcome of privatization undertaken so far in Nigeria.

Thus, we have selected three enterprises, one each from the major sectors in Nigeria: the industrial, banking and petroleum marketing sectors. In each sector, we have selected enterprises with substantial market share, significant government equity holding prior to privatization and sufficient post-divestiture history. The selected enterprises are the United Bank for Africa Limited (UBA), Ashaka Cement Company Limited and Unipetrol Nigeria Limited. Table 5 presents the number of firms' privatized by sector and means.

Table 5: Privatization by sector/means in Nigeria

	Public offer	Deferred public offer	Private placement	Sales of assets	Management buy out
Banking and Insurance	22	-	1	-	-
Manufacturing	10	-	6	6	-
Petroleum marketing	3	-	-	-	-
Tourism/Hotels	-	4	-	-	-
Agriculture	-	-	-	2	1
Total	35	4	7	8	1

Source: Author's calculation.

Potential for sample selection bias

Concerns have recently been expressed about the sample selection in studies comparing pre- and post-privatization firm-level data. Critics have suggested that sample selection bias may arise from five basic sources identified in Chong and López-de-Silanes (2003). First, politicians who conduct privatization have the incentive to only sell the healthiest firms – "the crown jewels". According to this hypothesis, politicians only sell viable assets and keep poor performers, as investors engage in "cherry picking" (Bayliss, 2002). Second, several studies are based on information about firms privatized through public offers on the stock exchange. Such samples are thus biased towards the largest, and probably the best performing, firms. A third source of sample selection bias comes from the greater availability of data from industrialized countries, which may have relatively better performing firms. Cross-country firm-level analyses are therefore as biased as their samples. The fourth source emerges from the intense focus of the studies on oligopolistic or heavily regulated industries, where the gains from privatization may come from market power. Finally, a last source of concern in interpreting the positive results of privatized firms is survivorship bias. This bias is introduced when firms that went bankrupt after privatization are excluded from the sample that compares pre- and post-performance.

Overcoming sample selection bias is empirically difficult and requires large amounts

of pre- and post-privatization information for nearly complete cross-industry samples of privatized firms of all sizes. We are consoled by the fact that there is little evidence that the Nigerian government sold the "crown jewels".

Beck et al. (2005), in their study of bank privatization in Nigeria, demonstrated empirically that it was only weak firms that were privatized. Moreover, none of the firms in our sample is from oligopolistic or heavily regulated industries, where the gains from privatization may come from market power, and not all of them were privatized by public offers.

Technical efficiency

Data envelopment analysis (DEA) is used to assess changes in the level of technical efficiency in the selected enterprises. It was first introduced by Charnes et al. (1978) as a generalization of the Farrell efficiency frontiers within a linear programming framework (Farrell, 1957). It is a non-parametric method that allows efficiency to be measured a priori without specifying the analytical form of the production function required.[7] This feature has been identified as a major advantage of DEA over other forms of production or cost-efficiency measurement (Forsund et al., 1980). Usually, we define a frontier of the most efficient decision making unit (DMU) and then measure how far from the frontier are the less efficient units. When there is a single input and output, efficiency is measured as the ratio of output to input. DMUs will typically have multiple input and output. Efficiency is then measured as the ratio of the sum of weighted outputs to the sum of weighted inputs.

Charnes et al. (1978) proposed a model that assumed constant returns to scale. Subsequent models have considered alternative formulations allowing for variable returns to scale (Coelli, 1996). First we consider the constant returns to scale model. For each DMU we would like to obtain a measure of the ratio of all outputs over all inputs, such as $u'y_i / v'x_i$, where u is an Mx1 vector of output weights and v is a Kx1 vector of input weights. To select optimal weights we specify the mathematical programming problem:

$$\begin{aligned} &max_{u,v}\ (u'y_i / v'x_i) \\ &st \quad u'y_j / v'x_j \leq 1, \quad j = 1, 2, ..., N \\ &\ u, v \geq 0. \end{aligned} \tag{1}$$

This involves finding values for u and v, such that the efficiency measure of the ith DMU is ma)ximized, subject to the constraint that all efficiency measures must be less than or equal / to one. One problem with this particular ratio formulation is that it has an infinite number of solutions. To avoid this one can impose the constraint $v'x_i = 1$, which provides:

$$\begin{aligned} &max_{\mu,v}(\mu'y_i), \\ &st \quad v'x_i = 1, \\ &\mu'y_j - v'x_j \leq 0, \quad j = 1,2,...,N \\ &\mu, v \geq 0, \end{aligned} \tag{2}$$

where the notation change from u and v to μ and v reflects the transformation. This form is known as the multiplier form of the linear programming problem.

Applying the duality theorem in linear programming, one can derive an equivalent envelopment form of this problem:

$$\begin{aligned} &min_{\theta,\lambda}\theta, \\ &st \quad -y_i + Y\lambda \geq 0, \\ &\theta x_i - X\lambda \geq 0, \\ &\lambda \geq 0, \end{aligned} \tag{3}$$

where θ is a scalar and λ is a Nx1 vector of constants. This envelopment form involves fewer constraints than the multiplier form ($K+M<N+1$) , and hence is generally the preferred form to solve. The value of θ obtained will be the efficiency score for the ith DMU. It will satisfy $\vartheta \leq 1$, with a value of 1 indicating a point on the frontier and hence a technically efficient DMU, according to Farrell (1957) definition. However, the linear problem must be solved N times, once for each DMU in the sample. A value of θ is then obtained for each DMU.

The constant returns to scale (CRS) linear programming problem can be easily modified to account for variable returns to scale (VRS) by adding the convexity constraint: $N1'\lambda = 1$ to (3) to provide:

$$\begin{aligned} &min_{\theta,\lambda}\theta \\ &st \quad -y_i + Y\lambda \geq 0 \\ &\theta x_i - X\lambda \geq 0 \\ &N1'\lambda = 1 \\ &\lambda \geq 0 \end{aligned} \tag{4}$$

where $N1$ is an $Nx1$ vector of ones. This approach forms a convex hull of intersecting planes that envelope the data points more tightly than the CRS conical hull and thus provide technical efficiency scores that are greater than or equal to those obtained using the CRS model. The VRS specification has been the most commonly used specification in the 1990s. However, we will consider both cases.

Many studies have decomposed the technical efficiency (TE) scores obtained from a CRS DEA into two components, one due to scale inefficiency and the other to “pure” technical inefficiency. This may be done by conducting both a CRS and a VRS DEA upon the same data. If there is a difference in the two TE scores for a particular DMU, then this indicates that the DMU has scale inefficiency, and that the scale inefficiency can be calculated from the difference between the VRS TE score and the CRS TE score.

5. Firm histories and the privatization process

As mentioned earlier, this analysis involves three enterprises, the United Bank for Africa Limited (UBA), Ashaka Cement Company Limited and Unipetrol Nigeria Limited. These companies represent each of the major sectors of the Nigerian economy – industry, banking and petroleum marketing. Each one also presents a reasonable picture of substantial market share, significant government equity holding prior to privatization and sufficient post-divestiture history. The following sections review the privatization process related to these three firms.

The United Bank for Africa (UBA)

The United Bank for Africa (UBA) has its antecedents rooted in that of its precursor, the British and French Bank Limited. The British and French Bank Limited, itself, metamorphosed from Banque Nationale Pour le Commerce et l'Industries (BNCI), which was established in 1932. The initial arrangements for setting up the British and French Bank was done by Messrs E.G. Hungerbuhler and C.H. Baker in early 1949. By May 1949, the British and French Bank began operations in Lagos, Nigeria.

In 1960, the bank went public following the intention of the French owners of the bank to sell off some of their shares. The United Bank for Africa Limited was incorporated on 23 February 1961 by a consortium of five major international financial institutions to take over the assets and liabilities of the British and French Bank.

The founding banks were:

- The British and French Bank;
- Banca Nazionale del Lavoro of Italy;
- Monte dei Paschi di Siena of Italy;
- Bankers Trust of New York, USA; and
- Amsterdam Rotterdam Bank of Holland.

The bank commenced business on 1 October 1961. At inception, its paid-up capital was over ₦4 million. In 1973, the Nigerian government decided to acquire an equity share in the capital of major international banks in Nigeria. UBA was the first to conclude an agreement providing for the sale to the federal government of 1,705,000 shares, being 37.89% of the issued share capital. Over the years the bank experienced several changes in its capitalization, which led to an expansion in the government's percentage shareholding of the bank. By 1993, when the bank was about to be privatized, the government controlled 45.76% of the bank's shares (Table 6).

Table 6: Shareholding structure of UBA before and after privatization

Shareholders	Pre- privatization			Post-privatization		
	Capital (naira)	Shares of 50k each	% Holding	Capital (naira)	Shares of 50k each	% Holding
Ministry of Finance Incorporated	45,763,840	91,527,680	45.8	-	-	-
Nigerians	14,236,160	28,472,320	14.2	60,000,000	120,000,000	60.0
Banque Nationale de Paris	25,471,240	50,942,480	25.5	25,471,240	50,942,480	25.5
Bankers International Corporation, USA	4,500,000	9,000,000	4.5	4,500,000	9,000,000	4.5
Banca Nazionale del Lavoro	2,400,000	4,800,000	2.4	2,400,000	4,800,000	2.4
Monte dei Pasch di Siena, Italy	2,400,000	4,800,000	2.4	2,400,000	4,800,000	2.4
	100,000,000	200,000,000		100,000,000	200,000,000	

Source: Adapted from TCPC Final Report, Vol. II.

