DETERMINANTS OF INVESTMENT IN NIGERIAN MANUFACTURING 1981-1997

BY

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DECLARATION

I hereby declare that this thesis is a product of my own research. It has not been accepted anywhere, to the best of my knowledge, for the purpose of awarding a masters degree. All references have been duly acknowledged by way of bibliography at the end of the thesis.

Signed _____
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Date 25/09/2013

CERTIFICATION

This Thesis entitled "DETERMINANTS OF INVESTMENT IN NIGERIAN MANUFACTURING (1981-1997)" written by ASOMUGHA KINGSLEY EMEKA, meets the regulations governing the award of the degree of MASTER OF SCIENCE (Economics) of Ahmadu Bello University, Zaria and is approved for its contribution to knowledge and literary presentation.

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DEDICATION

This Thesis is dedicated to my late Grandmother, **MAMA AGNES ONYEBERECHI ASOMUGHA OPARAH.** May God grant her soul a perfect rest, Amen.

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ABSTRACT

Many economists agree that the expansion of private investment especially in manufacturing should be the main impetus for economic growth in developing countries. But after' a decade of economic adjustment, the recovery of this sector in Nigeria has remained very weak and slow; and as usual, inappropriate macroeconomic policies, macroeconomic instability and structural factors are blamed for this. This issue has received only limited attention in empirical studies on the experience of Nigeria. This study uses data from Nigeria during 1981-1997 to perform the empirical analysis. In exploring the association between manufacturing investment and macroeconomic policies (including fiscal policy, exchange rate and monetary policy) with particular reference to Nigeria, the study finds that macroeconomic policy variables do actually affect manufacturing investment in Nigeria. Furthermore, the study confirms the negative impact of foreign exchange rates, unguarded deregulation of interest rate and high domestic inflation rates on manufacturing investment in Nigeria and highlights the adverse impact of large budget deficits on private capital accumulation. The study sharply brings to focus the macroeconomic uncertainty associated with high external debt ratio.

On the other hand, private manufacturing investment is determined by the rate of capacity utilization, credit to the sector and the growth rate of real GDP, which suggest that

developments within these three variables have significant positive effects on manufacturing investment in Nigeria.

Supplementing regression analysis with historical and qualitative insights, the study establishes that other structural factors like low managerial skill and technological capability explain low investment in manufacturing.

Policy wise, these results suggest that strategies to boost' manufacturing investment must take into account both macroeconomic stability and structural incentives. Also, the removal of structural constraints should be stressed. Manufacturing investment being mostly long-term by nature requires a predictable and stable business environment, reliable and efficient infrastructure, high level managerial skill and technological capability, diversified export base, political and social stability and transparency.

These are some of the factors required for the growth of manufacturing investment and development in Nigeria.

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CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Since the attainment of political independence in 1960, successive Nigerian governments have been preoccupied with the accelerated growth and development of the economy.

To enhance the realization of this objective, several concrete measures and, sometimes aggressive steps have been taken. The initial bold steps for effective management of the Nigerian economy were articulated in the four National Development Plans. Though the plans enabled the policy makers to understand the structure of the Nigerian economy as well as identify its strength and weakness (Ariyo 1996), it was generally marked by sectoral focus of major policies, primacy of the public sector and nominal adherence to planning (Onimode 1995). However, despite the ascendancy of planned and public sector-led growth strategy in the first decade, the contribution of private sector to gross capital formation was about twice that of the public sector (Olaloku 1980).

The Nigerian economic crisis had its roots in the early 1980s. This crisis manifested itself in different forms including persistent macroeconomic imbalances, widening saving-investment gap, high budget deficits and rising unemployment. Above all, investment had collapsed and this contributed strongly to a declining real output and falling per capita real income level. In 1983 and 1984, the growth

rate of Gross Domestic Product (GDP) was negative; per capita income, which had risen to $970 million in 1981, plummeted to $270 million in 1989, the aggregative investment income ratio which had achieved a peak of 31.5 percent in 1976 collapsed to less than 9 percent in 1985 (World Bank 1995). By the middle of 1980s, the economic crisis had set in motion a rethink of Nigerian development strategy. Essentially, this rethinking formed the bases for the articulation of the Structural Adjustment Programme (SAP) adopted in 1986. Packaged in accordance with the neoclassical economic paradigm, SAP aimed at reducing the dominance of unproductive investment in the public sector, enhancing the growth potential of the private sector and, subsequently, restoring non-inflationary and sustainable economic growth.

It is in recognition of this, that the industrialization of the economy has remained a policy objective of Nigerian governments. The favourable policy stance of the government towards the industrial sector might have been formed by the obviously positive relationship between industrialization and general development of any economy. Various Nigerian governments have realized that private investments (especially the manufacturing sector) are more profitable and sustainable than public investments.

Despite government's support of the manufacturing industry over the years, the sector still remains weak and is heavily import-dependent. The share of the manufacturing in

Gross Domestic Product (GDP) remained below 11 percent between 1970 and 1997. The sector remains a net user of foreign exchange, contributing less than 1 percent of foreign exchange earnings and utilizing about 64 percent of foreign exchange earned in the economy over the same period (CBN 1996). The economic downturn had a major impact on the manufacturing sector as capacity utilization fell drastically from 82 percent in 1970 to less than 30 percent in 1997. Similarly manufacturing employment fell by nearly 25 percent between 1985 and 1997. The sharp depreciation of the currency has resulted in a drastic fall in the dollar value of manufacturing value added from US $ 5,456 million in 1970 to less than US $ 325 million in 1997. This represents a contraction of over 90 percent in value terms, (Soludo and Adenikinju 1997). Certainly, macroeconomic policies - monetary, fiscal and exchange have a bearing on the investment behaviour in a country (Likelile 1997; Ghura and Hadjimicheal 1996; World Bank 1994), but the impact of these policies on manufacturing investment behaviour in Nigeria is still largely unclear.

In broad terms, manufacturing investment depends on institutional and economic factors, including economic endowments, the level of human capital and of per capita income, the administrative, legal, and institutional frame work, and the stance of financial policies. In Nigeria, the expansion of manufacturing investment has traditionally been

impeded by structural and institutional constraints, government intervention, overvalued exchange rates and high cost structures, unstable macroeconomic conditions, and limited confidence in the direction of government policies.

1.2 STATEMENT OF THE PROBLEM

Policy makers believed that economic development depends critically on investment (or alternative savings and capital formation). The role of the savings ratio and/or investment has also been emphasized in theories of development or economic growth. Chenery and Strout (1966) first established the role of investment or the investment-income ratio in economic development.

Economists concerned about Africa's dismal growth record relative to other regions of the World have often stressed the primacy placed of investment. With respect to Nigeria, the early to mid-1970s held much promise for prospects of investment-led growth. With resources made possible by the oil boom, Nigeria's investment rate got to its peak of about 25 percent annually during this period (Dike 1991). Following the recession of the early 1980s, the introduction of the Structural Adjustment Programme (SAP) once again raised the expectation of a return to earlier period of relatively high growth rate through liberalization - induced investment boom. Thus, a critical objective of the (SAP) introduced in 1986 is to enhance the productivity of the manufacturing sector. The

reason for this is obvious. Firstly, the success recorded in the high growth Asian economies in World trade can be traced to the competitive strength and growth of the industrial sector. Secondly, the economic downturn experienced in recent years has shown that efficiency in the use of resources rather than accumulation of productive inputs remains important for the transformation of the manufacturing sector (Adenikinju and Olofin 1998). This optimism was, however, short lived as the country's investment rate failed to rise to anything near the level reached in the 1970s.

However, the fact remains that the Nigerian economic structure is still largely agrarian. Besides this, the nascent industrial sector is skewed towards the mining and petroleum subsectors. Manufacturing output only contributed an average of 8.4 percent to the GDP between 1981 and 1996. The non oil industrial GDP is equally low averaging about 11.8 percent since 1981.

Thus, using any index, the Nigerian manufacturing endeavour is still very vulnerable compared to agriculture, petroleum and mining (World Bank 1996). In attempting to identify the key determinants of manufacturing investment growth in the Nigerian economy, it is desirable to draw on current directions and trends of investment theory concerning less developed economies. Private investment in the manufacturing sector can be significantly affected by such factors as macroeconomic instability, macroeconomic policy (monetary,

fiscal and exchange rate), structural and institutional constraints and response to it by the various agents involved in investment decisions, uncertainty and irreversibility and credibility of policy reforms.

This examination becomes pertinent given that while growth may be affected by many factors that are wholly or largely independent of macroeconomic policies, such as health, education and training, research, technological base and the like, the major determinant that is most directly affected by macroeconomic policy is investment, both public and private (World Bank 1993). Such microeconomic policies involve the deliberate manipulation policy instruments as monetary policy government fiscal operations, exchange rate and trade policies, pricing and environmental policies for the purpose of achieving broad macroeconomic objectives of relative price stability, high level of employment, economic growth, equitable distribution of national income and balance of payments equilibrium, otherwise referred to as internal and external balance. These are macroeconomic indicators upon which investors' confidence, expectations and decisions on whether to invest or not are based. Macroeconomic and structural variables could therefore, be regarded as the economic fundamental or preconditions must be fulfilled without which investment cannot take place.

Manufacturing investment, being mostly long-term by nature, requires both a predictable business environment and

policy stability. Clearly a comprehensive and realistic explanation of determinants of private investment in the manufacturing sector is needed if sustainable economic growth and development are to be achieved.

1.3 OBJECTIVE OF THE STUDY

The key objective of this study is to fully identify and understand the key determinants of long-run trends in manufacturing investment in Nigeria with particular reference to the effects of macroeconomic instability, macroeconomic policy and various structural and institutional constraints on manufacturing investment.

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1.4 JUSTIFICATION OF THE STUDY

A study of this nature is considered relevant for at least two reasons. Firstly, since investment is the most strategic input in growth, knowledge of the factors influencing private investment in the manufacturing sector is a vital input in optimal private investment policy formulation, as this will alert policy makers to the policy strategies to adopt in order to elicit maximum growth response in the Nigerian economy. Secondly, at the general level, as we uncover the forces that undermine investment in the manufacturing sector, it becomes possible to undertake empirically-based reappraisal of various traditional determinants and other macroeconomic and structural variables

that were not included in earlier studies currently informing our understanding of why manufacturing investment growth has been so slow in Nigeria even after adjustment reform and price liberalization have been implemented.

1.5 RESEARCH HYPOTHESIS

Manufacturing investment is low due to macroeconomic instability and various structural constraints.

1.6 METHODOLOGY OF THE RESEARCH

1.6.1 SOURCES OF DATA

This thesis uses secondary data obtained from the Central Bank of Nigeria (CBN) publications, the Federal Office of Statistics (FOS), the World Bank, and the International Monetary Fund. Other secondary sources of data include previous studies and articles, as well as data gathered from textbooks.

1.6.2 TOOLS OF ANALYSES

Manufacturing investment is regressed on those variables which capture the influences of macroeconomic instability and structural constraints. Manufacturing investment - GDP ratio is used as proxy for total private manufacturing investments in Nigeria. The choice of this variable was because private investments in the manufacturing sector account for about 80 percent of aggregate manufacturing investments in Nigeria (World Bank 1995).

1.7 EXPECTED RESULTS

In this research, manufacturing investment - GDP ratio is hypothesized to depend positively on those variables capturing the effect of structural impediments to manufacturing sector development, viz; growth rate of real GDP, the rate of capacity utilization and credit to the sector, and negatively on the fiscal deficit and the domestic lending interest rate. The manufacturing investment - GDP ratio is also hypothesized to depend negatively on three variables measuring uncertainty in the macroeconomic environment, viz, foreign exchange premium, external debt-GDP ratio (designed to measure the debt overhang effect) and the rate of inflation.

1.8 SCOPE AND LIMITATIONS OF THE STUDY

The scope of the study will cover a period of seventeen years (1981-1997). The period incorporates the crisis, SAP and pre-SAP phases in the evolution of the manufacturing sector.

The obvious limitations of this study centre around data inconsistency. Nigerian data often vary from source to source which posed a fundamental problem. It is important to note that due to absence of data, we have to make use of the available data from aggregate manufacturing investment-GDP ratio as a proxy for total private manufacturing investements in Nigeria and assume them to be "error-minimized".

1.9 ORGANISATION OF THE STUDY

The rest of the study is organized in four chapters. Chapter Two contains theoretical proposition and reviews the relevant literature on investment. Chapter Three deals with the structure and development of the Nigerian manufacturing sector and also presents an overview of industrial policy under the Structural Adjustment Programme.

It also examines the performance of the Nigerian macroeconomic policies and the relationship between manufacturing investment and their growth for Nigeria during 1981-1997 period as a way of establishing the critical role of investment in economic development.

Chapter four specifies the models that explain the determinants of investment and also discusses results of the regression analysis. Chapter five contains the summary, and conclusion and policy recommendations.

CHAPTER TWO

LITERATURE REVIEW

2.1 INVESTMENT THEORY

The evolution of investment theory originated from keynes's landmark work in 1936. In this work, he observes that investment depends on the prospective marginal efficiency of capital, relative to interest rate which is the opportunity cost of the invested funds. He stressed the volatility of private investment given that the return on investment is bound to be uncertain. Consequently, the private investors instinct would be the main driving forces in investment decisions. This view conforms to the keynesian and neoclassical models of investment as both models are basically centred around two major economic variables: income and interest.

Investment, as considered here, is determined by factors, such as marginal efficiency of capital (MEC), level of income in the economy (which determines the level of savings and output demand), and other environmental factors. The MEC captures the internal returns and profitability of any investment decision. Investments with high MECs are usually chosen first before those with lower MEC. The income level as a determinant of investment, provides an important information about investment in a developing economy where the "availability of funds" is a major determinant factor for both demand and supply generally.

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The market interest rate may be low, thus, making the internal rate for a potential investment high (that is, a higher MEC), yet if the investible funds are not available, then, the rate will not make any economic sense. Environmental factors include those non market (or non-economic) factors that effect investment, namely, political stability and availability and state of infrastructure.

The theories of investment after keynes were essentially hinged on simple growth models. In the 1950s and 1960s, these models grew to assume a life of their own. One of the most important is the accelerator theory which assumes that investment is a linear proportion of changes in output.

The general mathematical formulation of private investment is as follows.

$$PINV = B(KP^{*} - KP_{t-1}) + U_t \quad \ldots\ldots\ldots\ldots\ldots\ldots \quad (1)$$

Where

PINV = Private Investment

KP^{*} = Desired capital stock of the private sector

KP = Actual capital stock of the private sector.

ß = Co-efficient of adjustment

$0 \leq ß \leq I$

Ut = error term

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To overcome the deficiencies associated with the concept and measurement of the capital stock in equation I, Bleger and Khan (1984a) expressed the desired capital stock to be linearly related to level of output (Y)

Then

$Kp^{*} === \alpha y$ ..... (2)

Substituting equation 2 into I and first differenciating the two equations yields

$PINV_t - PINV_{t-1} = ß\ (Y_t - Y_t\text{-}1) - \lambda\ (KP_{t-1} - KP_{t-2})$ ... (3)

We also know that by definition $PINV_t = KP_t - KP_{t-1}$ ..... (4)

Substituting and rearranging, we have

$PINV_t = ß(Yt - Yt_{-1}) + (1- \lambda\ )PINV_{t-1}$ ..... (5)

Where

Y = level of output

t = year under consideration, and

$t\text{-}1$ = previous year

λ = Lamda (common ratio)

Empirically, equation (5) has been decried as inadequate to track the behaviour pattern of private investment particularly in the LDCs (Clark 1979).

Following Tun wai and Wong (1982) and Bleger and Khan (1984b) the simple accelerator model has been reworked. Primarily, the coefficient of adjustment ß has been endogenized on the basis that the response of private investment to the gap between desired and actual capital stock varies systematically with economic factors that influence the ability of private investors to achieve the desired level

of investment.

The availability of investment financing which includes the domestic fund measured by changes in Bank credit inflow and external debt option, has been recognized as one of the principal constraints on investment in developing countries.

