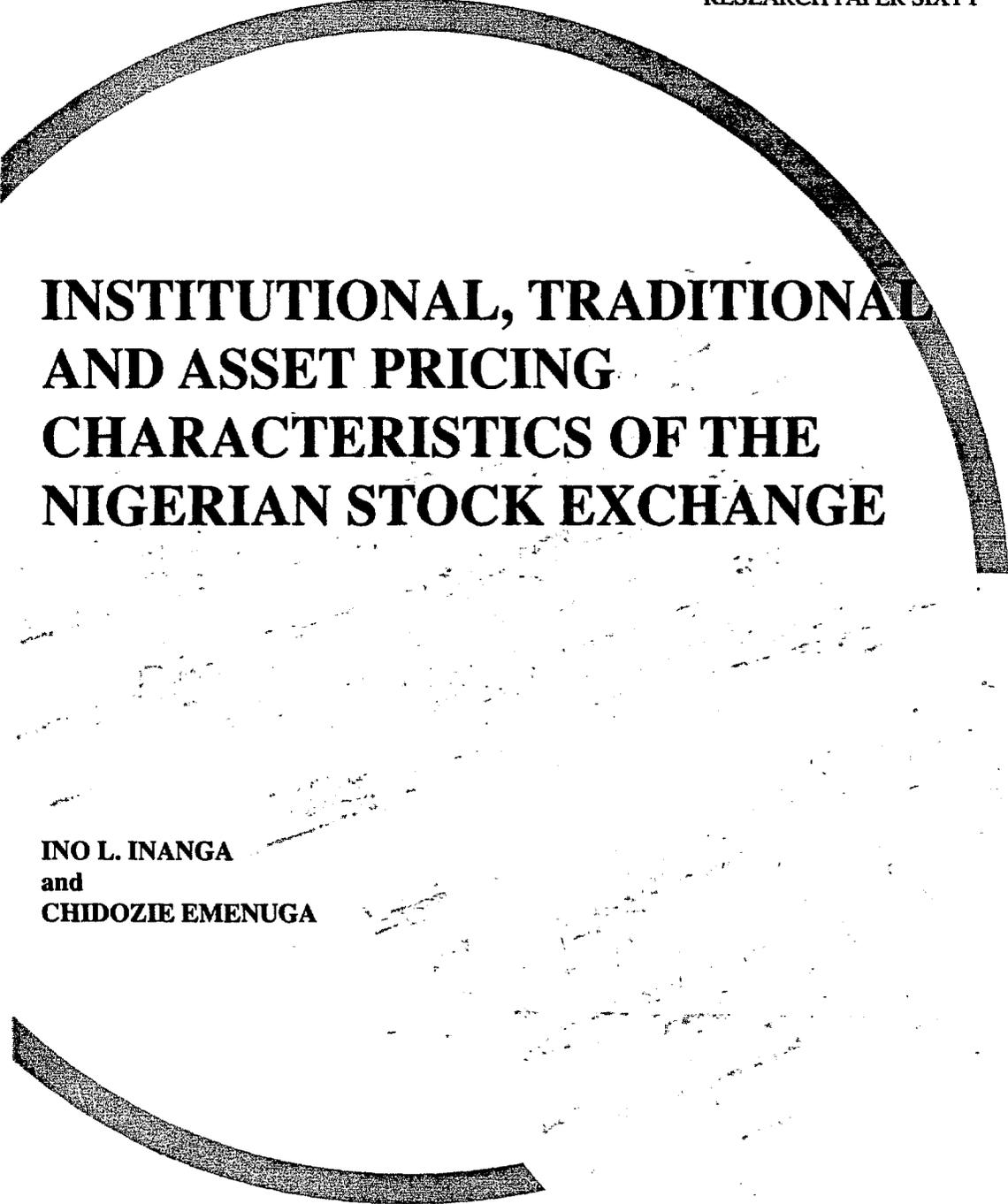


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**INSTITUTIONAL, TRADITIONAL
AND ASSET PRICING
CHARACTERISTICS OF THE
NIGERIAN STOCK EXCHANGE**

**INO L. INANGA
and
CHIDOZIE EMENUGA**

AFRICAN ECONOMIC RESEARCH CONSORTIUM

CONSORTIUM POUR LA RECHERCHE ECONOMIQUE EN AFRIQUE

**Institutional, traditional and asset
pricing characteristics
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Institutional, traditional and asset pricing characteristics of the Nigerian Stock Exchange

Eno L. Inanga
and
Chidozie Emenuga
*Department of Economics
University of Ibadan
Ibadan, Nigeria*

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Abstract

Nigeria, like many other developing countries, has invested in developing the domestic capital market as a means of mobilizing external capital and domestic savings. A developed domestic capital market provides opportunity for greater funds mobilization, improved efficiency in resource allocation and provision of relevant information for investment appraisal, and improved corporate discipline.

The stock market is a central institution in any capital market and its ability to enhance the efficiency of investments is linked to its level of efficiency. The paper investigates the efficiency of the Nigerian stock market in terms of institutional, traditional and asset pricing characteristics of the market.

Using micro and macro data as well as parametric and non-parametric techniques, the paper empirically implements the measures of stock market development. It is found that the stock exchange has witnessed improved development in recent years, although it still exhibits features of rudimentary stages of development. Measures for improving the performance of the market are proposed.

IV

I. Introduction

Many African countries have invested in developing domestic capital markets as institutions for mobilizing external capital inflow and domestic savings. The development of domestic capital markets provides opportunity for greater funds mobilization, improved efficiency in resource allocation and provision of relevant information for investment appraisal (Black, 1988).

Capital markets in Africa, usually classified as emerging, differ in some respects from those in developed countries. They are, for example, generally of recent origin. In comparison with those of developed countries, they have fewer market participants and less sophisticated and less skilled investment analysts. These characteristics raise the question as to the markets' capability to mobilize funds and allocate resources efficiently, as well as their ability to endure in their financial intermediation roles for foreign and domestic capital.

Stock markets, as an arm of capital markets, are central institutions in long-term financial intermediation. For a number of reasons, developed stock markets are important for promoting the efficiency of investments. First, well-functioning stock markets generate lower cost of equity capital for firms. Second, continuous adjustment of share prices in a developed stock market imposes control on the investment behaviour of firms. Third, in a developed stock market, investors have the opportunity to price and hedge against risk effectively. Finally, stock markets serve as a mechanism for attracting foreign portfolio investment, thereby increasing resources available to the economy for investment (Demirguc-Kunt and Levine, 1993).

