THE IMPACT OF PRIVATIZATION ON THE EFFICIENCY OF FIRMS IN NIGERIA

A CASE STUDY OF THE AFRICAN PETROLEUM PLC AND ASHAKA CEMENT COMPANY OF NIGERIA.

By

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DECLARATION

I declare that the work in this thesis titled "THE IMPACT OF PRIVATIZATION ON THE EFFICIENCY OF FIRMS IN NIGERIA A CASE STUDY OF THE AFRICAN PETROLEUM PLC AND ASHAKA CEMENT COMPANY OF NIGERIA" was performed by me in the Department of Economics under the supervision of Professor Olowononi and Dr Ishaya Audu. The information derived from the literature has been duly acknowledged in the text and a list of references provided. No part of this thesis was previously presented for another degree or publication anywhere.

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CERTIFICATION

This thesis titled "THE IMPACT OF PRIVATIZATION ON THE EFFICIENCY OF FIRMS IN NIGERIA A CASE STUDY OF THE AFRICAN PETROLEUM PLC AND ASHAKA CEMENT COMPANY OF NIGERIA" by ABDULMALIK saidu meets the regulation governing the award of the degree of master of science of Ahmadu Bello university, Zaria –Nigeria and is approved for its contribution to knowledge and literary presentation

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ABSTRACT

The transfer of major public enterprises in Nigeria to private sector in the year 2000 marked the beginning of the Nigeria experiment on full privatization of government-owned entities. Unfortunately, little has been done to assess the efficiency impact of this policy on enterprise performance. This study attempts to provide some empirical evidence from the oil & gas and manufacturing sector on the efficiency impact of the privatization policy in Nigeria. First, the study made use of micro and macro indicators to examine the financial and operating performance of two fully privatized enterprises in competitive sectors in Nigeria by comparing the pre and post-privatization performance. The results albeit mixed, show a significant improvement in some of the indicators, such as profitability in both Africa petrol and ASHAKA Cement Company of Nigeria. Operating efficiency also witnessed an upsurge in the two indicators for both firms. While both firms witnessed a slight increase in capital investment spending as there was no evidence of capital investment spending before privatization in African petroleum. In the case of output African petroleum shows a significant response (positive) to the claim of increase in output than ASHAKA Cement. The evidence shows that there have been significant employment losses in both African petroleum and Ashaka Cement. In the case of leverage African petroleum show significant accentuation to the leverage proposition while ASHAKA Cement is on the negative side. In the two firms, dividend payments increased after divestiture. By exploiting conflicting effects it was found that privatization enhance efficiency in enterprise performance. Secondly, the study has used a mathematical non-parametric linear programming model, called Data Envelopment Analysis (DEA), to measure the relative efficiency and management performance in the presence of incomparable multiple inputs or outputs. Results of subsequent (DEA) analysis appear to indicate that the privatized enterprises are more technically efficient, thus providing some evidence in support of the efficiency hypothesis. Such a finding has important implications on privatization policy in general. These implications are that privatization policy should be vigorously purshued. The lessons learned from this study can obviously be of great help in managing and assessing the current strategies and methods of privatization in Nigeria.

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CHAPTER 1

GENERAL INTRODUCTION

1.1 BACKGROUNDS TO THE STUDY

Privatization, a method of reallocating assets and functions from the public sector to the private sector, appears to be a factor that could play a serious role in the quest for growth. In recent history, privatization has been adopted by many different political systems and has spread to every region of the world.

All over the world, the public sector as a matter of experience has not been known for their capacity to create wealth. Consequently, public enterprises were perceived as drain pipes for government budget, thus creating budgetary strains and avoidable burden on the economy (World Bank, 1995). It became a national policy imperative therefore to disengage the public sector from those areas where the private sector has the comparable advantage to perform, while letting the state concern itself with the provision of infrastructure, security and the enabling environment for business to thrive through enhanced wealth creation (BPE, 2003). It is important to observe that for many developing countries like Nigeria it was perhaps unavoidable for the government, to promote the initial investments in the early phase of national development when the private sector was almost non-existent. Unfortunately the government got herself so involved in business that could better be performed the private sector, that government could no longer perform her traditional functions satisfactorily the function include **the provision of infrastructure and security through the maintenance of law and order as well as the promotion of an enabling and conducive environment for investments and wealth creation.**

Privatization as a tool for economic management came to the front burner when Chile turned public assets/businesses to private operators in the early 1970s. Since then, over 140 countries (both developed and developing) have embraced privatization as a route to economic growth and prosperity. While the details and strategies of the privatization exercise have varied among countries, the ultimate objective is to liberalize the economies through increasing private sector involvement and capacity utilization. A critical aim is to free enterprises from control by rigid and bureaucratic structures, and makes the management of such enterprises more flexible in their management and investment strategies. In Venezuela, it is termed Capitalization while Brazilians call it Flexibilisation. In other countries such as Argentina, United Kingdom and Mexico where it has worked, different tags have been adopted but the aim and purpose have remained the same. It is worth noting that over 120 countries have embraced the idea of privatization. In the process of privatization, more investible capital has been injected into the various economies through local and foreign investors to the benefit of the country at large. In the process, funds that would have been committed to the maintenance of otherwise inefficient enterprises have been freed into more productive sectors of the economy.

In the case of Nigeria, the (BPE, 2003) pointed out that the issue of mismanagement and under-utilization which led to huge wastage of resources and manpower potentials all forced government to pursue the privatization programme. They further stated that transfers to these enterprises ran into billions of naira. These transfers were in form of subsidized foreign exchange, import duty waivers, tax exemptions and/or write-off of arrears, unremitted revenues, loans and guarantees and grants/subventions. These companies were also infested with many problems which became an avoidable drag on the economy such as - abuse of monopoly power, defective capital structure, heavy

dependence on treasury funding, rigid bureaucratic structures and bottlenecks, mismanagement, corruption and nepotism. With all these problems the government had no other option but to take a positive step (BPE, 2003). The reform as conceived had two interrelated components – **Privatization** and **Commercialization**. The overall objectives of the privatization exercise were:

- To improve on the operational efficiency and reliability of the public enterprises;
- To minimize their dependence on the national treasury for the funding of their operations;
- To roll back the frontiers of State Capitalism and emphasise private sector initiative as the engine of growth;
- To encourage share ownership by Nigerian citizens in productive investments hitherto owned wholly or partially by the Nigerian Government and, in the process, to broaden and deepen the Nigerian market.

1.2 PROBLEM STATEMENT

Public enterprises in Nigeria were established to propel socio-economic development and to guard against the control of the economy from foreign domination and exploitation. This accounts for a larger proportion of the national budget been voted for the creation and sustenance of 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 leading to the clamour for privatization.

The issue for examination is whether or not Nigeria has benefited from privatization.

The wind of privatization which has been blowing in Nigeria has several implications which have not been investigated in Nigeria. The debate on privatization has mainly focused on enterprise performance or efficiency. This implies that a change on ownership will enhance efficiency. The question on whether ownership is an important determinant of economic performance has not been adequately addressed in the literature.

Given this situation it is reasonable to observe that sufficient time has elapsed since the start of the reforms to allow an assessment of the extent to which privatization has realized its intended economic and financial benefits.

In line with the above the following research questions becomes relevant to the study:

(1) How has privatization enhanced efficiency in performance indicators of the selected enterprise in Nigeria?

(2) How has privatization enhanced the technical efficiency of the selected enterprise in Nigeria?

(3) Has productivity and profitability in newly privatized public enterprise increased dramatically?

(4) Has privatization been a good Development strategy in Nigeria?

1.3 OBJECTIVES OF THE STUDY

The broad objective of this study is to provide empirical evidence of the superiority of private enterprise over public ones. The specific objectives are to:

1) Examine the extent to which privatization has enhance efficiency in performance indicators of the selected enterprise in Nigeria.

2) Examine the extent to which privatization has enhance the technical efficiency of the selected enterprise in Nigeria.

3) To make policy recommendations.

1.4 HYPOTHESIS

The study will test the following hypothesis

Ho (Null hypothesis): Privatization does not enhance economic efficiency.

H1 (Alternative hypothesis): Privatization enhances economic efficiency.

1.5 JUSTIFICATION

In line with the trend worldwide, the spate of empirical works on privatization has 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, 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 empirical literature on privatization focuses on cross-sectional and multi-country studies which may have difficulty in controlling for firm-specific and country-specific effects. Privatization as an economic policy is seen in the context of economic reform that encourages incentives. Furthermore, the very dependence of privatization on other economic factors simply means that privatization decisions should be made based on specific social, political, and economic conditions surrounding a particular country, industry, or firm. See Adnan (2004). In fact, Poole argues that for developing countries the precise mix of policies will require case-by-case study" (1998). Given this situation it seems logical to appraise the performance of Nigeria privatization programmes.

This thesis is significant because privatization aims at poverty reduction as it frees resources for effective utilisation in the social service sector. Poor performance of public enterprise leads to economic losses. Hence privatization is expected to lead to greater investment and growth.

1.6 SCOPE AND LIMITATION OF THE STUDY

The study focuses on two enterprises selected from the two major sectors of the Nigeria economy with substantial government ownership prior to privatisation and fully privatised in Nigeria, thus: The African petroleum PLC and ASHAKA Cement Company. Also the study was based on the data collected from 1990 to 2010

1.7 OGANISATIONIONAL FRAMEWORK

The study is organised into five (5) chapters. Chapter one is on the introduction. It contain background to the study, the problem, objectives, hypothesis, justification, scope and limitation of the study and the organisational framework Chapter two contains conceptual literature review, theoretical and empirical literature review. Chapter three present the research methodology, while chapter four focuses on data presentation and interpretation of result. Finally, chapter five contains the summary, conclusion and recommendation of the study.

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

This chapter provides a conceptual framework, a brief review of the theoretical links between a change in ownership from public to private and economic efficiency and of the empirical literature that has examined this relationship. It also describes different methods of privatization as well as provides examples of privatization taking place around the world (with an emphasis on Nigeria) and lastly presents a brief background of case study companies.

2.2 CONCEPTUAL FRAMEWORK

2.2.1 Privatization

Privatization can be defined as the transfer of ownership and control of enterprise from the state to the private sector. Various groups have also defined it differently. The Privatization and Commercialization Act of 1988 and the Bureau of Public Enterprises Act of 1993 defined privatization as the relinquishment of part or all of the equity and other interests held by the Federal Government or any of its agencies, in enterprises whether wholly or partly owned by the Federal Government. But, however privatization is defined; it transfers ownership of production and control of enterprises from the public to the private sector. It is an ideological concept.

For the purpose of the Privatization and Commercialization process the following definitions will apply:

2.2.1.1 Full Privatization

Means divestment by the Federal Government of all its ordinary shareholding in the designated enterprise.

2.2.1.2 Partial Privatization

Means divestment by the Federal Government of a part of its ordinary shareholding in the designated enterprise (BPE 2003)

2.2.2 Commercialization

Nigerian commercialization and privatization Decree No 25 of

1988 defines commercialization as "the reorganization of enterprises wholly and partly owned by the government in which such commercialized enterprises shall operate as profit-making ventures and without subvention from government".

The decree also distinguishes between full and partial commercialization.

2.2.2.1 Full Commercialization

The fully commercialized enterprises are expected to operate on a commercial basis to raise fund from the capital market without any form of government guarantee, such enterprises are expected to use private sector procedures in the running of their business. It is expected that such enterprises would require no government subvention because of their high social service content; their operation cannot be left to individual shareholders. A typical example is the Nigerian National Petroleum Corporation (NNPC) which is a pivot to the national economy.

2.2.2.2 Partial Commercialization

Partial commercialization is those enterprises with high social service component. Such enterprises are expected to generate enough revenue to cover their operating expenditures. The government may therefore give them subventions to finance their capital-intensive projects. It should be noted that both full and partial commercialization does not require that government would divest her equity holdings. Essentially commercialization exercise also calls for a "performance contract" to govern the post commercialization financial relationship between government and the commercialized enterprises.

The contract requires:

1. Specifying long-term objectives of the enterprise;

2. Establishing agreed (between the enterprise and the government) performance criteria;

3. Having an agreed level of enterprises performance; and

4. Having a performance bond that specifies penalties for not meeting agreed levels of performance or rewards for surpassing them.

In sum, a performance contract establishes a two-way relationship between the government and commercialized enterprises. (BPE 2003)

2.2.3 The Concept of Efficiency

A market is called efficient when resources are used in a way that maximizes the production of goods and services at the lowest cost. Economic efficiency is a relative term; an economy is more efficient when it produces more goods and services for

society than another by using the same or lower input. Economists recognize several ways of measuring or talking about the ways economies may be efficient; some of the most common include efficiency of scale, productive efficiency, technical efficiency, allocative efficiency, dynamic efficiency and social efficiency. Efficiency types are not mutually exclusive; more than one can describe a market or economy. (http://www.eHow_com.mht)

2.2.3.1 Productive Efficiency

Productive efficiency is achieved when a producer uses the least amount of resources to produce goods or services relative to others. The producer might achieve this by exploiting economies of scale or by having the advantage of the most efficient production technology, the cheapest labor or minimal production waste.

2.2.3.2 Technical Efficiency

A prerequisite for allocative efficiency, technical efficiency describes production that has the lowest possible opportunity cost. Material and labor resources are not wasted in the production of goods or services in technically efficient production. When it's achieved, technical efficiency allows for but doesn't guarantee allocative efficiency.Technical efficiency means that natural resources are transformed into goods and services without waste, that producers are doing the best job possible of combining resources to make goods and services. There is no waste of material inputs. There are no workers standing idly around waiting for spare parts. The maximum amount of physical production is obtained from the given resource inputs. In essence, production is achieved at the lowest possible opportunity cost. (http://www.AmosWEB.com)

2.2.3.3 Allocative Efficiency

When a society's value for a certain good or service (the amount they pay for it) is in equilibrium with the cost of resources used to produce it, it is called allocative efficiency. It's typically achieved not by accident but when a society allocates its resources to producing what society values most.

2.2.3.4 Operational Efficiency

Operational efficiency is the capability of an enterprise to deliver products or services to its customers in the most cost-effective manner possible while still ensuring the high quality of its products, service and support.

Operational efficiency is often achieved by streamlining a company's core processes in order to more effectively respond to continually changing market forces in a cost-effective manner.

In order to attain operational efficiency a company needs to minimize redundancy and waste while leveraging the resources that contribute most to its success and utilizing the best of its workforce, technology and business processes. The reduced internal costs that result from operational efficiency enable a company to achieve higher profit margins or be more successful in highly competitive markets. (http: //www. webopedia_com.mht)

2.2.4 Public Enterprise

There appears to be no universally agreed definition among scholars regarding the conceptual meaning of public enterprises. According to Laleye (1985) the bewildering number and types of the organizations called public enterprises' their different contents and the rationale for which they are set up accounts for lack of authoritative and generally acceptable definition of public enterprises. Sosna (1983) opined that there are

many reasons why in developed capitalist countries, there is no single standard definition of public enterprises. Public enterprises were established at different periods, and each epoch naturally brought forth the types of public enterprises most clearly matching its own conditions. It is therefore believed that the variation in definition are informed by the ideological, values, interests, dispositions and circumstances that brought public enterprises into existence. Whatever the controversy and the lack of uniformity might conjure up, we would however review the viewpoint of some scholars of public enterprises. For instance, Efange (1987) define public enterprises or parastatal as institutions or organizations which are owned by the state or in which the state holds a majority interest, whose activities are of a business in nature and which provide services or produce goods and have their own distinct management.