On the other hand, private investment response to the capital stock gap is influenced by the level of public investment, and perhaps the influence of the interest rate administration in Nigeria.

From the Keynesian perspective public investment through the multiplier effect would encourage the growth of private investment. Besides, given that government provides certain infrastructure, it has been argued that such public investment would reduce the cost of production, increase the returns to scale and increase the profitability of private investors. From the foregoing, a linear representation of this relationship would be

$$PINV = bo + b_1 ED + b_2 PUI + b_3 IR + b_4 CMS + Ut \quad \ldots\ldots\ldots (6)$$

$b_1 < 0$, $b_2 > 0$, $b_3 < 0$ and $b_4 > 0$

Where ED = External debt

PUI = Public investment

IR = Lending interest rate

CMS = Credit to manufacturing sector

However, on the basis of the argument above, the simple accelerator model was redefined to include those factors that affect the speed and ability of private investor to achieve

their desired levels of investment.

These factors are proxied by macroeconomic instability and various structural constraints that have hampered private investment. However, Jorgenson (1967) and Hall and Jorgenson (1971) reviewed the restrictive assumptions of the accelerator theory of investment and formulated the neoclassical approach. In this approach, investment growth is a function of the level of output and user cost of capital.

Lags in decision making and delivery create a gap between the current and desired capital stocks, giving rise an investment equation relating to the change in the capital stock.

The short-comings of this approach have been identified to include the assumption of perfect competition and exogenously given output which are inconsistent. In addition, the assumption of static future prices, output, interest rates and investment is basically a futuristic process, and that the lags in delivering are not introduced in an orderly manner. The neoclassical model has its major appeal in that it addresses the primary motive for investment to make profit and thus, a cost benefit analysis should be at the heart of an investor's calculations. In the calculations of costs and expected returns, the entire socio-political and micro and macroeconomics environment and various structural and institutional factors that impinge on these variables must be taken into account. A variant of the traditional framework is

that of Tobin Q (1969) which focuses on the capitalized value of the marginal unit of capital, relative to its replacement cost (a ratio known as Tobin Q). Central to these neo-classical frameworks is a convex cost function in the process of adjusting to the desired capital stock. In the neoclassical world, therefore, once the expected benefits from an investment exceed the cost, it should be undertaken.

It is on record that the poor performance of the neoclassical model in recent years explains the nature of adjustment costs in the process of investment (especially in developing countries). This has spurred several important extensions (Serven 1996).

The four key features of the adjustment process can be summarized as follows:

(i) Most fixed capital investments once made are partly irreversible, and this raises the cost of bad investment decisions given the difficulty of recovering part of the sunk-cost.

(ii) Future returns on investment are uncertain, induced by the volatile and incredible macroeconomic environment rather than determistic as assumed in the traditional framework.

(iii) Agents usually have discretion over the timing of investment, and there is a value to exercising the option-to-wait. Potential investors can be advised on the profitability of investments if the expected returns exceed cost of capital and the value option; and

(iv) Investors are likely to be concerned with the potential loss of value of their capital assets on account of risks of damage of property due to wars, civil/political unrest, weak contractual enforcement and the like. In the light of these considerations, investors (in developing countries) are likely to exercise their waiting option until the front-loading of incentives is adequate to compensate for any risks/uncertainties associated with any commitment to long-term investment.

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2.2. INVESTMENT AND ECONOMIC GROWTH

Investment is the process of incremental change in capital stock whereby a society sets aside part of its current production activity to create material and human capital. The incremental change is usually purposive in the sense that it is designed to enhance the future stream of earning.

According to Davenport (1969) increasing resource mobilisation through investments in developing countries is generally viewed as a means of breaking away from the vicious

cycle of poverty, and paving the way for economic development and sustained transformation.

Economic growth is a component of development. And investment is a part of economic development. It has to make do with an increase in the material and non material well-being of the people overtime (Ijere 1992).

Development economists have identified a strong correlation between investment and economic growth. For example Collier and Gunnings (1999), cross-country evidence linked investment to growth. This is also supported by time series evidence for individual countries. For example, Ghura (1999) finds for Cameroon for 1963-96 that the effect of changes in private investment on economic growth is robust, large and significant. Therefore, investment is of strategic importance to the development of any economy. This is because it significantly determines the long term course of economic activity. Modern growth theory takes the view that economic growth is particularly the result of capital accumulation, (Investment), as it is generally accepted that more capital goods will be required if there is to be growth. The position is true at both the micro and macro levels when viewed against the background of both profit and acceleration principles which base the decision to invest and the rate of investment (increase in capital stock) on the desired level of profits and output level respectively (Levacic and Rebmann 1982).

Although investment is usually a smaller component of aggregate demand than consumption, it is usually more volatile and as such, important in economic analysis as a source of short term fluctuation in aggregative demand. Investment is also a crucial variable in the supply side of an economy, as it is the means by which changes in the real capital stock are brought about (Busari and Fashanu 1998). The accumulation of capital (i.e real investment) is therefore, a vital element in economic growth and subsequent development. With a positive rate of return on capital and a given state of technical knowledge, the acquisition of new capital (investment) is essential to the utilization of such progress. The consensus concerning the solution to the low, and sometimes negative, growth rates in countries such as Nigeria and other African countries, is that resumption of growth will require an increase in investment - GDP ratio and investment rates (Serven 1996).

There is also abundant empirical evidence that investment is a major determinant of level, structure and rate of economic development. For instance, East Asia was able to sustain a growth rate of about 7-8 percent because it maintained rates of gross capital formation of about 30 percent of GDP.

Odedokun (1993) in a study based on a cross-section of 42 African countries also identifies investment as the major factor accounting for the differential growth performance of

the countries in the sample for the period 1970 to 1987. Hevine and Renelth (1992) also report that physical investment ratio was the most consistent and robust explanatory variable accounting for differences in growth performance of a large sample of countries over an extended period of time. According to Schmidt-Hebbel et - al (1992), this result corroborates other empirical analyses of the determinants of growth for different regions of the world.

In the empirical literature, public investment has been largely found to complement private investment (see Blejer and Khan 1984, Sakr 1993, Hadji Micheal et al 1995). Easterly and Rebelo (1993) also report that government investment in infrastructure is complementary with private investment although other types of government investment are not. More recently, Greene and Villanueva (1991) and Serven and Salimano (1991) report similar findings based on mullti-country panel data, while Musalem (1989) reports a complementarity in private and public investment in a time series study of investment trends in Mexico.

Balassa (1988), however reports cross-section estimates showing that an increase in public investment led a decline in private investment. Furthermore, he reports a negative correlation between the share of public investment in total investment and size of incremental capital output ratios, which indicates that public investment is less efficient than private investment. Khan and Reinhart (1990) also observed

that the marginal productivity of public sector capital is negative whereas private investment is significantly positive in respect of 24 developing countries.

However, the main link between growth of real (per capita) GDP (i.e economic growth) and investment is via the capital stock. The role of the financial sector is then invoked by assuming that the financial sector knows the marginal product of capital in alternative economic activities. Thus investible funds are channelled in such a way as to give priority to activities which lead to better allocation of resources, thus, sustaining high rates of economic growth.

Hayani and Rultani (1971) in their induced development theory, maintain that every country concerned with economic development is necessarily faced with a set of constraints, imposed by inelastic supply of strategic inputs (such as funds).

No production, no matter how simple the technology is, can take place without the use of capital. The availability of funds for the acquisition of capital goods is crucial for effective economic management which aims at increasing prosperity, equity and sustainability. In addition, economic management goals are consistent with the primary objective of sustainable development.

Economic dvelopment and growth in market economies is expected to be private sector driven, particularly in

manufacturing. This explains the keen interest accorded to the study of the determinants of investment in the Nigerian manufacturing sector in recent times.

2.3 DETERMINANTS OF INVESTMENT BEHAVIOUR

Recent years have witnessed growing empirical research on the main determinants of investment in Africa and particularly in Nigeria (See Serven 1996, Kumar and Mlambo 1995 and Oshikoya (1994). The resurgence is partly due to the desire to explain the weak response on investment to economic reforms in the 1980s and 1990s.

Thus, beyond the "Traditional" accelerator determinants of investment, recent empirical studies extend the neoclassical model by incorporating considerations of irreversibility, uncertainty and political and country risks. In addition to political and external risks (external debt, and terms of trade), the policy - induced risks and uncertainties constitute the major reason for investors to wait. The logic of this argument is that even though a country might be liberalizing (reducing trade barriers, depreciating over-valued exchange rate, eliminating financial repression and so on, it is ultimately the investors perception of risks associated with the variability rather than levels of key macroeconomic variables (especially relative prices), that matter most for investment response. Every investment is a gamble into the future, but an investor

would want to minimize the risk associated with a particular investment. It is not only that a given investment should be profitable by today's calculations, an investor also wants the basis for the calculations to remain fairly stable overtime. Where the socio-political and economic environments are highly volatile, an investor is better off exercising his option to wait. Alternatively, he might decide only on investments with self insurance character, that is investments whose cycle are very short and can easily be undone (Soludo 1998).

The following subsection reviews briefly the main transmission channels of the influence of macroeconomic policies and other factors on manufacturing investment

Output Growth and Capacity Utilization Rates

Economic studies of the determinants of investment rates suggest that the behaviour of investment is closely related to an economy's rate of growth and income per capita. And since the relationship between growth and investment is not unidirectional, low growth resulting from low investment implies future low growth. However, the decline in gross domestic investment rates is tied in part to an unfavourable external environment; domestic macroeconomic policy factors seem to have played a role as well.

It has been suggested that investment in private sector is positively related to the growth of real output. Theoretically, this relationship can be readily derived from

a flexible accelerator model with the underlying assumption that the underlying production function has a fixed relationship between the desired capital stock and the level of real output. In the same vein, private investment has been hypothesised as a positive function of income per capita. Greene and Villanueva (1991) assert that countries with higher per capita income could devote more resources to domestic savings, which could be used to finance investment projects.

Accordingly, Schmidt-Hebble et al (1996) consider it relevant to distiguish between the cycle and the long term. In the short term, investment was shown to depend on the rate of output growth and/or the rate of capacity utilizaton, which serve respectively as indicators of future demand and the severity of liquidity constraints faced by firms. These two variables are very critical to decisions to expand productive capacity. Thus, Serven and Salimano (1993) remark that during the course of the business cycle, output may lead to accelerated investment in the economy. Schemidt-Hebble et al (1996) opine that this sensitivity of investment to cyclical variations in output and/or other term factors suggests that a short-term recession may have negative long-term effects by causing a deep investment slump that permanently traps the economy in a low-growth, low-investment equilibrium, thus, suggesting that the growth process may be path-dependent.

Fiscal Policy

The impact of Fiscal Policy on private investment in the manufacturing sector at the theoretical level is still unclear. Public investment that results in large Fiscal deficits tends to crowd out private investment through high interest rates and reduced access to bank credit. But since a considerable number of developing countries have a large, coponent of government investment concentrated on infrastructure, public investment ought to complement private investment.

Some studies which reflect budget deficit and public investment in the same equations have found that budget deficits have an adverse impact on private investment (See Fisher 1991 and 1993; Hadjimicheal et al (1995). Although a large fiscal deficit may be indicative of unstable macroeconomic policy stance, some authors (e.g. Schmidt-Hebbel and Serven (1996) and Sala-i-Martin (1991) have argued that large deficit could be symptomatic of more fundamental microeconomic policy distortions. In this context, inappropriate microeconomic policies by introducing distortions in resource allocation and use, slow down economic growth for a given level of resources. If the growth rate falls below a level that is politically acceptable, governments may embark on expansionary fiscal policies in an attempt to revive economic activity thus raising the budget deficit rates.

Exchange Rate Policy

A key component of policy reforms that contains elements of both demand-side and supply-side measures is the real devaluation of the domestic currency. Since it is simultaneously an expenditure reducing and expenditure switching policy, real devaluation affects both domestic demand and domestic supply and thus, affects private investment through several channels. In the short run, a real devaluation will reduce private investment through its negative impact on domestic absorption on the demand side, the expenditure reducing effect of exchange rate policy is unambiguously clear. The main demand-side effects are a reduction in private sector real wealth and expenditure, due to the impact of the overall price level on the real value of private sector financial assets. For these reasons, real devaluation decreases domestic demand and when firms face sales - binding constraints the slump in aggregate economic activity may induce firms to reduce investment spending.

On the supply side, the impact of the expenditure switching aspect of exchange rate policy on private investment may be uncertain. A real devaluation increases the level of foreign prices measured in domestic currency and thus the price of traded goods in the domestic economy. Thus, devaluation will have a stimulative impact on private investment in the tradable goods sector, while it will depress investment in the non traded goods sector.

Financial Intermediation

However, Mckinnon (1973) and Shaw (1973) argue that financial deepening increases the rate of domestic saving; and thus lowers the cost of borrowing and stimulating investment. The core of this argument rests on the claim that developing counties suffer from financial repression. It is posited that the liberation of these countries from their repressive conditions would induce savings, investment and growth. In this view, investment is positively related to real rate of interest in contrast with the neoclassical theory. The reason for this is that a rise in interest rate increases the volume of financial intermediaries and thereby increases investible funds, the phenomenon that Mckinnon calls the "conduct effect". Thus, while it may be true that demand for investment declines with the rise in the real rate of interest, realized investment actually increases because of the greater availability of funds. In addition, if financial deepening contributes to an increase in the expected profitability of capital, it would also be expected to encourage investment. According to King and Levine (1993) the endogenous growth literature has been extended to investigate the effects of financial deepening and intermediation. The literature has emphasized the important role that financial intermediation plays in improving the efficiency of investment However, under financial repression, interest rate may be a poor proxy for the direction of money policy as well as the

user cost of capital.

In addition to other factors, Emenuga (1996) identifies the structure of the domestic financial system as yet another factor that affects investment flows. He believes that the development and liberalization of the financial system enhance the flow of alternative source of development financing as demonstrated by recent developments in the Republic of Korea, Mexico and Turkey. Also Claessens (1993) reports that in Southeast Asia, capital inflows even went into investment in the financial intermediation services. Lessard and Williamson (1987) argue that an underdeveloped domestic financial system contributes to capital flight.

Inflation Rate

The direction of inflation on investment is ambiguous in the theoretical literature. According to the Tobin - Mundell effect, higher anticipated inflation leads to a lower real interest rate and causes portfolio adjustment away from real money balances toward real capital; hence, a higher anticipated inflation would be expected to lead to higher real investment.

Considering Nigeria's case where the capital and financial markets are largely underdeveloped, the Tobin-Mundell effect does not apply. Instead, a higher rate of inflation moves portfolio adjustment from real money balances to real assets, thus indicating that high rate of inflation is

an indication that government lacks the ability to manage the economy, Fisher (1991); therefore, high rates of inflation are expected to lead to a contraction of private investment. The presence of high and variable inflation rates would be expected to lower the credibility of the authorities vis-a-vis the private sector and reduce the returns on private saving and investment, thereby lowering these aggregate. Greene and Villanueva (1991) found that a higher inflation rate had a negative effect on private investment for developing countries in their pooled time series/cross-sectional study. Also Oshikoya (1994) and Hadjimicheal et al (1995) attest to the negative impact of high inflation rate on private investment in developing countries.

The high rates of inflation in the country are no doubt traceable to fiscal deficits and unstable exchange rates of the naira. Also, the trend of movement in foreign exchange values of the naira to the U.S dollar reveals a systematic depreciation in the value of the naira over the years, notably between 1989 to date. More remarkable is the highly volatile behaviour of this trend which is largely attributable to policy instability and frequent changes in the manipulation of the so called market determined exchange rates (Ariyo and Adeniran 1995) and negatively affected the efficiency of the exchange rate market (Ogiogio 1996).

Dornbusch and Reynoso (1989) have argued that accelerating domestic inflation constitutes a strong

disincentive to private investment in developing countries by ipso facto, increasing the riskiness of longer-term investment projects and reducing the average maturing of commercial lending.