These benefits of developed stock markets may be lacking in a developing stock market. Empirical assessment of the role of stock markets in enhancing efficient investments is linked to measures of stock market development. Three broad measures are distinguishable (Demirguc-Kunt and Levine, 1993). These are traditional characteristics; institutional characteristics; and asset pricing characteristics.

Traditional characteristics are the basic indexes of growth, such as market capitalization, value of new issues, number of listed companies and market turnover. Institutional characteristics relate to the regulatory mechanisms, information disclosure and transparency rules, and trading costs. Asset pricing characteristics relate to market efficiency in pricing risk.

African stock markets are usually classified as "emerging". This may be interpreted to imply that they are underdeveloped, or at best developing. But such interpretation may not adequately convey information on either the degree of underdevelopment or the level of development. Formulation of policies for enhanced development of these markets

will depend on the known degree of underdevelopment and the factors responsible in each market. Our study explores this for the Nigerian stock market.

Studies that examine issues relating to the development of the Nigerian stock market have been few. Inanga and Emenuga (1993) considered an aspect of the institutional characteristics – taxation – and demonstrated that the tax system is unfavourable to investments in the stock market. There have, however, been other studies on aspects of the traditional characteristics of the market, such as market turnover (Gill, 1982) and investors' response to the traditional characteristics (Inanga, 1990; Soyode, 1976).

Generally, studies on institutional and asset pricing features of African emerging stock markets are hard to come by. In a cross-sectional setting, Claessens, Dasgupta and Glen (1993) studied the returns behaviour of a group of emerging stock markets, including Nigeria's. They showed that a number of factors explain cross-sectional movements of asset returns including dividend yield, price-earnings ratio and Beta. But most of the variables showed signs that could not be reconciled with theory and evidence from developed stock markets. The findings informed the suggestion for country-specific studies.

There has not been any close look at the regulations, information disclosure and transparency rules, accounting standards, settlement processes, and transaction costs aspects of the institutional characteristics of the Nigerian stock market. The asset pricing characteristics of the market need to be explored and the traditional characteristics of the market need to be updated.

Such studies will, among other benefits, highlight the level of the market's efficiency and development and the implied incentive to domestic and foreign capital. Identifying market characteristics and sources of observed inefficiencies can provide targets for policies required to promote market development and efficiency.

The identified market characteristics and parameters of stock market development could further be used to explore such issues as the relationship between stock market development and the development of financial intermediary services (Pardy and Dong-He, 1992); the financing pattern of corporations, ascertaining whether stock market development complements or substitutes debt financing (Seward, 1990); and the impact of stock market development on the cost of capital; and the response of domestic savings and foreign equity portfolio flow to stock market development (French and Poterba, 1991; Tesar Werner, 1992).

The objectives of this study therefore are to:

- identify and analyse the institutional and traditional characteristics of the Nigerian stock market;
- analyse the asset price formation process in the market and determine the efficiency of the process;
- assess the level of institutional development of the market and highlight the implied disincentive to investment; and
- propose policy measures to enhance the efficiency and development of the Nigerian stock market and similar emerging stock markets in other countries of Africa.

The rest of the study is organized in two sections. In Section II the framework for analysis and the characteristics of the Nigerian securities market are presented. Section III summarizes and concludes the study.

II. Characteristics of the Nigerian securities market

Institutional characteristics

The key elements of the institutional characteristics are:

- regulations
- information disclosure rules and accounting standards
- settlement process
- transactions costs
- institutional barriers
- market structure

Regulations

The regulatory institutions in the Nigerian capital market are the Securities and Exchange Commission (SEC) and the Nigerian Stock Exchange (NSE). These regulatory institutions are designed to encourage savings mobilization and investment; promote efficiency in resource allocation; and improve opportunities for firms to secure long-term funds.

The Securities and Exchange Commission (SEC)

The Securities and Exchange Commission (SEC) was established by the SEC Decree No. 71 of 1979. The establishment of the commission was the result of complaints that greeted the sale of shares during the indigenization programme. Many investors complained that the securities were over-valued (Kadiri, 1983).

The broad objectives of SEC include promoting the interest of investors and enhancing their confidence in the capital market; ensuring orderly, fair and equitable dealings in securities; and promoting the growth and development of the Nigerian capital market.

In pursuit of these objectives, SEC has the mandate to perform the following functions:

- registering all securities coming into the capital market;
- maintaining surveillance over the securities market to ensure orderly, fair and equitable dealings in securities;
- registering market participants, such as registrars, investment advisers, securities dealers, etc.;

- protecting the market from sharp practices such as insider trading; and
- acting as the apex regulatory institution for the Nigerian Stock Exchange.

The SEC on undertakes surveillance and monitoring of the quoted companies to ensure that their activities conform to standards. Until 1993, SEC also performed the task of valuing shares in the primary securities market. This function has now been transferred to stockbrokers. In practice, the Securities and Exchange Commission carries out its regulatory functions through the following operational areas:

- Mergers and acquisitions– Investigates the genuineness of merger or acquisition proposals for both quoted and unquoted limited liability companies.
- Debt conversion– Scrutinizes and approves successful bids at the central bank auctions.
- Allotment of issues– Approves before the deal is sealed all public offers of equity and debt instruments, namely, offer for sale, offer for subscription, rights issues and debenture loan stocks.
- Registration– Through its right to approve or withhold registration for all capital market operators, ensures that every player in the market, whether a quoted company or a service firm, meets the entry requirements.
- Surveillance and Investigation– Monitors the trading sessions of the Nigerian Stock Exchange to ensure compliance with laws and regulations.
- Investors' Complaints– Entertains complaints from the public on the capital market.

Through these activities, SEC acts as an arbiter in the capital market. Often the Commission institutes legal action against parties that fail to comply with its provisions and requirements.

The Nigerian Stock Exchange (NSE)

The functions of the Nigerian Stock Exchange (NSE) related to the regulation of the operators in the capital market include regulating the dealings of members of the stock exchange with their clients; determining the fees charged by members for services rendered to their clients; and investigating irregularities in the stockbroking activities of members with their clients and complaints made by any party against another that border on stockbroking. The decision of NSE is binding on the parties involved. As part of its regulation of the dealings in the stock market, NSE has prescribed a maximum price movement of 10 points (10 kobo) per stock in one trading. This policy is meant to protect investors through its control of the loss in one transaction. The policy is also designed to check market malpractices such as insider trading.