Obadan (2000), Obadan & Ayodele (1998) defined public enterprises as organizations whose primary functions is the production and sale of goods and/or services and in which government or other government controlled agencies have no ownership stake that is sufficient to ensure their control over the enterprises regardless of how actively that control is exercised.

2.3 THEORETICAL FRAMEWORK

Private ownership and competitive markets are normally thought to go hand in hand, but the two issues of ownership and market structure are often separate. For the economist devoted to both, the question then arises as to which object of affection is more beloved: private ownership or competition. Here a difference of opinion appears among economists that corresponds to a preference for either privatization or liberalization. Those who believe that efficient performance depends on private

ownership per se favour privatization, even in cases generally regarded as natural monopolies. Conversely, those who see competition as the critical spur to efficiency are more sceptical about the benefits of privatizing monopolies and often put more emphasis on other policies, such as deregulation. In the case of a government telecommunications monopoly, for example, those who stress ownership may be willing to privatize the monopoly intact, whereas those who stress competition may prefer to break it up before sale or even to keep it in public ownership while allowing private firms to compete with it on equal terms.

Thus the perspective that unequivocally points to privatization as desirable policy holds that property ownership is the fulcrum of political economy. Curiously, the two unlikely bedfellows sharing this appreciation of ownership are Marxism and Chicago economics, which draw from it opposite but equally strong conclusions about the overriding importance of getting ownership into the right sector. From the Chicago tradition come two closely related clusters of work: the theory of property rights and the theory of public choice. Both attempt to enlarge the conventional economic paradigm by treating the classical firm and modern package of property rights as only one of various possible institutional forms. In this enlarged model, public institutions merely represent an alternative property rights configuration, which, on theoretical grounds, the Chicago School predicts regularly will perform less efficiently than private enterprise.

As developed by economists such as Armen Alchian, Ronald Coase, and Harold Demsetz, the theory of property rights explains differences in organizational behaviour solely on the basis of the individual incentives created by the structure of property rights. In this view, property rights specify the social and economic relations that people must observe with each other in their use of scarce resources, including not only the benefits that owners are allowed to enjoy but also the harms to others that they are

allowed to cause. A right of ownership actually comprises several rights, chiefly the rights to use an asset, to change it in form, substance, or location, and to transfer all or some of these rights. Insofar as the state restricts these rights, they become "attenuated." Thus the key issues for the theory are, first, to whom are property rights assigned? And second, how, if at all, are they attenuated?

Like other branches of microeconomics, the property rights school conceives of human action as purely individualistic. The more individuals stand to gain from tending to their property, the better will it be tended. Conversely, the more attenuated and diluted their property rights, the less motivated individuals will be to use property under their control efficiently. Private ownership concentrates rights and rewards; public ownership dilutes them. The property rights school does not recognize any fundamental change in the working of private enterprise as a result of the separation of ownership and management in the modern corporation. To be sure, shareholders in large corporations cannot monitor management as closely as the owner of the classical firm could oversee his enterprise. However, in this view, the market generates the needed spur to prevent corporate management from dissipating value through excessive salaries or slack attention. If returns from the enterprise are low, shareholders will sell their stock and the price will be depressed. In the extreme case, the firm may be acquired by outsiders and the managers may lose their jobs. These crucial deterrents to inefficient management are missing from the public sector. Since "shareholders" (citizens) have no transferable property rights in public enterprise, they cannot sell stock as a signal of dissatisfaction with performance; even moving to another jurisdiction is costly. Moreover, there is no "market for corporate control": public enterprises cannot be taken over by bidders who believe that they can make more efficient use of the assets. Hence, according to the

theory, there is no check on the dissipation of value by the management of public enterprises.

De Alessi (1980) in explaining the poor monitoring of public firms' performance stated that:

"The crucial difference between private and political (publicly owned) firms is that ownership in the latter effectively is non-transferable. Since, this rules out specialization in their ownership, it inhibits the capitalization of future consequences into current transfer prices and reduces owners' incentives to monitor managerial behaviour."

However, there are other theories demonstrating that shareholders' monitoring are no greater (Vickers and Yarrow, 1988) and the threat of takeover is rather weak (Grossman and Hart, 1980) for private firms. Even though ownership of public firms is not transferable in theory, politicians who fail to do a good job of monitoring public performance can be voted out of office. In addition, financial surplus created by a well-monitored public firm can be used to confer benefits to at least some voters thus enhancing the chance of the electoral success of the politicians concerned. Both forces tend to encourage greater monitoring of public firms.

The Grossman and Hart's argument relies on the idea that shareholders may free ride on the effort of the party involved in mounting a takeover. The threat of takeover is weaken because if shareholders know that there is a pending takeover then they might as well hold on to their shares because there will surely be some surplus to be created after takeover (otherwise why is there a takeover in the first place). This free riding behaviour actually hinders takeover and hence protects inefficient managers.

With conflicting theoretical predictions, it is reasonable therefore to conclude that this issue can probably be settled empirically. Empirical evidences however, provide conflicting results (See Boardman and Vining (1989) for a tabulation of results for 53 studies on the efficiency impact of privatization). This issue therefore is still unsettled and we provide more evidence to the growing body of literature by testing the hypothesis that privatization enhance economic efficiency.

2.4 EMPIRICAL LITERATURE ON PRIVATIZATION

This section will present an empirical study done by other researchers, analyzing the effects of privatization on efficiency.

2.4.1 Privatization and Efficiency

Firm performance has been the focus of the empirical literature on privatization. Studies cited in a survey of empirical studies of privatization almost unani-mously report increases in firm performance associated with privatization (Meg-ginson and Netter, 2001)[1]. Most of these studies compare post-privatization performance changes with either a comparison group of non-privatized firms or compare three year mean/median performance of privatized firms to their own mean/median performance during their last three years as state owned firms.

Critics of these findings are quick to point out that all of the gains researchers have documented after privatization are due to selection bias. The argument is that better firms are privatized first and their comparison to more poorly performing firms that

[1] A survey by Djankov and Murrell (2002) examines the effects of privatization in transition
economies. They conclude that in most countries, privately owned firms perform better than
state owned firms.

happen to remain public gives a spurious relationship between privatization and firm performance. Cross-sectional studies may not be able to satisfactorily control for firm-specific effects and therefore address the selection problem for privatization. While comparing before and after three year averages of performance measures might be less biased, even that method may not entirely solve the selection problem. One could argue that, those firms would have improved at any rate even if they were not privatized or other re- forms that accompany the privatization process may have been responsible for the changes observed (Omran, 2004).

Table 2.1: SUMMARY OF EMPIRICAL LITERATURE REVIEW

Researcher	Sample description and study period	Methodology	Empirical findings
Cagla *et al.*(2005)	Tests the effects of privatization on productive and allocative (market) efficiency using a rich panel data set of privatized cement plants from Turkey	Fixed effect panel data estimator.	Finds that ownership effects are sufficient to achieve improvements in labor productivity. The results on allocative efficiency, however, are dependent on changes in the competitive environment. Also find that the privatized firm switches to a more capital-intensive technology as capital, investment and the capital labor ratio increase while employment decreases after privatization.

Table 2.1: Continued

Researcher	Sample description and study period	Methodology	Empirical findings
Meggison et al (1994)	Comparison of pre and post privatization financial and operating performance of 61 firms from 18 countries (12 industrialized and 6 developing) distributed over the period of 1961-1990.	Micro Indicators like real sales, profitability, investment spending, operating efficiency, leverage and dividend payouts.	Remarkable improvement in all the indicators including employment
Galal, et. al (1994)	Examines the welfare consequences of privatizing 12 large firms mostly 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

Table 2.1: Continued

Researcher	Sample description and study period	Methodology	Empirical findings
Iraji, H. (1999)	A stock taking of the initial three years of privatization performance of 512 medium and large enterprises through the National Investment Fund (NIF) in Poland	The use of Performance indicators such as profitability, labour productivity, asset values, share prices, etc.	There is improvement in profitability/reduction in losses and labour productivity of portfolio companies but net assets did not keep up with inflation while share prices was on a decline with funds being traded with a large discount. Discount varies inversely with size and shares of assets tied up in minority companies hence existence of fund management had insignificant effect on the discount.

Table 2.1: Continued

Researcher	Sample description and study period	Methodology	Empirical findings
Jerome A (2001)	Measures pre and post Privatization performance of 3 partially privatized enterprises in Nigeria between 1988 and 1993.	The use of Performance indicators such as profitability, labour productivity, asset values, share prices, etc were employed.	Efficiency increased in all the three enterprises hence a substantial improvement is observed as a result of privatization.
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.

Table 2.2: Continued

Researcher	Sample description and study period	Methodology	Empirical findings
Omran (2004)	Compares before and after privatization averages of performance measures of privatized firms from Egypt.	Compare three years mean/median performance of privatized firms to their own mean/median performance during their last three years as state owned firm	Finds a significant increase in performance. But when he carries out the same exercise for firms that remain state-owned he finds that they also improve after the privatization period though they are not privatized. Either the improvement of privatized firms has spill over effects on state-owned firms or privatization has nothing to do with changes observed. He suggests that other economic reforms that enhanced the competitive environment in which his sample of privatized and state-owned firms were operating might have been responsible for his findings.

Table 2.1: Continued

Researcher	Sample description and study period	Methodology	Empirical findings
Ehrlich et al. (1994)	Sample of twenty-three comparable international airlines of different ownership categories over the period 1973-83.	Using firm fixed effects in a panel data analysis	Their results suggest that private ownership leads to higher rates of productivity growth and declining costs in the long run, and that these differences are not affected by the regulatory environment. Their estimates suggest that the short-run effects of changes from state to private ownership on productivity and costs are ambiguous.
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.

Table 2.1: Continued

Researcher	Sample description and study period	Methodology	Empirical findings
Villalonga (2000)	Examines twenty-four Spanish firms from different industries	Using firm fixed effects in a panel data analysis	Finds that privatization does not increase firm efficiency (defined as rate of return on assets. He argues that political factors such as the business cycle during which the firm is privatized and foreign ownership are important determinants of firm efficiency).
Earle and Telegdy (2002)	Privatization Methods and Productivity Effects in Romanian Industrial Enterprises	Using firm fixed effects in a panel data analysis	Finds that privatization increases labor productivity growth in their heterogeneous sample of Romanian firms

Table 2.1: Continued

Researcher	Sample description and study period	Methodology	Empirical findings
Wallsten (2001)	Analysis of Telecom Competition, Privatization, and Regulation in Africa and Latin America	Using firm fixed effects in a panel data analysis	He finds that in the telecommunications sector, privatization by itself does not appear to generate many benefits and is negatively correlated with main line penetration. He points out the importance of regulatory framework ensuing from privatization as he finds that privatization combined with the existence of a separate regulator is correlated with increased connection capacity and labour efficiency as measured by employees per main line.
The World Bank (1995)	Effectiveness of public enterprises reform in Africa. Study sample from 12 countries.	Micro and macro indicators of performance.	Privatization programmes were successful in some countries and unsuccessful in others.

Table 2.1: Continued

Researcher	Sample description and study period	Methodology	Empirical findings
Frydman et al. (1999)	The Impact of Private Ownership on Corporate Per-formance in the Transition Economies	Using firm fixed effects in a panel data analysis	Find that privatization to outsider owners has significant effects on revenue performance, but not on cost reduction using data from the Czech Republic, Hungary and Poland, of 218 state owned firms, of which 128 were privatized during the period from 1990 to1994.
Lorch (1991)	Comparison of static and dynamic efficiency between privately owned and state-owned mills in Bangladesh.	Ability to respond to market signals and astuteness in adjustment to changing environment.	Privately owned mills outperformed state owned mills in static efficiency though both firms were found wanting in aspects of dynamic efficiency.

Table 2.1: Continued

Researcher	Sample description and study period	Methodology	Empirical findings
Maina (2001)	A Post Privatization Analysis of Performance of Kenya's Banking Sector: A Case Study of Kenya Commercial Bank And National Bank of Kenya.	Ratio analysis comprising of time ratio and snapshot ratio.	National Bank of Kenya profitability worsened while capital adequacy ratio increased in the post privatization period. The same applied to the commercial Bank sector with the small sized banks emerging as the worst performers. The study also found that foreign owned banks attained the highest level of profitability.
Nor Ghani et al. (2003)	Conducted an empirical study using data from Port Klang to test the hypothesis that a privatized firm is more efficient.	Ordinary least square and weighted-least-squares (WLS) regression analyses.	The results indicate that the privatized firm is probably more efficient thus providing additional evidence in support of the efficiency hypothesis.

2.5 METHODS OF PRIVATIZATION

Countries around the world have pursued different methods of privatizing state assets depending on the initial conditions of the country's economy and the economic ideologies of the political party in charge. The process of privatization is often easy for small institutions, while the process becomes harder when it comes to finding the appropriate buyers for larger enterprises2. One of the main methods of privatization is the sale of state-owned enterprises to private investors. The state would simply decide which institutions should be privatized and through the use of market mechanism, private investors are able to buy shares of each firm. The benefits from this method of privatization are that it creates badly needed revenues for the state while putting privatized firms in the hands of investors who have the incentives and the means of investing and restructuring. On the other hand, finding domestic investors in underdeveloped countries is often a difficult task (Stirbock, 2001). Amongst many other countries that have used this method, Jamaica has been successful in privatizing its National Commercial Bank through the sale of shares to domestic investors. Despite its underdeveloped financial market, symbolized by an almost non-existent stock market, Jamaica's government was still able to successfully privatize the bank in less than three months. Not only did the number of shareholders in Jamaica go up five times, but the nation's largest bank was in the hands of the private sector, which responds to market conditions (Poole, 1996).

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2 It is particularly hard to find the right investors that are willing to buy large, industrial firms, whose value is hard to evaluate (Stirbock, 2001).

Another widely used method of privatization has been known as voucher privatization. The government universally distributes3 vouchers to its eligible citizens, which can be sold to other investors or exchanged for shares in other institutions being privatized. Although this method does not create revenues for the state, it does privatize state-owned firms in a short period of time (Stirbock, 2001)4. Many countries such as Canada and Russia have employed this method, but the most notable voucher privatization program was the one designed by the Czech Republic. Due to the fear of the return of the communist party, the government felt that it was necessary to pursue a rapid privatization process. For a nominal price, voucher booklets were sold to the citizens who had the option of claiming a share in a particular firm or investing in the newly created investment funds. The purpose of the investment funds was to consolidate vouchers and diversify risk for the citizens. Furthermore, the investment funds were expected to motivate enterprise restructuring as the investment funds use the invested vouchers to obtain shares in particular firms. Mass voucher privatization was conducted in two waves; one under the rule of Czechoslovak Federation and the second after the break up. Although a large percentage of state-owned enterprises was privatized in a short period of time, the overall process was not considered very successful due to "the lack of appropriate accompanying institutional policies and lagging banking sector reform" (World Bank, 2002). It becomes evident once again that a potentially successful economic policy fails due to the lack of institutional changes and other appropriate economic policies (World Bank, 2002).