Interest Rate Policy

For contries with repressed financial system, the relationship between private investment and interest rates is negative. Rising interest rates discourage investment because it leads to rise of the average cost of capital (Pfeffermann and Madarassy 1992).

The inappropriateness of Nigeria's interest rate management policy has been elucidated by Fakiyesi (1996) who opines that real interest rate has consistently remained negative since 1970. He attributes this to lack of proper coordination between fiscal and monetary policies, policy inconsistence and historically inefficient management style which did not improve significantly and were therefore carried into the economy reform era.

External Debt

Investment activity is also affected by the presence of large external debt burdens. Borensztein (1989) and Froot and Krugman (1990) have argued that the high ratio of external debt to GDP reduces the incentives for investment because most of the forthcoming returns from investment would be used to

repay existing debt thus, acting as a tax on domestic investment. Also Chhibber and Pahwa (1994) and Iyoha (1997) have established the existence of debt overhang effect in Nigeria. This means that Nigeria's high external debt stock and debt service burden are having a depressing effect on aggregate investment and lowering the rate of economic development. They confirmed that Nigeria's high debt stock has contributed to the sharp and stubborn investment decline.

And as Olaniyan (1997) has observed, domestic debt also has the crowding out effect on private sector investment as less banking system's credit is available for the private sector's use. Mirakhor and Montiel (1987) demonstrate that if substantial external debt leads to difficulties in meeting debt service obligations, relations with external creditors may deteriorate, thus reducing the amount of trade financing a country can obtain. Thus, in turn, may make it harder or costlier to finance projects in developing countries.

As Greene and Villanueva (1991) and Oshikoya (1994) have found out, increases in the debt service ratio dampens private investment. For Nigeria Ajayi (1995) observes that the existence of huge external debts has led to capital flight from Nigeria and has precluded new investment from coming in.

Macroeconomic Uncertainty

Bernanke (1983) Pindyick (1991) and Serven (1996) have made an excellent appraisal that the basic model of

irreversible investment focuses on output demand and/or prices as the basic sources of uncertainty. In this context, investors, foreign and local, will be reluctant to commit large expenditures on fixed investments when they are uncertain about the future political, social, and economic environment. Changes in uncertainty usually associated with unpredictability, instability of the incentive structure as well as lack of sustainability and imperfect credibility of macroeconomic policy reforms can have a very significant impact on private investment, although virtually all the studies are done on cross-country basis.

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Human Capital Development

Human capital development has received significant attention in developing countries as a necessary input for sustained economic growth. The concept of human capital formation refers to a conscious and continous process of acquiring and increasing the number of people with the requisite knowledge, education, skills and experiences that are crucial for the economic and political development of a country (Harbrison 1973, Salleh 1992). The importance of human capital in the overall national development and the well-being of the people is certainly not a new idea. It was noted by Adam Smith in 1776 that the bases for national wealth are the skill, dexterity and competence of individuals. This conception is further given prominence by the ancient proverb:

if you are planning for a year, sow rice. For ten years, plant trees. For a hundred years, educate people" (Salleh 1992:3).

Schultz (1961) shows that there are five ways of developing human resources, viz:

(i) Health facilities and services should be broadly conceived to include all expenditures that affect life expectancy, strength and stamina and the vigour and vitality of the people.

(ii) In-service or on-the-job training organized by firms to cater for their new and old workers.

(iii) Formally organized education at the primary, secondary and tertiary levels.

(iv) Study programmes that are organized by firms e.g. extension programmes in manufacturing or adult literacy programmes organized for those that missed formal education; and

(v) Migration of individuals and families to adjust to changing job opportunities.

The transfer (importation) of technical expertise and consultants are other aspects of human resource development. Precisely, economic benefits of human resource development arise from making people more productive by improving their nutrition, health, education and other social indices through adequate and proper investments.

World resources of any form are being exploited, processed and developed by human beings to eventually benefit mankind. Natural or physical resources of whatever kind will not on their own contribute to the development of the world to the extend that can be seen today. It is clear, therefore, that the human factor plays a decisive and active role in investment, economic and social progress while, at the same time, it becomes the ultimate beneficiary of this development.

In line with this argument Harbrison (1973:3) points out that:

> "human resources constitute the ultimate basis for the wealth of nations. Capital and natural resources are passive factors of production; human beings are the active agents who accumulate capital, exploit natural resources, build social, economic and political organizations, and carry forward national development. Clearly a country which is unable to develop the skills and knowledge of its people and to utilize them effectively in the national economy will be unable to develop anything else".

By implication any country that neglects an effective human capital formation is doing that at its own peril. A formal educational system is the major institutional mechanism for building and advancing people's knowledge, skills and attitudes.

There is an overwhelming evidence in support of the crucial link between purposeful education and meaningful growth and development. For individuals and families, education is a sound economic investment which raises the quality of life, improves health and productivity in market

and non market work, increases individuals access to paid employment and often facilitates social and political participation (Hill and King 1991; Bellew and King 1991). For society, investing in education raises per capita GNP, reduces poverty, and supports the expansion of knowledge (Burnett Marble and Patrinos 1995). Investing in education complements investment in physical capital. The benefits from human and physical capital are highest where macroeconomic policy is sound.

Technological Change and Innovation

Conventional analyses of manufacturing hardly associate the African variety with significant technical change, and inventive activities. But then much of these kinds of analyses have focused more on traditional micro-enterprises. To be sure, a large part of the technology in use is imported, while very limited post - investment analysis of firm level activities have been undertaken, even for large scale firms.

There are a few African case studies which reveal that some technology mastery efforts have been made in large-scale plants: Adenikinju (1996) and Emenuga (1996), even then these efforts have been inadequate in arresting Nigeria's dismal industrial performance. In this regard, not much has been done in understanding the technological behaviour and especially manufacturing small and medium enterprises. This is so in terms of their propensity to innovate (which include

R & D), the sectoral influences and differences in the capacity to generate technical change and how macro policies and institutions can move manufacturing firms into the technological "high road".

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Institutional Factors

Also, it is believed that institutional factors affect private investment. These factors include corruption (which increases transaction costs and engenders uncertainty). bureaucratic red tapes, weak judicial system and frequent government interference in business. All these factors increase the operational costs of business, induce high expected rates of returns encourage consumption and capital flight and thereby deter investment. In view of this, Pfeffermann and Madarassy (1992)have argued that investment can flow in response to the elimination of these institutional factors only when investors believe that such trend of positive change is permanent. Such belief is associated with shifts to open-export-oriented economy, convertible currency system, large-scale and credible privatization programme and emergence of a regional trading block (Borner, Bunetti and Weder 1992).

Sundarajon and Thakur (1980) incorporated features of the neoclassical model into investment models for developing countries taking into account the relevant data problems and structural features that cause a gap between the modern theory

of investment and the models specified for developing countries. Bamidele and Englama (1998) also help to appreciate the Nigerian growth crisis as all the macroeconomic foundations of growth fall below the specified values even for "slow grower".

Aramolaran (1998) presented a well thought-out theoretical exposition on private public investment controversy, as manifested in the general call on less developed countries (LDCs) to commercialize and ;privatize their existing public enterprises.

He recommended the suspension of any further action on partial or full-scale privatization, the continuation of the process of partial and full commercialization of more public enterprises and the continuation of public sector investment in growth enhancing enterprises, in such a way as to obey the "principle of optional marginal returns on investment". In addition, policy oriented studies should be commissioned to ascertain the stage of industrial development where Nigeria is at present and determine what share of GNP should be accounted for by pubic and private enterprises, if sustained growth in total productive investment is to be attained at every stage of industrial development.

2.4 EMPIRICAL LITERATURE ON DETERMINANTS OF INVESTMENT IN NIGERIA

Determinants of investment has been an interesting issue which has stimulated empirical investigation among economists and policy makers.

Easterly (1997) uses data for GDP and investment (Gross Fixed Capital Formation) for 146 counties pooled over the period, 1950-92, (in 4883 annual observations) to show that the "Harrod-Domar growth model makes no sense theoretically and it fails empirically". With the pooled data, Easterly finds that regressing lagged investment/GDP on GDP growth yields an adjusted R^2 of (-0.062) without a constant term but an adjusted R^2 of (0.003) with a constant term. When the same regression is performed for individual countries, 64 percent of the countries produced negative adjusted R^2 (with no constant term). Usually, the literature postulates that "investment is necessary but not sufficient" for growth.

Also, Easterly evaluates whether investment is necessary even in the shortrun and concludes that:

> "During episodes of increased growth with four-year periods, investment increased by the required amount" between 6 and 12 percent of time, depending on the incremental capital-output ratio (ICOR), the other 88 to 94 percent of the episodes violated the "necessary condition". Of course, the data are even more unkind to the necessary condition" with annual averages. Empirically speaking, increases in investment are neither necessary nor sufficient for increases in growth over the medium run".

The coefficient is negative in both regressions, indicating that Nigeria is among the 71 (out of 138) countries in

Easterly"s study where investment/GDP ratio impacts negatively on output growth. Could this be interpreted to mean that investment is harmful to growth in Nigeria? Due caution must be exercised in interpreting the result. Incorrect signs are due to a number of factors, including incorrect specifications and definitions. The lack of statistical significance of the coefficients might be one reason to ignore the sign for the moment. Notwithstanding the caveats, it is important enough that the Nigerian data rejects proportionality relationship between investment and growth (contrary to the conventional wisdom).

Soludo (1998) closely examines the age-long belief in the neoclassical paradigm that output can only grow through increased factor accumulation and/or through technical progress. Put differently, that only investment led growth is feasible. The emergence of the new (endogenous) growth theories with their departure from demand-oriented economics to supply-oriented type, particularly from the perspective of increased expenditure on human capital investment allows Soludo to cast strong doubt on the received theories of investment growth nexus. Drawing strength from Easterly (1977) as well as the findings of his own estimation using annual data for 1970-96 Soludo argues that investment/GDP ratio impacts negatively on output growth in Nigeria.

In his work, he identifies in addition to the traditional profits and acceleration principles, other determinants like

irreversibility of investment, uncertainty, and political upheavals (the high risk factors) as being of particular relevance to African economies.

Iyoha (1998) investigated the major macroeconomic issues germane to rekindling investment for economic development in Nigeria. The ordinary least square regression method with data from the CBN, statistical bulletin, World Bank and the international Monetary Fund from 1980 to 1992 were used.

The model estimated is presented as follows:

$$\frac{PINV}{GDP} = Bo+B_1\ GINV+B_2r+B_3\pi+B_4DSR+e$$

Where

$\frac{PINV}{GDP}$ = ratio of private investment to GDP

GINV = public investment

r = domestic interest rate

π = Foreign exchange premium

DSR = Ratio of debt-service payments to exports of goods and services and

e = stochastic error term

The regression coefficient showed that all the four independent variables have the correct signs and are highly significant. Two of the variables viz: Interest rate and foreign exchange premium pass the significance test at the I percent level while the other two variables namely, public investment and debt service ratio pass the significance test at the 2 percent level. The coefficient of determination (R^2) showed 97 percent of the systematic variations in the ratio of

private investment to GDP during the reference period. while the Durbin Watson test showed the absence of serial correlation at 1.95.

In the same token, Akpokodje (1998) is highly revealing. Upon his estimation, the author arrived at the conclusion that macroeconomic stability, reliable and efficient infrastructure, diversified export base, political stability and transparency are some of the factors required to rekindle growth and development in Nigeria.
However, he appears to have found it difficult to suggest what should be the direction of budget deficit so as not contract public investment which is believed that it will always trigger an expansion of private investment.

Green and Villanueva (1991), Pindyick (1991), Serven and Salimano (1992) and Iyoha (1997) established that investment (particularly private investment) can be significantly affected by such factors as macroeconomic policy (monetary, fiscal and exchange), and the respond to it by the various agents involved in investment decisions, uncertainty and credibility of policy reforms.

Ariyo and Raheem's (1991) country estimation on the determinants of investment consisted of public investment rate of GDP growth, domestic credit to the private sector and interest rate as arguments in the private investment function. Their results show that all the variables are statistically significant and evidence of the existence of "crowding in"

was found among the variables estimated.

Serven and Salimano (1992) have sought to explain this perverse in investment. According to them;

> First, the decline in availability of foreign savings have not been matched by a corresponding increase in domestic savings. Secondly, the deterioration of fiscal conditions due to cuts in foreign lending, higher domestic interest rates, and the acceleration of inflation in several countries forced a fiscal adjustment that in many cases took the form of a contraction in public investments. Third, the macroeconomic instability associated with external shocks has hampered private investment. And fourth, the debt overhang has discouraged investors through its implied tax on future output and the ensuring credit constraints in international capital market.

Martin and Wasom (1992) modelled private investment in Kenya with the real exchange rate, foreign exchange reserves, credit, public investment and income as arguments. Their results indicate the significance of all coefficients except those for interest rate and income.

Pfeffermann and Madarassy (1992) identify the major determinants of investment to include: the size of domestic market, capacity utilization, fiscal deficits, inflation, exchange rate volatility, interest rate, macroeconomic policies and institutional factors. He reported that the size of public sector financing crowds out private sector financing, particularly credit from the banking system. This provides signals that investors may have very limited access to credit. Inflation and volatile exchange rates have negative effects on investment. High and rising inflation rates raise expectations of currency devaluation which

heightens fears of rising costs of imported capital goods and inputs. An unstable exchange rate also creates foreign exchange risk and uncertain investment climate. Emenuga (1996) appears to subsume all these factors under the label "environment".

In Blejer and Khan (1984), credit availability was captured by change in real bank credit to the private sector plus real net private capital flows. This found to have a significant positive effect on private investment for the 24 developing countries studied. Similarly Demelo and Tybout (1986) in a study of Uruguay, proxied credit availability by real money growth which lagged one period, was found to be positively significant. Bier (1992) found that direct credit may be a better proxy.

Psacharopoulous (1985) who examined the determinants of investment in 58 countries during 1960-1985 came up with results which suggest that investment in human capital strongly contributes to aggregate output. The results, however, differ by regions. For most groups in developing countries, it is clearly evident that the higher the initial level of education, the greater the benefits from increasing it. This underscores the importance of investing in education. The result for the sub-saharan subregion however; shows a negligible effect on output growth. Factors, such as unfavourable local conditions, lack of complementary inputs, inadequate institutional capacity and other economic obstacles

could have prevented people from benefiting fully from their greater skills. Among all the subregions, the contribution of education to GDP is highest in East Asia. This is followed by Latin America and the Caribbean, Middle East and North Africa, and South Asia accordingly.

World Bank (1990) observes that education substantially increases manufacturing productivity in countries like Korea, Malaysia and Thailand while Burnetti et al (1995) also indicate the significance of massive investment in primary, lower secondary and on-the-job training on the pattern of growth in East Asia. They argue that massive investment in education significantly explains the development "miracle" experienced in the subregion.

Also in a study of eight fast growing East Asian economies, the World Bank (1993) notes that among their common features are the high initial levels and growth rates of human and physical capital. In other words these countries invested a lot in education and the provision of other infrastructure necessary for development, and even more important where such was necessary. Education shortens the learning curve facing a nation and enhances its capability to absorb, adapt and improve on imported technology.

Mankiw, Romer and Weil (1992) augmenting solow's growth model, empirically show that the effects of saving or investment and population growth rates are biased upward whenever human capital formation is excluded. Their augmented

model explains nearly 80 percent of the cross-country variation in per capita income, which is about 30 percent larger than when human capital is excluded.

Evidence from Grammy and Assane (1996) using varied forms of human capital investment, such as school enrollment, human development index and economic liberty index clearly shows that human capital formation propels growth in per capita income. Its positive contribution to growth was statistically significant at 1 percent. Besides, the inclusion of the variable reduces the bias often associated with growth model that exclude human capital investment and hence the explanatory power of the model.

A cross-country econometric study was also carried out on the link between human development and growth by UNDP (1996). Its proxy for human development was positively related to growth at 1 percent level of significance. The same sign and statistical relationship remained when the reverse causation was examined.