The bank is active in all spheres of commercial banking services including the operation of current deposit and savings accounts and the provision of short- and medium-term finance to industry and government.

Privatization of UBA

Bank privatization, like the overall privatization programme, has been very contentious in Nigeria. The antagonists to bank privatization argued that ownership of banks would provide access to rents from the foreign exchange allocation system analogous to the import licensing regime prior to the introduction of the structural adjustment programme in 1986. Indeed, they pointed out that this particular factor has been responsible for the rapid increase in number of banks in the country at a time when the economy is witnessing a recession. New entrants were known to record over 300% return on equity, largely as a result of the risk-free earnings arising from foreign exchange transactions. From 12 in 1960, the number of commercial banks operating in the country grew steadily to 29 in 1986 and peaked at 66 in 1992 (Table 7). Thereafter, owing to the liquidation over the years of 15 banks, the number declined to 51 at the end of 1988. Their branch network rose faster from 160 in 1960 to 2,402 in 1996 but declined to 2,107 in 1998. With regard to merchant banks, only one operated between 1960 and 1970. The period between 1970

and 1985 witnessed the addition of 11 more licensed merchant banks. In contrast to the slower rate of growth between 1960 and 1986, 42 new merchant banks were licensed between 1986 and 1991.

Table 7: Number of commercial and merchant banks in Nigeria

Year	Commercial banks	Merchant banks	Total
1960	12	1	13
1965	15	1	16
1970	14	1	15
1975	17	5	22
1980	20	6	26
1985	28	12	40
1986	29	12	41
1987	34	16	50
1988	42	24	66
1989	47	34	81
1990	58	49	107
1991	65	54	119
1992	66	54	120
1993	66	51	117
1994	65	51	116
1995	64	51	115
1996	64	51	115
1997	64	51	115
1998	51	38	89

Source: CBN Statistical Bulletin Annual Reports.

Proponents of bank privatization, on the other hand, based their argument on the phenomenal increase in the number of banks in the post-SAP era. Out of the nearly 130 licensed banks, fewer than 40 were government owned and the FGN was the largest shareholder in only ten of them. Furthermore, available statistics indicate that government banks were less efficient, more wasteful and less profitable, and a change in ownership would provide the necessary impetus for improved services. The interference of government through frequent changes in boards and management of banks has been a matter of serious concern to the public. Such changes were perceived by the public as attempts by the government to use the banking system for patronage, instead of allowing it to serve as an important economic institution where only the best personnel should be recruited at both board and management levels.

According to the TCPC Decree No. 25 of 1988, government was to maintain its shareholding in the 12 commercial and merchant banks in which it invested. In August 1992, the position was changed and all government owned banks were to be fully privatized through a presidential order or directive. Following this decision, TCPC had to examine the implications of the decision covering such issues as the absorptive capacity of the capital market, the timing of the exercise, etc. By the end of May 1993, of the 12 affected banks, 9 had been privatized. The total number of shares offered to the Nigerian public from the nine banks was 879 million worth ₦1,050 billion. This represented about 30% of total privatization proceeds.

UBA was privatized in 1993. It was the second to be undertaken by the TCPC in 1993 and the thirty-sixth in the privatization programme. The bank was privatized by public offer for sale of shares between 10 May and 14 June 1993. A total of 91,527,680 shares of 50k each, representing 45.76% of the fully paid-up share capital, was offered to the Nigerian public at ₦1.80 by the United Bank for Africa and Lead Merchant Bank on behalf of the TCPC and the Ministry of Finance Incorporated.

The privatization of UBA was not without problems, however. There were allegations of under-valuation of shares and insider trading, although this was stoutly defended by the TCPC. The bank privatization period also coincided with the initiation of several regulatory reforms in the Nigerian banking sector. In 1991, there was a comprehensive review of the legal framework for bank regulation and supervision. Two basic banking statutes, the Bank and Other Financial Institutions (BOFI No. 25 of 1991) Act and the Central Bank of Nigeria (CBN No. 24 of 1991) Act, were enacted to replace and repeal the 1969 Banking Act. Prior to the promulgation of these acts, a major problem plaguing the Nigeria financial system was the lack of an adequate legal framework for effective regulation and supervision of the banking system as well as the non-bank financial institutions. The repealed CBN Act of 1958 and the 1969 Banking Act were not only inadequate but were riddled with ambiguities. Apart from the requirements to build a vibrant financial system to ensure the success of SAP, one other factor that informed the promulgation of these acts was the resolve to address the problem of banking distress, which began in the late 1980s.

The BOFI Act No. 25 of 1991 (as amended) contains significant changes relative to previous banking laws. For example, and unlike the pre-1991 period, the CBN is the sole issuer of banking licences as well as licences for other non-bank financial institutions. Hitherto, the final authority was the presidency. In the same vein, the Governor of the CBN has final authority to vary or revoke conditions subject to which the licences are issued. The CBN can determine, solely, the minimum paid-up capital of all categories of banks. Furthermore, the act gives the CBN supervisory powers over all banks, whether licensed, development or special. Similarly, it has powers to regulate and supervise the activities of other financial institutions. The act vests the CBN with the power to deal with ailing banks as deemed fit. Finally, the act (as amended) imposes several severe sanctions on licensed banks that fall short of specific requirements. In the main, such penalties include monetary penalties as well as imprisonment terms ranging from one to ten years for individual officers, employees and directors of banks. The provisions relating to these penalties are intended to address the issue of recurrent violations of relevant banking laws and regulations.

Earlier, in 1988, a Deposit Insurance Scheme (DIS) was established through the Nigeria Deposit Insurance Corporation Act No. 22 of 1988. The essence of the establishment of the deposit insurance scheme was to provide a guarantee to depositors in case of imminent closure of any banking institutions. The initial provision of 1988 has undergone several amendments, but the basic functions still remain the same.

The Failed Banks (Recovery of Debts) and Financial Malpractices in Banks Act No. 18 of 1994, commonly referred to as the Failed Bank Act, also came into existence in 1994 following massive distress in the banking industry, and the severe difficulties

encountered by distressed banks in recovering their bad debts. The act has its focus on the recovery of debts owed to banks and the prosecution of those involved in financial malpractices in several distressed and non-distressed banks. It is on record that several bank officers and directors have been imprisoned through the various provisions of the act. Similarly, a quantum of hitherto unrecoverable debts has been recovered through the implementation of the act.

Corporate governance

Prior to privatization, the board of UBA comprised 17 directors, headed by Mr. Sunday Adewusi, a former Inspector General of Police. Other prominent members included Air Commodore Emeka Omeruah (rtd); Mr. Luke Okafor, managing director and chief executive; and seven expatriates representing the various public concerns. The reorganization programme embarked on by the board and the boardroom squabbles did not appear to be consistent with public policy considerations. In particular, some shareholders appeared to have arrogated to themselves powers and authorities not in any way commensurate with their shareholdings. Their actions appeared to lend credibility to allegations that UBA had been effectively hijacked by a few shareholders who were fronting for Ibrahim Babangida. Mr. Hakeem Belo-Osagie, a Harvard and Cambridge trained economist eventually emerged as the chair. Incidentally, he is the son of the physician to Ibrahim Babangida. Under him, however, the bank set out to enhance the efficient utilization of its resources with a view to increasing the returns to shareholders. A restructuring and repositioning exercise was embarked on in 1994. Arthur Anderson, a management consultant firm, was retained to carry out a diagnostic review of the bank's operations with a view to recommending measures that could be implemented to make the bank more competitive and efficient.

The changes effected under the exercise affected different aspects of the bank's operations, ranging from its balance sheet structure, earnings quality, growth and adequacy of its human resources and skills base, the quality of service delivery, and product development. The bank also employed top quality staff and modern technology.

Ashaka Cement Co. Plc

On attaining political independence in 1960, Nigeria's exports consisted largely of primary agricultural products; virtually all capital and consumer products were imported. The FGN set out to correct this distortion by manufacturing some imported products internally. By 1961, it was considered politically expedient for federal and regional governments to participate in the ownership of industrial enterprises, as aptly demonstrated in the evolution of the cement industry in Nigeria.

In 1962, the Northern Regional Government commissioned a German firm, Ferrostahl A.G., to establish an integrated cement plant in Sokoto; in 1964, the Eastern Regional Government commissioned a cement plant at Calabar; and in 1965, the Midwestern Region commissioned Continho Caro for the construction of a cement plant at Okpella. This pattern continued with the establishment of Ashaka Cement Company and Benue Cement Company, both in 1975. Thus, by 1978, there were seven cement manufacturing

companies in Nigeria, including the Onigbolo joint venture with Benin Republic[8] as shown in Table 8, which presents the profile of the industry by 1978.

Table 8: Profile of the Nigerian cement industry by 1978

Company (location)	Year established	Partner (nationality)	Major machinery supplier
Nkalagu (Anambra)	1954	F.L. Smidth (Danish)	F.L. Smidth
WAPCO: Ewekoro (Ogun)	1959	APCM (British)	Wickers-Armstrong Polysius
Sokoto (Sokoto)	1962	Ferrostahl A.G. (German)	MIAG
Okpella (Bendel)	1965	Continho Caro (Austrian)	Krupp/Polysius
Calabar (Cross River)	1964	Polysius (German)	MIAG
WAPCO: Shagamu (Ogun)	1975	APCM (British)	Assorted
Benue (Gboko)	1975	Cementia (Swiss)	Polysius
Ashaka (Bauchi)	1975	APCM (British)	Assorted
Onigbolo (Benin)[a]	1978	F.L. Smidth (Danish)	F.L. Smidth

Note: APCM = Associated Portland Cement Manufacturers (later known as Blue Circle Industries); WAPCO = West African Portland Cement.
[a] Joint venture with Benin Republic.
Source: Esubiyi, 1995.