[3] In some cases of voucher privatization, vouchers are sold instead of distributed, but for a negligible amount (Poole, 1996).

[4] Ironically, voucher privatization accomplishes a socialist concept of ownership by the people (Poole, 1996).

Internal privatization, also known as "employee or management buy out," is another method of privatization. State-owned enterprises are sold to managers (for an extremely low price) who are already familiar with the particular firm and its structure, but there are minimal revenues created for the state. This method creates some incentives but the incentives are much stronger when firms are sold to strategic investors. Additionally, new owners often do not have the resources to invest and restructure, which is badly needed in a large percentage of state owned firms in underdeveloped countries (Stirbock, 2001). Slovenia has been known for their internal privatization process in which a majority of the state assets were distributed to state owned institutional investors (such as pension funds) while the rest were sold to employees (with many subsidies). This process led to a lack of strategic investors, which may have played a role in the limited success of Slovenia's privatization (World Bank, 2002). There is another type of privatization method that has been employed in some circumstances, but is not used nearly as often as the three methods discussed earlier. Restitution is the process of giving the property rights of a company back to the original owner. Along with the difficulty of finding the original owner, there are many drawbacks to this method of privatization since the value of the company changes over time (Stirbock, 2001). Examples of privatization in Hungary as well as the privatization in a group of Latin American countries are worth being mentioned. Hungary was the most indebted country in the region, in per capita terms, and therefore wanted to implement a speedy privatization process that would create revenues. The government opened up the sale of state-owned firms to strategic investors, including foreign ones. The result was an inflow of foreign capital, which led to much needed technological improvement and an increase in competition. The bank sector was a major target of foreign investors, resulting in the restructuring of the banking laws and regulations.

The World Bank attributes Hungary's good growth in the second part of the last decade to their method of privatization (World Bank, 2002). Once again the importance of technological improvements and the benefits of advanced foreign technology become evident. In the case of the privatization process in the countries of Argentina, Mexico, and Peru, it is worth mentioning that each of those countries was able to create major revenues from the privatization process.

Instead of using the revenues to balance the current operating budget, the countries used it to pay off the outstanding debt (Poole, 1996).

2.6 INSTITUTIONAL BACKGROUND

2.6.1 The Need for Government Intervention in the Nigeria Economy

The emergence of the state owned enterprises should be seen as performing two closely interrelated roles: As instruments of legitimization of government's direct action in economic and social spheres and as instrument for power building and wealth accumulation by and in favour of those who are at the helm of affairs. Furthermore, the emergence of the state owned enterprises (SOEs) was supported by the Second National Development Plan, 1970-1974 when it stated that state owned enterprises are expected to stimulate and accelerate national economic development under condition of capital scarcity and structural defects in private business organization. The 1999 Federal Republic of Nigerian Constitution also lends credence to the government intervention in the economy. Specifically section 16 subsection 1a, b, c and d states:

"The state shall, within the context of the ideals and objectives for which provisions are made in this constitution –

a. Harness the resources of the nation and promote national prosperity and an efficient, a dynamic and self reliant economy.

b. Control the national economy in such manner as to secure the maximum welfare, freedom and happiness of every citizen on the basis of social justice and equality of status and opportunity;

c. Without prejudice to its rights to operate or participate in areas of the economy, other than the major sectors of the economy manage and operate the major sectors of the economy;

d. Without prejudice to the right of any person to participate in areas of economy within the major sectors of the economy, protect the right of every citizen to engage in any economic activities outside the major sectors of the economy".

Consequent upon the aforementioned social and constitutional provision, a survey of the official records indicate that state-owned enterprises have increased in number in Nigeria to achieve the following purposes.

1. To ensure economic decolonisation and nationalism;

2. Promotion of indigenous capitalism;

3. Improvement of the balance of payment;

4. Resource mobilization by governments;

5. Promotion of development, and

6. Correction of the regional imbalances.

These (SOEs) state owned enterprises have developed in the following major fields. Omoleke et al. 73

1. Marketing of commodities;

2. Mobilization of funds;

3. Development of infrastructures;

4. Industrial development;

5. Development of commercial and service ventures;

6. Agricultural development, and

7. Development of mineral resources (Laleye, 1986).

This development can be observed both at Federal and State levels. One striking fact is that the first fertile ground of federal government intervention in the economy was the establishment of public utilities. The major public utilities that have emerged since early 1960s are the Nigerian Railways Corporation, the Nigerian Airways, Nigerian Broadcasting Corporation now Federal Radio Corporation of Nigeria, the Nigerian Television

Authority, Nigeria External Telecommunication Limited, Nigerian Ports Authority and the National Electric Power Authority now (Power Holding Company of Nigeria Ltd) (Ajakaye, 1988).

The reason for the government intervention was due to the magnitude of the required initial investment to the relatively low profit expectation and the social dimension of their services, and private initiative was not forthcoming. Moreover, these areas concern the basic infrastructural facilities for any meaningful industrial development.

The second striking observation is that it was the then regional governments that first made an aggressive use of state owned enterprises for the marketing of agricultural products. The marketing boards turned out to be the effective devices for mobilizing financial resources which were later used to establish Finance and Development

Corporations with a view to promoting industrial, commercial and social development. The federal government also became aware of the necessity to provide the machinery for monetary and fiscal policies but also organized investment promotion and insurance. They contributed in no small measure to the promotion of industrial investment, either singly or in partnership with private entrepreneurs. These investments developed considerably in practically all the sectors of the economy: Agriculture, mining, commerce, manufacturing and tourism. Most of the ventures in which governments were involved, assumed the form of parastatals and were aimed at increasing public revenues and accelerating the pace of development. However, the SOEs worked for almost a decade before their performances started declining. Hence there was a poor return to investment which now calls for privatization policy. The principal objective of this study therefore is, to examine the impact of the Nigeria Privatisation Policy implementation on enterprise performance.

2.6.2 Public Enterprise in Nigeria

The 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 2.2: 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

* = 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 nonperforming

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. Afeikhena, J. (2008)

2.6.3 The Need for Privatization in Nigeria

Public enterprise deficits have been a major source of fiscal problems and a drag on growth (World Bank, 1995). In Nigeria, privatization came as an integral part of adjustment credits and the policy was aimed at enhancing the efficiency of resource allocation of government. In the words of Mahamoud (2005), the core objectives of the privatization policy are to reduce fiscal deficits, building a broader tax base, attracting more investment and growing of the private sector. He went further that public enterprises sector had played an increasingly dominant role in the Nigerian economy accounting for over 50% of the GDP and over 60% of modern sector employment. He asserted further that, as at 1986, the estimated number of state owned enterprises (SOEs) in Nigeria was 1,500 out of which 600 were owned by the Federal government and the rest were managed by the states and local governments.

According to the author, Nigeria adopted the policy of privatization in 1986 and Technical Committee on Privatisation and Commercialization was established in 1988. The committee, he said was able to privatize about 34 firms cutting across several sectors through public floatation. The enterprises that have been wholly privatized were mainly in manufacturing and insurance sub sectors. The privatization of utilities such as power and telecommunication seems to have made little progress in Nigeria.

The second phase of the privatization programme started on the 20th July, 1998 when the National Council on Privatisation was established with Bureau of Public Enterprises as its secretariat in Abuja. It was on record that the first phase of the privatization policy implementation made the following achievement between 1988 and 1993.

1. The creation of 800,000 new shareholders;

2. Over N3.3 billion of privatization proceeds realized;

3. 1,486,772,063 billion shares were sold;

4. 280 board seats ceded by the Federal government;

5. Treasury funded SOEs reduced, and

6. The Nigerian capital market broadened and deepened (Mahmoud 2003).

Discussing the background of SOEs and circumstances that called for privatization of the SOEs, Mahmoud (2005) remarked that the Federal Government of Nigeria had invested more than US$100billion in SOEs between 1975 and 1995. He exposed further that:

1. These enterprises drain a lot of resources from the Federal Government leading to a recent huge transfer of US$3 billion, 0.8 billion, 1.4 billion and 44 billion in 1998, 1999, 2000 and 2001, respectively;

2. About 5,500 board appointments exist in these nonperforming firms;

3. Over 50% of all non-performing public sector debts in Nigeria were generated by these SOEs. For example, NICON Hilton - US$300 and Sheraton Hotel - US$250 million;

4. SOEs in Nigeria returned only about 0.5% in profit. Without NICON Hilton and Central Bank of Nigeria (CBN), they would have provided negative returns, and

5. They control over N1 trillion more than an average federal government budget.

The foregoing lends credence to Omoleke (2007) when he asserted that N265.00 billion were spent on public enterprises in Nigeria without adequate return to investment while Obadan (2000) said:

"*Public enterprises in many developing countries, as in Nigeria, have been attacked for being economically inefficient and wasteful of resources. They make significant*

demands on government resources, as well as on domestic and foreign credit. Yet these demands have been associated with low profitability and inefficiency."

Finally, Nassar and Akinola (1999) also affirmed that poor performance of Nigerian public enterprises in the 1980s called for policy of privatization and commercialization by the promulgation of Decree No. 25 of 1988 establishing the privatization policy while the Technical Committee on Privatisation and Commercialisation was organizing and monitoring the divesture programme. As at March 1993 a total of 55 public enterprises had been privatized by the T.C.P.C. The two scholars went further that, with the sale of government equities, investment in seven banks and private company, all involving 866.5 million ordinary shares with a market capitalization of N1,064.4 million, the proceeds, from the 55 enterprises offered for sale as at the end of 1992 were N3.3 billion. This, when compared with the original investment of N652.0 million in these enterprises since the inception of the programme showed roughly 500% capital gains. However, this is inconclusive as the depreciated value of the domestic currency arising from the adoption of floating exchange rate system has not been taken into consideration. Ostensibly, a major gain/development from the privatization exercise is the drastic reduction of reliance of public enterprises on the government for finance, thereby government realizing funds for development of other sectors of the economy. However, the question is: How has this gain from privatization policy been evenly utilized for the benefits of the grassroots remains a different issue entirely in Nigeria?

Apart from reducing the scope of political patronage in form of Board and Commissions appointment, the policy has, in addition, helped in stimulating the growth and expansion of the Nigerian capital market from N8 million in 1988 to over N30 billion in September 1992 (United Bank for Africa Monthly Business and Economic Digest February to August, 1993). Conversely, in spite of the seemingly positive

developments aforementioned, the policy is still facing a lot of problems. Omoleke *et al* (2010) noted that, while the profit level of the privatized companies has increased the same thing cannot be said of the quality of their services. The services produced by most of these companies fall far below expectation. He affirms that, this obviously portends falling standard of living as customers now pay higher prices for inferior or low quality services. In the same manner, this tends to cast doubt on the expectation that privatization will, in the long run, lead to reduction in government deficit. This is because, it is only when an enterprise is run efficiently and profitably in the private or even public sector that the budget benefit from privatization policy will be on a permanent basis. He further noted that the low-income earners have not been involved in the privatization policy as they are not financially empowered to either buy share or enjoy the quality of product from the privatized companies as prices of their products are beyond the reach of the poor. Furthermore, the harsh economic conditions coupled with the low per capita income of a greater percentage of Nigerians have eroded the economic power of the grassroots. This condition, if not checked may accentuate the existing inequality gap in the Nigerian Society.

The implementation of the privatization policy has led to retrenchment in some privatized organizations. Some of the retrenchment cases are due to economic exigencies.

With privatization, the functional and operational restructuring within the enterprises has to be made in order to realize the economic goal of the policy. This restructuring rendered some positions redundant adding to the unemployment problem in Nigeria. Hitherto most of these

Public enterprises were overstaffed due to heavy politicization before the privatization exercise, due to influence of the Nigerian political elite. Thus, if the facts are considered

in relation to needs for these enterprises to be efficient, then the issue of retrenchment arising form the implementation of privatization policy might not be very important but it becomes

Important when social welfare consideration comes in. This, therefore, raises the issue of trade off between economy and social/welfare consideration in the implementation of privatization policy. Perhaps the two necessities must be properly balanced to achieve maximum benefits from the policy and to avoid offensive relationship of the privatization policy and constitutional provisions of 1999 Constitution (Section 16 – Subsection

1 (a – d)) as earlier stated. The privatization policy also faced the problem of workers' resistance through their union on the presumption that the implementation of the policy will lead to retrenchment of workers and pauperization of the working class and enhancement of the 'political and economic hegemony of the political and economic elite who have the economic power to buy all the companies. In addition, several other interest groups such as labour and student unions and some intellectuals are also apprehensive of the policy. Their apprehension is founded on the arguments that the programme/policy will lead to high inequalities of resources as the shares will be hijacked by the few rich ones, reduction in the living standard through Omoleke et al. 75 inflation and misappropriation of the proceeds from the privatization policy implementation. To some extent, some of the apprehensions have been justified in the Nigerian case. Most of the enterprises were bought by the economic elite e.g. Benue Cement factory was bought by Dangote Company. (Omoleke, *et al* 2010)

2.7 PROCEDURES FOR THE DIVESTMENT OF GOVERNMENT INTERESTS:

Section 2 of the Privatisation Decree contains provisions on the mode privatisation would take in Nigeria. Under this section, an offer for the sale of the shares of a public enterprise shall be by public issue or private placement, as the case may be. An offer for the sale of shares by public issue to Nigerians may be made at the capital market.

Where the shares of an enterprise are not to be offered for sale by public issue of share or private placement, the Council may approve that the shares be offered for sale through a willing seller and willing buyer basis or through any other means.

To understand these provisions better, it would be useful to distinguish between entities to be partially privatised, and entities to be fully privatised. And for the former, to further distinguish between the 40% equity to be transferred to Core/Strategic investors, and the 20% to be sold to Nigerian Citizens.

For the entities to be partially privatised, with respect to the 40% equity to be transferred to Core/Strategic investors, it would appear that the only procedure which it can take would be through a willing seller and willing buyer basis as contemplated by the Decree.

This view accords with the elaborate procedures highlighted under head 2 of this discourse where the government (the willing seller) through its agencies, the BPE and the Privatisation Advisers, would enter into direct negotiations with Core/Strategic investors (the willing buyer) to determine the appropriate prices of the enterprises that would be sold to the investors.

For the 20% equities to be sold to Nigerians, it can be made either by public issue or private placement. However, considering the desire of the government that the process

should be transparent, and reach as many Nigerians as possible, it is more likely the sale would be by public issue. Hence, the provision that an offer for the sale of shares by public issue to Nigerians may be made at the capital market.

However, to enjoy maximum efficiency in the disposal process, and take full advantage of the stock exchange facilities, those public enterprises not yet quoted in the stock exchange would have to be listed before the disposal would start.