Information disclosure rules and accounting standards

Here we examine the information needs arising from the requirements of asset pricing models (e.g., CAPM, APT, and dividend and earnings models), as well as the adequacy of information provided and its availability to users. The institutional checks and balances for ensuring the authenticity of supplied information are also an issue of interest.

Full disclosure of information by all market participants is a requirement of the SEC and the NSE. At the primary securities market, the requirements for listing on the exchange are (NSE, 1992):

- registration as a public limited liability;
- submission of financial statements/business records for the past five years;
- issue of at least 25% of the issued share capital to the public;
- a minimum of 500 shareholders; and
- audited accounts of the company within the preceding should not exceed nine months.

Of these listing requirements, the submission of financial statements is the most relevant for the purpose of valuing the shares of a company in the primary securities market. For the secondary securities market, the information to be made public by the listed companies is as required by the Companies Decree of 1968 and its 1988 amendment. By their provisions, quoted companies as well as other public limited liability companies are to make public their profit and loss accounts and balance sheet. The adequacy of information supplied by the Nigerian quoted companies for investors' use could therefore be viewed from the contents of these financial statements and their availability to investors.

The link between publicly available information and share pricing is explained by the efficient capital market hypothesis, in which Fama (1970) shows that security prices reflect all available information. One characteristic of an inefficient capital market is non-availability of information that should be publicly available. Where the required information is available to the public, its reliability is another determinant of market efficiency.

The facts contained in the public information supplied by Nigerian companies going public are the following:

- the company's issued share capital and the proportion of the share capital being offered;
- the turnover and profits for the past five years;
- a five-year history of dividends and retention ratio;
- a five-year record of net assets based on audited accounts;
- statutory and general information relating to the company's operations;
- market capitalization of stocks offered and market capitalization of the company at offer price;
- one-year forecast of dividends, earnings, earnings per share (eps), earnings yield, price-earnings ratio, dividend per share, and dividend cover.

For companies already quoted, the items of information made available to the public are those contained in the annual reports and accounts, which are distributed to all shareholders (Inanga, 1995). The contents of the annual reports, which shareholders

tend to use for investment purposes, are such accounting data as earnings per share dividend per share, and transfer to statutory reserve, besides the usual contents of profit and loss accounts and balance sheet. But since these are not published as guides to investment decisionmaking, investors use such data at their own risk.

The flaw of the published annual accounts is their lack of basic information for investment analysis. As demonstrated in Inanga (1983), the accounts cannot be used in making investment decisions because of the absence of the following information:

- forecast of future cashflows;
- the market price of the companies shares at the stock exchange; and
- the average price of the company's share during the year.

The implication of the absence of these items of information is that the investor, who relies on the company's annual report for appraising an investment, counts the gains on the basis of dividends alone and does not reckon with capital gains because no information on that is statutorily supplied.

The set of information supplied in the annual reports could be suitable for investment decisions if it satisfied the three criteria of objectivity, comparability and neutrality (Inanga, 1976). The only guarantee of objectivity in the published accounts as provided in the Companies Decree is the certification of the auditor to that effect. But even such certification is no more than an expression of professional opinion. The accounts can contain mistakes in spite of the certification. Such mistakes are allowed so long as they are neither material nor intended to mislead.

For companies seeking listing, the SEC normally investigates the authenticity of the submitted accounts through site visits and independent appraisal of the operations of the companies. Information gathered from SEC indicates that in some instances, the claims in the company accounts differ from the site observations. This raises serious doubt about the objectivity of the annual reports of listed companies that are not subjected to verification after the auditors' certification. For example, banks liquidated in 1994 had reported profitable operations right up until the central bank declared them bankrupt. Moreover, when in 1989 the central bank compelled banks to provide for unrecoverable debt in their accounts, their profit levels dived. Consequently, the share prices of most banks fell drastically.

The published accounts of the quoted companies do not seem to meet the criterion of inter-company comparability. What is available to an investor is the performance of the company in the past year. The investor does not know the performance of other companies that might be of interest, even within the same industrial sector.

The only sources of information on share price movements for all the quoted companies has been the weekly *Business Times*, *Financial Guardian* and *Business Concord*, which publish weekly terminal prices of listed stocks. The information published by the three papers is usually extracted from the daily official list of the stock exchange. However, since the *Guardian* and *Concord* newspapers were closed by the federal government, *Business Times* is now the only reliable source of information available. But the price of the paper has risen so high that not many readers can afford to buy it. The statistics displayed in the daily official list relate to the last traded price of each stock, its lowest price in the year, last ex-dividend date, dividend payment date, amount of dividend paid,

earnings per share and price-earnings ratio. These items of information provide little basis for comparing stocks. The information on dividend and earnings is incomplete for any specific accounting period. Other than providing information on the current (with one-week lag) share prices the statistics are of little use, if any, for investment decision-making purposes.

Even an index of the stock market trend is not available. What the NSE computes is the index of market capitalization. This is useful for understanding the traditional (growth) characteristics of the market, but not necessarily for investment decisions. The capitalization index is not published by the weekly business newspapers. The earliest publication of the index appears in the monthly report of the central bank, which is published with a six-month lag.

Existing and potential investors in the Nigerian stock market are not publicly informed about the expected rates of return on current investments. Such information is not available for the entire market or for any of the sectors. Specialized business magazines and journals analyzing the various sectors of the market are not available. From the point of view of investors, especially those not familiar with the Nigerian capital market, the stock market looks like a black box. The services of an expert would have to be employed even for information that should ordinarily be available. This state of affairs does not make the market investment-friendly.

Settlement process

Stock trading in the NSE is by the call-over system. The post trading clearance, settlement and delivery are executed by stockbrokers. The process is expected to conform to the NSE settlement roster, which provides for completion of the process in three working weeks. But in practice the process takes far longer. Table 1 shows the time lag between offer date and first trading day on selected public issues. On the average, it takes 9.4 months for the offer procedure to be completed. Issuance of share certificates starts only after the completion of the offer procedure up to the post offer trading. From our investigations, i.e., interviews with shareholders and stockbrokers, the earliest reported time between payment for a share and receipt of share certificate is one year. This applies to both primary issues and secondary market purchases. It also takes a minimum of a year for unsuccessful subscribers to a public issue to be refunded. Almost every issue of the Nigerian weekly business newspapers carries a complaint by an investor who has either not received share certificates years after subscription or who has not been refunded the subscription deposit. In part, the problem of delay is caused by the settlement process, which is manual. Transactions in shares at the stock exchange and at the level of stockbrokers and registrars are not computerized. The stock exchange, we gathered, has drawn up plans to install a central clearing system (CCS) to facilitate speedy transactions and introduce checks. The system is to cover the following activities:

- Stock exchange reporting
- Stockbrokers bank - with appointed existing banks equipped with automated

- daily balance accounting system to provide on-line inter-firm reconciliation
- Stock exchange back office system
 - depository system
 - Clearing house system
 - Registrars/company secretaries system

Another associated problem is that of non-receipt of dividend warrants by investors. In our random non-structured interviews with investors, some complained that they usually do not receive dividend warrants. Such complaints were supported by firm-level evidence. In 1991 for example, 86 of the 142 quoted companies reported unclaimed dividends valued at ₦108.72 million (US\$11.09 million). In 1992, 95 of the 145 quoted companies reported ₦184.83 million (US\$9.37 million) unclaimed dividends (SEC, 1992). These unclaimed dividends provide free sources of internal finance to the companies. The non-receipt of dividends by investors according to SEC sources arises from three major sources:

- inefficiency of the postal system;
- non-update of company registries; and
- ignorance of investors on the process of converting dividend warrants to cash.

Table 1: Settlement time of public offers in the Nigerian capital market

	Stock	Date of offer month/year	First post offer trading month/year	Time lag between offer and first trading (month)
1.	African Petroleum Plc	2-89	12-89	10
2.	National Oil & Chemical Co. Plc	5-89	12-89	7
3.	UNIC Plc	7-89	3-90	8
4.	NEM Insurance Co. Plc	11-89	9-90	10
5.	Niger Insurance Plc	11-89	7-90	8
6.	WAPIC Plc	10-89	8-90	10
7.	BAICO Plc	11-89	7-90	8
8.	Royal Exchange Insurance Plc	10-89	12-90	14
9.	Sun Insurance Plc	10-89	12-90	14
10.	Nigeria Yeast & Alcohol	2-90	10-90	8
11.	Manufacturing Co. Plc	7-90	3-91	8
12.	Okomu Oil Palm Plc	8-90	3-91	7
13.	Benue Cement Co. Plc Unipetrol Plc	5-91	3-92	10
	Average			9.4

Source: (Emenuga).

Table 2: Cost of public issue of equities in the Nigerian capital market

S/N		N 50 million	N 80 million
1.	Listing fee payable to NSE	22,000	32,000
2.	Application fee payable to NSE (.5%)	375,000	600,000
3.	Registration fee payable to SEC	3,000	3,000
4.	Valuation fee (.75%) payable to SEC	375,000	600,000
5.	Advertising	80,000	80,000
6.	Printing	100,000	100,000
7.	Brokerage fees (banks & stockbrokers 1%)	500,000	800,000
8.	Sundry (postage distributions, etc.)	15,000	15,000
9.	Solicitors to the issues	40,000	40,000
10.	Solicitors to the trustee	40,000	40,000
11.	Solicitors to the company	30,000	30,000
12.	Reporting accountant	60,000	60,000
13.	Registrar's fee	40,000	40,000
14.	Vending fee (1%)	500,000	800,000
15.	Contingencies	20,000	20,000
	Total	2,190,000	3,025,000
	Cost of issue as a percentage of equity issued	4.4%	3.8%

Source: NSE (1992).

Transaction costs

The level of transaction costs in a market relative to others is one measure of the efficiency of that market. Inefficient markets have high transaction costs relative to efficient markets. From the point of view of companies, transaction costs cover the various expenses in the course of public offer of equity or loan stock. Table 2 contains the average cost of public issue of equity in the Nigerian capital market. The major cost elements as shown in the table are application fee (.5%), valuation fee (.75%), brokerage fee (1%) and vending fee (1%). Other cost items are payments to auditors and solicitors, advertising, and administrative expenses. For public offers of equity valued at ₦50 million or more, the total cost is normally less than 5% as Table 2 shows. For offers of smaller values, the cost could range from 5% of issued capital to over 100%.

Table 3 shows the cost of the offering of low and high capitalized equities in the privatization programme. For the issue valued at ₦96 million, the cost was as low as 2.9%.

For issues of about ₦30 million, the cost was about 5%. As much as 15% was spent on many of the issues valued between ₦2 million and ₦10 million. Equity issues capitalized below ₦2 million attracted offer expenses that exceeded the realized revenue.

One insight from the cost of equity issues in the market is that issues valued at less than ₦30 million appear too costly for public offering. This arises from certain cost items that are not reducible to be proportional to the size of small offers. These include

Table 3: Revenue and sales express in the privatization offers of equities in Nigeria

Company	Gross revenue (N million) (1)	Sales expenses (N million) (2)	(2) as a % of (1) (3)
1.	6.24	1.098	17.7
2.	32.83	1.787	5.5
3.	33.6	1.951	5.7
4.	17.57	1.370	8.0
5.	0.901	n.a.	100.0*
6.	8.84	1.319	15.0
7.	0.745	1.027	142.9
8.	4.312	n.a.	n.a.
9.	17.59	n.a.	n.a.
10.	3.213	0.621	19.4
11.	39.00	2.253	5.6
12.	42.601	1.792	4.3
13.	9.877	0.645	6.6
14.	96.00	2.768	2.9
15.	0.611	0.844	138.1
16.	1.47	1.418	96.5

Source: Emenuga (1994).

n.a. = not available

* The actual figure not indicated but TCPC source indicates that it is over 100%.

the search cost (advertising), printing cost, and fees for accountants, solicitors and registrars.

The cost of public issue of debt in the market is similar to that of equity except for the underwriter's commission, which is payable for issues of loan stock. In Table 4, the average cost of debt issue in the market is shown. On the average, the cost of debt issue is 11% compared to about 4% for equity of similar value. In terms of transactions cost, therefore, it is cheaper for a company to make public offer of equity than debt.

On the part of the investor, the official transaction cost in buying shares is the brokerage fee of 1%. The unofficial transaction cost components are the profit opportunity forfeited within the one year it takes to receive share certificates after payment and the interest opportunity lost when an investor's money is refunded after a year if the bid is unsuccessful. In some instances, though illegal, stockbrokers take commission on the investor's deposit if the bid fails (SEC, *Report and Accounts*, 1992, documents such complaints). These transaction costs could discourage potential investors in the market.