The North-East region was anxious to develop a cement factory on the limestone deposit at Ashaka. It approached the Nigerian Investment Development Bank, in which the International Financial Corporation (IFC) was a shareholder, with a view to raising the funds. At the same time, the FGN arranged for the Nigerian Industrial Development Bank to carry out a preliminary feasibility study. This study indicated that a cement works in the Northern Region would be viable provided the government was prepared to undertake a considerable amount of infrastructure work in the area, especially roads and power supply. The Associated Portland Cement Manufacturers Limited (APCM) was already well established in Nigeria as a cement manufacturer through its investment at Ewekoro run by the West African Portland Cement Company (WAPCO). Several organizations, including APCM, were asked to produce detailed proposals for erecting a factory. First-stage reports were prepared and APCM was then asked to produce a full proposal with the intention that the company would subsequently join Nigerian investors and the IFC to build and commission a factory.

In June 1973, John Milne and APCM Technical Director Dr. Gordon Marshall visited Nigeria to make further investigations on the feasibility of WAPCO erecting a second cement plant in the Western Region and another one at Ashaka. They met the Nigerian Industrial Development Bank (NIDB), acting also as the representative for the North-Eastern State Government, and visited the proposed site. An agreement was reached in principle for ACPM to act as the technical manager with a shareholding of not less than 30%. Other potential shareholders identified included the Federal Government, 20%; the North-Eastern State Government, 30%; NIDB, 10%; and International Finance Corporation (IFC), 10%. In April 1974, representatives of all the shareholders in the project attended a two-day meeting in Lagos and the total project cost was agreed at ₦75 million.

The operating company, to be known as Ashaka Cement, would establish a works in Ashaka that would go into production towards the end of 1977. Two kilns each with a

rated capacity of 300,000 tonnes per annum were to be installed from the outset. Ashaka Cement and WAPCO would operate independently, but with technical support and management from the overseas investment services of the Blue Circle Group. Steady progress was being made through 1974 and virtually everything was in place for the Ashaka project to proceed at full speed. However, the worldwide inflation in 1973–1975 raised the costs of all projects dramatically and by April 1975 it was clear that building the factory at Ashaka was going to cost far more than envisaged. By the end of 1977, it was clear that production would not commence in October 1978 as envisaged because of financial problems and the remoteness of Ashaka.

In preparation for production, APCM – or Blue Circle as the company was renamed in 1978 – replaced David Tolson with Colin Roots as managing director. Roots was very experienced, having been a manager at several UK cement works before becoming deputy manager for the Northern Area and then technical coordinator for Blue Circle's interests in the Western Hemisphere comprising Canada, Mexico, Brazil, Spain, South Africa and Nigeria.

Ashaka Cement Works was officially commissioned on Thursday, 19 July 1979, by the Chief of Staff of Supreme Headquarters, Major General Shehu Musa Yar'Adua, amidst great fanfare. Also present were senior delegates from the federal and state governments as well as representatives from private industry, financial institutions and the company's technical partners. The main business of the company is cement manufacture. It is the second largest cement company in Nigeria after WAPCO. Its share of total cement market has risen from 14.1% in 1984 to 17.9% in 1987 and 36% in 1998.

Privatization of Ashaka Cement

Ashaka Cement was partially privatized in 1990 through a public offer for sale. A total of 32.5 million ordinary shares of 50 kobo each of Ashaka Cement Company Plc (Ashakacem) were offered for sale to the Nigerian public at a price of ₦1.20 per share with a total market capitalization of ₦39 million. The offer ran from 5 March to 30 March 1990.

A total of 37,184 applications for 50,854,852 ordinary shares was received in respect of the offer. Of these, 37,101 applications for 50,498,400 ordinary shares were found to be valid and accepted, while 83 invalid applications for 356,452 ordinary shares were rejected. In all, Ashaka issued 32.5 million shares to the general public throughout Nigeria representing 21% of the company's equity. The offer, on the back of a further sharp rise in profits in 1989 from ₦53 million to ₦103 million, was well received and 50% oversubscribed. In line with the objectives laid out in the original privatization decree, the shares were allocated over a wide spread and Ashaka Cement acquired 37,500 new shareholders. Ten per cent of the issue was reserved for staff, over 80% of whom applied for and received shares. As the shares rose sharply, everyone was delighted, especially as they received a dividend almost immediately. It was an extremely successful exercise.

By reducing the reliance of public enterprises on the government for finance, the programme of privatization has encouraged new investment in the enterprises concerned. The cold hands of Treasury Control have been replaced by the warm hands of the Capital

Table 9: Allotment of shares for Ashaka Plc.

	Total No. of shares applied for	Total No. of shares allotted	%
Individuals	26,615,300	21,584,600	66.4
Corporate bodies	3,958,750	1,166,300	3.6
State institutions	5,812,500	5,537,500	17.0
Special interest groups	11,305,300	1,405,050	4.4
Ashaka Cement staff	2,806,550	2,806,550	8.6
Total	50,498,400	32,500,500	

Source: Adapted from TCPC Final Report, Vol. II.

Market, which are as stimulating as they are invisible. For example, within the cement sector, Ashakacem has been able to raise fresh funds to the tune of ₦90 million to finance their plant optimization programmes.

Corporate governance

Since inception, a board of 12 directors, nine of them Nigerians, has determined the general policy of the company. While welcoming the privatization plan in general terms, the then managing director, Grema Mustafa, noted after a company board meeting in July 1989 that the financial advisers (Nigerian Merchant Bank Ltd., appointed by TCPC) were extensively briefed on the importance of maintaining the balance of control, which has proved a source of strength to the company. A proposal put forward to the committee that met the aspirations of wider share ownership and preserving in principle the original partnership of the founding shareholders was accepted.

Grema Mustafa, the company's first Nigerian managing director, had been an exceptional manager and administrator combining efficiency, administrative ability and diplomatic skill. He had provided a highly effective link between the shareholders and the employees. In many ways he was a practical representation of the harmonious partnership between Nigeria and Blue Circle. The company was devastated by his death on 21 May 1991, after which the long-serving financial controller and Mustafa's deputy managing director, Mike Parsey, took over temporarily as managing director before transferring to WAPCO as deputy managing director. He was replaced by Mike Casey, who had served Blue Circle for over 35 years in many capacities, most notably as the manager in Northern Ireland and as managing director of the Indonesian company in which Blue Circle Industries has an interest.

On Blue Circle's recommendation, the board eventually appointed Alhaji Muhammad Daggash as managing director. In the meantime, Ashaka Cement has continued to maintain its record as Africa's most efficient producer of cement.

Unipetrol Nigeria

The Nigerian economy is largely dependent on its oil sector accounts for over 95% of its foreign exchange earnings. Nigeria's downstream oil industry comprises four refineries with a nameplate capacity of 445,000 billion barrels per day (bbl/d), eight oil companies and about 750 independents all active in marketing petroleum products. Problems such as fire, sabotage, poor management, lack of turn-around maintenance

and corruption have meant that the refineries often operate at less than 40% of full capacity. This has resulted in shortages of refined products and dependence on imports to meet domestic demand. Cross-border smuggling is an ongoing problem and there are frequent reports of large-scale corruption in the distribution and marketing chain. The major marketers include foreign-owned companies such as Mobil Oil, Texaco and Total, as well as two Nigerian companies, African Petroleum and Unipetrol. The foreign-owned companies currently control about 65% of the fuels business. The independent marketers are mainly Nigerian companies.

Until 1960, government participation in the oil industry was limited to the regulation and administration of fiscal policies. In 1971, Nigeria joined the Organization of Petroleum Exporting Countries (OPEC) and in line with OPEC resolutions, the Nigerian National Oil Corporation (NNOC) was established, later becoming NNPC in 1977. The government through its 100% state-owned national oil company, Nigerian National Petroleum Corporation (NNPC), has had an all-encompassing control over the industry through its shareholding in all the companies involved and in the setting of wholesale and retail prices. This giant parastatal, with all its subsidiary companies, controls and dominates all sectors of the oil industry, both upstream and downstream. The Ministry of Petroleum Resources regulates the petroleum industry in Nigeria. The government retains close control over the industry and the activities of the NNPC and marketing companies, whose senior executives are appointed by the ruling government.

Unipetrol Nigeria commenced business operations in 1956 as a petroleum marketing company in Nigeria under the name Esso West Africa Incorporated, a subsidiary of Exxon Corporation of the USA. It was incorporated under Nigerian Laws as Esso Standard Nigeria Limited in 1969. In 1976, the Nigerian Government bought Esso's interest and thus owned the company wholly as part of the indigenization programme. The company was then rebranded as Unipetrol Nigeria Limited And has since existed as the only government-owned oil marketing company.

Unipetrol is the fourth largest petroleum marketing company in Nigeria. Its major areas of operation include marketing of petroleum products, blending of lubrication oils, bunkering of ocean vessels and export of bitumen. It has the highest number of retail outlets in Nigeria. Apart from operating in all states of the federation, it has a lubricant blending plant in Kaduna and gas filling stations in Kaduna, Kano, Warri and Lagos. It also holds a 40% equity in Unipetrol Ghana and 20% interest in West African Refinery Company, Sierra Leone. Unipetrol also invested in Stallion properties, IMB securities and UNITAB Nigeria Limited with equity participation of 49%, 39% and 51%, respectively.