With respect to the enterprises to be fully privatised, the sale would take place through public offer at the capital market. By the July 1999 presidential order, this sale would start with the full privatisation of 11 public enterprises to be conducted before the end of December, 1999. That sale would be conducted at the Lagos Stock Exchange. Both Nigerians and foreign investors can participate in this process as no distinction is made as to who is eligible to buy the shares. This contrasts with the 20% equity expressly reserved for Nigerians in the enterprises to be only partially privatised.

A related issue here which should be of utmost concern to the foreign investor is the issue of golden shares (i.e. shares carrying special rights) particularly with respect to the 40% to be retained by the government. Would the equities enjoy the status of golden equities to give the government overwhelming control in the enterprises? Our view is that the equities to be retained by the government would not enjoy such sacred status. This view is based on the following reasons.

The first is that the concept of golden shares negates the very essence of liberalisation, and government has in different fora sounded its resolve to liberalise the economy for in all time, and has enacted laws to demonstrate this.

We do not think that it would be right to suppose that having gone this far, government would introduce anything such as the golden shares concept to negate what it has committed so much to do.

Secondly, in the Press briefing made on the 19th day of February, 1999, by the BPE, it was stated clearly by the agency that to protect the enterprises from undue interference in routine business decisions by ministry officials post Privatisation, Management and Shareholders Agreements will be signed.

Thirdly, government is desirous of attracting foreign investors into the country, and would therefore not do anything that would scare them away.

Lastly, the battle for and against golden shares phenomenon has been fought in the Nigerian Privatisation experience, and appears to have been resolved against it. For those familiar with the history of privatisation in Nigeria, it would be recalled that when government privatised the 4 big banks in Nigeria in 1988, it sought to confer golden status on the shares still held by it, but this move was abandoned following its resistance by both local and foreign investors.

(www.chrisogunbanjo.com/files /PRIVATIZATION)

2.8 ENTITIES TO BE PRIVATIZED

Under the Privatisation Decree, two categories of entities are to be privatised - those to be partially privatised, and those to be fully privatised. For the partial privatisation, we have thirty seven companies (37) while twenty five (25) are to be fully privatised, bringing everything to sixty two (62) entities to be privatised. A breakdown of the

companies to be partially privatised shows that two (2) are in the telecommunications sector, one (1) in the electricity sector, seven (7) in the petroleum/oil sector[5]

, two (2) fertilizer companies, one (1) machine tools manufacturing company, one (1) gas company, six (6) companies in the steel and aluminium sector, four (4) companies in the mining and solid mineral sector, two (2) media companies, two (2) insurance companies, three transport and aviation companies, three (3) paper companies, and three (3) sugar companies, bringing the total to thirty seven (37).

2.9 ENTITIES TO BE FULLY PRIVATIZED

For the Companies in which the Government intends to divest of the totality of its equity holding, we have three (3) petroleum marketing companies, six (6) cement companies, five (5) Commercial and Merchant banks, three (3) agro-allied companies, six (6) motor vehicles and truck assembly companies, and two (2) hotels.

As to be gleaned above, these companies to be privatised, whether fully or partially, are among the juiciest companies that can be found anywhere, and indeed represent the most profitable companies, at least potentially, in the Nigerian economy. That the government has slated them down for privatisation demonstrates, more than anything else, the government's belief and commitment in privatisation as a vehicle for true economic liberalization, and as such, an assurance to foreign investors.

(www.chrisogunbanjo.com/files /PRIVATIZATION)

[5] Port Harcourt refinery is made up of two companies.

2.10 TIMING OF IMPLEMENTATION:

From the beginning it must be understood that the first phase of privatisation in Nigeria was that done between 1986 and 1993. The current privatisation programme is only the second phase and it is divided into 3 stages with respect to timing of implementation.

Stage I

This stage is expected to be completed by December`1999. This stage involves the full privatisation of enterprises in three sectoral groups (commercial and merchant banks, cement plants and petroleum marketing companies) which already have their shares listed on the Lagos Stock Exchange. Here government wishes to divest the balance of its equity holdings ranging from 10 to 40 percent.

Target $ 150m - Now completed, $200m transferred to Treasury (BPE, July 2002).

Stage II

This stage is expected to start by January, 2000. It involves the full privatisation of hotels and vehicle assembly plants in which government has equity holdings of between 35% and 100%.

Stage III

This is the final stage. This involves the partial privatisation of enterprises in which the government currently has 100% equity. This includes public utilities, refineries, fertilizer plants and the Nigerian Airways. It is here that Core/Strategic investors would feature prominently. Remarkably, the 40% equity to be transferred to Core/Strategic investors would first be done following the procedure already described in. The 20% to be sold to Nigerian Citizens would only be done after the Core/Strategic investors have been given adequate time to settle down and add value to the enterprises. This is expected to take 2-3 years. It must be emphasized that the phasing arrangement is very

flexible. For instance, although Nigeria Airways was earlier slated for the 3rd stage, the International Finance Corporation (IFC) has already been mandated to commence work on its immediate privatisation. To this end, Bernard Verr, Secretary of the BPE, has stated that government will bring forward any enterprise that in its opinion has become ripe for privatisation. (www.chrisogunbanjo.com/files/PRIVATIZATION

2.11 PRIVATIZATION REALITIES

Privatization has not been a popular reform. Economic assessments of its effects on economic welfare and growth in developing and transition economies have generally been positive. At the same time, allegations of political chicanery and corruption in Russia and Malaysia, fiscal mismanagement in Brazil, escalating prices in Argentina, and loss of jobs in numerous countries have sullied privatization's reputation, even among proponents of the liberalization of the last two decades. Thus, Nobel laureate Joseph Stiglitz campaigns for slower and more deliberate privatization, while critics of the larger liberalizing agenda—known as the Washington Consensus—conclude that privatization should be entirely opposed (Birdsall, N., and J. Nellis. 2003).

At the heart of much of the criticism is the belief that privatization has been unfair—hurting the poor, the disenfranchised, and beleaguered workers, and benefiting the privileged and powerful. Privatization, it is claimed, throws masses of people out of work or forces them to accept jobs with lower pay, less security, and fewer benefits; raises, too far and too fast, the prices of goods and services sold; provides opportunities to enrich the agile and corrupt; and generally makes the rich richer and the poor poorer[6] (Tandon 1995).

[6] A more technical critique of privatization attributes perceived efficiency and performance benefits to market reform and the enhancement of competition, not ownership change. For example, Tandon (1995, 229–30) argues: ". . . there are, of

A major complaint is that, even if privatization contributes to improved efficiency and financial performance, as some contest, it negatively affects distribution of wealth, income, and political power. This perception is widespread and growing: 63 percent of people surveyed in the spring of 2001 in 17 countries of Latin America disagreed or strongly disagreed with the statement: "The privatization of State companies has been beneficial. . . ." The extent of disagreement was 6 percent higher than in 2000 and 20 percent higher than in 1998[7]. More than 60 percent of Sri Lankans interviewed in 2000 opposed the privatization of remaining state-owned firms. Similar expressions of popular dissatisfaction with privatization, of equal or greater magnitude, were found in transition countries generally and Russia in particular (Latinbarometer 2001).

Some popular perceptions and critical assertions are accurate—mistakes have been made; promises have been broken; however, others are inaccurate. One can argue that the concrete outcomes of privatization have, in many cases, been better than people think or that privatization may not be the true cause of the problems people encounter. Nonetheless, perceptions count greatly if they result in political opposition sufficient to slow, halt, or reverse a process that would bring efficiency and growth gains to a society—gains that could, in principle, be fairly shared using tax or other policy instruments.

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course, many cases where privatization appears to have 'resulted' in efficiency improvement; in most of these cases, however, the privatization appears to have been contemporaneous with deregulation or other types of competition-enhancing measures."

[7] Latinbarometer conducted interviews in April and May (2001), and survey results were presented in August of the same year; see Latinbarometer (2001). Results showed that negative perceptions about privatization had increased greatly in certain countries (e.g., Argentina, Brazil, and Colombia) and slightly in others (e.g., Chile, Ecuador, and Venezuela); however, in all 17 countries surveyed, the percentage had grown. For a general discussion of dissatisfaction with liberalizing economic reform in Latin America, see Lora and Panizza (2002).

Moreover, the distributional effects of privatization matter because inequality matters in at least three ways:

_ Most societies possess and exercise implicit limits on their tolerance for inequality, independent of its effects on growth and efficiency.

_ Mounting evidence suggests that inequality can and does hinder growth, particularly in developing economies where institutions and markets are weak[8]

_ Increasingly, it is evident that inequality can perpetuate itself by affecting the nature and pace of economic policy and locking in unproductive political arrangements[9].

2.12 BACKGROUND OF CASE STUDY COMPANIES

2.12.1 African Petroleum Plc

The Nigerian economy is largely dependent on its oil sector which 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

[8] Aghion, Caroli, and Garcia-Penalosa (1999) discuss the growing theoretical and empirical literature regarding this point. Barro (2000) finds that the inequality effect on growth is negative only in developing countries—a finding consistent with the likelihood that the effect operates where markets and institutions are weak and government policy either reinforces or fails to offset those factors; Easterly (2002) and Birdsall and Londoño (1997) emphasize the relevance of asset distribution.

[9] As Hellman, Jones, and Kaufman (2000) documented in the Russian case, initial distribution of resources and property rights to a limited set of actors, in a situation with few institutional impediments to translating economic power into political power, created a group able to block subsequent competition-enhancing and redistributive reforms. Nellis (1999) offers a similar argument.

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 (2008 BP Statistical Energy Survey). 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.

2.12.1.1 Background of the Company:

African Petroleum Plc (AP) a key player in the Nigeria downstream oil sector was incorporated on December 11, 1964. After 14 years in operation, AP changed its status

from a private limited liability company to a public liability company. In compliance with the provisions of the Nigerian Enterprises Promotion Decree of 1977, 40% of the company's shares were sold to Nigerians and a year later, 60% was acquired by the Federal Government of Nigeria in favour of the Nigerian National Petroleum Corporation (NNPC) from the British Petroleum which resorted to the change of name in November 1979 to its current name (AP).

AP's business centres on marketing of petroleum products, covering four main areas namely; Automobile, Industrial, Aviation and Marine sub sectors. Among its products are: Premium Motor Spirits (PMS), Automotive Motor Oil (Diesel), Dual Purpose Kerosene (DPK), Fuel Oils and Jet A-1 fuel to mention a few.

2.12.1.2 Privatization of African Petroleum

In March 1989 the Federal Government sold 20% of the 60% NNPC's stake in AP to Nigerian Citizens, increasing their stake from 40% to 60%. In the year 2000, the Federal Government under its privatization programme divested its remaining 40%, 30% to a core investor named Sadiq Petroleum Nigeria Limited and the remaining 10% to interested Nigerians. In 2005, Sadiq Petroleum Nigeria Limited divested its stake to Asset Management Nominees Ltd. Meanwhile, the N10.195 billion owed to the NNPC by AP was converted to equity holding in favour of NNPC. In May 2007, the shareholding structure took another dimension as Incorporated Trustees of NNPC's Pension Fund divested its stake to Zenon Petroleum & Gas Limited, making it the majority shareholder in the company. AP now has its shares spread amongst over 160,000 shareholders and more are still showing interest in the company.

The company has an authorized share capital of N5 billion divided into 10 billion Ordinary shares of 50 kobo each. The issued and fully paid-up share capital is N394, 393,919 divided into 788,787,838 Ordinary shares of 50k.

2.12.1.3 Corporate Governance

The company operates under a group structure managed by a 10-man Board of Directors three (3) of whom are executives. The Board comprises of professionals with proven track records in private and public endeavours especially in the Oil & Gas industry. The Chairman of the Board, Mr. Femi Otedola, who is known to be a business mogul with a vast experience

in the sector is also currently the chairman of Transcorp Hilton Hotel, Abuja, the president and CEO Zenon Petroleum & Gas Ltd, Seaforce Shipping Company Ltd, Garment Care Ltd, a director in African Finance Corporation (AFC) among many others. The Chief Operating Officer, Mr. Joel Tunde Falasinu, has over 25 years in-depth experience in petroleum products marketing and operations in the downstream sector of Nigerian Oil & Gas industry. Mr. Falashimu, until his appointment as Chief Operating Officer AP, was a General manager Operation Total Plc.

Table 2.3: AP in brief

Incorporated	BP Nigeria Limited 1964 AP Limited 1979 AP Plc 1989
Fully Privatized	Year 2000
Major Investors	Zenon Petroleum and Gas Limited
Technical Partners	BP South Africa {pty} Ltd BP Town Square 61 St Georges Mall Cape Town 8000 South Africa
Turnover	58,110,054 {at Dec 2004}
Retail Network	Above 500 Filling & Service Stations across Nigeria
Number of Employees	347 {at August 2004}
Number of Shareholders	In excess of 158,000
Lubricants Blending Plant	50,000 metric tones capacity annually
Subsidiaries	AP Oil Services Nigeria Limited {wholly owned} AP Properties Limited {wholly owned} AP Ghana Limited {wholly owned}

2.12.2 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[10] as shown in Table 2.4; this presents the profile of the industry by 1978.

[10]. 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.

Table 2.4: ***PROFILE OF THE NIGERIAN CEMENT INDUSTRY BY 1978***

Company (location) Established	**Year**	**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)	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 N75 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.

2.12.2.1 Privatization of Ashaka Cement

Ashakacem Plc was incorporated on August 7, 1974 as a private limited liability company with primary activities as manufacturing and marketing of cement products. It was later converted to a public company and its shares were subsequently quoted on the Nigerian Stock Exchange (NSE) in July 1990 and partially privatized 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 N1.20 per share with a total market capitalization of N39 million. The offer ran from 5 March to 30 March 1990.

A total of 37,184 applications for 50,854,852 ordinary shares were 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 N53 million to N103 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 market, which are as stimulating as they are invisible.

Table 2.5: ***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.

For example, within the cement sector, Ashakacem was able to raise fresh funds to the tune of N90 million to finance their plant optimization programmes.

Ashaka was fully integrated into the Lafarge Group in July 2002 after the acquisition of Blue

Circle Industry Plc of the United Kingdom (BCI, UK) by Lafarge SA, France. As at date, Lafarge Group remains the key shareholders in Ashaka with 50% ownership via BCI and 0.16% via Lafarge (Nigeria) limited. This puts the total shareholdings of Lafarge Group in the company at 50.16 per cent while the remaining percentage is held by Nigerians-private individuals and institutions.

2.12.2.2 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.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 SOURCE OF DATA

Secondary data from the following establishments were used in the study:

- Annual reports, offer prospectus and financial statements of the privatized enterprises
- Bureau of Public Enterprises publications
- Fact Book of the Nigerian Stock Exchange

3.2 METHOD OF CAPTURING PERFORMANCE INDICATORS

Many researchers conducted efficiency measurement studies. Bakhtiar and Sher (2005), Meggison et al (1994), Iraji (1999), Jerome (2001) and Amakom (2003). The ranges of performance indicators used have given insight to what is needed. This study thus made use of micro and macro indicators such as profitability, operating or relative efficiency, capital expenditure and employment. Other performance indicators include output, dividend policies and capital structure for each enterprise included in the sample. Using the efficiency, financial and distributional impacts of privatization as indicators, the impact of privatization on private sector development will be obtained.