Institutional and market structure

The Indigenization Decrees of 1972 and 1977 were the first legislation that restricted foreign investment in Nigeria. They limited the scope of foreign participation in enterprises to 40%. This provision was amended by the Nigerian Enterprises Promotion Decree No. 54 of 1989, which allowed 100% participation of foreigners in most enterprises. Foreign interest in banking/insurance, petroleum prospecting and mining is still restricted to a maximum of 40%.

Table 4: Cost of public issue of loans stock in Nigerian capital market

S/N	Value of equity	₦ 50 million	₦ 80 million
1.	Listing of payable fee to NSE	22,000	32,000
2.	Application fee payable to NSE (.75%)	375,000	600,000
3.	Registration fee payable to SEC	3,000	3,000
4.	Valuation fee (.75%)	375,000	600,000
5.	Advertising	80,000	80,000
6.	Placement/underwriting commission	3,250,000	5,200,000
7.	Stockbrokers to the issue	30,000	30,000
8.	Printing	100,000	100,000
9.	Brokerage fees (banks & stockbrokers 1%)	500,000	800,000
10.	Sundry (postage, distribution etc.)	15,000	15,000
11.	Solicitors to the issue	40,000	40,000
12.	Solicitors to the Trustee	40,000	40,000
13.	Solicitors to the company	30,000	30,000
14.	Trustee fee	40,000	40,000
15.	Reporting accountant	60,000	60,000
16.	Registrar's fee	40,000	40,000
17.	Vending fee (1%)	500,000	800,000
18.	Contingencies	20,000	20,000
	Total	5,520,000	8,530,000
	Cost of issue as a percentage of loan stock issued	11%	10.7%

Source: NSE (1992).

The composition of foreign and domestic ownership of investment in the Nigerian capital market largely reflects the 40-60 ratio (NSE, 1992). The companies quoted in the second-tier securities market, however, are fully owned by Nigerians as required by law. The second-tier securities market provides softer listing conditions for small indigenous firms.

A corporate tax rate of 40% applies to Nigerian quoted and unquoted companies. There are also the capital gains tax and dividend withholding tax of 20% and 5%, respectively. Unlike the past when there was an upper limit on the amount of earnings to be distributed as dividends, quoted companies may now pay out up to 100% of their earnings as dividends. Foreign shareholders are free to repatriate their earnings and capital at any time and no tax is levied on repatriated income.

A major problem facing the Nigerian capital market is divestment by foreign investors due to the falling foreign exchange value of investment income. The foreign investors in the most capitalized company in the market (UAC) and the most capitalized bank (First Bank) have divested their holdings in the last one year. The falling foreign exchange value of investment income arises from the depreciating value of the naira since the introduction of the structural adjustment programme in 1986. Thus while the policy framework in Nigeria, especially since the adjustment programme, is receptive to foreign capital, the effect of the macroeconomic policies of the adjustment programme weigh seriously against foreign investment.

However, far-reaching and innovative reforms were introduced by the 1995 budget. These include the repeal of the Nigerian Enterprises Promotion Decree and the Exchange Control Act of 1962. The latter reform removed restrictions on the amount of foreign exchange that can be imported into Nigeria. Equally significant is the liberalization of the Nigerian capital market. Thus, the Nigerian Stock Exchange is now expected to link up with its counterparts in Japan, the United Kingdom and the United States without reference to either the Ministry of Finance or the Central Bank of Nigeria. Foreigners can therefore invest in equity shares of Nigerian companies without let or hindrance. It is yet too early to understand clearly and fully appraise the effectiveness and impact of these changes. Evaluation of the changes for their impact and effectiveness should form an interesting subject matter for future comparative study.

Traditional characteristics

Market size

The size of market capitalization and its growth rates are indicators of market size and performance. Market size is also measured by the market capitalization ratio, which is defined as the value of shares listed divided by GDP. The essence of the market capitalization ratio, is that the size of the market should be positively correlated with the ability to mobilize capital and diversify risk in an economy (Demirguc-Kunt and Levine, 1995).

The number of listed companies and their growth rates are also measures of market size.

The number of listed securities in the Nigerian Securities Market increased from 186 in 1986 to 276 in 1994, the period covered by the study, maintaining an average annual growth rate of 4.89%. Out of the total securities, equities alone grew by an annual average rate of 7.44% with the number listed rising from 99 in 1986 to 177 in 1994 (Table 5). This shows that the growth of the securities market has largely been driven by the growth of the equities sector. The growth of the equities sector within the study period (1986-1994) dramatically out-performed that of the preceding years (1.09% for 1980-1985). Although the privatization exercise contributed to the growth of the equities sector, it accounted for only 2% of the growth rate. The adjusted (for privatization) growth rate shows 5.38% between 1986 and 1994 compared with 1.09% between 1980 and 1985. The total market capitalization also grew steadily from 1986 to 1994. As Table 6 shows, it rose from ₦7.7 billion in 1986 to ₦23.1 billion in 1991 and further to ₦65.5 billion in 1994. Over the period 1986 to 1994, it recorded an average annual growth rate of 30.12% (27.72% adjusted) compared with 10.83% in the preceding period.

Table 7 shows the capitalization ratio (capitalization/GDP). From 10.68% in 1986 to 8.33% in 1987, the ratio decreased continuously to 5.89% in 1989. Although it rose to 7.19% in 1991, by 1993 it was down to 6.88%. Over the period 1986 to 1994, the average capitalization/GDP ratio stood at 7.28%, a shortfall from 9.34% for the immediate past years (1980-1985). The figures indicate a declining capitalization ratio, showing that

Table 5: Number and growth rates of listed securities on the Nigerian stock exchange, 1980—1994

Year	Market	Adjusted	Market	Adjusted	Market	Adjusted	Market	Adjusted
1980	91	91			157	157		
1981	93	93	2.20	2.20	163	163	3.07	3.07
1982	93	93	0.00	0.00	168	168	5.95	5.95
1983	92	92	-1.80	-1.80	178	178	1.69	1.69
1984	92	92	0.00	0.00	175	175	3.43	3.43
1985	96	96	4.35	4.35	181	181	2.76	2.76
Average			1.09	1.09			3.38	3.38
1986	99	99	3.13	3.13	186	186	2.76	2.76
1987	100	100	1.01	1.01	185	185	-0.54	-0.54
1988	102	102	2.00	2.00	188	188	1.62	1.62
1989	111	98	8.82	-3.92	198	185	5.32	-1.60
1990	131	113	18.02	15.30	217	199	9.60	7.60
1991	142	122	8.40	8.00	239	219	10.14	10.10
1992	145	120	2.11	-1.60	242	217	1.26	0.91
1993	174	147	21.76	22.50	272	245	12.40	12.90
1994	177	150	1.72	2.00	276	249	1.42	1.63
Average (1986-1994)			7.44	5.38			4.89	3.93

Sources: NSE (1992) and the Nigerian Stock Exchange.