Privatization of Unipetrol

Unipetrol was privatized by public offer through the Nigerian Stock Exchange in 1991. A total of 48 million ordinary shares of 50 kobo each, representing 60% of the shares of the company, were offered to Nigerian public at a price of ₦2.00 per 50 kobo share. The application list opened throughout the country on Monday, 27 May 1991 and closed on Friday, 21 June 1991. A total of 94,578 applications for 59,999,178 ordinary shares was received, making the offer 1.25 times oversubscribed. Of these, 93,020 applications for 59,363,156 ordinary shares were found to be valid and therefore accepted, while 1,558

applications for 636,022 ordinary shares were found to be invalid and rejected. The allotment is presented in Table 10.

Table 10: Shares allotment for Unipetrol

	Total no. of applications	Shares applied	Shares allotted	%
Individuals	92,022	40,905,056	35,766,506	74.5
Corporate bodies	289	4,974,050	1,810,914	3.9
State institutions	12	3,030,000	3,010,000	6.3
Regional institutions	2	740,000	480,000	1.0
Special interest groups	108	4,913,950	2,893,950	6.0
Staff of Unipetrol	588	4,800,000	4,038,630	8.4
Total	92,913	59,363,056	48,000,000	

Source: Adapted from TCPC Final Report, Vol. II.

In 2000, under the second phase of Nigeria's privatization programme, Ocean & Oil Services Limited acquired 30% of the FGN's remaining 40% equity stake in Unipetrol Nigeria Plc. The balance of 10% was sold to the Nigerian public. The investment in Unipetrol Nigeria Plc by Ocean & Oil Services Limited was with the support of its international technical partners, Compania Espanola De Petroleos (CEPSA), which is currently the second largest oil group in Spain and ranks among the top ten oil groups in Europe. CEPSA is a fully integrated petroleum company involved in exploration and production, petrochemicals, natural gas, trading, refining, distribution and marketing.

In August 2002, Unipetrol Nigeria Plc acquired Agip Petroli's 60% stake in Agip Nigeria Plc. The sale of the 60% interest of Agip Petroli International was the result of an international bid conducted by Agip Petroli International BV with the assistance of an international adviser during which Agip Petroli International selected Unipetrol Nigeria Plc.

Corporate governance

Prior to privatization, the general policy of the company was determined by a board of seven directors headed by Dr. P.J. Amenechi, a chemist and a fellow of the Royal Institute of Chemistry; Alhaji Yesuf Ali, managing director; and Prof. Eno Inanga; among others. After privatization, the composition of the new board of directors represented the new shareholding structure of the company. Chief Odoliyi Lolomani became the chair assisted by ten other directors. The board was reconstituted in February 2000, however, following full privatization.

6. Empirical results

In this section, we present and discuss the empirical results using unadjusted performance measures for the sample of three privatized firms. The measures include those for profitability, operating efficiency, capital investment, output and employment. Others are leverage and dividends. The basic results are presented in tables 11–13.

Profitability indicators

One of the major problems of state-owned enterprises is the lack of proper economic incentives for the management and the fact that they are often charged with objectives like maximization of employment or providing goods or services at heavily subsidized prices so that the goal of profit maximization cannot be achieved. As a consequence, state-owned enterprises are often unprofitable. A change to a more private ownership structure leads to profit maximization, which becomes the dominant firm objective. Hence, we expect the profitability to increase after privatization. To measure profitability, three indicators are computed. These are return on sales (net income to sales), return on assets (the ratio of net income divided by total assets) and return on equity (profit attributable to ordinary shareholder expressed as a percentage of average equity).

Our results show significant improvements in profitability after divestiture in two of the three firms (Table 11). For example, the mean (median) return on sales goes from 2.6% (2.4%) before privatization to 9.17% (9.34%) at Unipetrol. Many of the variables are significant.

Table 11: Performance indicators: Profitability

	Mean value before privatization	Mean value after privatization	Mean change due to privatization	+ test statistic for significance of change	Wilcoxon Z statistic for change in median
Profitability/UBA Plc					
Return on assets (before taxation)	1.3900 (1.1000)	27.0140 (3.0800)	25.6240	1.062	2.023**
Return on assets (after taxation)	0.6300 (0.6500)	20.2950 (1.2200)	19.6620	1.033	1.483*

Continued

Table 11, continued

	Mean value before privatization	Mean value after privatization	Mean change due to privatization	+ test statistic for significance of change	Wilcoxon Z statistic for change in median
Profitability/UBA Plc					
Return on equity (before taxation)	7.8580 (3.7600)	20.8160 (19.9400)	12.9500	2.432***	2.023**
Return on equity (after taxation)	5.4700 (2.1200)	9.3420 (5.3500)	3.8600	0.927	0.674
Profitability/Ashaka Cement					
Return on sales (before taxation)	22.4260 (22.3300)	28.9120 (30.5800)	6.4860	1.585*	1.214
Return on sales (after taxation)	16.050 (16.1400)	16.1240 20.0700	0.079	0.020	.0.674
Return on assets (before taxation)	17.4640 (19.0200)	29.5520 (28.0100)	12.0880	3.739***	2.023**
Return on assets (after taxation)	12.1560 (14.1700)	15.4160 (17.8700)	3.2600	0.0809	0.944
Return on equity (before taxation)	83.7320 (94.5900)	320.6260 (258.6300)	326.8940	4.9690***	2.023**
Return on equity (after taxation)	57.9660 (71.8600)	153.3360 148.9500)	95.3700	3.204***	1.753*
Profitability/Unipetrol					
Return on sales (before taxation)	2.5870 (2.4000)	9.1700 (9.3400)	6.5990	5.932***	2.023**
Return on sales (after taxation	2.0260 (1.7100)	6.9220 (7.1600)	4.8960	5.035***	2.032**
Return on assets (before taxation)	9.8500 (5.9900)	64.7340 (58.1000)	54.8840	4.610***	2.023**
Return on assets (after taxation)	7.6400 (4.1700)	48.2000 (46.3100)	40.5600	4.779***	2.023**
Return on equity (before taxation)	22.9440 (9.400)	612.1340 (300.9000)	589.1900	2.343***	2.023**
Return on equity (after taxation)	17.3660 (6.5300)	414.2000 (239.8300)	386.8340	1.933*	2.023**

***, **, * Significance at 1, 5 and 10%, respectively.
Source: Author's Computation.

Operating Efficiency

Flowing from the property rights and public choice literature, privatization is expected to result in increased efficiency in privatized enterprises as a result of new investment, new technology and improved corporate governance. To capture the ability of firms to extract maximum output from any given level of inputs, we compute two indicators of operating efficiency: sales efficiency (real sales/employees) and net income efficiency (net income/employees) both before and after tax. All the firms witnessed an upsurge in the two indicators. The results are also significant at the 1% and 5% levels. To measure operating efficiency in United Bank for Africa, however, we utilized net earnings per employee. The mean and median changes are very significant at 1% level (see Table 12).

Table 12: Performance Indicators: Operating efficiency, capital investment and output

	Mean value before privatization	Mean value after privatization	Mean change due to privatization	T-test statistic for significance of change	Wilcoxon Z statistic for change in median
Operating efficiency/UBA					
Log of net earnings per employee	5.0540 (5.0128)	5.9474 (5.8993)	0.8932	26.406***	2.023**
Operating efficiency/Ashaka Cement					
Sales efficiency	0.3540 (0.0000)	0.9966 (1.0000)	0.620	2.58***	2.023**
Net income efficiency (before tax)	0.1760 (0.0000)	(0.6200)	0.6340 0.4500	2.648***	1.753*
Net income efficiency (after tax)	0.2820 (0.0000)	(1.000)	0.7800 0.4980	1.487	1.461
Operating efficiency/Unipetrol					
Sales efficiency	0.3560 (0.0100)	1.5820 (1.1500)	1.2260	12.293***	2.023**
Net income efficiency (before tax)	0.02200 (0.0001)	0.6660 (0.6000)	0.6440	6.224***	2.023**
Net income efficiency (after tax)	0.0860 (0.0001)	1.2140 (1.0000)	1.1280	6.266***	2.023**
Capital investment/UBA					
Capital expenditure to sales	-	-	-	-	-
Capital expenditure to total assets	2.2740 (2.4600)	26.7140 (7.7200)	24.4400	1.229	2.023**

Continued

Table 12, continued

	Mean value before privatization	Mean value after privatization	Mean change due to privatization	+ test statistic for significance of change	Wilcoxon Z statistic for change in median
Capital investment/Ashaka Cement					
Capital expenditure to sales	2.5580 (1.9800)	6.1940 (5.6000)	3.6360	2.741***	1.753*
Capital expenditure to total assets	1.7800 (1.7400)	6.6880 (5.7300)	4.8000	3.221***	2.023**
Capital investment/Unipetrol					
Capital expenditure to sales	7.1600 (5.9800)	2.8980 (1.9800)	-4.2620	3.972***	2.023**
Capital expenditure to total assets	28.2640 (19.8500)	24.3000 (7.720)	-3.9640	1.140	0.674
Output/UBA					
Real sales	-	-	-	-	-
Output/Ashaka Cement					
Real sales	0.3180 (0.0100)	1.780 (1.0900)	0.7600	3.681***	2.023**
Output/Unipetrol					
Real sales	0.3920 (0.0100)	1.5380 (1.1200)	1.1460	6.514***	2.023**

***, **, * Significance at 1, 5 and 10%, respectively.
Source: Author's computation.

Capital investment

Greater emphasis on efficiency is anticipated to lead newly privatized firms to increase their capital investment spending. Once privatized, firms should increase their capital expenditures since they have access to private debt and equity markets (Boubakri and Cosset, 1998). To assess the impact of privatization on capital formation, we compute two indicators: capital expenditure to sales and capital expenditure to total assets. The results are mixed. Ashaka Cement and UBA experienced an upsurge in post-divestiture investment spending, while Unipetrol witnessed a decline (Table 12).