For African petroleum PLC considering the date of privatization which is October, 2000 to measure the impact of privatization changes in any given indicator will be measured by comparing the average value for the ten years before privatization (-10 to –1) i.e. 1990 to 1999 with ten years after privatization (+1 to +10) i.e. 2001 to 2010 and for ASHAKA Cement Company considering the date of privatization which is march,

2001we compare the average value for the nine years before privatization (-9 to –1) i.e. 1992 to 2000 with nine years after privatization (+1 to +9) i.e. 2002 to 2010. The year of privatization is thus taken as the base year (100), which in effect is exempted from the analysis. We then test whether a statistically significant change occurred after privatization.

To do so, we apply the Wilcoxon signed rank test, which is a parameter free test and especially well suited for cases with small sample sizes. To conduct the test we identify the period prior to privatization as one population and that after privatization as the second one to ascertain the significance of changes in the observed variables before and after privatization process.

This study investigates the efficiency of two privatized firms in Nigeria thus: The African petroleum PLC and the ASHAKA Cement Company of Nigeria.

Table 3.1: SUMMARY OF INDICATORS EMPLOYED AND CAPTURING INSTRUMENTS

Major Indicators	Sub-Indicators	Method of capturing
Profitability	Return on sales	Net income/sales
	Return on assets	Net income / total assets
	Return on equity	Ordinary share expressed as a percentage of average equity
Operating Efficiency	Sales efficiency	Real sales/number of employees
	Net income efficiency	Net income/number of employees
Capital investment		Capital expenditure/sales
		Capital expenditure/total assets
Output		Real sales
Employment		Employment level
Leverage		Debt to assets ratio
Dividend		Dividend to sales ratio (before and after taxation)
		Dividend payments/net income (before and after taxation)

3.3 METHOD OF CAPTURING TECHNICAL EFFICIENCY

One major issue facing researchers and policy makers in developing countries is how to measure changes in firm efficiency associated with privatization/reform of firms. Various approaches to defining firm output and input in measuring firm efficiency have been adopted. In literature, there are two techniques to measure efficiency frontier. One is econometric based parametric frontier technique proposed by Aigner *et al.,* (1977). The other is mathematical non-parametric linear programming technique, called Data

Envelopment Analysis (DEA) developed by Charnes *et al* (1978) to measure the relative efficiency and management performance in the presence of incomparable multiple inputs or outputs.

3.3.1 Technical Efficiency Model Specification

The study adopted a mathematical non parametric linear programming techniques (DEA) model developed by Charnes et al. 1978.

DEA is a multi-factor productivity analysis model for measuring the relative efficiencies of a homogenous set of decision making units (DMUs). The efficiency score in the presence of multiple input and output factors is defined as:

Efficiency =weighted sum of outputs /weighted sum of inputs 1

Assuming that there are n DMUs, each with m inputs and s outputs, the relative efficiency score of a test DMU p is obtained by solving the following model proposed by Charnes et al. (1978):

$$\text{Max} \quad \frac{\sum_{k=1}^{s} v_k y_{kp}}{\sum_{j=1}^{m} u_j x_{jp}}$$

$$\text{s.t} \quad \frac{\sum_{k=1}^{s} v_k y_{ki}}{\sum_{j=1}^{m} u_j x_{ji}} \leq 1 \quad \forall i$$

$$v_k, u_j \geq 0 \qquad \forall k, j, \qquad 2$$

Where

$k = 1$ to s,

$j = 1$ to m,

$i = 1$ to n,

y_{ki} = amount of output k produced by DMU i,

x_{ji} = amount of input j utilized by DMU i,

v_k = weight given to output k,

u_j = weight given to input j.

But since linear programming cannot handle fraction as in (2), we need to transform the formulation, such that we limit the denominator of the objective function and only allow the linear programming to maximize the numerator.

So the new formulation would be:

$$\text{Max} \quad \sum_{k=1}^{s} v_k y_{kp}$$

$$\text{s.t} \quad \sum_{j=1}^{m} u_j x_{jp} = 1$$

$$\sum_{k=1}^{s} v_k y_{ki} - \sum_{j=1}^{m} u_j x_{ji} \le 0 \quad \forall i$$

$$u_{k,} v_j \ge 0 \qquad \forall k, j. \qquad 3$$

The above problem is run n times in identifying the relative efficiency scores of all the DMUs. Each DMU selects input and output weights that maximize its efficiency score.

In general, a DMU is considered to be efficient if it obtains a score of 1 and a score of less than 1 implies that it is inefficient.

3.3.2 Benchmarking in DEA

For every inefficient DMU, DEA identifies a set of corresponding efficient units that can be utilized as benchmarks for improvement. The benchmarks can be obtained by applying the duality theorem in linear programming as shown in (4).

$$\text{Min} \quad \theta$$

$$\text{s.t} \quad \sum_{i=1}^{n} \lambda_i x_{ji} - \theta x_{jp} \leq 0 \qquad \forall j$$

$$\sum_{i=1}^{n} \lambda_i y_{ki} - y_{kp} \geq 0 \qquad \forall k$$

$$\lambda_i \geq 0 \quad \forall i \qquad (4)$$

Where

θ = efficiency score, and

λs = dual variables.

Based on problem (4), a test DMU is inefficient if a composite DMU (linear combination of units in the set) can be identified which utilizes less input than the test DMU while maintaining at least the same output levels. The units involved in the construction of the composite DMU can be utilized as benchmarks for improving the inefficient test DMU.

The Constant Return to Scale linear programming problem can easily be modified to account for the Variable Return to Scale (VRS) by adding the convexity of constraint: N1'λ =1 to equation 4 to give:

Min θ

s.t $\sum_{i=1}^{n} \lambda_i x_{ji} - \theta x_{jp} \leq 0 \qquad \forall j$

$\sum_{i=1}^{n} \lambda_i y_{ki} - y_{kp} \geq 0 \qquad \forall k$

N1'λ =1

$\lambda_i \geq 0 \quad \forall i$ 5

CHAPTER 4

DATA PRESENTATION AND ANALYSIS

4.1. INTRODUCTION

This chapter is in two sections, section one present result of the before and after averages of performance measures of the firms. The measures include those for profitability, operating efficiency, capital investment, output and employment. Others are leverage and dividends and section two presents the mathematical non parametric technique linear programming data envelope analysis (DEA) computer result. The basic results are presented in this chapter.

4.2 PRESENTATION OF PERFORMANCE INDICATORS RESULT

4.2.1 Profitability Indicators

Table 4.1

Profitability African Petroleum	**Mn B/F Prvtztn**	**Mn After prvtztn**	**Mn chng due to prvtztn**	**Wilcoxon statistic**
Return on sales (Before taxation)	0.0638059	0.0754209	0.01162	2.52**
Return on sales (After taxation)	0.044937718	0.055458142	0.01052	2.62*
Return on assets (Before taxation)	0.61155294	0.88214661	0.270594	2.52*
Return on assets (After taxation)	0.43070919	0.64865561	0.217946	2.62*
Return on equity (Before taxation)	16.541479	3.3766196	-13.1649	2.78*
Return on equity (After taxation)	23.486823	4.5920723	-18.8948	2.78*
Profitability Ashaka Cement				
Return on sales (Before taxation)	0.300943	0.336265	0.035322	2.64*
Return on sales (After taxation)	0.197361	0.222403	0.025042	2.64*
Return on assets (Before taxation)	0.208135	0.205471	-0.00266	2.64*
Return on assets (After taxation)	0.136496	0.222403	-0.0006	2.64*
Return on equity (Before taxation)	31.31869	16.91886	-14.3998	2.64*
Return on equity (After taxation)	47.75592	25.58063	-22.1753	2.64*

*****, ****, ***, **, * Significance at 5, 2.5, 1, 0.5 and 0.05%, respectively.

Source: Author's Computation

Given that the property right theory points out that state owned enterprise lack proper economic incentive for management to perform efficiently, and that a change to a more private ownership structure will leads to profit maximization, it is expected that profitability will 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). The results show significant improvements in profitability after divestiture in the two firms (Table 4.1). For example, the mean return on sales goes from 6.4% before privatization to 7.5% at Africa petrol. Many of the variables are significant.

4.2.2 Operating Efficiency

Table 4.2

Operating Efficiency African petroleum	**Mn B/F Prvtztn**	**Mn After prvtztn**	**Mn Chng due to prvtztn**	**Wilcoxon statistic**
Sales efficiency	12098.225	318,193	306,094	2.78*
Net income efficiency (Before tax)	771.9383	23,998	23,226	2.52**
Net income efficiency (After tax)	543.66662	17646.367	17102.7	
Operating Efficiency Ashaka Cement				
Sales efficiency	380.429	16182.64	14802.21	2.64*
Net income efficiency (Before tax)	415.4305	5441.649	5026.219	2.64*
Net income efficiency (After tax)	272.4425	3599.07	3326.628	2.64*

*****, ****, ***, **, * Significance at 5, 2.5, 1, 0.5 and 0.05%, respectively.

Source: Author's Computation

Following from the property rights and public choice literature, privatization is expected to result in increased efficiency; privatized firms should employ their human, financial and technological resources more efficiently because of a greater stress on profit goals and a reduction of government subsidies (Kikeris, Nellis and Shirley, 1992; Boycko, Shlefer and Vishny, 1996). As a result of new investment, new technology and improved governance, privatization is expected to lead to increase in efficiency. To capture the ability of firms to extract maximum output from any given level of inputs, two indicators of operating efficiency were computed: sales efficiency (real

sales/employees) and net income efficiency (net income/employees) both before and after tax. Based on the findings and the test carried out both firms witnessed an upsurge in the two indicators. The results are also significant at the 0.5 and 0.05% levels see (Table 4.2).

4.2.3 Capital Investment

Table 4.3

Capital investment African petroleum	**Mn B/F Prvtztn**	**Mn After prvtztn**	**Mn chng due to prvtztn**	**Wilcoxon statistic**
Capital expenditure to Sales	- 0.009978	0.009978		2.27***
Capital expenditure To total assets	-0.1167063	0.1167063		2.27 ***
Capital investment Ashaka Cement				
Capital expenditure to Sales	0.08521	0.282063	0	2.64*
Capital expenditure To total assets	0.05893	0.282063	0.223133	2.64*

*****, ****, ***, **, * Significance at 5, 2.5, 1, 0.5 and 0.05%, respectively.
Source: Author's Computation

Government expects that greater emphasis on efficiency will lead the newly privatized firm to increase its capital investment spending. Once privatized, the firm should also increase its capital expenditures because it has greater access to private debt and equity markets and it will have more incentives to invest in growth opportunities (Megginson, Nash and Van Randenborgh, 1994, Boubakri and Cosset, 1998). When efficiency is increased there is likely to be a corresponding increase in capital investment since access to private debt and equity market is less probabilistic. To assess the impact of

privatization on capital formation, two indicators were computed: capital expenditure to sales and capital expenditure to total assets. Both firms witnessed a slight increase in capital investment spending after privatization as in the case of African petroleum there was no evidence of capital investment spending before privatization (Table 4.3).

4.2.4 Output

Table 4.4

Output **African Petroleum**	**Mn B/F Prvtztn**	**Mn After prvtztn**	**Mn chng due to prvtztn**	**Wilcoxon statistic**
Real sales	8117908.8	114,123,734	106,005,825	2.78*
Output **Ashaka Cement**				
Real sales	2413757	11139500	8725743	2.64*

*****, ****, ***, **, * Significance at 5, 2.5, 1, 0.5 and 0.05%, respectively.

Source: Author's Computation

Following privatization, output should increase because of greater competition, incentives and more flexible financing opportunities (Megginson, Nash and Van Randenborgh, 1994). On the other hand, the theoretical model of Boycko, Shlefer and Vishny, (1996) predicts a fall in output since the government no longer subsidizes the newly privatized firm to maintain inefficiency high output level. When privatization is correctly conceived, efficiency is fostered, investment is also stimulated which correspondingly leads to a boost in output. African petroleum shows a significant response (positive) to the claim of increase in output than ASHAKA Cement. See (Table 4.4)

4.2.5 Employment

Table 4.5

Employment **African petroleum**	**Mn B/F Prvtztn**	**Mn After prvtztn**	**Mn chng due to prvtztn**	**Wilcoxon statistic**
Total employment	671	359	-312	0.025*****
Employment **Ashaka Cement**				
Total employment	1748.556	688.3611	-1060.19	0.03*****

*****, ****, ***, **, * Significance at 5, 2.5, 1, 0.5 and 0.05%, respectively.

Source: Author's Computation

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 immediate effect of most privatisation instances has been that of employment loss not only because there tends to be substantial overstaffing in public enterprises, but also because new owners typically prefer to begin with less then ideal levels of employment to allow for greater flexibility in both the number of workers and the contracts under which they are employed. In other words privatization is assumed to have negative effect on employment in the short-run but expected to have positive effect in the medium and long run. Government expect the level of employment to decline once the SOE which is usually overstaffed turns out private and no longer receives government subsidies. However, in growing sectors, the newly privatized firms could absorb surplus

labour through new capital investment and more productive use of existing assets (Kikeris, Nellis and Shirley, 1992). The results presented here also confirm a decline in the number of employees after privatization. See (Table 4.5).

4.2.6 Leverage

Table 4.6

Leverage African petroleum	**Mn B/F Prvtztn**	**Mn After prvtztn**	**Mn chng due to prvtztn**	**Wilcoxon statistic**
Debt to assets	-0.843913041	0.843913041		2.78*
Long-term debt to Equity	-28.33184105	28.33184105		2.78*
Leverage Ashaka Cement				
Debt to assets	0.13023	0.041855	-0.08838	1.75****
Long-term debit to Equity	1.997851	1.203987	-0.79386	1.75****

*****, ****, ***, **, * Significance at 5, 2.5, 1, 0.5 and 0.05%, respectively.

Source: Author's Computation

The switch from public to private ownership is supposed to lead to a reduction in the proportion of debt in the capital structure since the government might end debt guarantee which in other words will increases the cost of borrowing due to firm's new access to public equity markets. Errunza and Mazumdar's (1994) model also suggests that, if bankruptcy costs are significant, once government guarantees are removed, the newly privatized firm should reduce its debt level. From the study results, African petroleum show significant accentuation to the leverage proposition while ASHAKA Cement is on the negative side as shown in (Table 4.6)

4.2.7 Dividends

Table 4.7

Dividends African Petrol	**Mn B/F Prvtztn**	**Mn After prvtztn**	**Mn chng due to prvtztn**	**Wilcoxon statistic**
Cash dividends to Sales	0.024142178	0.041743103	0.01760092	1.71****
Dividends payout (before taxation)	0.378368965	0.5534684	0.17509943	1.71****
Dividends payout (after taxation)	0.5372364	0.752695672	0.21545927	1.71****
Dividends Ashaka Cement				
Cash dividends to Sales	0.054241	0.194573	0.140332	2.58*
Dividends payout (before taxation)	0.180236	0.57863	0.398394	2.58*
Dividends payout (after taxation)	0.274831	0.874866	0.600035	2.58*

*****, ****, ***, **, * Significance at 5, 2.5, 1, 0.5 and 0.05%, respectively.

Source: Author's Computation

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 the two firms, dividend payments increased after divestiture as shown in (Table 4.7). The Z test for African petroleum is not as significant as that of Ashaka cement.