Bogunjoko (1998) opined that public investment promotes private investment in Nigeria, a conclusion based on the results of the OLS estimation technique. Consequently, macroeconomic determinants of private investment have been experimented with in such variables as growth of real income, credit availability, cost of capital, investment expectation by investors and investment profitability that reflect both keynesian and neoclassical theoretical foundations. Upon

estimation, Bogunjoko found out that all the above variables are important determinants of private investment and they explained between 63 to 78 per cent variations in private investment rate in Nigeria. While the proportion is assumed to be higher and relevant for policy analysis, the F-Statistics of above 9.55 reported for the equation confirms that the equation is indeed statistically significant for policy analysis.

External debt was considered as one of the factors used in explaining credit to the government. This was predicated on the reasoning that the availability of external resources tends to reduce the demand for credit by the government. One is not too sure if this argument is cogent. The expectation is that the external debt accumulation that leads to huge debt service payments automatically reduces the funds available for investment. After servicing debt from the regular revenue generated, the balance is hardly adequate to meet other needs, to the extent that persistent and raising government deficits have been financed largely from bank credit. Thus, in the Nigerian case, the accumulation of external debt precipitated government's reliance on bank credit to balance its budget, a negation of Bogunjoko's submission.

It is credit that should influence investment (See Wai and Wong (1982) and not necessarily vice visa. It is difficlt to accept the point that the demand for credit by government since the early 1980s was substantially influenced by public

investment, an inference from the results of Bogunjoko's study. Moreover there are very many confusions with the results. For instance, external resource flow was reported to reduce the demand for credit. External resource flow here is proxied by the ratio of external to GDP. Trade economists generally know that external resource flow has two parts - inflows and outflow. External debt is accumulated in the course of foreign borrowing.

There is also the finding that external debt stimulated private investment (Bogunjoko 1998); it is difficult to rationalize this result. In most empirical studies, it is common to employ values of the ratio of external debt to GDP and debt service ratio "because information is usually available only for the end of the year and is therefore generally known retrospectively". (Greene and Villanveva, 1991). This was not the case in Bogunjoko's study, and this error may have accounted for the "counter-intuitive" result.

Obaseki and Onwioduokit (1998) skillfully investigated the relationship between public and private investment and economic growth in Nigeria. The major inference drawn from their regression analysis is that public and private sector investments complementarily encourage economic growth in Nigeria. Besides, their results imply that public sector investment has a stronger impact on economic growth than that of the private as should be expected in the Nigerian case. The conclusions result from the thrust of government's

development policies and the distribution and control of the country's revenue in favour of the public sector which enabled the public sector to dominate the economy over the years.

However, in Iyoha (1998), we frown at the use of ratio of debt service payments to exports of goods and services (designed to capture the debt overhang effect). In our study, we shall use the ratio of external debt stock to GDP because it gives a broader measure of economic activity. The choice of GDP to export of goods and services as a better measure of economic growth has been emphasized by Akpokoje (1998). Also, the use of nominal inflation rate is misleading, for it ought to be the consumer price index since most key prices in a heavily indexed economy were adjusted accordingly to the consumer price index. Next, we shall incorporate rate of capacity utilization, credit to the sector and growth in real GDP in our regression analysis, structural factors which were neglected by Iyoha. Yet, the influence of this factors on private investment cannot be over-emphasized. (See for example Wai and Wong (1982). Due to the absence of appropriate data base, other structural variables, viz: human capital and technological capability could not be specified for implementation. Rather a qualitative analysis supplemented with descriptive analysis is used to pursue the argument.

While a number of studies have examined the economy-wide determinants of investment; (Chhibber and Pahwa (1994), Iyoha

(1998), Bogunjoko (1998), and Akpokodje (1998). Yet others are based on cross-section data on SSA and Africa; Devaragon, Esterly and Pack (1999) and Mlambo and Oshikoya (1999) respectively. None deals specifically with manufacturing investment. This present study attempts to fill this gap in the literature by examining the effect of macroeconomic instability and various structural constraints on manufacturing investment in Nigeria. Also, there is need to update knowledge since most studies covered the period 1980-1992. This is due to the fact that alot of changes in economic policies both at national and international levels have taken place in recent times which must disprove or strengthen their findings. This research work used exclusively Nigeria's data for the period 1981-1997 to empirically investigate the unimpressive manufacturing investment rate and what would need to be taken into consideration to achieve manufacturing investment growth.

CHAPTER THREE

3.1 THE NIGERIAN MANUFACTURING SECTOR: AN OVERVIEW

Manufacturing involves to a greater degree the conversion process that is converting resources from their raw materials state to a form which is utilizable either by firms or individual consumers.

There are basically three categories in the Nigerian manufacturing sector. The small to medium - sized firms or informal sector constitute the most active segment of the manufacturing sector. These firms are mostly private and Nigerian owned. They are predominant in such activities as food processing, textile, wood products, paper and printing etc. Many of these firms operate in the informal market (such as tailoring, carpentry, repairs and maintenance) where their activities are mostly unrecorded or are under reported.

There is also quite a significant presence of medium to large private and public manufacturing groups or formal sector. Several of these companies are owned by and operated as subsidiaries of foreign companies. Under SAP, many of the restrictions of foreign ownership were relaxed. The government also initiated a privatization programme to divest its equity in several of these companies.

The third is the public sector. This category of the manufacturing sector are those companies that constitute the core industrial projects. Government owns a large share in these companies. They were initiated to facilitate the

industrialization process. Their poor conception combined with incessant political interference led to the inefficient operation of these companies. A general feature of the companies is the acute low level of capacity utilization. For instance, most of the steel mills operate below 10 percent (The Economist, 1996). Among these are the iron and steel plants, paper mills, petrochemicals, fertilizer firms, refineries, cement, machine tool and marble firms. These companies are bedevilled with shortages of raw materials, sharp rises in infrastructural costs and alternatives.

Available statistics furnished by the Central Bank of Nigeria Annual Reports indicate that the index of aggregate manufacturing production increased by roughly 83 percentage points during (1985 - 1992) (1985 = 100). Expanding branches are said to emerge in soaps and detergents, beverages, sugar, cotton, textiles and synthetics; the shrinking branches are located in the fertilizer plants, grain milling (heavily dependent on imported wheat), Footwear, building materials (cement, roofing sheets) and vehicles assembly.

However, survey conducted by the researcher contracdict the CBN statistics on expanding manufacturing output. In most manufacturing firms visited, capacity utilization ranged below 30%. The automobile firms for instance, are the worst hit, operating below 10% in most cases. Production in some branches, e.g detergents, beverages, etc seem to have at best remained stable. Overall, however, observed decline in formal

or corporate manufacturing has been absorbed in a way by rapid expansion of informal-sector manufacturing. For instance the steep decline automobile assemblying has been taken up by expansion in importation of used automobiles from Western Europe as well as informal sector refurbishing and spare parts fabrication industry.

The financial performance of this category of enterprises has deteriorated since the SAP year, both output and capacity uttilization showing unremitting decline attributable to inadequate funding, especially working capital foreign exchange contraints to procure essential imports, high cost of production, frequent break-down of equipment and industrial unrest.

Many of these investments were hatched in the resource-boom years of the 1970s, which explains why little thought appears to have been given to the implications of their foreign-exchange intensive operations. Of all the core industrial projects (CIPs), only some of the cement plants, the NAFCON fertilizer plant, and the refineries are financially viable or working at a satisfactory capacity utilization. The poor performance of the public sector enterprises is one major reason for the rising fiscal deficits and the commercialization and privatisation of enterprises.

Admittedly, the manufacturing sector is still dominated by the consumer goods sector. Textiles, beverages, cigarettes, soaps and detergents together account for about 60

percent of local manufactured output. This dominance is often reinforced by the structure of incentives which is definitely against the capital goods sector. The overvaluation of the exchange rate in the 1970s makes the importation of capital and producer goods favourable, and against local manufactures while at the same time, the position of the final consumer goods manufacturing is entrenched by higher tariffs. The cycle tends to perpetrate the need to import raw materials and intermediate products and to maintain the existing structure of import substitution in favour of non-essential industries beyond the limit of exhaustion of substitution possibility and indeed beyond the limit of rationalisation (Okigbo 1983).

3.2 THE PRIVATE CORPORATE SECTOR:

The bulk of the small to medium firms are located in the private sector. It was estimated that of the 120,000 or so identified firms in 1987 only 3,200 belonged to the private corporate or the so-called "organized private sector" (Ezenwe, Dike and Duru (1999). Firms here dominate the consumer goods and intermediate products sub-sectors. This is also the domain of the long established business enterprises that originated as subsidiaries of foreign firms. Following indigenisation in the 1970s, the foreign equity holdings in Nigerian affiliates of foreign firms were reduced and bought up by private Nigerians and the government. Indigenisation in the 1970s thus permitted private Nigerians and the government particularly to build up a large porfolio of ownership of

virtually all large sectors of industry and finance. Privatisation under the adjustment reform is aimed at expanding the operation of the private enterprise sector.

The most dynamic activities of private manufacturing , according to available data, are synthetic fabrics, followed by the bottling firms and breweries, sugar, soap and detergents, and the like. On the other hand, vehicles assembly, radio and TV, footwears, paints, grain milling, and so on have experienced a decline. Following exchange rate devaluation the cost of imported inputs has increased many folds. Manufacturing firms which are dependent on local raw materials or have been able to switch over to the use of local raw material have thrived. Those that have difficulty in this regard have difficulty surviving.

3.3 EFFECT OF LAWS AND GOVERNMENT POLICY

Here we discuss the land use Decree, Industrial Policy/Laws, the Enterprises promotion Decree, indigenous Business and Government Regulations, foreign Companies and Government Regulations and the import substitution policy.

3.3.1 *LAND USE DECREE*

The Land Use Decree does not appear to have created much of a reaction with the business community. The business community considers land as an important factor of production. One advantage observed in the Decree is the elimination of

problems encountered in establishing the right title to land and the incidence of protracted litigation (Ogunbanjo 1983). With this decree, the state governments became the landlords and issue land to those that wish to build or invest on it. It is equally fair that adequate compensation should be paid to the original owners especially those who had invested their savings in the land. The decree is seen as a land reform law.

3.3.2 INDUSTRIAL POLICY/LAWS

A number of laws exist to encourage and promote industrialization, but so far there has been no comprehensive national industrial policy. The manufacturing sector's contribution to the Gross Domestic Product is still relatively small, for the sector to make the contribution that is expected of it in economic development, government defined the role of the industry and deliberately promoted the necessary investment climate and guarantee adequate rewards for entrepreneurship. One particular area of importance is the procedure for the processing and payment of royalties, licensing rights and technical service agreements. Also, the agreement recognises the percentage ownership of foreign investors in many enterprises.

3.3.3. THE ENTERPRISES PROMOTION DECREE

The year 1972 saw the promulgation of the Nigerian enterprises promotion decree, which could be described as the

culmination of pressures which had built up since 1968. The decree conferred powers on the enterprises promotion board (the board) to advance and develop the promotion of enterprises in which citizens of Nigeria would participate fully and play a dominant role. Three principal objectives were indicated in a government press release as the motivating factors to the indigenisation programme.

a. To create opportunities for indigenous Nigerian businessmen.

b. To maximize the local retention of property.

c. To raise the level of intermediate capital goods production.

The decree was generally welcomed by the indigenous sector of the business community. To the foreign business community it came as a surprise, but after the initial reaction, it was received with great understanding, particularly by the large foreign enterprises. Criticism soon followed. The 1977 decree was then promulgated to replace the 1972 decree.

With the introduction of Structural Adjustment Programme (SAP) in 1986 the Nigerian enterprises promotion Decree of 1972 and first amended in 1977, had also been further amended to remove the restrictions against foreigners participating in certain businesses. There is now only one list of scheduled business reserved for Nigerians. All other business, except banking, insurance, petroleum prospecting and mining in which

the Federal government continues to have varying level of equity are open for 100 percent Nigerians or foreign participation separately or in partnership.

A new industrial policy was introduced in January 1989 to achieve "steady growth" in industrial development and reduce dependence on imported inputs. Under this policy, the industrial development co-ordinating committee (IDCC) was established as the sole agency that can authorise the establishment of new industries.

3.3.4 INDIGENOUS BUSINESS AND GOVERNMENT REGULATIONS

Indigenous businessmen continue to play a useful role within the economy and are accepting the challenges of the time by their contribution to the industrial development of the nation. Problems of finance, management capability and other sociological problems hinder the activities of these entrepreneurs. The attendant frustration produces an outcry for better condition and freedom from unhealthy competition from foreign investors.

In defence of what is regarded as inalienable right, the indigenous businessmen applied pressure on the government to legislate and restrict activities of their foreign counterparts to minimise competition in their area of competence. Nationalism thus becomes the order of the day and a cross-road is reached when the main problem is reconciliation of nationalism with self-interest. It is

pertinent to observe that some indigenous entrepreneurs have been criticised for being less than co-operative with the government in complying with the policies and regulations made to improve the economy.

3.3.5 FOREIGN COMPANIES AND GOVERNMENT REGULATIONS

Although the contribution of foreign investors has been welcome, but in the 1970s, the government was under pressure to be more restrictive on the industrial activities of these investors. The pressures seem to derive, on one part, from the new spirit of nationalism which engulfed the country after the end of the civil war. On the other part, the end of 1973 saw the world of oil escalating to a phenomenal level, thus adding to the resources and wealth of the nation in an appreciable manner.

The confidence thus generated emboldened the country to pursue a more dynamic policy directed towards liberating the country from the hands of foreign investors. It is true that a number of incentive laws exist which were designed to encourage investment, government still formulated policies and laws to restrict the activities of the major companies. By 1986, some of these policies were amended to remove the restrictions against foreigners participating in certain businesses.

3.3.6 IMPORT SUBSTITUTION POLICY

Evidently, the main features of the Nigerian national policy for industrialization of the 1960s and 1970s hinged on the strategy of import substitution introduced by the government in 1962, meant to reduce the country's dependence on imported goods. The strategy created problems for the country. Apart from resulting in heavy import bills due to the supply of items such as machinery and spare parts, it led to over-dependence on imported raw materials. Industries relied completely on imported inputs for their operations, and this limited the spill-over effects on the rest of the economy.

The economic crisis of 1982 caused by the collapse in the oil market nearly crippled the economy, in essence, therefore, import substitution needed immediate review. It was apparent that the economy was structurally defective. A new industrial policy was introduced in January 1989 to achieve steady growth in industrial development and reduce dependence on imported inputs.

3.4 DEVELOPMENT OF THE NIGERIAN MANUFACTURING SECTOR

The development of the Nigerian manufacturing sector has followed distinct phases in the history of the country. The pre- 1970 era marked a period of import substitution. Merchant Companies, such as PZ, UAC and Lever Brothers, which were operating in the country as trading outposts, were given

incentives to establish manufacturing plants in the country. The government expanded available infrastructure to encourage manufacturing activity. The first National Development Plan (1962 - 68) falls within this period. The emphasis on planning at that time was the development of light industry and assembly plants. The manufacturing projects in the plan included machine tools, kitchen utensils, electric fans and vehicle assembly. Manufacturing growth rate was generally high during this period (see table 1).

TABLE I: AVERAGE ANNUAL GROWTH RATE OF SELECTED SECTORS IN NIGERIA 1960 - 1995

Sector	19960-70	1970-80	1980-85	1985-90	1990-95
Agriculture	0.02	-0.1	1.2	4.1	4.2
Oil and Mining	23.6	4.2	-5.5	2.7	3.6
Manufacturing	7.4	11.2	-4.7	5.1	0.3
GDP at factor cost	4.5	5.1	-2.20	5.5	4.4

Source: Federal Office of Statistics (FOS), Annual Abstract of Statistics, various years.

The second period spans the oil boom period of 1970 - 80. The huge inflow of petro dollars removed, albeit temporarily, the resource constraints facing the country. Planners asserted that the state must take the "commanding heights in the economy". The indigenization plan was pursued with vigor to achieve this new objective. The direct participation of government in production activities became pronounced. Trade

policy also alternated between liberalization and protection depending on movements in foreign reserves.