Output

Privatization when correctly conceived should foster efficiency, stimulate investment and yield a corresponding increase in output. Our proxy for output is real sales. The results confirm such theoretical predictions. All the firms experienced marginal boosts in real sales following privatization. The mean change in real sales attributable to

privatization are 0.76% for Ashaka and 1.15% for Unipetrol. All the results are also significant at 1%. The observed increase in output might be a reflection of increased productivity of the affected firms. (Refer to Table 12.)

Employment

According to the literature, the effect of privatization on employment is ambiguous. Some researchers (MNR, 1994; Boubakri and Cosset, 1998) reported an increase in employment after privatization while other authors (La Porta and López-De-Silanes, 1999) found a significant decline in the number of employees after privatization,

The evidence shows that overall, employment losses have been significant in UBA and Unipetrol, while Ashaka in fact recorded large increases in employment after privatization (Table 13). This may be attributable to most SOEs tending to be overstaffed prior to privatization. Consequently, in order to increase efficiency, extensive layoffs usually accompany government divestiture.

Table 13: Performance indicators: Employment, leverage and dividends

	Mean value before privatization	Mean value after privatization	Mean change due to privatization	+ test statistic for significance of change	Wilcoxon Z statistic for change in median
Employment/UBA					
Total employment	8223 (8156)	6480 (7713)	-1743	-2.170**	2.023**
Employment/Ashaka Cement					
Total employment	1424 (1424)	1730 (1807)	306.6000	5.429***	2.023**
Employment Unipetrol					
Total employment	663.2000 (663.0000)	584.4000 (596.000)	-77.8000	6.707***	2.023**
Leverage / UBA					
Debt to assets	94.8300 (115.3400)	203.8940 (127.1100)	109.0640	1.357	1.753*
Long-term debt to equity	664.6620 (721.9500)	271.3800 (217.04)	-393.2820	-6.865***	2.023**
Leverage / Ashaka Cement					
Debt to assets	52.1160 (52.3400)	54.7420 (52.3400)	2.6260	0.494	0.4050*
Long-term debit to equity	75.0600 (68.9100)	44.6440 (41.9100)	-31.4160	2.717***	1.753*

Continued

Table 13, continued

	Mean value before privatization	Mean value after privatization	Mean change due to privatization	+ test statistic for significance of change	Wilcoxon Z statistic for change in median
Leverage / Unipetrol					
Debt to assets	109.3820 (85.7500)	22.7160 (24.0900)	-86.6660	-1.648*	1.483
Long-term debt to equity	48.5060 (20.1100)	203.5500 (120.0000)	155.0440	1.842*	1.753**
Dividends / UBA					
Cash dividends to sales	1.2940 (0.4200)	3.1040 (2.7600)	1.8100	2.653***	2.023
Dividends payout (before taxation)	21.7000 (10.8700)	41.4900 (20.3800)	19.7900	0.903	0.944*
Dividends payout (after taxation)	10.9880 (15.0700)	21.8060 (21.0900)	9.7846	2.472***	1.753***
Dividends / Ashaka Cement					
Cash dividends to sales	7.3940 (6.7400)	5.1060 (4.7900)	-2.2880	6.0040***	2.023**
Dividends payout (before taxation)	35.2820 (30.1700)	17.5600 (19.7600)	-17.7220	3.640***	2.023**
Dividends payout (after taxation)	46.6180 (39.7200)	41.7040 (30.6600)	-4.9140	0.318	0.6740
Dividends / Unipetrol					
Cash dividends to sales	0.1440 (0.0000)	2.7420 (2.7900)	2.5980	12.805***	2.023**
Dividends payout (before taxation)	5.1880 (0.0000)	30.0360 (29.2300)	24.8480	4.452***	2.023**
Dividends payout (after taxation)	7.4240 (0.000)	0.1200 (41.63.00)	32.6960	3.814***	1.753*

***, **, * Significance at 1, 5 and 10%, respectively.
Source: Author's computation.

Two competing ideas have emerged on who should be responsible for downsizing. The early school of thought holds that where large-scale labour shedding is required, it is best handled by the state (Nellis and Kikeri, 1989). Any change in employment should thus occur prior to rather than after privatization. Private investors may demand protection and subsidies in exchange for taking on excess labour, reducing the efficiency gains from privatization. Further, because of the sensitivities in shedding employees, large-scale layoffs are best handled by the state prior to sale. According to the second school

of thought (Kikeri et al., 1992; La Porta and López-de-Silanes, 1997), the decision to retain or dismiss labour should be left to the new private investors. They, presumably, will be in a better position to judge what kinds of skills the firm needs, and they have the incentive to minimize severance costs. The empirical evidence in La Porta and López-de-Silanes (1997) strongly supports this view.

Leverage

SOEs, particularly in developing countries, are typically encumbered by large debts, causing many to have negative net worth. Private buyers often make it clear that they do not want to take on these debts, even when the sale price is discounted by the amount of the debt. They seek an immediate positive cash flow to reduce their risk and help finance new investment. Debt write-downs are thus not uncommon practices for divesting governments the world over.

MNR (1994) and Boubakri and Cosset (1998) show that leverage decreases significantly after privatization, a result that is partly due to debt write-downs and partly to infusions of equity capital into those firms executing primary offerings, but mostly a result of higher (retained) profitability.

A priori, the shift from public to private ownership should lead to a decrease in leverage because the government's removal of debt guarantee will increase the cost of borrowing. This expectation holds sway only for Unipetrol, with a mean change of -86.66%. Contrary to expectations, the post divestiture ratio of debt to assets recorded marked increases in UBA and Ashaka. The t-test for significant of change and the z-test for median change for long-term debt to equity are all significant while those of debts to assets show mixed results. (Refer to Table 13.)

Dividends

Dividend payments should increase following privatization, since unlike government, private investors demand dividends. Our proxies for dividend are the dividend to sales ratio and dividend payout ratio (dividend payments divided by net income) computed both before and after tax. In two of the three firms, dividend payments increased remarkably after divestiture (Table 13). The t and Z tests for the three firms are very significant. All the indicators, however, recorded a decline at Ashaka Cement. The t and z tests for dividends payout after tax are insignificant.

7. Technical efficiency

As for other performance indicators, a longitudinal analysis was adopted to assess changes in technical efficiency associated with privatization. The first stage in the implementation of the DEA is an identification of all outputs and inputs in each firm. Ideally, all data should be in physical units so as to avoid allocative efficiency considerations (Boussofiane et al., 1995). The choice of inputs and outputs has been guided by the literature. For UBA, the choice of inputs and outputs was less problematic as a lot of studies have been conducted on banking sector efficiency (Yue, 1992). We have selected two outputs, earning assets and total interest income, and four inputs, number of full time employees, salary expenses, value of fixed assets and other non-interest expenses. The output for Ashaka Cement is cement per tonne and turnover deflated by the consumer price index. The inputs for Unipetrol and Ashaka Cement, following Martin and Parker (1997), are employee hours, capital and materials. Since it is impracticable and problematic to obtain data on quantities for all categories of materials, the procedure to calculate materials follows Oniki et al. (1994), Boussofiane et al. (1995), and Mautino (1999). Basically, they all define materials as the operating costs that are not labour or capital costs deflated by the consumer price index. Fixed asset was employed as a measure of physical capital stock. Ideally, it would have been better to use volume measures of capital like land and building in square metres, number of vehicles, etc., but such information is unavailable. Thus, the value of capital components was computed using the perpetual inventory method as developed by Christensen and Jorgenson (1969), although bearing in mind the limitation of the method.

These outputs and inputs are used within the context of the DEA model framework to obtain the relative efficiency of the firms. Usually, the results assume a value between zero and one, the higher the value the greater the efficiency. A value of one indicates that the firm is technically efficient.

The models were solved using the DEA version 2.0 software developed by Tim Coelli of the Centre for Efficiency and Productivity Analysis, University of New England, Australia. The scores of technical efficiency are presented in Table 14. The technical efficiency scores are presented for both the constant returns to scale (CRS) and the variable returns to scale (VRS) DEA. Efficiency assessment was undertaken initially assuming constant returns to scale. The CRS results show that efficiency increased from 0.789 in the pre-privatization period to 0.967 in the post-privatization period in UBA, 0.220 to 0.733 in Unipetrol and 0.479 to 0.898 at Ashaka Cement. These results indicate a substantial improvement in technical efficiency as a result of privatization.

However, a CRS frontier assumes that proportionate input increase (reduction) will be followed by equi-proportionate output increase (reduction). The CRS assumption is only appropriate when all DMUs are operating at an optimal scale. Several constraints, such as imperfect competition, lack of finance, etc., may cause a DMU not to operate at

optimal scale. Thus, Charnes et al. (1978) suggested an extension of the CRS DEA model to account for VRS situations. This approach forms a convex hill of intersecting planes that envelope the data points more tightly than the CRS conical hill, and this provides technical efficiency scores that are greater than or equal to those obtained using the CRS model (Coelli, 1996).

The model was re-estimated assuming variable returns to scale. The results of the VRS specification are also presented in Table 14. Comparing both results, it is evident that the efficiency ratings have increased, but the overall pattern of results is unaffected. As indicated in the table, the efficiency scores are higher, increasing from 0.953 in the pre-privatization era to 0.988 for UBA and 0.349 to 0.739 for Unipetrol. The results are consistent with the findings of Mautino (1999) for the Argentine telecommunications sector.