4.3 PRESENTATION OF THE COMPUTER RESULT FOR DATA ENVELOPE ANALYSIS (DEA) TECHNICAL EFFICIENCY SUMMARY FOR THE PRIVATIZED FIRMS

Table 4.8:

AFRICAN PETROLEUM
Results from DEAP Version 2.1
Input orientated DEA
Scale assumption: VRS

EFFICIENCY SUMMARY:

firm	crste	vrste	scale	
1990	1.000	1.000	1.000	-
1991	1.000	1.000	1.000	-
1992	0.008	1.000	0.008	irs
1993	0.013	0.879	0.015	irs
1994	0.022	0.846	0.026	irs
1995	0.026	0.722	0.036	irs
1996	0.023	1.000	0.023	irs
1997	0.354	1.000	0.354	irs
1998	0.017	0.499	0.034	irs
1999	0.025	0.625	0.041	irs
2000	0.939	1.000	0.939	drs
2001	1.000	1.000	1.000	-
2002	0.726	0.855	0.850	irs
2003	1.000	1.000	1.000	-
2004	0.526	0.700	0.752	irs
2005	1.000	1.000	1.000	-
2006	0.894	1.000	0.894	drs
2007	1.000	1.000	1.000	-
2008	0.061	0.574	0.107	irs
2009	1.000	1.000	1.000	-
2010	0.801	0.903	0.845	irs
Mean	0.545	0.886	0.572	
Mean Before	0.249	0.857	0.254	
Mean After	0.801	0.903	0.845	

Note: crste = technical efficiency from CRS DEA
vrste = technical efficiency from VRS DEA
scale = scale efficiency = crste/vrste

ASHAKA CEMENT
Results from DEAP Version 2.1
Input orientated DEA
Scale assumption: VRS

EFFICIENCY SUMMARY:

firm	crste	vrste	scale	
1992	1.000	1.000	1.000	-
1993	0.414	0.664	0.623	irs
1994	1.000	1.000	1.000	-
1995	0.526	0.629	0.837	irs
1996	1.000	1.000	1.000	-
1997	0.894	1.000	0.894	drs
1998	1.000	1.000	1.000	-
1999	0.061	0.563	0.109	irs
2000	0.818	1.000	0.818	irs
2001	1.000	1.000	1.000	-
2002	1.000	1.000	1.000	-
2003	1.000	1.000	1.000	-
2004	1.000	1.000	1.000	-
2005	1.000	1.000	1.000	-
2006	0.940	0.967	0.972	irs
2007	0.622	0.983	0.633	irs
2008	0.445	0.785	0.566	irs
2009	0.829	1.000	0.829	irs
2010	1.000	1.000	1.000	-
Mean	0.818	0.926	0.857	
Mean before	0.746	0.873	0.809	
Mean after	0.871	0.971	0.884	

Note: crste = technical efficiency from CRS DEA
vrste = technical efficiency from VRS DEA
scale = scale efficiency = crste/vrste

The first stage in the implementation of the Data envelope analysis (DEA) is an identification of all outputs and inputs in each firm. The choice of inputs and outputs

has been guided by the literature. The output for Ashaka Cement is cement per tonne and turnover while the output for African petroleum is turnover. The inputs for African petrol and Ashaka Cement, following Martin and Parker (1997), Jerome, A (2001), Amakom, U S (2003), are employee cost, 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. 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 2.1 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 4.8. 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 0.746 in the pre-privatization period to 0.871 in the post-privatization period in Ashaka Cement and 0.249 to 0.801 at Africa petroleum. 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 4.8. 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 0.873 in the pre-privatization era to 0.971 for Ashaka cement and 0.857 to 0.903 for Africa petroleum. 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 4.8)

CHAPTER 5

SUMMARY CONCLUSION AND RECOMMENDATION

5.1 SUMMARY

This study has examined the financial and operating performance of two fully privatized enterprises in competitive sectors in Nigeria by comparing the pre and post-privatization performance using micro and macro indicators such as profitability, operating efficiency, capital investment spending, output and dividends. The study has also used a mathematical non parametric linear programming techniques (DEA) developed by Charnes et al. 1978 to obtain the technical efficiency of the selected enterprises.

The study was set to confirm whether or not privatization in Nigeria has led to better performance of the enterprises involved. From the result of the study, the performance of the two selected enterprises shows a significant improvement in some of the indicators, such as profitability in both Africa petrol and ASHAKA Cement Company of Nigeria. Operating efficiency also witnessed an upsurge in the two indicators for both firms. While both firms witnessed a slight increase in capital investment spending as there was no evidence of capital investment spending before privatization in African petroleum. In the case of output, African petroleum shows a significant response (positive) to the claim of increase in output than ASHAKA Cement. The evidence shows that there has been a significant employment loss in both African petroleum and Ashaka Cement. In the case of leverage African petroleum show significant accentuation to the leverage proposition while ASHAKA Cement is on the negative side. In the two firms, dividend payments increased after divestiture. By exploiting conflicting effects it was found that privatization enhance efficiency in enterprise

performance. The DEA results also provide empirical support for the view that privatization is associated with improved technical efficiency.

The results indicate that the privatized firms became more efficient after privatization than before privatization providing evidence in support of the efficiency hypothesis. Such a finding has important implication on privatization policy in general. It suggests that the privatization of public enterprises in Nigeria did provide some benefits in the form of increased efficiency.

5.2 CONCLUSION

It should be borne in mind, however, that no assessment is made of whether the improvement in efficiency has been translated into distributional equity, and ultimately into improved consumer welfare. Ownership seems to be important for enterprise performance. Indeed, privatization if well conceived 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.

While a success is good, existing conditions place some firms beyond hope of internal reform even with new owners because markets and policy frameworks are too poor for ownership change alone to turn the tide dramatically.

Partly because it is not a panacea, controversy continues about the effects—and thus the desirability—of privatization, particularly in countries like Nigeria where complementary reforms have just put in place, competition is limited, and regulatory and supervisory capacity are embryonic. These challenges must be addressed, nonetheless this study has shown that privatization is among the more successful economic reforms; that is, in many more cases than not, it has yielded good returns to

new private owners, freed the state of a heavy administrative and unproductive financial burden, provided governments with a one-time fiscal boost, and helped to sustain a larger process of market-enhancing economic reforms.

These results are encouraging—if not surprising—since Nigeria like most developing countries and transition economies are well inside the optimal production frontier. Because of policy distortions and government failures, there is often ample room for increasing efficiency by reducing the state's stranglehold on resources and making room for competition that fosters individual entrepreneurship, motivates workers, and supports overall productivity gains.

However, caution should be exercised in interpreting the result which are based on limited sample size (two firms only)

In certain cases, privatization has produced both increased income and wealth for investors, but increase inequitable distribution of income and wealth.

5.3 RECOMMENDATION

Flowing from the findings and conclusion we recommend that privatization programme should be pursued vigorously in Nigeria.

- Government should set up a veritable regulatory mechanism for the industries that will be in charge of issues of pricing, coordination and competition among other operators, as well as protecting the interests of the customers. Where sector regulators exist already, they need to be empowered.

-With the absence of sector regulators and an anti competition laws or commission, an effective post privatization regulatory and compliance framework should be put in place. In other jurisdictions, privatized firms are de-privatized and ownership and

control reverted to the regulator once they fail to meet agreed benchmarks within specific time limits. Since the BPE is overwhelmed by several regulatory responsibilities, another sub commission should be established for this purpose.

- Government should empower low income earners to be able to take part in the purchase of shares and enjoy the quality of product from the privatized companies as prices of their products are beyond the reach of the poor.

- The Federal and State governments should encourage institutional owners (public investors) in which local communities, villages, cities, foundations are allowed to establish and run companies.

- There should be a very high rate of public enlightenment and governments should ensure high transparency and accountability in the sale of public enterprises.

- Government should contract out part of the production and distribution operations of public enterprises that have not been privatized.

- Rather than outright sale of the enterprises to few rich hands. Government should go into unit ventures with the private entrepreneurs and employers. Yet, government should have decisive influence on the ventures.

In conclusion, the introduction of the above suggested reforms will certainly stimulate and ensure optimal value of privatization to the Nigerian economy in the longer term. With a new government and economic team, the reforms in the energy sector, a new National Council on Privatization, it will be a brand new opportunity to inculcate best global practices into the Nigerian privatization exercise.

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APPENDIX –A

AP WILCOXON SIGN RANK TEST RESULT

Analyse-it v2.22

Test	**Compare Pairs - Wilcoxon test**		
	TO Aft > TO B4		
Performed by	HP USER	Date	30 January 2011

n	10		
Median difference	88,502,132.0		
95.8% CI	41,497,564.0	to +∞	(exact)
Wilcoxon's statistic	55.0		
Z statistic	-		
1-tailed p	0.0010	(exact)	

Difference between pairs	N	Rank sum	Mean rank
Positive	10	55.0	5.50
Negative	0	0.0	-
Zero	0		

Analyse-it v2.22

Test	**Compare Pairs - Wilcoxon test**		
	DB Aft > DB B4		
Performed by	HP USER	Date	30 January 2011

n	10		
Median difference	8,467,307.3		
95.8% CI	5,560,134.0	to +∞	(exact)
Wilcoxon's statistic	55.0		

Difference between pairs	N	Rank sum	Mean rank
Positive	10	55.0	5.50
Negative	0	0.0	-
Zero	0		

Analyse-it® Evaluation

Z statistic	-	
1-tailed p	0.0010	(exact)

Analyse-it v2.22

Test	**Compare Pairs - Wilcoxon test**
	T A Aft ≠ T A B4
Performed by	HP USER
Date	30 January 2011

n	10

Difference between pairs	N	Rank sum	Mean rank
Positive	10	55.0	5.50
Negative	0	0.0	-
Zero	0		

Median difference	7,154,585.0		
95.1% CI	3,016,627.5	###########	(exact)
Wilcoxon's statistic	55.0		
Z statistic	-		
2-tailed p	0.0020	(exact)	

Test	**Compare Pairs - Wilcoxon test**
	T A Aft > T A B4
Performed by	HP USER
Date	30 January 2011

n	10

Difference between pairs	N	Rank sum	Mean rank
Positive	10	55.0	5.50
Negative	0	0.0	-
Zero	0		

Median difference	7,154,585.0		
95.8% CI	3,415,506.5	to +∞	(exact)
Wilcoxon's statistic	55.0		
Z statistic	-		
1-tailed p	0.0010	(exact)	

Analyse-it® Evaluation Copy

Analyse-it v2.22

Test	**Compare Pairs - Wilcoxon test**
	DV Aft > DV B4
Performed by	HP USER
Date	30 January 2011

n	10		
Difference between pairs	N	Rank sum	Mean rank
Positive	4	34.0	8.50
Negative	6	21.0	3.50
Zero	0		
Median difference	615,988.0		
95.8% CI	-183,600.0	to +∞	(exact)
Wilcoxon's statistic	34.0		
Z statistic	-		
1-tailed p	0.2783	(exact)	

Analyse-it v2.22

Test	**Compare Pairs - Wilcoxon test**
	RM Aft > RM B4
Performed by	HP USER
Date	30 January 2011

n	10		
Difference between pairs	N	Rank sum	Mean rank
Positive	10	55.0	5.50
Negative	0	0.0	-
Zero	0		
Median difference	953,271.8		
95.8% CI	476,051.3	to +∞	(exact)
Wilcoxon's statistic	55.0		
Z statistic	-		
1-tailed p	0.0010	(exact)	

Analyse-it v2.22

Test	**Compare Pairs - Wilcoxon test**
	OD Aft > OD B4
Performed by	HP USER
Date	30 January 2011

n	10		
Difference between pairs	N	Rank sum	Mean rank
Positive	10	55.0	5.50
Negative	0	0.0	-
Zero	0		
Median difference	179,197.0		
95.8% CI	161,197.0	to +∞	(exact)
Wilcoxon's statistic	55.0		
Z statistic	-		
1-tailed p	0.0010	(exact tables used, 80% ties)	

Analyse-it v2.22

Test	**Compare Pairs - Wilcoxon test**
	C E Aft > C E B4
Performed by	HP USER
Date	30 January 2011

n	10		
Difference between pairs	N	Rank sum	Mean rank
Positive	9	45.0	5.00
Negative	0	0.0	-
Zero	1		
Median difference	1,008,034.5		
95.8% CI	504,017.3	to +∞	(exact)
Wilcoxon's statistic	45.0		
Z statistic	-		
1-tailed p	0.0020	(exact)	

Analyse-it v2.22

Test	**Compare Pairs - Wilcoxon test**
	N E Aft > N E B4
Performed by	HP USER
Date	30 January 2011

n	10		
Difference between pairs	N	Rank sum	Mean rank
Positive	0	0.0	-
Negative	10	55.0	5.50
Zero	0		
Median difference	-313.3		
95.8% CI	-369.5	to +∞	(exact)
Wilcoxon's statistic	0.0		
Z statistic	-		
1-tailed p	1.0000	(exact)	

Analyse-it v2.22

Test	**Compare Pairs - Wilcoxon test**
	SLS Aft > SLS B4
Performed by	HP USER
Date	30 January 2011

n	10		
Difference between pairs	N	Rank sum	Mean rank
Positive	10	55.0	5.50
Negative	0	0.0	-
Zero	0		
Median difference	88,502,132.0		
95.8% CI	41,497,564.0	to +∞	(exact)
Wilcoxon's statistic	55.0		
Z statistic	-		
1-tailed p	0.0010	(exact)	

Analyse-it v2.22

Test	**Compare Pairs - Wilcoxon test**
	NI AT Aft > NI AT B4
Performed by	HP USER
Date	30 January 2011

n	10			
Difference between pairs	N	Rank sum	Mean rank	
Positive	8	52.0	6.50	
Negative	2	3.0	1.50	
Zero	0			
Median difference	5,119,675.0			
95.8% CI	632,036.0	to +∞	(exact)	
Wilcoxon's statistic	52.0			
Z statistic	-			
1-tailed p	0.0049	(exact)		

Analyse-it v2.22

Test	**Compare Pairs - Wilcoxon test**
	FA Aft > FA B4
Performed by	HP USER
Date	30 January 2011

n	10			
Difference between pairs	N	Rank sum	Mean rank	
Positive	10	55.0	5.50	
Negative	0	0.0	-	
Zero	0			
Median difference	6,454,643.5			
95.8% CI	4,671,728.5	to +∞	(exact)	
Wilcoxon's statistic	55.0			
Z statistic	-			
1-tailed p	0.0010	(exact)		

Analyse-it v2.22

Test	Compare Pairs - Wilcoxon test		
	NI BT Aft > NI BT B4		
Performed by	HP USER	Date	30 January 2011

n	10		
Difference between pairs	N	Rank sum	Mean rank
Positive	8	50.0	6.25
Negative	2	5.0	2.50
Zero	0		
Median difference	6,193,693.0		
95.8% CI	654,867.0	to +∞	(exact)
Wilcoxon's statistic	50.0		
Z statistic	-		
1-tailed p	0.0098	(exact)	