Infrastructures were expanded and also several multinational corporations came into the country to take advantage of the new oil wealth, currency overvaluation and tariff protection and the huge Nigerian internal market (Adejugbe 1995). In terms of the performance of the manufacturing sector, this period can aptly be regarded as the "golden era".

Capacity utilization was at an all-time high and value added accelerated at a rapid rate (Chete and Adenikinju 1995). The third National Development Plan (1975 - 80) launched in the second half of the period shifted emphasis to heavy industrial projects, especially in the steel and petroleum refining subsectors.

The third period of 1982 - 85 was perhaps a dark era in the development of the manufacturing sector. The inherent softness of the international oil market, resulting in the collapse of oil prices, starting from 1982, coupled with a lack of effective inter-sectoral linkages, pushed the economy into deep recession. Infact, many of the programmes contained in the fourth National Development Plan (1980 - 85) were aborted. The various austerity and stabilization measures pursued during this period to stem the rapid decline of the economy did not yield much fruit. While some progress was achieved, it became evident that the measures further compounded the structural distortions already in place (Jerome

and Adenikinju 1995). During this period, capacity utilization declined precipitatously. Several firms unable to import necessary raw materials and spare parts shut down.

The post 1986 period witnessed a change in the underlying philosophy of the industrialization policy in Nigeria. The development strategy of previous decades was abandoned for the one of openness, adjustment and stabilization (Adejugbe, 1995). The objective was to woo foreign investors and promote manufactured exports through various incentives such as, the relaxation of the indigenization policy, depreciation of the naira; liberalization of trade and payments and an explicit export promotion policy.

A new industrialization policy (NIP) was launched in 1988. The NIP identified the problems of industrialization in Nigeria as: excess capacity, high production costs, low value - added, imported input-intensive processes and a high concentration of spatial industries. The policy stated the goal of industrialization in Nigeria as: generation of greater employment opportunities, promotion of manufactured exports, raising the level of technological capability and skill efficiency, promoting the inflow of foreign investments and increasing private sector participation in industry. A detailed analysis of these objectives shows a stricking similarity with those of SAP. Little wonder therefore, that the NIP adopted similar strategies to SAP.

Many industrialization objectives envisioned under SAP remain unachieved a decade after the programme was initiated, inspite of the reversal of the growth trend in manufacturing value added from negative to positive (see table I). A world Bank survey in 1992 showed that overall employment in the manufacturing sector declined by about 1 per cent between 1986 - 92, while several companies were reported to have shed as much as 25 percent to their labour force.

3.4.1 Manufacturing Sector and External Balance

The Nigerian manufacturing sector is still at the "teething stage" and it relies heavily on imported intermediate inputs and capital goods. Therefore, the nation is an import and technologically-dependent economy. The export of Nigerian manufactured goods is very small and few are being smuggled out of the country to the neighbouring countries. The manufacturing sector cannot meet up the domestic demand, hence most of the manufactured goods are imported from the industrial countries of the world. This created the ever increasing resource gap between Nigeria as a debtor and the lending countries and ultimately balance of payment problem.

Before the oil era, Nigeria relied on primary products that their prices have declined relative to manufactured goods. As a result, the terms of trade have on the average tended to worsen overtime. But with the emergence of oil, the

country therefore has to sell greater quantity of its oil in order to purchase a given quantity of manufactured goods and pay for fuel imports. Infact, manufactured exports performed dismally throughout the period, remaining below 1 percent (see table 2). This unsatisfactory performance is traceable to the structural problems of the sub-sector which have to be addressed if its potentials are to be fully exploited. World Bank (1996) estimate has placed the extra costs of deteriorating terms of trade for the less developed countries at over 2.5 billion US dollars per year during the past decade. As a result, third world merchandise trade balances steadily worsened during the 1980s, falling from 55.8 billion U.S dollars to 1.9 billion U.S dollars in 1991 (Todaro, 1994).

As the Nigerian manufactured exports did not rise fast enough, the nation has to resort to external borrowing to finance the imports needed for its economic growth. This is one of the principal reasons for the Nigeria debt burden today. This is the origin of the centre - periphery reaction to which the distinguished Argentine economist, Paul Prebish first drew attention in the 1950s (Parker 1985).

TABLE 2: MANUFACTURED EXPORTS AS A PROPORTION OF TOTAL EXPORTS (1982 - 97) NMillion)

Year	Manufactured Exports (N Million)	Oil Exports N Million	Total Exports NMillion	Manufactured Exports as a % of Total Exports	Oil Exports as a % of Total Exports
1982	14.5	8929.6	9196.3	0.16	97.1
1983	9.0	7304.0	7751.8	0.12	94.2
1984	14.3	8650.4	9138.8	0.16	95.0
1985	8.5	11335.8	11717.9	0.07	96.7
1986	3.9	8425.8	9047.4	0.04	93.1
1987	149.8	28208.6	29598.1	0.51	95.3
1988	187.0	28435.4	31192.8	0.60	91.2
1989	316.7	55016.8	57971.2	0.55	94.9
1990	730.8	106626.5	109886.1	0.67	97.0
1991	120.8	116886.5	121533.7	0.92	96.2
1992	1095.5	201384.8	205613.1	0.53	97.8
1993	1096.7	213778.8	218770.1	0.50	97.7
1994	1087.6	200710.2	206049.4	0.52	97.7
1995	7115.9	927565.3	949661.4	0.75	97.6
1996	11046.7	1286215.9	1309543.4	0.84	98.2
1997	11257.8	1212499.4	1241662.7	0.90	97.6

SOURCE: CBN, Statistical Bulletin 1, December 1997 and Annual Report and Statement of Account.

3.4.2 Small Size

The Nigerian manufacturing sub-sector is very small. Its share of GDP stood at only 6.5% in 1996 while it has persistently accounted for only about 1% of the country's total exports (see table 2). The relative share of manufactured exports for sub-saharan Africa was 6.2% in 1990 an average of 72.5% for Asian Countries, 94% for Korea and 96% for Hong Kong (Ezenwe, 1998).

3.4.3 Low Capacity Utilization

Capacity utilization in the Nigerian manufacturing sector is quite low. As can be gleaned from Table 3, the level of capacity utilization in the Nigerian manufacturing sector which peaked at 84 percent in 1976, declined to 80.2 percent in 1977 and declined to an all time low level of 12.7 percent in 1985 before increasing noticeably to 36.4 percent in 1986. It further increased (though slightly) through 1987 to 1988, declined by a 2.1 percent and then moved in a zig-zag manner before reaching 36.2 percent in 1993, and thereafter declined through 1994 to 37.2 percent in 1997. Overall, average capacity utilization for the period stood at 46.5 percent. Emenuga (1996) notes that this fact does not seem good for investment because projects are hardly considered feasible at less than 50 percent capacity utilization.

The causes of under utilization of existing industrial capacity are well known. The manufacturers' pessimism centres primarily on high costs of production as a result of high cost of foreign exchange; lack of managerial skill, sluggish demand, incessant power disruption, water shortage, insufficient raw materials supply, inadequate working capital and frequent machine breakdown. Needless to say that such other matters like policy inconsistency and instability, the general decay of infrastructure, poor communication and political uncertainties have also taken their toll on manufacturing.

The removal of these constraints will increase capacity utilization which will invariably increase manufacturing output without necessarily requiring new capital investments. In other words, initial growth in manufacturing would come from mere increases in the current low levels of capacity utilization.

TABLE 3: Average Manufacturing Sector Capacity Utilization in the Nigerian Economy: 1976 - 1997.

Year	Capacity Utilization (%)
1976	84.0
1977	80.2
1978	84.2
1979	83.3
1980	57.5
1981	55.5
1982	53.5
1983	47.8
1984	39.9
1985	12.7
1986	36.4
1987	42.0
1988	44.5
1989	42.4
1990	39.4
1991	32.4
1992	41.8
1993	37.2
1994	30.4
1995	29.4
1996	32.5
1997	37.2

SOURCE: Central Bank of Nigeria, Annual Report and Statement of Account, (Various Issues) and Manufacturers Association of Nigeria's Reports.

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3.4.4 Weak Technological Base

The weak technological base of the industrial sector is also a contributory factor to the poor industrial performance. Solow (1957), shows that technological change was a major source of growth in the United States economy during the period 1909 - 47. The low growth total factor productivity growth (TFPG) could therefore also result from poor technical progress. The current poor performance of the capital goods sector such as the basic iron and steel industries and motor vehicle assembly plants in Nigeria, has stultified technical progress.

The obsolete technology prevalent in the Nigerian industrial sector has also hindered industrial performance. Findings from a world Bank study on Nigeria's industrial sector reveals that most of the existing machinery and equipment had been purchased during the oil boom days and a large part of these are old and technologically obsolete and would need replacement (World Bank, 1990). The response of foreign investors to the economic reforms undertaken so far has been muted. This indicates that other issues, such as political stability and policy consistency, have a stronger influence. Policy mortalities are very high and correlate highly with the unstable policy, which creates uncertainties that inhibit investment and efficient economic decision making and also causes social dissatisfaction. Moreover, it leads to the erosion of devaluation, thereby magnifying exchange rate instability and misalignment. This often affects the capacity of manufacturers to plan effectively and also scares off foreign investors, thus denying the economy's access to modern technologies.

3.4.5 Low Human Capital Development

Another important factor turns on education and training. In nearly all the rapidly growing East Asian economies, the growth and transformation of systems of education and training during the past three decades has been dramatic. By 1965, Hong Kong, South Korea and Singapore had achieved universal primary education, while Indonesia with its huge population

already had a primary enrollment rate of above 70%. Today, the cognitive skill levels of secondary school graduates in some East Asian economies are comparable to, or higher than, those of graduates in high-income countries. (Ezenwe 1998). Aside from their relative emphasis on training of engineers, technologists and technicians in massive numbers, labour productivity is outstandingly high as a result of per capita increases in physical and human capital. For example, hetween 1970 and 1989, real expenditures per pupil at the primary level rose by 355% in Korea. A comparable figure for Nigeria is unlikely to be positive. Today, Nigeria's formal education system includes 46 universities, 37 polytechnics, 64 colleges of education, about 6,000 secondary schools, and 36,000 primary schools (World Bank, 1996). Although these resources are substantial, accounting for more than 50% of all educational institutions in the African continent, the future of Nigeria's education system is threatened with possible collapse. Abysmally poor funding and visionless leadership have militated against the existence of a viable development-oriented education and training system.

Investment in human capital is the most productive form of investment. In 1950, South Korea was industrially as backward as, if not more so than Nigeria, certainly less educated and certainly more corrupt (Okigbo, 1987). But by 1975 South Korea had become the industrial show piece of South-East Asia. In sharp contrast to the Korea situation,

Nigeria's GNP per capita declined steadily from US $1,160 in 1980 to US $260 in 1995 to graduate as one of the 20 poorest countries of the World (Ezenwe 1998).

3.4.6 Local Sourcing of Raw Materials

Industrial raw materials can be defined as expendable matter or substances which are inputs or can be processed and developed into inputs for the manufacture of industrial goods and services (Adenikinju 1996). Raw materials are broadly classified into two categories:

i) primary raw materials which are those in crude or natural state, that require transformation or processing before they can be used as industrial inputs; and

ii) secondary raw materials which are those that have already been processed and can be used directly in the production process. Raw materials can also be classified into industrial groups e.g agro-based or mineral - based and can be sourced locally or imported.

Regular availability of raw materials is crucial in the determination of the technical and economic viability as well as the size of most industrial projects. In many industries the selection of technology, process equipment and the product mix depend largely on the specifications of basic raw materials. Availability of essential raw materials at an economic cost is a necessary condition for any meaningful industrialisation. This is why critical evaluation must be

made about production process to determine whether it is cost effective to develop local material resources or import them. In particular, there is an increasing desire by every country to source raw materials locally for her industries so as to minimise the problems of dependence on other countries, threat to national security and depletion of foreign reserves. Thus, policy on raw materials has become an important national issue that requires thoroughness in articulation and dexterity in execution.

In spite of this rich and varied resource base, low degree of actual use of local raw materials/backward integration was one of the serious problems faced by the nation's industrial sector prior to the introduction of the Structural Adjustment Programme (SAP) in 1986. There were low linkages within industries and between them and the rest of the economy, especially agriculture, as industrial activities were organised to depend principally on imported inputs. This situation was mainly a fall out of the import substitution industrialisation strategy adopted at independence which sought to replace imported manufacturers with locally produced goods, and sustained largely with import dependent raw material inputs. The attendant large-scale importation of raw materials accounted for a huge chunk of foreign exchange earnings in the 1970s. With the collapse of the world oil market in 1981, shortage of foreign exchange led to substantial contraction in raw materials' imports and

therefore, a steep fall in manufacturing capacity utilisation rate.

Some industrial policy initiatives under the SAP were, therefore, introduced to harness the nations's vast natural resources and to correct the lopsided policy of raw materials' importation. Identification of suitable raw materials in the domestic economy and promotion of their use by industry were the key elements of the initiatives. Government introduced tax incentives on research and development (R & D) on raw materials processing carried out locally. Furthermore, Banks were enjoined to encourage and give financial assistance to industries that engage in backward integration activities, while the importation of some agricultural produce was banned in order to promote their local production.

Domestic capacity constraint has continued to limit the level of achievement in the local raw materials sourcing. Progress in this area has not attained the desired level precisely because of production and supply inadequacies. The Central Bank of Nigeria (CBN) business surveys and the manufacturers Association of Nigeria's (MAN) Half-yearly Economic Reviews have shown that in the period under review, the proportion of raw materials sourced locally by firms in Nigeria averaged 49.82 percent between 1995 to 1997, compared with an estimated average of about 40.1 percent between 1982 and 1989 and about 20 percent before the introduction of the SAP. The policy of local sourcing of raw materials is

therefore, yielding fairly positive results.

3.4.7 Investment and Employment

Reflecting the unhealthy operating conditions and the continuing sag in consumer spending, capital spending by industries and manufacturing employment maintained the downward slide that has been a feature of the sector in recent years. Unfortunately, the soft domestic demand has not significantly slowed imports of cheap consumer goods which have continued to flood the market, under-selling local products, the competitiveness of which has been hurt by the prevailing high cost conditions in the country.

High cost of credit caused by high interest rates declining profits and falling stock prices, coupled with slumping domestic demand effectively discouraged capital spending by industries. The decline in profits effectively impaired internally generated funds which is usually a prime source of capital spending.

Also, increasing sales difficulties and weakened productivity caused essentially by energy crisis and falling profits put industries under pressure to evolve survival strategies. Expectedly, as price hikes were difficult to pass on in a market of soft household demand, a number of firms saw staff rationalization as the only option.

The major policy through which Nigeria government plans

to enhance employment generation is the promotion of small scale industries. Studies have shown that in Nigeria today; small and medium scale industries offer greater employment opportunities than large scale industries. According to Schuh's findings (1998), employment turnover is highest among small establishments and new entrants typically are smaller than incumbents. Though output per capita is much lower in small and medium enterprises (SMEs) than in large scale enterprises LSEs), the contribution of SMEs to value added and employment are generally higher than those of LSEs.

There is no recent reliable data in the development of the number of persons gainfully employed and the changes in the structure of employment in Nigeria. The existing population statistics only allow estimates to be made within a relatively wide range of variations. Nigerian manufacturing sector is relatively small and it equally contributes very little in the provision of employment. The data on employment between 1963 - 1991 in the manufacturing sector is shown in table 4.

TABLE 4: PERSONS EMPLOYED IN MANUFACTURING SECTOR 1963-91

Year	No of Establishments	No of Employees
1963	649	65,798
1968	625	86,728
1972	1,052	167,470
1977	1,418	324,440
1978	N A	305,495
1980	2,315	453,632
1981	NA	448,697
1982	2,123	352,455
1983	2,128	357,672
1984	1,166	344,667
1985	2,184	355,179
1988	NA	26,601
1989	NA	27,101
1991	NA	27,130

NA = Not Available

Source: Federal Ministry of Industry and Technology, (1992). A handbook of Industrialization in Nigeria. Annual Abstract of Statistics, 1986 and 1997 editions by Federal Office of Statistics (FOS).