The technical efficiency scores obtained from a CRS DEA can also be decomposed into two components, one due to scale efficiency and the other due to "pure" technical efficiency. A difference in the two technical efficiency scores for a particular DMU indicates that the DMU has scale inefficiency and this can be calculated from the difference between the VRS technical efficiency score and the CRS technical efficiency score. Scale efficiency is equal to the ratio of the CRS technical efficiency to the VRS technical efficiency. The scale efficiency results are also presented in Table 14.

Table 14: DEA efficiency summary for the privatized firms

UBA	Crste	Vrste	Scale	Ashaka Cement	Crste	Vrste	Scale
1988/89	0.620	0.938	0.661	1985	1.000	1.000	1.000
1989/90	0.956	0.992	0.965	1986	0.664	0.932	0.712
1990/91	0.838	0.928	0.903	1987	0.443	0.917	0.483
1991/92	0.530	0.908	0.583	1988	0.030	0.663	0.045
1992/93	1.000	1.000	1.000	1989	0.257	0.978	0.263
1993/94	0.883	0.955	0.924	1990	0.394	1.000	0.394
1994/95	0.993	1.000	0.993	1991	0.885	0.886	0.998
1995/96	1.000	1.000	1.000	1992	0.915	0.917	0.998
1996/97	0.926	0.941	0.985	1993	0.854	0.933	0.916
1997/98	0.917	1.000	0.917	1994	0.881	1.000	0.881
1998/99	1.000	1.000	1.000	1995	0.953	1.000	0.953
Mean	0.878	0.969	0.903	Mean	0.661	0.930	0.695
Mean (pre-privatization)	0.789	0.953	0.822	Mean (pre-privatization)	0.479	0.898	0.501
Mean (post-privatization)	0.967	0.988	0.979	Mean (post-privatization)	0.898	0.947	0.949

Unipetrol	Crste	Vrste	Scale
1986	0.126	0.133	0.951
1987	0.433	1.000	0.433
1988	0.131	0.143	0.920
1989	0.145	0.166	0.871
1990	0.265	0.305	0.869
1991	0.405	0.418	0.970
1992	0.474	0.488	0.971
1993	1.000	1.000	1.000
1994	1.000	1.000	1.000
1995	1.000	1.000	1.000
1996	0.193	0.205	0.941
Mean	0.470	0.533	0.902
Mean (pre-privatization)	0.220	0.349	0.809
Mean (post-privatization)	0.733	0.739	0.982

Note: Crste = technical efficiency from CRS DEA; Vrste = technical efficiency from VRS DEA; Scale = efficiency = crste/vrste

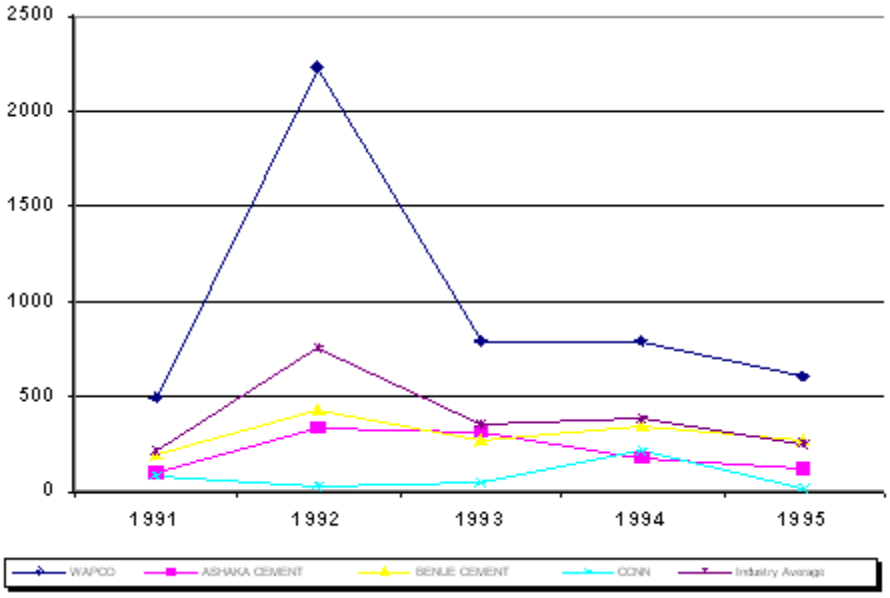
8. The counterfactual

To handle the counterfactual scenario of what would have happened in the absence of privatization, we compare the performance of the three firms with that of a "control group" comprising the industry average. For UBA, the indicators presented are pre-tax return on average assets and returns on average equity. The industry average[9] is calculated from a total of 65 banks, comprising 37 commercial banks and 28 merchant banks. The indicators for Unipetrol and Ashaka Cement are capital expenditure, real sales growth, dividend declared and pre-tax return on average equity.

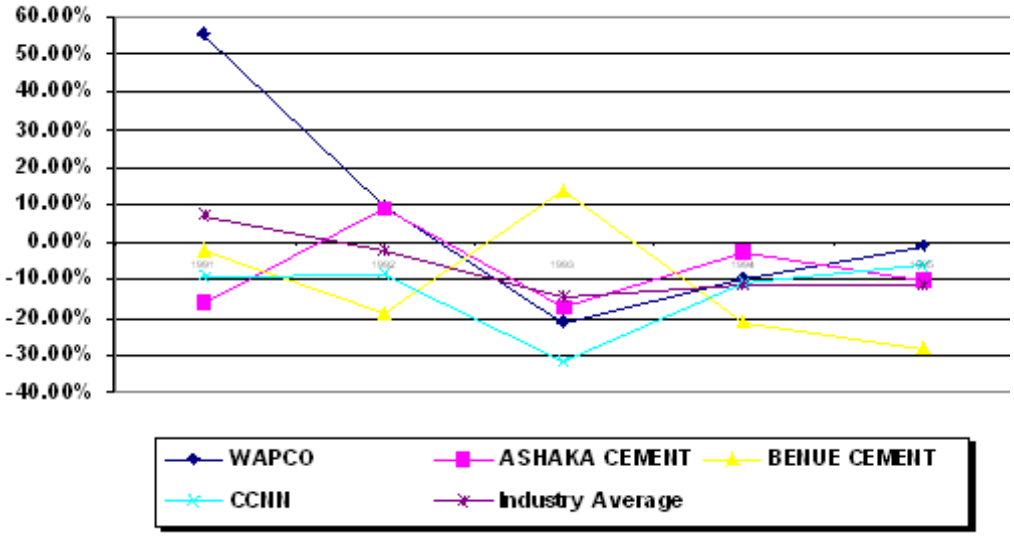
The comparisons are presented in figures 1–3. A cursory examination of the figures reveals that UBA performed poorly compared to the industry average on all counts. The same holds when we partition the banks into merchant and commercial banks. Thus, we can infer that while privatization led to overall improvement in the profitability of UBA, its performance is still below the industry average. Ashaka Cement and Unipetrol on the other hand follows a similar trend with the industry average. Thus we can infer that exogenous forces have not influenced privatization outcome significantly.