Analyse-it v2.22

Test	Compare Pairs - Wilcoxon test		
	EC Aft > EC B4		
Performed by	HP USER	Date	30 January 2011

n	10		
Difference between pairs	N	Rank sum	Mean rank
Positive	10	55.0	5.50
Negative	0	0.0	-
Zero	0		
Median difference	839,484.0		
95.8% CI	679,624.5	to +∞	(exact)
Wilcoxon's statistic	55.0		
Z statistic	-		
1-tailed p	0.0010	(exact)	

APPENDIX -B

ASHAKA CEMENT WILCOXON SIGN RANK TEST RESULT

Analyse-it v2.22

Test	**Compare Pairs - Wilcoxon test**		
	TO Aft > TO B4		
Performed by	HP USER	Date	3 February 2011

n	9		
Difference between pairs	N	Rank sum	Mean rank
Positive	9	45.0	5.00
Negative	0	0.0	-
Zero	0		
Median difference	13,134,707.0		
95.1% CI	10,540,999.0	to +∞	(exact)
Wilcoxon's statistic	45.0		
Z statistic	-		
1-tailed p	0.0020	(exact)	

Analyse-it v2.22

Test	**Compare Pairs - Wilcoxon test**		
	DB Aft > DB B4		
Performed by	HP USER	Date	3 February 2011

n	9		
Difference between pairs	N	Rank sum	Mean rank
Positive	5	30.0	6.00
Negative	4	15.0	3.75
Zero	0		
Median difference	348,145.3		
95.1% CI	-193,248.5	to +∞	(exact)
Wilcoxon's statistic	30.0		
Z statistic	-		
1-tailed p	0.2129	(exact)	

Analyse-it v2.22

Test	**Compare Pairs - Wilcoxon test**
	NA Aft > NA B4
Performed by	HP USER
Date	3 February 2011

n	9		
Difference between pairs	N	Rank sum	Mean rank
Positive	9	45.0	5.00
Negative	0	0.0	-
Zero	0		
Median difference	7,725,060.0		
95.1% CI	6,574,970.0	to +∞	(exact)
Wilcoxon's statistic	45.0		
Z statistic	-		
1-tailed p	0.0020	(exact)	

Analyse-it v2.22

Test	**Compare Pairs - Wilcoxon test**
	DV Aft > DV B4
Performed by	HP USER
Date	3 February 2011

n	9		
Difference between pairs	N	Rank sum	Mean rank
Positive	8	44.0	5.50
Negative	1	1.0	1.00
Zero	0		
Median difference	1,925,175.0		
95.1% CI	984,025.0	to +∞	(exact)
Wilcoxon's statistic	44.0		
Z statistic	-		
1-tailed p	0.0039	(exact)	

Analyse-it v2.22

Test	Compare Pairs - Wilcoxon test		
	RM Aft > RM B4		
Performed by	HP USER	Date	3 February 2011

n	9		
Difference between pairs	N	Rank sum	Mean rank
Positive	9	45.0	5.00
Negative	0	0.0	-
Zero	0		
Median difference	676,126.5		
95.1% CI	537,552.5	to +∞	(exact)
Wilcoxon's statistic	45.0		
Z statistic	-		
1-tailed p	0.0020	(exact)	

Analyse-it v2.22

Test	Compare Pairs - Wilcoxon test		
	OD Aft > OD B4		
Performed by	HP USER	Date	3 February 2011

n	9		
Difference between pairs	N	Rank sum	Mean rank
Positive	9	45.0	5.00
Negative	0	0.0	-
Zero	0		
Median difference	438,750.0		
95.1% CI	351,000.0	to +∞	(exact)
Wilcoxon's statistic	45.0		
Z statistic	-		
1-tailed p	0.0020	(exact tables used, 78% ties)	

Analyse-it v2.22

Test	Compare Pairs - Wilcoxon test		
	CD Aft > CD B4		
Performed by	HP USER	Date	3 February 2011

n	9		
Difference between pairs	N	Rank sum	Mean rank
Positive	7	38.0	5.43
Negative	2	7.0	3.50
Zero	0		
Median difference	65.4		
95.1% CI	4.3	to +∞	(exact)
Wilcoxon's statistic	38.0		
Z statistic	-		
1-tailed p	0.0371	(exact)	

Analyse-it v2.22

Test	Compare Pairs - Wilcoxon test		
	CE Aft > CE B4		
Performed by	HP USER	Date	3 February 2011

n	9		
Difference between pairs	N	Rank sum	Mean rank
Positive	9	45.0	5.00
Negative	0	0.0	-
Zero	0		
Median difference	2,829,388.5		
95.1% CI	1,302,448.5	to +∞	(exact)
Wilcoxon's statistic	45.0		
Z statistic	-		
1-tailed p	0.0020	(exact)	

Analyse-it v2.22

Test	**Compare Pairs - Wilcoxon test**
	NE Aft > NE B4
Performed by	HP USER
Date	3 February 2011

n	9		
Difference between pairs	N	Rank sum	Mean rank
Positive	0	0.0	-
Negative	9	45.0	5.00
Zero	0		
Median difference	-1,062.3		
95.1% CI	-1,121.3	to +∞	(exact)
Wilcoxon's statistic	0.0		
Z statistic	-		
1-tailed p	1.0000	(exact)	

Analyse-it v2.22

Test	**Compare Pairs - Wilcoxon test**
	SL Aft > SL B4
Performed by	HP USER
Date	3 February 2011

n	9		
Difference between pairs	N	Rank sum	Mean rank
Positive	9	45.0	5.00
Negative	0	0.0	-
Zero	0		
Median difference	8,840,525.1		
95.1% CI	6,406,138.5	to +∞	(exact)
Wilcoxon's statistic	45.0		
Z statistic	-		
1-tailed p	0.0020	(exact)	

Analyse-it v2.22

Test	**Compare Pairs - Wilcoxon test**
	NI A/T Aft > NI A/T B4
Performed by	HP USER
Date	3 February 2011

n	9		
Difference between pairs	N	Rank sum	Mean rank
Positive	9	45.0	5.00
Negative	0	0.0	-
Zero	0		
Median difference	1,956,425.4		
95.1% CI	1,364,101.0	to +∞	(exact)
Wilcoxon's statistic	45.0		
Z statistic	-		
1-tailed p	0.0020	(exact)	

Analyse-it v2.22

Test	**Compare Pairs - Wilcoxon test**
	FA Aft > FA B4
Performed by	HP USER
Date	3 February 2011

n	9		
Difference between pairs	N	Rank sum	Mean rank
Positive	9	45.0	5.00
Negative	0	0.0	-
Zero	0		
Median difference	8,004,651.5		
95.1% CI	2,880,969.0	to +∞	(exact)
Wilcoxon's statistic	45.0		
Z statistic	-		
1-tailed p	0.0020	(exact)	

Analyse-it v2.22

Test	**Compare Pairs - Wilcoxon test**
	TA Aft > TA B4
Performed by	HP USER
Date	3 February 2011

n	9		
Difference between pairs	N	Rank sum	Mean rank
Positive	9	45.0	5.00
Negative	0	0.0	-
Zero	0		
Median difference	14,687,000.0		
95.1% CI	12,297,653.8	to +∞	(exact)
Wilcoxon's statistic	45.0		
Z statistic	-		
1-tailed p	0.0020	(exact)	

Analyse-it v2.22

Test	**Compare Pairs - Wilcoxon test**
	NI A/T Aft > NI A/T B4
Performed by	HP USER
Date	3 February 2011

n	9		
Difference between pairs	N	Rank sum	Mean rank
Positive	9	45.0	5.00
Negative	0	0.0	-
Zero	0		
Median difference	3,009,834.5		
95.1% CI	1,978,861.5	to +∞	(exact)
Wilcoxon's statistic	45.0		
Z statistic	-		
1-tailed p	0.0020	(exact)	

APPENDIX –C

ASHAKACEM DEA RESULT

Results from DEAP Version 2.1

Instruction file = eg1-ins.txt

Data file = eg1-dta.txt

Input orientated DEA

Scale assumption: VRS

Slacks calculated using multi-stage method

EFFICIENCY SUMMARY:

firm	crste	vrste	scale	
1	1.000	1.000	1.000	-
2	0.414	0.664	0.623	irs
3	1.000	1.000	1.000	-
4	0.526	0.629	0.837	irs
5	1.000	1.000	1.000	-
6	0.894	1.000	0.894	drs
7	1.000	1.000	1.000	-
8	0.061	0.563	0.109	irs
9	0.818	1.000	0.818	irs
10	1.000	1.000	1.000	-
11	1.000	1.000	1.000	-
12	1.000	1.000	1.000	-
13	1.000	1.000	1.000	-
14	1.000	1.000	1.000	-
15	0.940	0.967	0.972	irs
16	0.622	0.983	0.633	irs
17	0.445	0.785	0.566	irs
18	0.829	1.000	0.829	irs
19	1.000	1.000	1.000	-
mean	0.818	0.926	0.857	

Note: crste = technical efficiency from CRS DEA

vrste = technical efficiency from VRS DEA

scale = scale efficiency = crste/vrste

Note also that all subsequent tables refer to VRS results

SUMMARY OF OUTPUT SLACKS:

firm	output:	1	2
1		0.000	0.000
2		272.115	110.634
3		0.000	0.000
4		386.220	0.000
5		0.000	0.000
6		0.000	0.000
7		0.000	0.000
8		333.700	462.002
9		1.000	454.893
10		0.000	0.000
11		0.000	0.000
12		0.000	0.000
13		0.000	0.000
14		0.000	0.000
15		10.395	0.000
16		23.898	83.524
17		20.779	199.058
18		0.000	0.000
19		0.000	0.000
mean		55.164	68.953

SUMMARY OF INPUT SLACKS:

firm	input:	1	2	3
1		0.000	0.000	0.000
2		0.000	0.000	0.000
3		0.000	0.000	0.000
4		0.000	0.000	0.000
5		0.000	0.000	0.000
6		0.000	0.000	0.000
7		0.000	0.000	0.000
8		0.000	0.000	0.000
9		25.256	68.539	0.000
10		0.000	0.000	0.000

11	0.000	0.000	0.000
12	0.000	0.000	0.000
13	0.000	0.000	0.000
14	0.000	0.000	0.000
15	28.221	0.000	0.000
16	760.602	0.000	0.000
17	0.000	0.000	0.000
18	0.000	0.000	0.000
19	0.000	0.000	0.000
mean	42.846	3.607	0.000

SUMMARY OF PEERS:

firm	peers:			
1	1			
2	10	1	5	
3	3			
4	10	7	1	5
5	5			
6	6			
7	7			
8	10	1	5	
9	10	11		
10	10			
11	11			
12	12			
13	13			
14	14			
15	1	11	14	
16	1	13		
17	1	10	13	
18	18			
19	19			

SUMMARY OF PEER WEIGHTS:

(in same order as above)

firm peer weights:

1 1.000

2 0.595 0.355 0.050

3 1.000

4 0.222 0.178 0.512 0.087

5 1.000

6 1.000

7 1.000

8 0.068 0.447 0.484

9 0.719 0.281

10 1.000

11 1.000

12 1.000

13 1.000

14 1.000

15 0.020 0.454 0.526

16 0.038 0.962

17 0.041 0.264 0.695

18 1.000

19 1.000

PEER COUNT SUMMARY:

(i.e., no. times each firm is a peer for another)

firm peer count:

1 6

2 0

3 0

4 0

5 3

6 0

7 1

8 0

9 0

10	5
11	2
12	0
13	2
14	1
15	0
16	0
17	0
18	0
19	0

SUMMARY OF OUTPUT TARGETS:

firm	output: 1	2
1	755.000	288.000
2	273.115	525.634
3	1.000	867.000
4	389.220	516.000
5	3.000	747.000
6	3.000	945.000
7	3.000	892.000
8	339.700	535.002
9	8.000	674.893
10	8.000	649.000
11	8.000	741.000
12	10.000	198.000
13	12.000	567.000
14	15.000	815.000
15	26.395	771.000
16	39.898	556.524
17	41.779	577.058
18	28.000	3.000
19	36.000	404.000

SUMMARY OF INPUT TARGETS:

firm	input: 1	2	3

1	755.000	146.000	263.000
2	307.295	526.981	132.077
3	737.000	576.000	266.000
4	454.029	385.485	343.981
5	104.000	592.000	765.000
6	792.000	623.000	812.000
7	256.000	519.000	798.000
8	391.972	403.235	488.275
9	271.744	737.461	1.000
10	57.000	749.000	1.000
11	820.000	708.000	1.000
12	926.000	706.000	1.000
13	156.000	686.000	2.000
14	247.000	731.000	4.000
15	517.334	709.028	7.738
16	178.491	665.724	11.800
17	154.737	680.213	12.567
18	0.000	771.50014644683.000	
19	0.000	818.75015615936.001	

FIRM BY FIRM RESULTS:

Results for firm: 1

Technical efficiency = 1.000

Scale efficiency = 1.000 (crs)

PROJECTION SUMMARY:

variable		original value	radial movement	slack movement	projected value
output	1	755.000	0.000	0.000	755.000
output	2	288.000	0.000	0.000	288.000
input	1	755.000	0.000	0.000	755.000
input	2	146.000	0.000	0.000	146.000
input	3	263.000	0.000	0.000	263.000

LISTING OF PEERS:

peer	lambda weight
1	1.000

Results for firm: 2

Technical efficiency = 0.664

Scale efficiency = 0.623 (irs)

PROJECTION SUMMARY:

variable		original value	radial movement	slack movement	projected value
output	1	1.000	0.000	272.115	273.115
output	2	415.000	0.000	110.634	525.634
input	1	463.000	-155.705	0.000	307.295
input	2	794.000	-267.019	0.000	526.981
input	3	199.000	-66.923	0.000	132.077

LISTING OF PEERS:

peer	lambda weight
10	0.595
1	0.355
5	0.050

Results for firm: 3

Technical efficiency = 1.000

Scale efficiency = 1.000 (crs)

PROJECTION SUMMARY:

variable		original value	radial movement	slack movement	projected value
output	1	1.000	0.000	0.000	1.000
output	2	867.000	0.000	0.000	867.000
input	1	737.000	0.000	0.000	737.000
input	2	576.000	0.000	0.000	576.000
input	3	266.000	0.000	0.000	266.000

LISTING OF PEERS:

peer	lambda weight
3	1.000

Results for firm: 4

Technical efficiency = 0.629

Scale efficiency = 0.837 (irs)

PROJECTION SUMMARY:

variable		original value	radial movement	slack movement	projected value
output	1	3.000	0.000	386.220	389.220
output	2	516.000	0.000	0.000	516.000
input	1	722.000	-267.971	0.000	454.029
input	2	613.000	-227.515	0.000	385.485
input	3	547.000	-203.019	0.000	343.981

LISTING OF PEERS:

peer	lambda weight
10	0.222
7	0.178
1	0.512
5	0.087

Results for firm: 5

Technical efficiency = 1.000

Scale efficiency = 1.000 (crs)