Table 4 shows that in contrast to the situation with regard to the number of establishments was on the downward trend during the 1980 - 1985 period. The figure declined from 453,632 in 1980 to about 335,179 in 1985. The decline is reflected in almost all the manufacturing sub-sectors. The high increase in the number of employment from 1972 - 1980 could be as a result of the oil boom in the Nigerian economy. The lowest employment figure in the manufacturing sector was recorded during the period 1988 - 1991 as shown in table 4. It was the period when most industries shut down operations which was also the period of Structural Adjustment Programme (SAP).

Total employment going by returns by 200 firms in July - December, 1995 was 50,523. In 1996, 228 respondent firms had a work force of 48,909, representing a decline of 3.2 per cent. About 115 member companies of the manufacturers Association of Nigeria (MAN) shut down operations during the year.

In respect of manufacturing employment, the declining trend that was observed in 1995 was further accentuated in 1996. Data from 1996 companies indicated a 12.3 percent drop in employment from the level in January to June 1996. This shows the weak nature of the Nigerian manufacturing sector (manufacturers Association of Nigeria 1997).

Although manufacturing employment rose by 7.9 percent in 1997, the picture was not as cheering when compared with the last six months of 1998 (January - June). At 39,933 represented by 252 companies in January - June in 1998 was 13 percent lower than the figure of 45,948 registered by 222 companies in July to December, 1997. This is the inevitable consequence of a deepening slump in manufacturing activity occasioned by weak consumption, infrastructural deficiencies and policy induced output constraints.

There is no question that the respondent companies above could take in more workers if manufacturing activities were stronger. An even more telling loss in employment potential is represented by large number of firms that have been rendered inactive by a combination of weak demand, price hikes

and infrastructural inadequacies that have been worsened by scarcity of petroleum products and uncertainty of electricity supply. With the scope of new employment in the civil service severely limited, manufacturing represents an important viable source of new employment that must be cultivated. The challenge is therefore to lift the depression in industrial activity by removing all the bottlenecks to a more vibrant and dynamic manufacturing sector.

3.4.8 Credit to the Sector

The information in Table 5 shows that there has been an increase in the investible funds from the banking sector as demonstrated by the credits from the commercial and merchant banks. These increases, however, need to be considered with caution and reservation for some reasons. One of this is that in the face of the deregulation that started in 1986, the economy has been subjected to intense inflationary pressure. The costs of production generally have been increasing and the situation is further intensified by the rapid fall in the relative value of the naira due to the devaluation that accompanied the deregulation of the foreign exchange market.

One policy measure that has demonstrated obvious failure to achieve the desired impact on the economy is interest rate rationalization. Though deposit rates have risen sharply, they remain negative given high inflation rates in the economy, which tends to undermine financial intermediation.

In the same way, lending funds to investors is undermined because banks cannot accumulate enough deposits to lend out (Ezenwe, Dike and Duru 1999). One source summarized the failure of interest rate policy in the following terms.

> "A greater percentage of money in circulation in the economy is outside the banking industry. The economy is now starved of investible funds as potential depositors prefer to invest their funds where they can get maximum yield. Even the reported increase in the volume of credit to the private sector might have been used to bid for foreign exchange in speculative trading. Government's desire to raise industrial capacity utilization has not been achieved due to difficulty in sourcing foreign exchange (UBA, 1994)".

TABLE 5: BANKING SYSTEM'S CREDIT TO THE SECTOR (₦MILLION)

Year	Commercial Bank Credit to the MFg Sector (1)	Merchant Bank Credit to the MFg Sector (2)	Total Credit to the Sector From (1) & (2)	Growth in Total Credit to the Sector (%)
1980	1,956.8	-	-	-
1981	2,659.8	304.5	2,964.3	-
1982	3,037.6	427.6	3,465.2	16.9
1983	3,053.1	484.3	3,537.4	2.08
1984	3,083.5	529.6	3,613.1	2.14
1985	3,232.2	576.8	3,809	5.42
1986	4,475.2	1,009.8	5,485	44
1987	4,961.2	1,570.4	6,531.6	19.08
1988	6,078.0	1,908.7	7,986.7	22.28
1989	6,671.7	2,520.5	9,192.2	15.09
1990	7,883.7	3,091.4	10,975.1	19.35
1991	10,911.3	4,543.1	15,454.4	40.81
1992	15,403.9	5,777.4	21,181.3	37.06
1993	23,110.6	8,863.6	31,974.2	50.95
1994	39,390.7	10,000.3	49,391.1	54.47
1995	58,090.7	13,653.6	71,744.3	45.46
1996	72,238.1	14,797.8	87,035.9	21.31
1997	82,823.1	19,361.3	102,184.4	17.40

Source: CBN Statistical Bulletin (Various Issues)

3.5 INDUSTRIAL POLICY UNDER THE STRUCTURAL ADJUSTMENT PROGRAMME (SAP)

Several policies were embodied in SAP to enhance industrial performance. While some of these policies are targeted at the macro-economy, others are targeted primarily at the industrial sector. At the economy - wide level, the devaluation of the naira was expected to alter domestic relative prices in favour of manufactured exports. Furthermore, the abolition of the import license scheme and the partial deregulation of the exchange market were expected to enhance the access of firms access to foreign exchange.

SAP also included the removal of import licenses, the simplification to the tariff protection system and the adoption of various export promotion schemes.

At the sectoral level, certain incentives were put in place to promote investment. For instance, in 1987, the corporate income tax rate was reduced from 45 per cent to 40 percent. Capital allowances were increased for plant and machinery. Tax Free dividends were introduced for foreign personal and corporate equity holders, provided the entity acquisition occurred between 1987 and 1992. In a similar vein, special tax incentives were put in place to encourage local R & D. Up to 140 percent tax relief was granted in respect of R & D expenses on raw material development.
Tax holidays were also granted to firms willing to invest in economically disadvantaged areas.
Tariff Incentive Measures which included the reduction in custom duty rates on imported manufacturing inputs, increase in the duty rates on imported manufactures' substitutes, reduction in export duties for manufactures, and reduction in excise duties on manufactures were adopted to boost investment in manufacturing sectors. At times, the reduction in duty may mean zero rate where there is complete removal of tax or prohibitively high rate. Tariff incentives are more acceptable to market - oriented economists than the quantitative trade control measures. This is because tariff is less legislative and regimental, and can easily fit into

the price mechanism and be enforced with limited waste of resources. It also entails limited loss in net social welfare than the quantitative trade restrictions (Takacs 1990).

Furthermore, domiciliary accounts were allowed, to enable exporters maintain their export earnings in foreign currency. The government also initiated the privatization and commercialization programme to enhance industrial efficiency. Under this programme, 110 companies and 35 other organizations were scheduled to be privatized or commercialized.

Another novelty in the post-SAP industrial development scheme was the package of incentives for promoting the export of manufactures. These incentives were spelt out in the Export Incentives Decree of 1986. An Export Guarantee and Insurance Scheme was established to assist Nigerian Companies to compete effectively in the international market. A compensatory scheme was also put in place to enable exporters to locally manufactured goods to claim subsidies from the export adjustment scheme fund. Similarly, an export expansion fund was introduced to provide cash inducements for exporters, provided a minimum of ₦50,000.00 worth of semi-manufactured or manufactured products had been achieved. The Nigeria Export and Import Bank (NEXIM) has played a significant role in facilitating manufactured exports in Nigeria.

In addition, the Companies Act of 1968 was replaced in 1990 by the Companies and Allied matters Decree. This was

designed, among other things, to facilitate the process of incorporation, registration and supervision of Companies by the appropriate government agency. The aim was to remove the cumbersome delays associated with setting up a business in Nigeria.

3.6 THE IMPACT OF FISCAL INCENTIVES TO THE MANUFACTURING ACTIVITIES.

The fiscal policy incentives implemented in Nigeria are characterized by lack of supportive policies combined with infrastructural inadequacy and the general hostility of the environment for investment. On the fiscal incentives themselves, the issue that can be raised against its workability is that there are too many policy inconsistencies. This is partly attributable to the sporadic military take-over, which usually results in frequent changes in public policies in order to enhance the administration's legitimacy.

In realization of the negative effect of these frequent changes, some precautionary measures have been taken within the policy framework to ensure that investors are protected. For instance, the 1984 changes in tariffs and the tariff reforms of 1988 were billed to last three and seven years respectively, before any other changes could be made. This clearly shows government's acknowledgement of the negative effects of incessant interruption of public policies on business investments.

By far the most devastating problem in the management of investment incentives is the initiation of conflicting and inconsistent policies that are not supportive of investment incentives. There had been preferential credit allocation incentive to the manufacturing investments in the period under review (see table 5). At the same period, however, there was a drastic deregulation of interest rates, which was intended to accord appropriate pricing to and allocation of scarce financial capital in the economy. This appropriate interest rate setting brought about extremely high rates of interest for any significant long-term investment in the manufacturing sector. This led to a high level of credit diversion from the sector. Thus, even if the ratio of credits intended for the sector were exhausted, very limited of the credits was indeed invested in it - some proportion of it would have been diverted to the importation and sales of finished goods in order to cope with the high obligation of servicing of the loans.

The high devaluation of the naira complemented existing high interest rates to weaken whatever incentives that were directed towards enhancing investments in the manufacturing industry. The picture becomes clear when it is known, as the CBN observes in its annual review of the real sector, that the industries that recorded the weakest capacity utilization were those that still depended largely on foreign inputs (CBN 1995).

Again, during the SAP era, the government gave some good incentives to aid researches into the use of domestic raw and intermediate materials. Those incentives were also meant to enhance domestic fabrication and usage of machinery and equipment. Serious attention was given to raw material and machine tool research institutions. For instance, the government set up the Raw Materials Research and Development Council (RMRDC) to complement the efforts of Federal Institute of Industrial Research, Oshodi (FIIRO) and the Product Development Agency (PRODA). Also the Industrial Development Coordinating Committee (IDCC) was set up, while an Export Processing Zone (EPZ) was established at Calabar. Surprisingly, however, there has been a low level of government investment in research and development in the university during the same period and even there after. This is quite worrisome, given that research and development are some of the cardinal responsibilities of the University.

On the use of local raw materials in the manufacturing industry, Adenikinju and Chete (1996) note that among the higher users of local raw materials who utilize between 70 to 80 percent are the wood products/furniture and non metallic mineral industries. Other industries that source over 60 percent of their raw materials from the domestic market are food, beverages and tobacco, textile, wearing apparels, leather and leather products. The capital - product manufacturing subsector, namely, chemical and pharmaceutical,

motor vehicle miscellaneous assembly, and electrical and electronics industries, are really lagging behind in the use of domestic raw materials. The low level of production and adoption of local machinery and equipment mainly explain their reluctance to use domestic raw materials in the production system.

Another major factor that has constrained the outcome of manufacturing incentives in Nigeria has been the lingering political crisis. This really affected the inflow of foreign investment into the economy in view of the image problems which the political crisis has caused between Nigeria and the Western economies. Besides, it does also deter indigenous investors from undertaking long-term investment in some places within the economy. Again, the reigns of unpredictable administrations, which suspend the constitution of the country and promulgate decrees with retrospective enforcement during the military regime, cannot provide the congenial environment necessary for stable growth in private investment.

The activities of investors can be eased or constrained by the legal system in operation. The investors are very conscious of the time they spend in doing anything and they evaluate time into their cost structure. Also, the bureaucratic processes in the civil service are given serious consideration in making investment decisions. The government has regulated the civil service environment at various times to ensure that investors spend less time to get their business

done. The aim is to reduce the number of business contact demands between the investors and the civil service. This is one of the aims of deregulation as carried out under SAP. In fact, the trade policy reforms that have taken place in the country are a case in point in this regard.

However, there are still a lot more to be done to further ease up the bureaucratic process and lower the transaction cost of investment. The initiation of Industrial Development Coordination Committee (IDCC), according to Aremu (1991), has had some positive impact on the registration of foreign investments. Yet greater achievement can be attained if, for instance, there is full computerization of the corporate affairs office and some government Ministries that have direct interaction with business registration, regulation, and investment. This will reduce the time spent in such transactions and enhance the profitability of manufacturing businesses in the country.

The effects of investment incentives to the manufacturing activities can also be improved by increase in the efficiency of the publicly - supplied infrastructure, namely, transportation amenities, electricity and other sources of energy supply, telecommunication and postal services, water supply and health facilities. The provision of these infrastructure has been mostly carried out by government agencies whose performances are evidently very poor. Consequently, their inefficiency has been reflected in the

high cost of doing business generally in Nigeria, moreso, in the manufacturing sector where the infrastructures are basic requirements for their operations. Thus public sector inefficiency is replicated in virtually all services - power supply (by NEPA); telephone (by NITEL); petroleum products by NNPC or its subsidiary, the airways (by Federal Airports Authority of Nigeria), highways and toll gates (by the Federal Ministry of Works and Housing). The aggregate effect is the introduction of additional cost parameters into the business cost cutlay. Thus, investible funds are often diverted to private provisions of these services by the private investors. Undoubtedly, the costs of investment are unnecessarily increased than it naturally should be, with attendant high prices of output and other chain effects on the markets of these products.

KASHIM IBRAHIM LIBRARY

3.7 MANUFACTURING INVESTMENT AND ECONOMIC GROWTH IN NIGERIA

In some developing Countries, the manufacturing sector often serves as the linchpin on which rapid economic development or lack of it resolves. As in the case of the "East Asian Tigers" it propels the tempo of economic activity determining not only the pace but also the direction of advance. The Nigerian experience however has been mixed, (Ezenwe 1998).

The initial results of industrialization were promising. Within the period of 1970s through the early 1980, the

Nigerian economy witnessed a tremendous growth as a result of the oil boom. Following the unprecedented oil earnings, there was an investment boom, especially in the public sector. This is because when windfall savings were relatively high, investment expanded significantly. When domestic savings fell short of the desired level of investment, government resorted to foreign savings as a means of complementing domestic savings to finance investment. This practice in itself would not have been bad for the country but for the quality of investment which was poor. Consequently, it not only created debt overhang but also led to poor growth performance of the economy.

Aggregate manufacturing investment increased dramatically in the 1970s, peaking around 1979. Infact, the manufacturing value added grew at more than 10% annually though largely generated by protection. This period, however, showed that simply substituting local for imported goods brought neither economic independence nor technological capability. The import substitution manufactures that sprouted during the 1960s through the 1970s depended heavily on imported inputs, including raw materials, spare parts, machinery and equipment, technology and management expertise and were therefore, vulnerable to shortages of foreign exchange (Ezenwe, Dike and Duru 1999).

Evidently, during 1980 and 1981, the investment share declined, though it still remained high by historical

standards. After 1983, however, the investment profile began to fall dramatically. Thus, with the collapse of the oil market in the 1980s, investment also fell, thereby leading to a decline in economic growth. The manufacturing investment/GDP ratio fell to 8.4 and 7.8 percent in 1983 and 1984 respectively, and the growth rate of the economy was negative at 5.4 and 5.1 percent (see Table 6). This fall on investment is depicted in figure 1. Following these negative growth rates and the need to arrest this decline, the government adopted the structural adjustment programme (SAP) in 1986 with a view to rekindling investment and economic growth so as to achieve a greater capacity for development. To this end, interest rates, which were previously fixed and low, were replaced by an interest rate regime which was influenced more by market forces. The policy shift, therefore deemphasized direct investment stimulation through low interest rates and encouraged savings mobilization by decontrolling interest rates.

Available data shows that SAP has somehow improved the efficiency of manufacturing investment as GDP growth rate reached 10 percent in 1988 (see Table 6). However, with the half-hearted implementation of SAP, economic growth started to decline from 4.5 percent in 1991 to 2.3 percent in 1993, before reaching a trough of 1.4 percent in 1994, following the deregulation of the economy as clearly depicted in figure 2. This was accounted for, in part, by the aggregate

manufacturing investment which hovered around 8.8 percent of GDP annually between 1986 and 1997. The general picture of the economy's investment profile shows that the growth rate of the manufacturing investment exhibited declines for about seven years between 1983 to 1996.