Figure 1: Comparison of Ashaka Cement perfomance with industry average

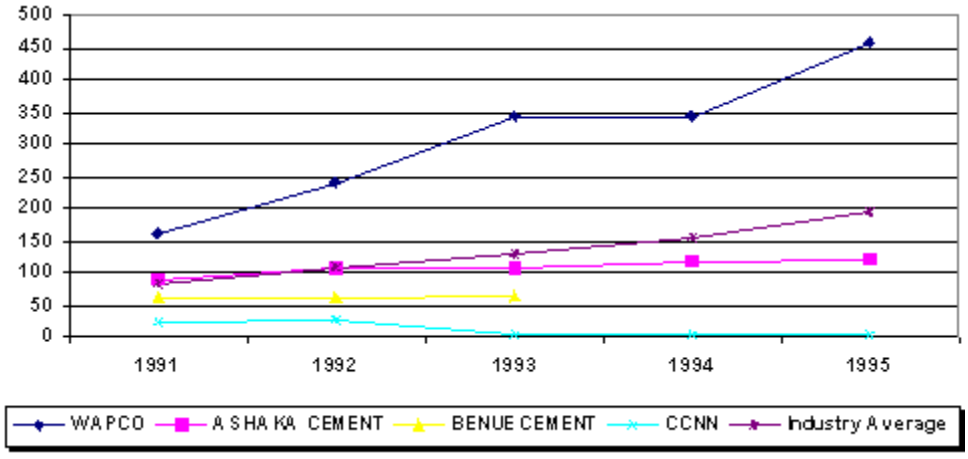
a) Capital expenditure



b) Real sales growth



c) Dividend declared



d) Pre-tax return on average equity

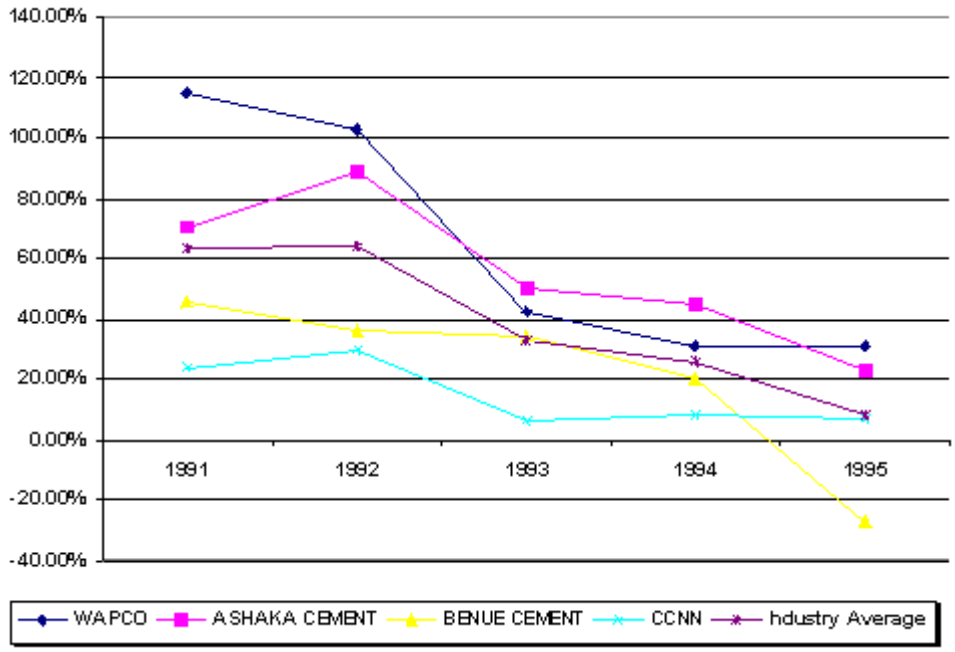
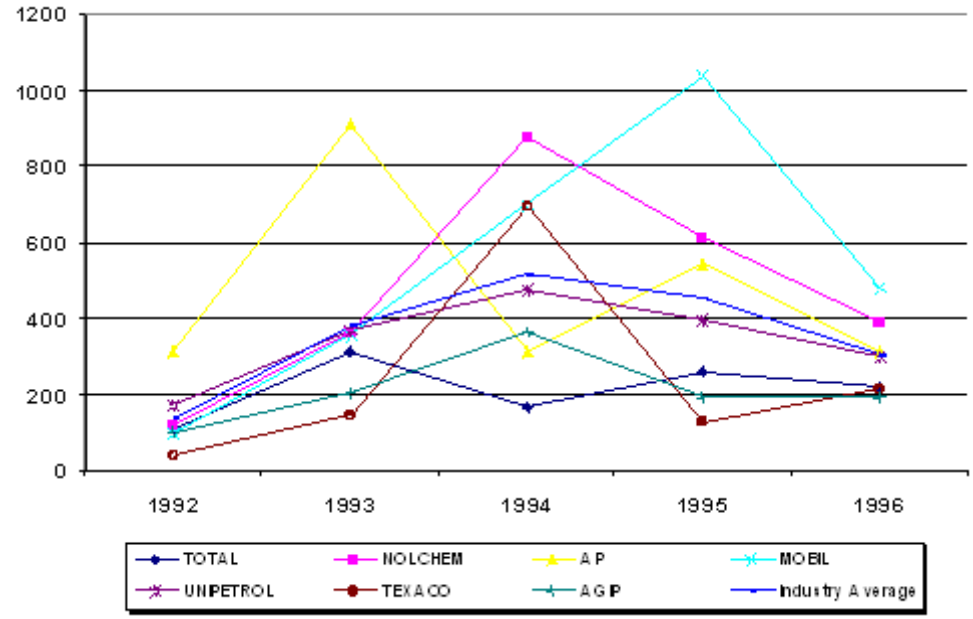
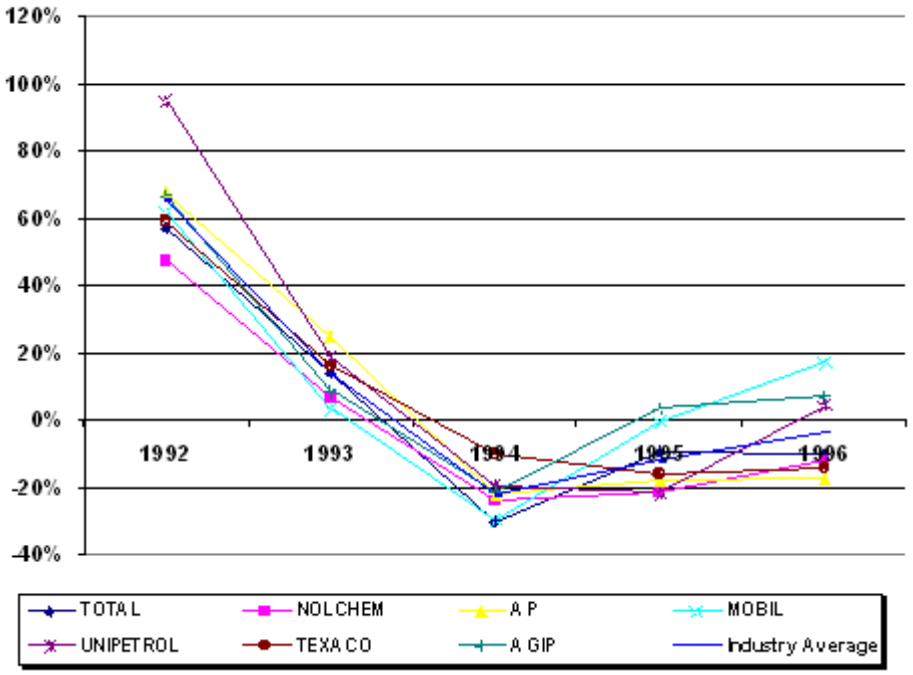