Adjusted implies market values adjusted for privatization. The market values are the market capitalization in each year. The adjustment was done by deducting the values of shares that were introduced to the market through privatization.

Table 6: Market capitalization of the Nigerian stock exchange 1986—1994 (₦ billion)

Year	Market capitalization (₦ billion)	Adjusted market capitalization (₦ billion)	Growth rate (%)	Adjusted growth rate (%)
1980	4.46	4.46	-	-
1981	4.84	4.84	8.52	8.52
1982	4.92	4.92	16.53	16.53
1983	5.80	5.80	17.89	17.89
1984	5.50	5.50	-5.17	-5.17
1985	6.40	6.40	16.36	16.36
Average			10.83	10.83
1986	7.70	7.70	70.31	70.31
1987	8.90	8.90	15.58	15.58
1988	9.70	9.70	8.99	8.99
1989	12.00	11.93	23.71	23.00
1990	15.90	15.70	32.50	31.60
1991	23.10	22.87	45.28	45.69
1992	31.30	30.74	35.23	34.41
1993	46.9	46.05	49.84	49.80
1994	65.5	64.00	39.00	40.39
Average (1986—1994)			30.12	27.27

Sources: NSE (1992), SEC (1992 and the Nigerian Stock Market

- = not available

Adjusted for privatization as in Table 5

Table 7: Market capitalization of the Nigerian stock exchange and value of shares traded as a percentage of GDP 1908—1994

Year	Capitalization /GDP (%)	Value traded GDP (%)
1980	9.00	1.05
1981	9.58	0.64
1982	9.53	0.42
1983	10.23	0.70
1984	8.73	0.40
1985	8.96	0.44
Average	9.34	0.61
1986	10.68	0.68
1987	8.33	0.27
1988	6.80	0.18
1989	5.89	0.29
1990	5.82	0.12
1991	7.19	0.07
1992	7.11	0.11
1993	6.88	0.10
1994	7.30	0.11
Average (1986-1994)	7.28	0.22

Source: Computed from figures obtained from the Nigerian Stock Exchanges

Table 8: Nigerian Stock Exchange: Value of securities traded (turnover) (N million) and turnover ratio, 1980—1994

Year	Value of securities traded	Turnover ratio* (%)
1980	522.85	11.50
1981	323.30	6.70
1982	216.40	5.30
1983	397.87	6.90
1984	249.82	7.59
1985	311.11	5.50
Average	336.89	7.25
1986	487.83	7.23
1987	286.30	4.19
1988	250.31	1.37
1989	653.31	4.06
1990	306.34	1.62
1991	234.54	0.59
1992	492.00	1.57
1993	662.00	1.41
1994	985.88	1.50
Average (1986—1994)	484.28	1.84

Source: Computed from figures obtained from the Nigerian Stock Exchange.

*We define turnover ratio as the percentage of value of share traded/market capitalization.

stock market capitalization has not kept up with the GDP. This is a manifestation of a declining ability to mobilize capital and diversify risk.

Liquidity

Generally, the liquidity of a stock market relates to the ease with which shares are traded in the market. Liquidity is measured by the ratio of the securities traded to the total national output, which is computed as: total value traded/GDP. Liquidity may also be measured by turnover ratio, which is the percentage value of shares traded/market capitalization. High turnover indicates both liquidity and low transaction costs. Total value traded/GDP shows the volume of trading relative to the size of the economy, while turnover ratio relates trading to stock market size. The liquidity of the Nigerian stock market as measured by the turnover ratio (value traded/market capitalization) is shown in Table 8. The figures in the table show a decreasing turnover ratio, from 7.23% in 1986 to 4.06% in 1989 and 1.50% in 1994. Over the period the turnover rate averaged 1.84% per annum, as against 7.25% in the preceding years. The decreasing turnover ratio provides evidence that the growth of trading activities lags behind the growth of the stock market (capitalization). In other words, there is increasing illiquidity of the market.

The liquidity of the stock market relative to the overall economic activities as measured by the total value traded/GDP ratio is shown in Table 7. Like the turnover ratio, the value traded/GDP ratio (expressed in percentage) declined from 0.68% in 1986 to 0.29% in 1989 and further to 0.10% in 1993. Between 1986 and 1993 the ratio averaged 0.23%. Relative to the economy the stock market shows low and decreasing trading activities. The poorer performance in trading relative to the past resulted from inactivity in the gilt-edged securities. Since 1987 government has not issued development stocks, which are the principal security in the government sector. The poor trading performance could not have resulted from increased transactions costs as hypothesized since the brokerage fee and other associated cost items were the same in the review and in the past periods.

Market concentration

Market concentration is the share of market capitalization accounted for by the dominant companies. Our measure of concentration is the share of the 20 largest stocks in the total market capitalization. Concentration of traded stocks is measured by the share of the top 20 companies in the total value traded.

The top 20 companies in the total market capitalization accounted for 70.58% of the market value in 1989 and 63.21% in 1994 (Table 9). The 20 companies represented 11% of the total number of equities listed but constituted 63% of the market capitalization. The trend of market shares, however, indicates a decreasing concentration. Table 9 also shows that the top 20 companies in total value traded account for 66.6% of the total value of shares traded in the market.

Table 9: Stock Market Concentration: Share of market capitalization by top 20 Nigerian quoted companies

Year	Share of top 20 companies in total market capitalization (%)	Share of top 20 companies in the total value traded (%)
1989	70.58	n.a.
1993	n.a.	66.6
1994	63.21	n.a.

n.a. = not available

Source: Computed from figures obtained from the Nigerian Stock Exchange.

Asset pricing characteristics

This section addresses the issue of the efficiency of the asset pricing process in the Nigerian securities market. In an efficient market prices fully and correctly reflect all available and relevant information, and security prices adjust instantaneously to new information. There are three levels of market efficiency: weak form, semi-strong form and strong form (Fama, 1970). For the weak-form level, prices reflect all information contained in the historical price pattern so that the past series of prices cannot be used to predict future prices. In other words, successive price changes are independent, identically distributed and follow a random walk. At the semi-strong level of market efficiency, current stock prices reflect both the information contained in the historical prices and all publicly available information. The strong-form level of market efficiency hypothesis asserts that security prices reflect all information publicly and privately available to any market participant.