In the same vein, the economy's output increased at a modest rate in the same period and even became negative from 1981 to 1987, thus implying that much of the investment went for depreciation. With the introduction of guided deregulation in 1995, output growth averaged 2.8 percent in 1995 and 1996. However, its growth rate was by all accounts rather low in many respects. It was low when compared with the rates achieved during SAP (an average of 8.5 percent between 1988 and 1990), and much lower when compared with the growth rates of Indonesia and Malaysia, countries that were in the same analytical group as Nigeria in the 1970s and 1980s.

Also, the poor performance of this sector was attributed mainly to low demand for local manufactures, resulting partly from dumping of imported goods (particularly second hand items) into the Nigerian market. The goods that were mostly affected by this development included tyres and tubes textiles foot wear; vehicles, batteries, soaps and detergents, cement, fabricated steel products and electronics. Low demand for goods was also attributed to fallen consumer purchasing power occasioned by high prices of many durable goods in the face of sticky wages and shrinking job opportunities. Other

constraints were high costs of operations, traceable largely to multiple taxes and levies and infrastructural inadequacies. Another major constrain was the persistent shortage of fuel and other petroleum products which had a negative impact on manufacturing operations. The scarcity of fuel hindered the movement of industrial inputs, goods and personnel; while shortage of diesel also reduced the capacity to use generators to provide power for running industrial machinery and equipment in the face of erratic electric supply from the National Electric Power Authority (NEPA). Besides, some manufacturers found private provisioning of power too costly to sustain on a long-term basis with consequent effect on plant closures and reduction in manufacturing activities. This dismal performance can be explained by the fact that although investment is basic to economic growth, there are some other complementary factors directly and indirectly linked with investment which must be present before growth can take place. These factors include favourable economic environment, improved technology; manpower development; adequate infrastructure; security and political stability.

TABLE 6: NIGERIA'S MANUFACTURING INVESTMENT PERFORMANCE AND GDP GROWTH RATES

Year	GDP at 1984 factor cost (₦Billion)	GDP growth Rate (%)	Share of MGF in the GDP at 1984 cost (%)	Share of MGF in the Industrial GDP (%) factor cost	Growth in MGF output at 1984 factor cost %
1980	96.2	5.5	-	-	-
1981	70.4	-26.8	9.8	32.4	-
1982	70.2	- 0.3	11.2	38.1	12.9
1983	66.4	- 5.4	8.4	31.6	-29.4
1984	63.0	- 5.1	7.8	28.3	-11.2
1985	68.9	9.4	8.6	32.0	19.8
1986	71.1	3.2	8.0	32.6	- 3.9
1987	70.7	- 0.6	8.4	35.3	5.1
1988	77.8	10.0	8.7	36.3	12.9
1989	83.5	7.3	8.2	33.8	1.6
1990	90.3	8.3	8.1	34.2	7.6
1991	94.6	4.5	8.5	32.5	9.3
1992	97.4	4.1	7.9	34.7	- 4.8
1993	99.6	2.3	7.4	31.6	- 4.1
1994	101.0	1.4	6.9	30.8	- 5.0
1995	103.0	2.2	8.2	31.0	- 5.5
1996	107.0	3.4	6.5	29.6	0.9
1997	111.1	3.8	6.2	30.1	1.9

Source: Federal Office of Statistics (FOS): CBN Annual Report and CBN Statistical Bulletin (Various Issues).

FIG. 1: MANUFACTURING INVESTMENT - GDP RATIO

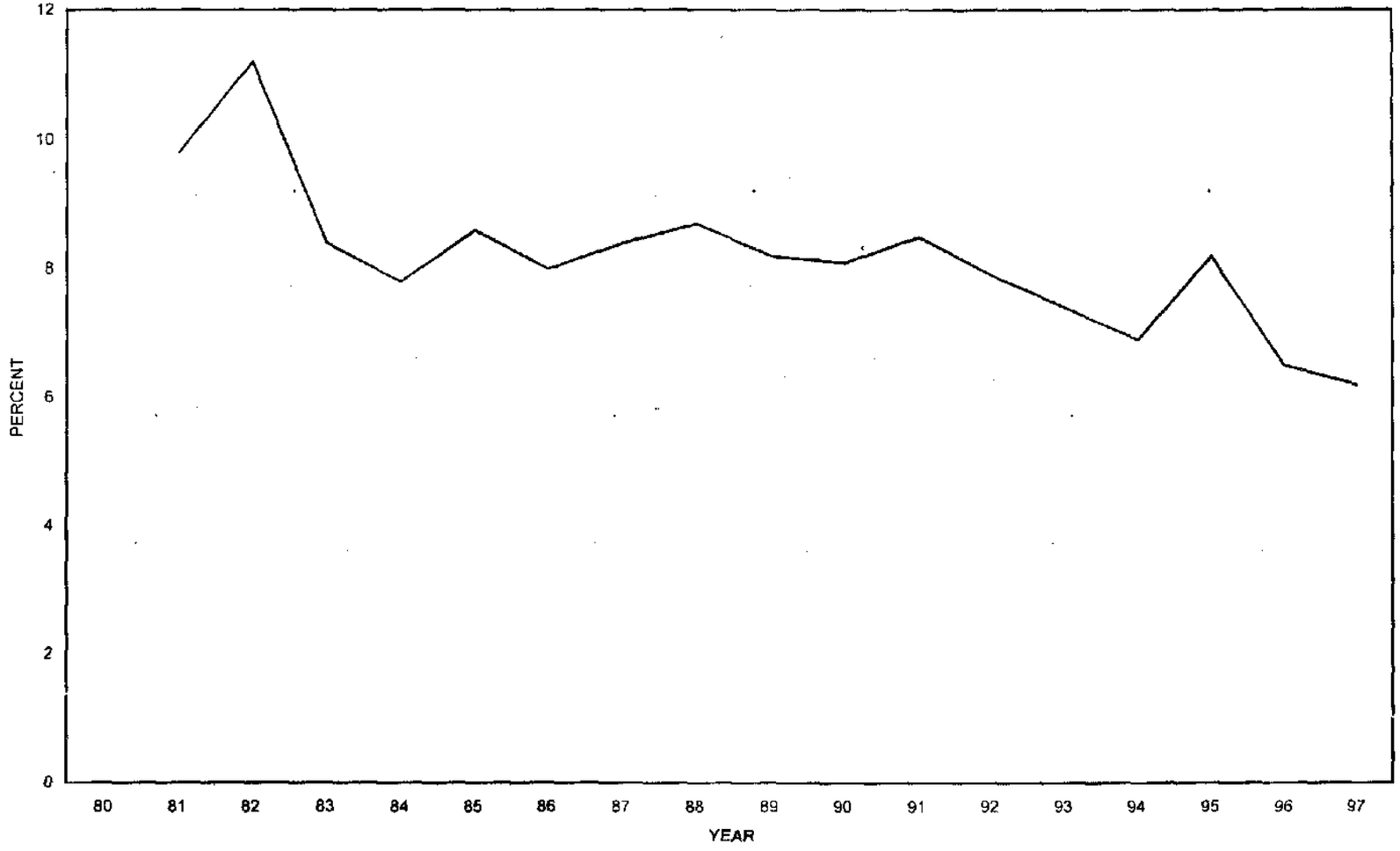
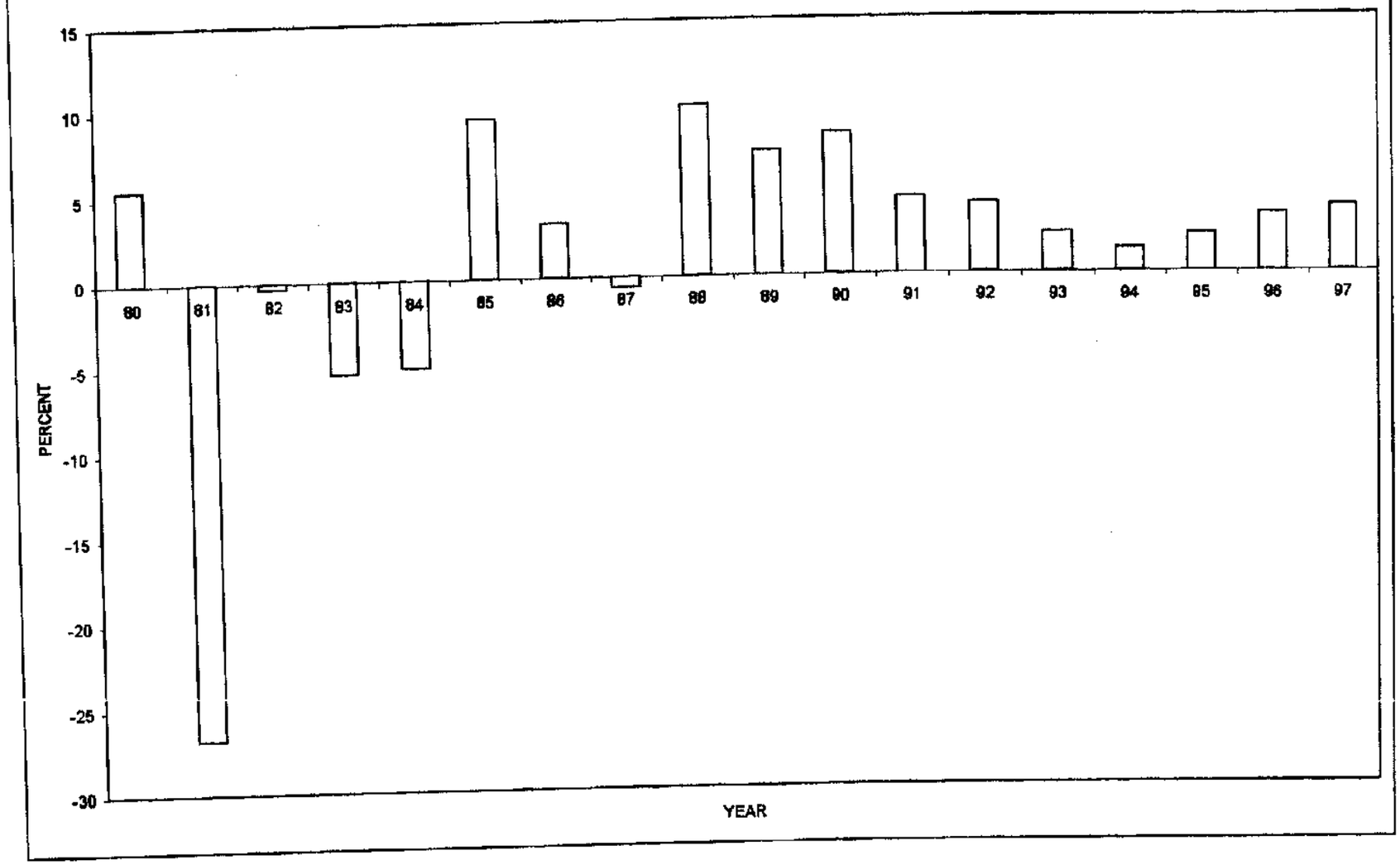


FIG. 2: % REAL GDP GROWTH 1980 - 1997



3.8 PERFORMANCE APPRAISAL OF NIGERIA'S MACROECONOMIC POLICIES

Macroeconomic policies send important signals to manufacturers about the direction of economic policies and the credibility of government's commitment to manage the economy efficiently. Such policies by facilitating long term planning and investment decisions, encourage private capital accumulation (Hadji Micheal, et al 1995).

The absence of a coherent macro-economic policy by creating an atmosphere of uncertainty, makes it difficult for economic agents to extract the correct signals from relative prices,, such as the real returns to investment in both human and physical capital and, thus, leads to inefficient resource allocation.

Having examined the relationship between manufacturing investment and economic growth earlier the focus of this section is to appraise the performance of the various policy initiatives put in place to determine the growth of manufacturing investment in Nigeria. The macro-economic policy variables to be examined include the fiscal policy, inflation rate, interest rate, Exchange rate, public investment and External debt management.

3.8.1 Fiscal Policy

The use and control of government expenditure and revenue, otherwise known as fiscal policy, is a tool for influencing the level of economic activities. Thus, fiscal

policy refers to government revenue generation through a variety of taxes (corporate and personal), royalty, investment income etc; the expenditure profile, transfer, distribution and all other related policies of the public sector activities. The economic fundamental of fiscal policy is to effect a counter-cyclical policy so that booms and depressions during the course of business cycles are offset (Harper Collins 1991). Thus, fiscal policy is essentially used in fine-tuning the economy. This is why Keynes advocated deficit financing, (an injection into the economy to stimulate aggregate demand via the multiplier effect) to effect a transition from mass unemployment to near full employment.

Nigeria's fiscal policy was characterized by persistently high deficit financing between 1970 and 1977 even though this was drastically reduced during 1995 - 1997. Indeed, the average budget deficit/GDP ratio between 1980 and 1994 was 7.0 (see table 7). This contracts with an acceptable limit of between 2 percent for fast growing economies and 3 percent for slow growing one (Table 8).

The huge deficit Financing found its way into foreign exchange market, depressed the value of the domestic currency and fueled inflation which reached a peak of 72.8 percent in 1995.

However, there is nothing sacrosanct about budget deficit provided it is manageable and expended on projects whose returns to scale is higher than the cost of borrowing.

Also of importance is the mode of financing the deficit, a

budget deficit financed through the capital market is less inflationary than when it is financed by the banking system, especially the Central Bank, as in the case in many developing Countries like Nigeria. Thus, excessive and prolonged deficit financing through the creation of high powered money may negate the attainment of macro-economic stability which may in turn curtail the level of desired investment in an economy and thereby stifle growth. The World Bank (1996) recently cited studies by Fischer (1993); Bruno and Easterly (1995); and Pindyck and Solimano (1993) to demonstrate that the fast growing countries in the world are those that maintain low inflation, low and manageable overall deficits minimal price distortions, stable exchange rates, strong, efficient and open economies with large trade shares, in contrast with those that exhibit long-run inflation rates in excess of 30 percent (Table 8).

We are also aware that low growth rates and inflation are correlated with large overall budget deficits in part because the financing was done mainly with Central Bank borrowing as was the case in Nigeria (World Bank 1996). The same scenario has been observed among HPAE of South East Asia whose economies have been remarkably successful in creating and sustaining macro-economic stability through manageable budget deficits, low inflation, maintenance of real effective exchange and keeping external debt under control; which in turn, encourage private sector savings, investments, exports

and growth.

TABLE 7: SOME RELEVANT MACRO-ECONOMIC INDICES

Year	GDP at 1984 factor cost (NBillion)	GDP (at 1984 Factor cost growth rate	Fiscal Deficit as % of GDP	Total Investment %	Public Investment GDP ratio %	Private Investment GDP ratio %
1980	96.2	5.5	4.10	22.2	15.4	6.8
1981	70.4	-26.8	7.80	23.3	16.8	6.5
1982	70.2	- 0.3	4.60	20.0	13.9	6.1
1983	66.4	- 5.4	3.00	14.7	10.5	4.2
1984	63.0	- 5.1	2.10	9.5	7.2	2.3
1985	68.9	9.4	2.30	8.9	6.9	2.0
1986	71.1	3.2	10.60	14.9	11.6	3.3
1987	70.7	- 0.6	5.50	13.7	9.8	3.9
1988	77.8	10.0	7.10	13.5	9.4	4.1
1989	83.5	7.3	6.70	14.1	9.7	4.4
1990	90.3	8.3	8.50	14.5	8.4	6.1
1991	94.6	4.5	12.40	16.3	10.3	6.0
1992	97.4	4.1	7.20	16.4	11.8	4.6
1993	99.6	2.3	15.40	13.6	13.3	0.3
1994	101.0	1.4	7.90	11.6	10	1.6
1995	103.5	2.2	1.01	10.0	7.9	2.1
1996	107.0	3.4	3.51	10.0	6.9	3.1
1997	111.0	3.8	4.50	11.2	6.5	4.7

Source: Federal Office of Statistics (FOS): CBN Annual Report and CBN Statistical Bulletin Vol. 6 No. 2 Dec. 1997.