Figure 2: Comparison of Unipetrol perfomance with industry average

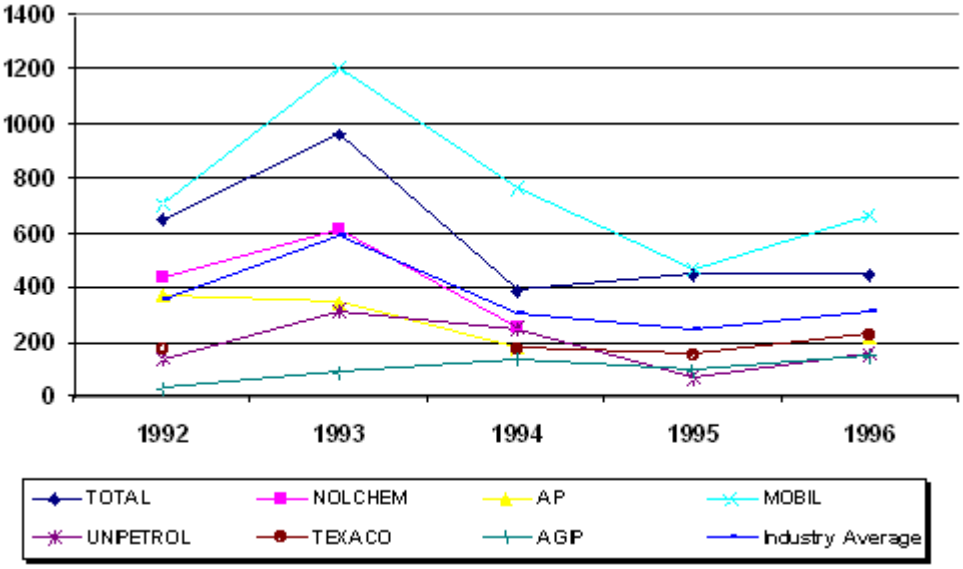
a) Capital expenditure



b) Real sales growth



c) Dividend declared



d) Pre-tax return on average equity

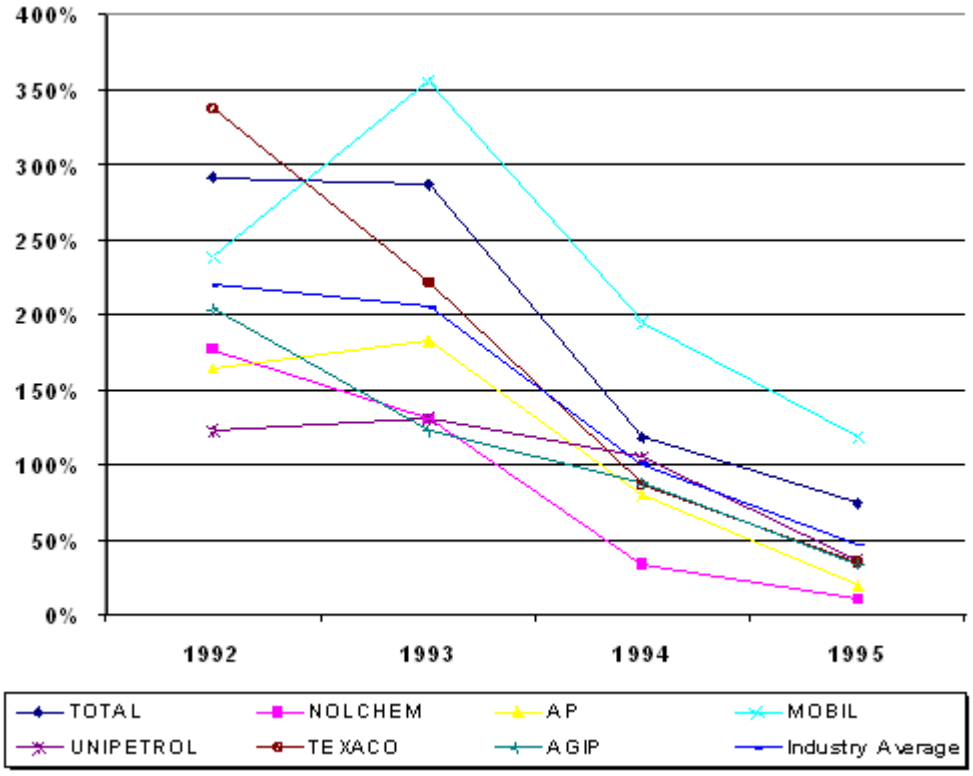
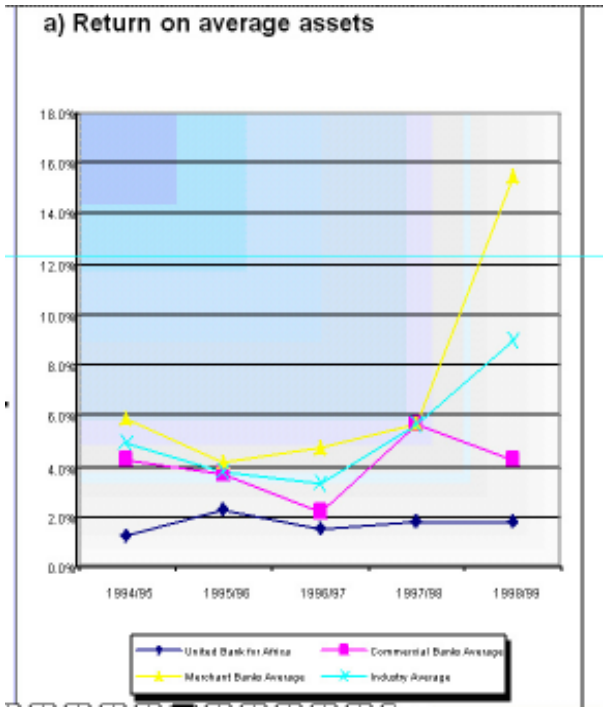
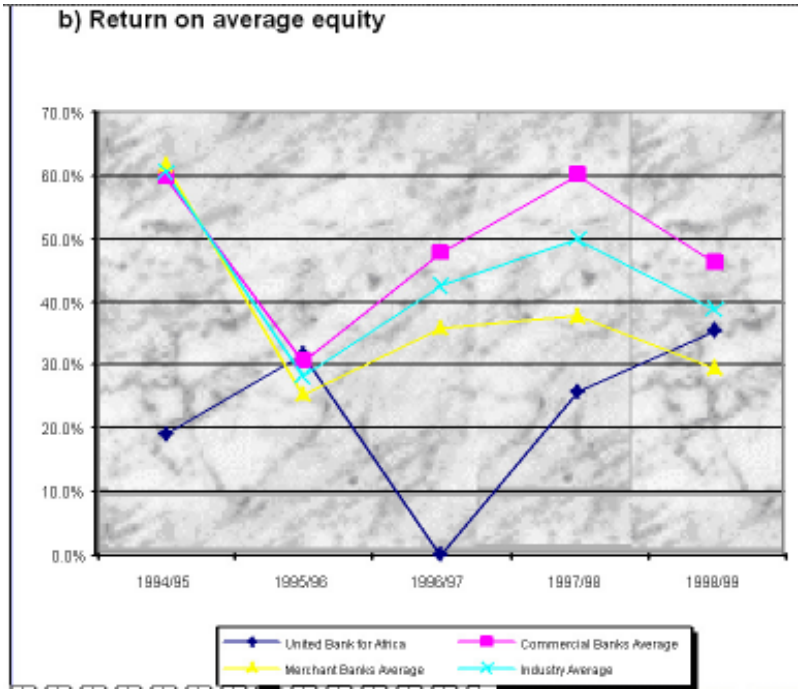
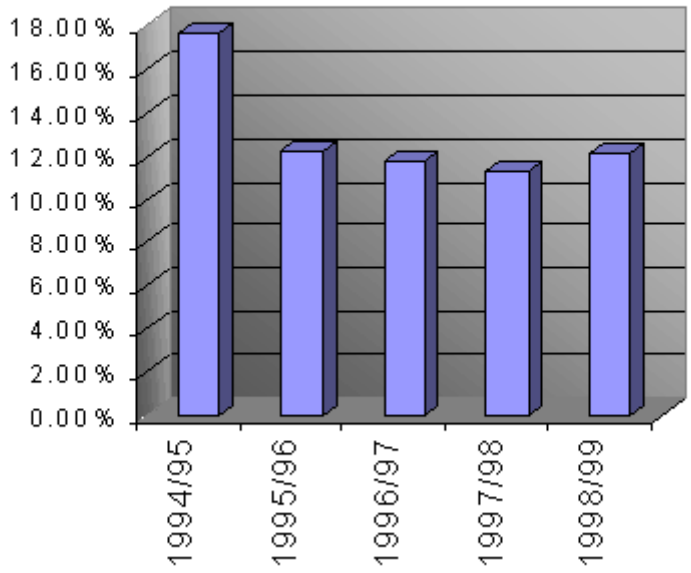


Figure 3: Comparison of UBA perfomance with industry average

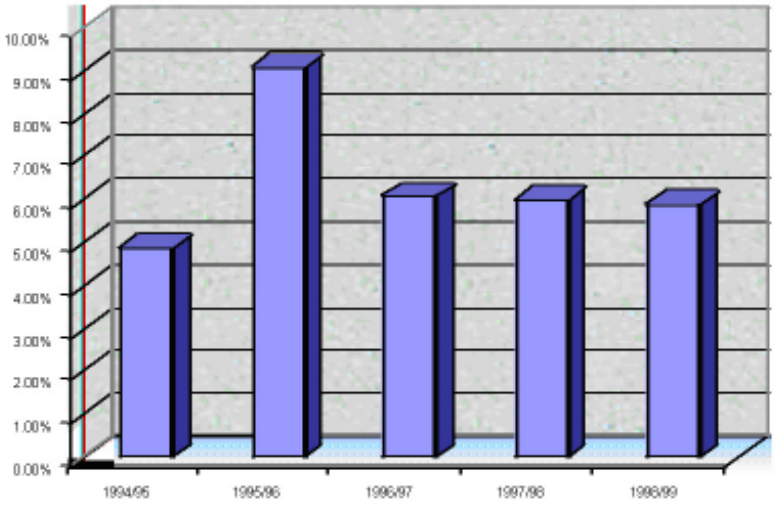




c) Market share of UBA
Total assets and contigents



d) Market share of UBA
Profit before tax



9. Conclusion

This study examined the financial and operating performance of three newly privatized enterprises in competitive sectors in Nigeria by comparing the pre- and post-privatization performance. The indicators used are profitability, operating efficiency, capital investment spending, output (adjusted for inflation), and dividends. The results, albeit mixed, show significant increases in these indicators. The evidence shows that, overall, employment losses have been modest in UBA and Unipetrol, while Ashaka in fact recorded large increases in employment after privatization.

The DEA results also provide empirical support for the view that privatization is associated with improved technical efficiency. It should be borne in mind, however, that no assessment is made of whether the improvement in efficiency has been translated into improvement in allocative efficiency, and ultimately into improved consumer welfare. Ownership seems to be important. Indeed, privatization brings with it private owners who place greater emphasis on profit goals and also carry out new investments that lead to increased output and employment.

Nigerian public enterprises have long been criticized for their inefficiency, politicization, corruption and poor output. The case studies indicate that public enterprises in Nigeria are inefficient primarily as a result of government's deliberate policy of transferring resources to cronies and supporters and not just because managers have weak incentives. Past political and military leaders have used these enterprises to favour their supporters through excessive employment, regionally targeted investments and deliberate underpricing of products or overpricing of inputs from politically connected suppliers. Reduction of politically motivated resource allocation has unquestionably been the principal benefit of privatization in Nigeria.

The case of United Bank for Africa also lends credence to the contention that privatization is not a threat to politicians as it is sometimes thought. Policy makers and their supporters have benefited from privatization by buying up some of the assets on sale.

Notes

1. The dismal performance of Nigeria's public enterprise sector has long been the attention of several commissions of inquiries. The most prominent perhaps are the Adebo Commission, 1969; Elias Commission, 1962; Ani Commission, 1967; Onosode Commission, 1982; Udoji Commission, 1973 and the A-Hakim Committee instituted in 1984. All the studies concluded that the public enterprise sector was infested by a multiplicity of problems including confused and conflicting missions, political interference in operating decisions, misuse of monopoly power, defective capital structures, bureaucratic red-tape in relations with supervising ministries, and gross mismanagement, nepotism, ethnicity and corruption.

2. Nonetheless, adverse petroleum and increasing debt pressures compelled the Buhari regime to retrench more than 15,000 workers in the civil service and the public enterprise sector, the single largest cutbacks in Nigerian history (see Lewis, 1990).

3. The Federal Ministry of Agriculture, Water Resources and Rural Development privatized a total of 17 agricultural and agro-allied enterprises, while the Federal Ministry of Transport privatized only one, the National Freight Company Limited.

4. Specifically, a total of 1,486,772,063 shares were sold.

5. See Megginson and Netter (2001) for details.

6. These problems are extensively discussed in White and Bhatia (1998).

7. More exposition on DEA and its application in Nigeria can be found in Jerome (2004).

8. In 1978, at the peak of the oil boom, the federal government went into a joint venture with Benin Republic to build a cement plant at Onigbolo in Benin.

9. The total number of banks in Nigeria has been fluctuating as a result of the distress phenomenon and licensing of new banks. For example, as at 1999, the number of licensed banks operating in the country stood at 89 with the revocation of the licences of 26 banks during the year. This was made up of 51 commercial banks and 38 merchant banks. Our database comprises banks that are deemed healthy by the Nigerian Deposit Insurance Corporation. Since the banking sector is essentially oligopolistic and our database includes the major players, we presume that the information presented captures about 95% of the industry.

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