These characteristics are considered in terms of serial correlation and non-parametric runs tests.

Serial correlation

The test of market efficiency at the weak-form level is a test of the random-walk hypothesis. If markets are efficient, stock prices will not be characterized by any systematic pattern and successive prices will be independent. Any dependence of the prices will indicate inefficiency.

The random-walk model is stated as:

$$R_{t+1} = R_t + e_{t+1} \quad (1)$$

and

$$E(e_t) = 0$$

where R_t is the stock return at time t ; e_t is a sequence of an independent and identically distributed random variable possessing the usual properties of a stochastic variable.

From Equation 1 the random-walk model implies that:

$$R_{t+1} = R_t + \sum_{i=1}^K e_{t+i} \quad (2)$$

In other words, historical prices of the securities cannot be used meaningfully to predict what future prices are likely to be. Thus, the conditional expectation of prices based on available information at time t becomes:

$$E_t(R_{t+1}) = R_t \quad (3)$$

A testable implication of the random-walk model is that in the estimation of the equation:

$$\Delta R_t = \sum_{i=1}^N a_{t-i} \Delta R_{t-i} + e_t \quad (4)$$

the coefficients of a_i for the periods $t = 1, 2, 3, \dots, 10$ will be zero. A non-zero coefficient implies dependence in the stock prices and therefore an inefficient pricing process. It is expected that dependence in prices could be more the nearer N is to 1.

The results of the serial correlation of stock prices are presented for the daily and weekly data in Table 10. For the daily data, the second and the eighth lags are significant, while the first and the third lags are significant for the weekly data at 5% level. The F-tests of both equations are also significant.

The significance of the serial correlations in the daily and weekly stock returns shows that there is serial dependence in the day-to-day and week-to-week stock returns. Thus the stock returns in Nigeria do not seem to follow a random walk. Among other implications, this suggests the possibility for profitable arbitraging.

Table 10: Efficiency test: serial correlation coefficients

Lag	1	2	3	4	5	6	7	8	9	10
Daily data ¹	0.4724 (0.6435)	0.1794 ^a (2.4500)	0.0504 (0.6851)	0.0573 (0.7779)	0.1231 ^b (1.6711)	0.0045 (0.0608)	-0.0189 (-2.563)	0.1515 ^a (2.0609)	0.0746 (1.0200)	-0.0209 (-0.2852)
R ² = 0.1363 F(10,187) = 2.95 DW = 1.99										
weekly data ²	0.3835 ^a (5.2491)	0.0877 (1.1212)	0.1838 ^a (2.3480)	0.1435 ^b (1.8201)	-0.0899 (-1.1322)	-0.0727 (0.9149)	-0.0668 (-0.8432)	0.0658 (0.8441)	-0.0365 (0.4695)	-0.0285 (-0.3927)
R ² = .3848 (F(10,187) = 11.7 DW = 1.98										
a,b = significant at 5% and 10% levels, respectively										

Source: Our estimates.

1. Data used are the log of daily stock returns from 04/3/94 to 30/12/94. There were 210 observations for the first lag, 209 for the second, etc.
2. The weekly data are the log of weekly (Friday) stock returns from 2/1/91 to 30/12/94. There were 206 observations for the lag, 205 for the second, etc.

Non-parametric runs test

The serial correlation of stock prices is sensitive to the magnitude of prices. A systematic pattern of price changes could therefore be obscured by few extreme values. Moreover, if price changes are random most of the time, but serially correlated over varying periods of time, serial correlation may not detect such dependence (El-Erian and Kumar, 1995). A non-parametric runs test, which does not depend on the size of price changes, is not susceptible to these problems of serial correlation. A runs test compares the actual number of runs with the expected number of runs and proceeds with the assumption that successive price changes are independent. A run is defined as a sequence of price changes of the same sign preceded and followed by price changes of different signs (Fama, 1965; El-Erian and Kumar, 1995). For a given sample that is an unbiased estimate of the population, the expected total number of runs of all signs can be computed as:

$$M = \left[N(N+1) - \sum_{i=1}^3 n_i^2 \right] / N \quad (5)$$

where; M is the expected number of runs; N is the total number of price changes of all signs and n_i is the number of price changes of each sign.

The standard error of M is given by:

$$\delta_m = \left[\frac{\sum_{i=1}^3 n_i^2 \left[\sum_{i=1}^3 n_i^2 + N(N+1) \right] - 2N \sum_{i=1}^3 N^3}{N^2(N-1)} \right]^{1/2} \quad (6)$$

The difference between the actual number of runs, R , and the expected number is defined by a standardized variable,

$$Z = \frac{R + \frac{1}{2} - M}{\delta_m} \quad (7)$$

where $1/2$ is the adjustment factor for discontinuity, M is the mean of the sampling distribution of runs and δ_m is its error. A two-tailed standardized normal variate Z -test is used to determine the significance of Z under the null hypothesis of randomness. For the runs analysis of stock returns for the daily data, the null hypothesis of price independence is rejected at the 5% level. We also reject the null hypothesis at the same 5% level for the weekly data. The results jointly support the serial dependence of stock returns and thus doubt that the pricing process is efficient.

Table 11: Efficiency test: Non-parametric runs test

		No. of sign changes	No. of runs of one sign	Total no. of actual runs	Total no. of expected runs	Standard deviation	Z- score
Daily data ¹	Positive	92	43	105	121.53	6.80	-2.36 ^a
	Neg.	100	51				
	Zero	18	11				
Weekly data ²	Positive	105	28	54	104.93	14.45	-3.49 ^a
	Neg.	100	26				
	Zero	1	0				

Source: Our estimates

a = significant at 5% level

1. The daily data cover 04/03/94 to 30/12/94 with 210 sign changes.

2. The weekly data cover 02/01/91 to 30/12/94 with a total of 206 sign changes.

Comparative characteristics

This section compares the characteristics of the Nigerian stock market with those of the developed and other emerging stock markets. The Nigerian stock market has the Securities and Exchange Commission whose function is to protect the investors as is the case in the developed capital markets and in most other emerging markets such as Korea, Turkey, India, Jordan and Malaysia. Entry and repatriation of capital and dividends are free in the Nigerian market. This is also the case in Turkey, Malaysia, Korea, Brazil and Jordan. While some restrictions exist in India, capital and dividend repatriation is restricted in Zimbabwe. Partial restrictions are applied to entry to the Zimbabwean market (Demirguc-Kunt and Maksimovic, 1995).