PROJECTION SUMMARY:

variable		original value	radial movement	slack movement	projected value
output	1	3.000	0.000	0.000	3.000
output	2	747.000	0.000	0.000	747.000
input	1	104.000	0.000	0.000	104.000
input	2	592.000	0.000	0.000	592.000
input	3	765.000	0.000	0.000	765.000

LISTING OF PEERS:

peer	lambda weight
5	1.000

Results for firm: 6

Technical efficiency = 1.000

Scale efficiency = 0.894 (drs)

PROJECTION SUMMARY:

variable	original	radial	slack	projected

		value	movement	movement	value
output	1	3.000	0.000	0.000	3.000
output	2	945.000	0.000	0.000	945.000
input	1	792.000	0.000	0.000	792.000
input	2	623.000	0.000	0.000	623.000
input	3	812.000	0.000	0.000	812.000

LISTING OF PEERS:

peer	lambda weight
6	1.000

Results for firm: 7

Technical efficiency = 1.000

Scale efficiency = 1.000 (crs)

PROJECTION SUMMARY:

variable		original value	radial movement	slack movement	projected value
output	1	3.000	0.000	0.000	3.000
output	2	892.000	0.000	0.000	892.000
input	1	256.000	0.000	0.000	256.000
input	2	519.000	0.000	0.000	519.000
input	3	798.000	0.000	0.000	798.000

LISTING OF PEERS:

peer	lambda weight
7	1.000

Results for firm: 8

Technical efficiency = 0.563

Scale efficiency = 0.109 (irs)

PROJECTION SUMMARY:

variable		original value	radial movement	slack movement	projected value
output	1	6.000	0.000	333.700	339.700
output	2	73.000	0.000	462.002	535.002
input	1	696.000	-304.028	0.000	391.972
input	2	716.000	-312.765	0.000	403.235

input	3	867.000	-378.725	0.000	488.275

LISTING OF PEERS:

peer	lambda weight
10	0.068
1	0.447
5	0.484

Results for firm: 9

Technical efficiency = 1.000

Scale efficiency = 0.818 (irs)

PROJECTION SUMMARY:

variable		original value	radial movement	slack movement	projected value
output	1	7.000	0.000	1.000	8.000
output	2	220.000	0.000	454.893	674.893
input	1	297.000	0.000	-25.256	271.744
input	2	806.000	0.000	-68.539	737.461
input	3	1.000	0.000	0.000	1.000

LISTING OF PEERS:

peer	lambda weight
10	0.719
11	0.281

Results for firm: 10

Technical efficiency = 1.000

Scale efficiency = 1.000 (crs)

PROJECTION SUMMARY:

variable		original value	radial movement	slack movement	projected value
output	1	8.000	0.000	0.000	8.000
output	2	649.000	0.000	0.000	649.000
input	1	57.000	0.000	0.000	57.000
input	2	749.000	0.000	0.000	749.000
input	3	1.000	0.000	0.000	1.000

LISTING OF PEERS:

peer lambda weight

10 1.000

Results for firm: 11

Technical efficiency = 1.000

Scale efficiency = 1.000 (crs)

PROJECTION SUMMARY:

variable	original value	radial movement	slack movement	projected value
output 1	8.000	0.000	0.000	8.000
output 2	741.000	0.000	0.000	741.000
input 1	820.000	0.000	0.000	820.000
input 2	708.000	0.000	0.000	708.000
input 3	1.000	0.000	0.000	1.000

LISTING OF PEERS:

peer lambda weight

11 1.000

Results for firm: 12

Technical efficiency = 1.000

Scale efficiency = 1.000 (crs)

PROJECTION SUMMARY:

variable	original value	radial movement	slack movement	projected value
output 1	10.000	0.000	0.000	10.000
output 2	198.000	0.000	0.000	198.000
input 1	926.000	0.000	0.000	926.000
input 2	706.000	0.000	0.000	706.000
input 3	1.000	0.000	0.000	1.000

LISTING OF PEERS:

peer lambda weight

12 1.000

Results for firm: 13

Technical efficiency = 1.000

Scale efficiency = 1.000 (crs)

PROJECTION SUMMARY:

variable		original value	radial movement	slack movement	projected value
output	1	12.000	0.000	0.000	12.000
output	2	567.000	0.000	0.000	567.000
input	1	156.000	0.000	0.000	156.000
input	2	686.000	0.000	0.000	686.000
input	3	2.000	0.000	0.000	2.000

LISTING OF PEERS:

peer	lambda weight
13	1.000

Results for firm: 14

Technical efficiency = 1.000

Scale efficiency = 1.000 (crs)

PROJECTION SUMMARY:

variable		original value	radial movement	slack movement	projected value
output	1	15.000	0.000	0.000	15.000
output	2	815.000	0.000	0.000	815.000
input	1	247.000	0.000	0.000	247.000
input	2	731.000	0.000	0.000	731.000
input	3	4.000	0.000	0.000	4.000

LISTING OF PEERS:

peer	lambda weight
14	1.000

Results for firm: 15

Technical efficiency = 0.967

Scale efficiency = 0.972 (irs)

PROJECTION SUMMARY:

variable		original value	radial movement	slack movement	projected value
output	1	16.000	0.000	10.395	26.395

output	2	771.000	0.000	0.000	771.000
input	1	564.000	-18.445	-28.221	517.334
input	2	733.000	-23.972	0.000	709.028
input	3	8.000	-0.262	0.000	7.738

LISTING OF PEERS:

peer	lambda weight
1	0.020
11	0.454
14	0.526

Results for firm: 16

Technical efficiency = 0.983

Scale efficiency = 0.633 (irs)

PROJECTION SUMMARY:

variable		original value	radial movement	slack movement	projected value
output	1	16.000	0.000	23.898	39.898
output	2	473.000	0.000	83.524	556.524
input	1	955.000	-15.907	-760.602	178.491
input	2	677.000	-11.276	0.000	665.724
input	3	12.000	-0.200	0.000	11.800

LISTING OF PEERS:

peer	lambda weight
1	0.038
13	0.962

Results for firm: 17

Technical efficiency = 0.785

Scale efficiency = 0.566 (irs)

PROJECTION SUMMARY:

variable		original value	radial movement	slack movement	projected value
output	1	21.000	0.000	20.779	41.779
output	2	378.000	0.000	199.058	577.058
input	1	197.000	-42.263	0.000	154.737

input 2 866.000 -185.787 0.000 680.213

input 3 16.000 -3.433 0.000 12.567

LISTING OF PEERS:

peer	lambda weight
1	0.041
10	0.264
13	0.695

Results for firm: 18

Technical efficiency = 1.000

Scale efficiency = 0.829 (irs)

PROJECTION SUMMARY:

variable	original value	radial movement	slack movement	projected value
output 1	28.000	0.000	0.000	28.000
output 2	3.000	0.000	0.000	3.000
input 1	0.000	0.000	0.000	0.000
input 2	771.500	0.000	0.000	771.500
input 3	14644683.000	0.000	0.000	14644683.000

LISTING OF PEERS:

peer	lambda weight
18	1.000

Results for firm: 19

Technical efficiency = 1.000

Scale efficiency = 1.000 (crs)

PROJECTION SUMMARY:

variable	original value	radial movement	slack movement	projected value
output 1	36.000	0.000	0.000	36.000
output 2	404.000	0.000	0.000	404.000
input 1	0.000	0.000	0.000	0.000
input 2	818.750	0.000	0.000	818.750
input 3	15615936.000	0.001	0.000	15615936.001

LISTING OF PEERS:

peer	lambda weight
19	1.000

APPENDIX –D

AP DEA RESULT

Results from DEAP Version 2.1

Instruction file = eg1-ins.txt

Data file = eg1-dta.txt

Input orientated DEA

Scale assumption: VRS

Slacks calculated using multi-stage method

EFFICIENCY SUMMARY:

firm	crste	vrste	scale	
1	1.000	1.000	1.000	-
2	1.000	1.000	1.000	-
3	0.008	1.000	0.008	irs
4	0.013	0.879	0.015	irs
5	0.022	0.846	0.026	irs
6	0.026	0.722	0.036	irs
7	0.023	1.000	0.023	irs
8	0.354	1.000	0.354	irs
9	0.017	0.499	0.034	irs
10	0.025	0.625	0.041	irs
mean	0.249	0.857	0.254	

Note: crste = technical efficiency from CRS DEA

vrste = technical efficiency from VRS DEA

scale = scale efficiency = crste/vrste

Note also that all subsequent tables refer to VRS results

SUMMARY OF OUTPUT SLACKS:

firm	output: 1
1	0.000
2	0.000
3	0.000
4	0.000
5	0.000
6	0.000

7	0.000
8	0.000
9	187.316
10	335.150
mean	52.247

SUMMARY OF INPUT SLACKS:

firm	input:	1	2	3
1		0.000	0.000	0.000
2		0.000	0.000	0.000
3		0.000	0.000	0.000
4		65.127	258.028	0.000
5		0.000	0.000	0.000
6		0.000	0.000	0.000
7		0.000	0.000	0.000
8		0.000	0.000	0.000
9		29.676	0.000	0.000
10		0.000	0.000	0.000
mean		9.480	25.803	0.000

SUMMARY OF PEERS:

firm	peers:			
1	1			
2	2			
3	3			
4	1	3		
5	1	3	8	2
6	2	3	8	7
7	7			
8	8			
9	2	3		
10	7	2	3	

SUMMARY OF PEER WEIGHTS:

(in same order as above)

firm peer weights:

1 1.000

2 1.000

3 1.000

4 0.001 0.999

5 0.001 0.762 0.236 0.002

6 0.002 0.094 0.347 0.558

7 1.000

8 1.000

9 0.215 0.785

10 0.039 0.386 0.575

PEER COUNT SUMMARY:

(i.e., no. times each firm is a peer for another)

firm peer count:

1 2

2 4

3 5

4 0

5 0

6 0

7 2

8 2

9 0

10 0

SUMMARY OF OUTPUT TARGETS:

firm output: 1

1 759.000

2 915.000

3 1.000

4 2.000

5 6.000

6 13.000

7 13.000

8	12.000
9	197.316
10	354.150

SUMMARY OF INPUT TARGETS:

firm	input:	1	2	3
1		330.000	54205.500	80.000
2		845.000	42.000	487.000
3		259.000	512.000	65.000
4		259.094	582.836	65.020
5		205.625	572.028	178.547
6		327.270	402.404	509.327
7		524.000	241.000	563.000
8		27.000	634.000	543.000
9		384.865	411.050	155.640
10		495.563	319.960	247.469

FIRM BY FIRM RESULTS:

Results for firm: 1

Technical efficiency = 1.000

Scale efficiency = 1.000 (crs)

PROJECTION SUMMARY:

variable		original value	radial movement	slack movement	projected value
output	1	759.000	0.000	0.000	759.000
input	1	330.000	0.000	0.000	330.000
input	2	54205.500	0.000	0.000	54205.500
input	3	80.000	0.000	0.000	80.000

LISTING OF PEERS:

peer	lambda weight
1	1.000

Results for firm: 2

Technical efficiency = 1.000

Scale efficiency = 1.000 (crs)

PROJECTION SUMMARY:

variable		original value	radial movement	slack movement	projected value
output	1	915.000	0.000	0.000	915.000
input	1	845.000	0.000	0.000	845.000
input	2	42.000	0.000	0.000	42.000
input	3	487.000	0.000	0.000	487.000

LISTING OF PEERS:

peer	lambda weight
2	1.000

Results for firm: 3

Technical efficiency = 1.000

Scale efficiency = 0.008 (irs)

PROJECTION SUMMARY:

variable		original value	radial movement	slack movement	projected value
output	1	1.000	0.000	0.000	1.000
input	1	259.000	0.000	0.000	259.000
input	2	512.000	0.000	0.000	512.000
input	3	65.000	0.000	0.000	65.000

LISTING OF PEERS:

peer	lambda weight
3	1.000

Results for firm: 4

Technical efficiency = 0.879

Scale efficiency = 0.015 (irs)

PROJECTION SUMMARY:

variable		original value	radial movement	slack movement	projected value
output	1	2.000	0.000	0.000	2.000
input	1	369.000	-44.780	-65.127	259.094
input	2	957.000	-116.136	-258.028	582.836
input	3	74.000	-8.980	0.000	65.020

LISTING OF PEERS:

peer	lambda weight
1	0.001
3	0.999

Results for firm: 5

Technical efficiency = 0.846

Scale efficiency = 0.026 (irs)

PROJECTION SUMMARY:

variable		original value	radial movement	slack movement	projected value
output	1	6.000	0.000	0.000	6.000
input	1	243.000	-37.375	0.000	205.625
input	2	676.000	-103.972	0.000	572.028
input	3	211.000	-32.453	0.000	178.547

LISTING OF PEERS:

peer	lambda weight
1	0.001
3	0.762
8	0.236
2	0.002

Results for firm: 6

Technical efficiency = 0.722

Scale efficiency = 0.036 (irs)

PROJECTION SUMMARY:

variable		original value	radial movement	slack movement	projected value
output	1	13.000	0.000	0.000	13.000
input	1	453.000	-125.730	0.000	327.270
input	2	557.000	-154.596	0.000	402.404
input	3	705.000	-195.673	0.000	509.327

LISTING OF PEERS:

peer	lambda weight
2	0.002

3 0.094

8 0.347

7 0.558

Results for firm: 7

Technical efficiency = 1.000

Scale efficiency = 0.023 (irs)

PROJECTION SUMMARY:

variable	original value	radial movement	slack movement	projected value
output 1	13.000	0.000	0.000	13.000
input 1	524.000	0.000	0.000	524.000
input 2	241.000	0.000	0.000	241.000
input 3	563.000	0.000	0.000	563.000

LISTING OF PEERS:

peer	lambda weight
7	1.000

Results for firm: 8

Technical efficiency = 1.000

Scale efficiency = 0.354 (irs)

PROJECTION SUMMARY:

variable	original value	radial movement	slack movement	projected value
output 1	12.000	0.000	0.000	12.000
input 1	27.000	0.000	0.000	27.000
input 2	634.000	0.000	0.000	634.000
input 3	543.000	0.000	0.000	543.000

LISTING OF PEERS:

peer	lambda weight
8	1.000

Results for firm: 9

Technical efficiency = 0.499

Scale efficiency = 0.034 (irs)

PROJECTION SUMMARY:

variable		original value	radial movement	slack movement	projected value
output	1	10.000	0.000	187.316	197.316
input	1	831.000	-416.458	-29.676	384.865
input	2	824.000	-412.950	0.000	411.050
input	3	312.000	-156.360	0.000	155.640

LISTING OF PEERS:

peer	lambda weight
2	0.215
3	0.785

Results for firm: 10

Technical efficiency = 0.625

Scale efficiency = 0.041 (irs)

PROJECTION SUMMARY:

variable		original value	radial movement	slack movement	projected value
output	1	19.000	0.000	335.150	354.150
input	1	793.000	-297.437	0.000	495.563
input	2	512.000	-192.040	0.000	319.960
input	3	396.000	-148.531	0.000	247.469

LISTING OF PEERS:

peer	lambda weight
7	0.039
2	0.386
3	0.575