Table 12: Comparative characteristics of some emerging stock markets

Country	Growth rate of listed companies (%) (1)	Growth rate of market capitalization (%) (2)	Turnover ratio (%) (3)	Market concentration (4)
Nigeria	4.89	28.27	1.84	48.00
Turkey	35.00	9,622.00	39.16	45.60
India	21.33	201.33	54.51	19.60
Jordan	0.00	30.49	22.76	44.00
Zimbabwe	2.12	168.00	3.83	—

Sources: Computed from IFC (1994); El-Erian and Kumar (1995).

Figures in columns 1, 2 and 3 are period averages for 1986—1993. Column 4 figures are for 1993. Market concentration measures the shares of top 10 companies in market capitalization.

A further comparison of the characteristics of the Nigerian stock market with other emerging markets is shown in Table 12. In terms of the growth of listed companies, the Nigerian market averaged 4.89% over 1986–1993 compared with the higher rates of 35.0% for Turkey and 21.33% for India, and lower rates of 0.00% for Jordan and 2.12% for Zimbabwe. For market capitalization Nigeria records the lowest growth rate of 28.27% as against 9,622.% for Turkey, 201.33% for India, 30.49% for Jordan and 168% for Zimbabwe. Even Jordan, which had no increase in the number of listed shares, performed better than Nigeria on market capitalization growth rate. Zimbabwe, with only 2.12% growth of listed companies, had 168% growth of capitalization. The low growth of the Nigerian market capitalization could have arisen from a combination of low volume of trading and low price increases. The turnover ratios of these countries tend to support this. Nigeria's turnover ratio of 1.84% is the least of the five countries. Turkey had 39.16%, India 54.51%, Jordan 22.76% and Zimbabwe 3.83%. The two African markets in the list are the worst performers in share trading. For the developed stock markets, the turnover ratios for 1993 were 72.3% for the US, 55.9% for Denmark, 49.5% for Canada, 42.7% for France and 40.6% for the UK (IFC, 1994). In 1993, of all the world's stock markets Nigeria's turnover of 1.5% was only higher than those of Kenya (1.4%) and Honduras (0.0%). In fact, low trading and turnover seem to be the greatest problem facing the

Nigerian stock market.

The Nigerian market also shows the greatest concentration as measured by the share of the top 10 companies in market capitalization. It had a concentration level of 48% compared with 45.6% by Turkey, 19.6% by India and 44% by Jordan. While the level of concentration in Nigeria is about the same as in other emerging markets, it is far higher than the level for the developed markets: 16.5% for Japan, 24.2% for the UK and 14.9% for the US (El-Erian and Kumar, 1995). The high concentration of the Nigerian market is a result of the large size of the multinational firms and the very small size of indigenous firms.

The developed stock markets are generally known to be efficient in asset pricing particularly at the weak-form level (Fama, 1970, 1991; Fama and French, 1992). The evidence of this study has shown the contrary for Nigeria. Stock prices are serially dependent and thus fail to meet the basic condition for weak-form efficiency. But the departure from conditions of efficiency does not seem to be peculiar to Nigeria. It has been shown that the markets in Turkey, Jordan, Greece and Philippines also lack efficiency at the weak-form level in asset pricing (El-Erian and Kumar, 1995). This suggests inadequate compensation for risk in the market, among other implications.

Summary and conclusion

We have examined the institutional, traditional and asset pricing characteristics of the Nigerian stock market. The analysis of the institutional features of the market has revealed the existence of a substantial regulatory framework to protect investors and ensure fairplay in the market. There is a functional Securities and Exchange Commission whose functions are augmented by the Nigerian Stock Exchange in regulating the capital market. Of particular note are the various regulatory requirements that compel market participants to make their affairs open and transparent.

The settlement process in the market, however, is fraught with institutional impediments. The process of share transaction takes almost a year to complete while payment of dividends to shareholders is characterized by irregularities, and paid dividends do not get to a good number of investors. The market is very free to non-residents for entry and repatriation of dividends and capital, however. In terms of the traditional growth characteristics, the market has been growing in the number of listed companies and capitalization though at a lower rate than most emerging markets. Market capitalization as a percentage of GDP has unfortunately been declining. The turnover ratio of the market, which has also been declining, is about the lowest in the world, reflecting a very inactive market in share trading. Market concentration is also high and above the level for many other emerging markets. The asset pricing characteristic of the market shows deviation from the expected behaviour. Stock prices have memory and the market appears to lack efficiency in terms of serial dependence of prices. Given the institutional bottlenecks in share transactions, the low and declining indexes of market development in the traditional sense, and the inefficient asset pricing process, the long-run survival of the Nigerian stock market appears bleak.

A number of policy measures are needed to set the market on a development path. First is a general improvement in the nation's economic climate. Much progress may have been achieved with the recent abrogation of the regulations that limited the interest of foreigners in certain industrial sectors. The recent reintroduction of the autonomous foreign exchange market now makes for easy entry of foreign capital and repatriation of dividends and capital. In the past, inflow of capital and repatriation of dividends and capital were legal but constrained by tight exchange controls. Policy measures introduced since 1995 that seek to liberalize capital inflow, capital repatriation and investment in the capital market need to be strengthened.

The second and most needed specific policy measure should be on the operations of the stock market. Most of the inefficiency in the present share transfer system could be eliminated by the introduction of the central securities clearing system, but the substantial

cost of the system has been the major obstacle withholding its implementation. Government could consider making a financial grant for the speedy implementation of the clearing system.

Another area requiring policy attention in developing the Nigerian stock market is share trading. Generally, Nigerian shareholders are averse to trading their shares and it is this attitude that informs the turnover ratio, which is about the world's lowest. The privatization of public companies, which introduced many new companies to the market, could not improve the trading activities as the new shares went to individual holdings, which are rarely traded. Public policy could be used to induce trading activities in the market. Government could create a highly capitalized special fund for investment in equities. This would stimulate trading in shares. This measure should also be supplemented by a general reform of share pricing procedures. According to current practice, brokers who fail to justify the reasons for their bids on firm-specific information are overruled by the chair of the call-up trading session. It is this highly regulated trading system that produces the lack of weak-form efficiency of the pricing process. The pricing of securities in the market needs to be liberalized. The intervention of authorities should be called for only when the entire market is threatened and not on a day-to-day and stock-by-stock basis as currently obtains in the course of daily trading. These policy recommendations are necessary, if not to develop the market, then at least to stem the tide of progressive capital market underdevelopment.

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