TABLE 8: THE MACROECONOMIC FOUNDATIONS OF GROWTH (%)

Cross Country Average 1960-1989	Fast Growers	Slow Growers	Nigeria 1985-92	Nigeria 1993-95
Ave. long run real per capita GDP growth rate	2 & above	2 & below	2.0	- 1.0
Budget deficit as share of GDP	2.0	3.0	5.0	9.0
Inflation rate	12.0	31.0	24.0	57.0
Parallel market Exchange rate premium	14.0	57.0	80.0	173.0
Investment as share of GDP	23.0	17.0	15.0	13.0
Export as share of GDP	32.0	23.0	29.0	28.0

Source: A World poverty Assessment Report (1996) No. 14733 - UNDP

3.8.2 Inflation Rate

Like deficit, inflation has been high volatile in the country. Double digit inflation rates were witnessed in the years under review except for 1972, 1973, 1985, 1986, 1990 and 1997 (see Table 9). This high rates of inflation in the country are no doubt traceable to the fiscal deficits and the unstable exchange rates of the naira. Thus, both the inflation and exchange rates deteriorated sharply as the naira exchange rate, which was ₦2.0206 to US $1.00 in 1986 maintained a downward movement of ₦85.00 to US $1.00 in 1997. On the other hand, inflation resumed its upward movement rising from 5.4 percent 1986 to an all-time high of 72.8

percent in 1995 before moderating at 29.3 and 8.5 percent in 1996 and 1997 (See fig. 3). The highly volatile behaviour of this trend is largely attributable to policy instability and frequent changes in the manipulation of the so-called market - determined exchange rate since 1987, which led to the chaotic behaviour of exchange rates (Ariyo and Adeniran 1995) and negatively affected the efficiency of the exchange rate market (Ogiogio 1996).

Data from the Federal Office of Statistics (FOS) showed that the average all-items composite consumer price index (CPI) for 1995, 1996 and 1997 stood at 2041.40, 2720.50 and 2878.40 (1985 = 100) respectively. This represented an inflation rate of 72.8 percent in 1995, compared with 8.5 and 29.3 percent in 1997 and 1996, respectively. The increase in the rate of domestic inflation was attributed largely to rising costs induced mainly by the persistent shortages of fuel and other petroleum products, erratic power supply as well as the announcement effect of the implementation of the new wage structure in the public sector in the last quarter of the year 1999. However, it is pertinent to note that a high rate of inflation will become a dis-incentive to manufacturers.

3.8.3 Interest Rate Management

There had been varied experience with respect to interest rate management, all of which have not proved very

satisfactory. These span periods of rigid control of interest rates and periods of partial control deregulation. Prior to SAP, the economy witnessed high levels of manufacturing investment/GDP ratio averaging 9.6 percent per year between 1981 and 1986 which was the period of fixed interest rate at low levels, compared with an average of 7.7 percent annually when interest rate became volatile in 1986 - 1993 period. Although the latter period coincided with the economic deregulation period, the financial operators unleashed a cut-throat competition that drove up the lending interest rates, from a low of 9.50 percent in 1980 to 36.10 percent in 1993. (See fig. 4). Similarly, the country witnessed high inflation rates, distress borrowing by banks concentration of reserves in a few banks, borrowing funds for speculative foreign exchange transactions, the use of stabilization securities for mopping up excess liquidity and banking system financing or huge management. Consequently, the rates prevailing before 1994 were not ideal or optimal. It was for this reason that efforts have been made since 1995 to address the fundamental problems and minimize their adverse effects on interest rate movements (Ojo, 1996).

Under the 1995 dispensation, banks and other financial institutions were required to maintain a maximum spread of 7.5% between their deposit and lending rates subject to maximum lending rate of 21%.

Given the inflation rate of about 72.8 percent in 1995 and lending rates of 21%, the incentive to borrow became apparently non-existent. Infact, this situation does not augur well to the economy if it continues and the aim of inducing the productive sectors will be defeated. Worst still, is the distress syndrome in the banking industry as it has apparently led to lost of confidence in that sector. The persistent negative real interest rates occasioned by the pegged interest rate has thus given rise to what is termed as "Flight of capital to safety". This is evidenced from the general drop in domestic deposits in banks in favour of inflation hedges such as hard currency, real estate, landed properties etc.

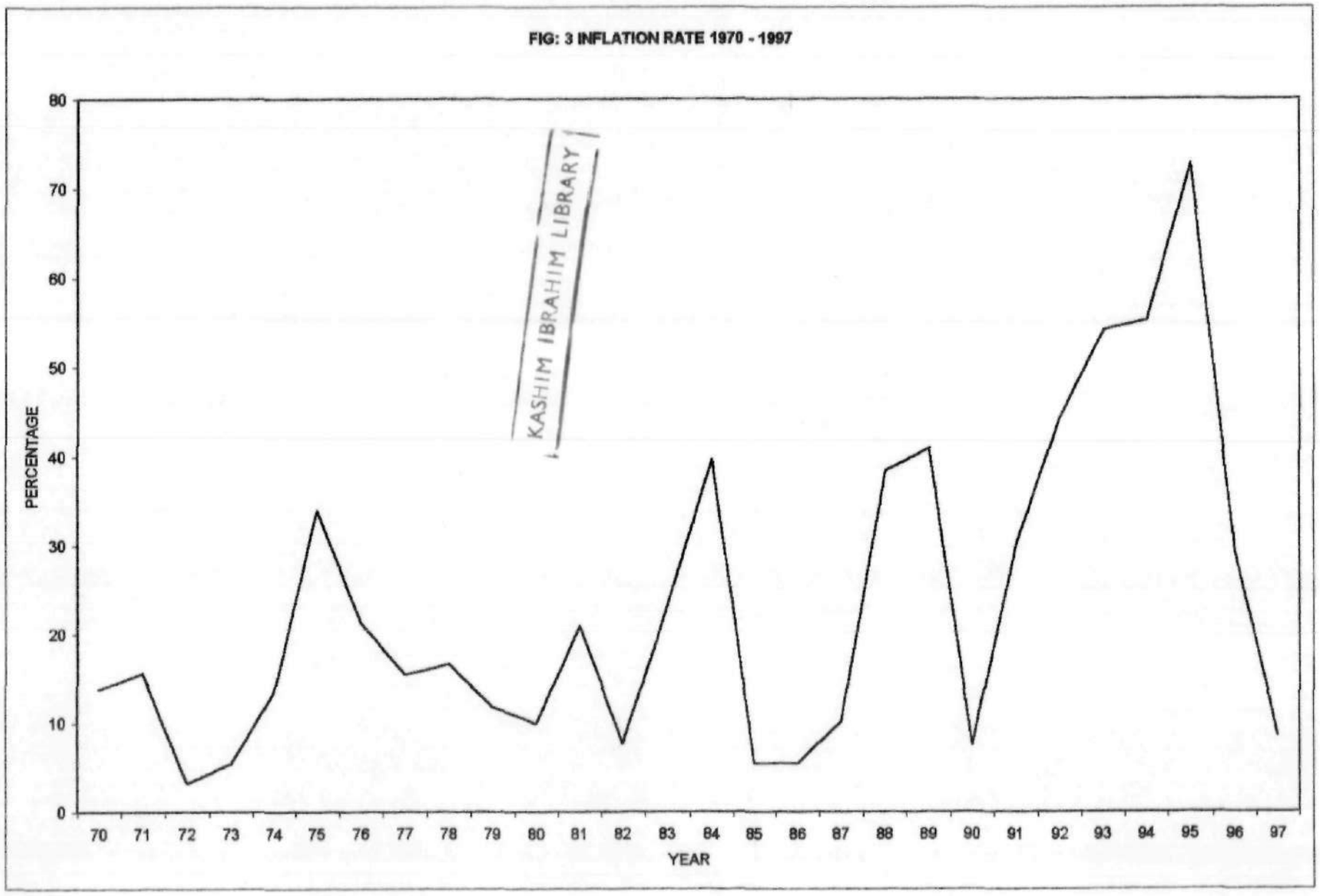
Also, it is important to note that with a high rate of inflation, a positive interest rate will equally become a dis-incentive to manufacturers. The best way out is to adopt a sound interest rate management in the 2000 Budget and direct attention to the supply side of the economy to bring down the rate of inflation before realising a meaningful rate of interest.

TABLE 9: INFLATION, EXCHANGE & INTEREST RATE AND EXTERNAL DEBT IN NIGERIA (1970 - 1997)

Year	Inflation rate (%)	Consumer price Index (1985 = 100)	Exchange Rate (N per US Dollar	Interest Rate lending %	External debt (US $b)	External debt (N million)
1970	13.8	10.80	0.7143	7.50-8.00	-	175.0
1971	15.6	12.50	0.6955	10.00	-	178.5
1972	3.2	12.90	0.6579	10.00	-	265.6
1973	5.4	13.60	0.6579	10.00	-	276.9
1974	13.4	15.40	0.6299	10.00	-	322.4
1975	33.9	20.70	0.6159	9.00	-	349.9
1976	21.2	25.60	0.6265	10.00	-	374.6
1977	15.4	29.60	0.6466	6.00	-	365.1
1978	16.6	34.50	0.6060	11.00	-	1252.1
1979	11.8	38.50	0.5959	11.00	-	1611.5
1980	9.9	42.30	0.5464	9.50	3.5	1866.8
1981	20.9	51.20	0.6100	9.00	3.8	2331.2
1982	7.7	55.10	0.6729	9.30	10.1	8819.4
1983	23.2	67.90	0.7241	10.10	17.8	10577.7
1984	39.6	94.80	0.7649	10.40	17.3	14808.7
1985	5.5	100.00	0.8938	9.20	18.9	17300.6
1986	5.4	105.40	2.0206	9.60	25.6	41452.4
1987	10.2	116.10	4.0179	14.00	28.3	100789.1
1988	38.3	181.20	4.5367	16.60	30.7	133956.3
1989	40.9	272.70	7.3916	25.50	31.6	240393.7
1990	7.5	293.20	8.0378	25.50	33.1	298514.4
1991	30.0	330.90	9.9095	20.00	33.7	328054.3
1992	44.5	478.40	17.2984	29.80	27.6	544264.1
1993	54.2	751.90	22.0702	36.10	28.7	633144.4
1994	55.3	1180.70	21.8861	20.20	29.4	648813.0
1995	72.8	2041.40	21.8861	21.00	32.6	716865.6
1996	29.3	2720.50	21.8861	19.10	28.6	617320.0
1997	8.5	2878.40	21.8861	17.1	27.1	595931.6

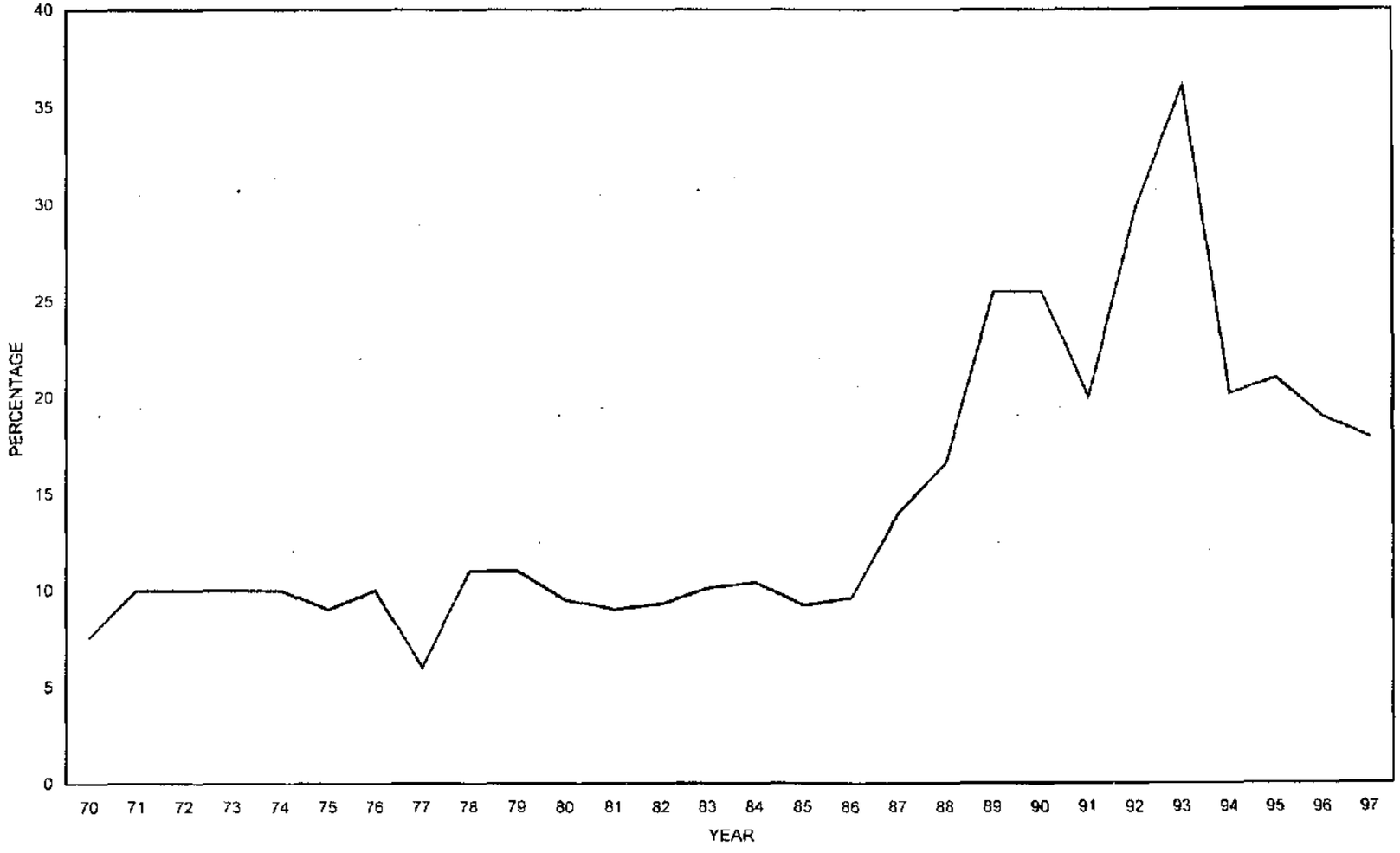
Source: Central Bank of Nigeria Statistical Bulletin, Vol. 6 No. 2 Dec. 1997.

FIG: 3 INFLATION RATE 1970 - 1997



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FIG. 4: TRENDS IN INTEREST RATE IN NIGERIA 1970 - 1997



3.8.4 Exchange Rate Policy

The profile of average exchange rate of the naira to the US dollar is shown in table 9. The rate appreciated consistently from 0.7143 in 1970 to 0.6159 in 1975, then depreciated continually to 1978, fluctuated during 1979 - 1980 and thereafter depreciated annually uptill date.
The rate was pegged at ₦22,00 in 1994. This was aimed at stabilizing the exchange rate and halting the inflationary spiral associated with rapid exchange rate depreciation. Unfortunately, by the end of 1994 it was clear that this policy objective had not been realized.

The Failure of the fixed exchange rate regime in Nigeria in the face of acute shortage of foreign exchange is quite understandable. We should note that Nigerian import demand can be excessive, at the same time it contains substantial frivolous elements when supply of Foreign exchange is severely limited. Given the latter,the market mechanism, inspite of its well known imperfections, is obviously a more acceptable modality for allocating foreign exchange for competing imports than administrative controls (Ezenwe,Dike and Duru 1999).

The naira, however, depreciated more significantly in the bureaux de change where the rate averaged ₦88.54 to US $1.00. The pressure on the foreign exchange market during the years reviewed was largely induced by the nervousness of both foreign exchange users and operators who were concerned about

the persistent fall in export receipts and doubted the ability of the Central Bank of Nigeria (CBN) to sustain supply of foreign exchange to the Autonomous Foreign Exchange Market (AFEM), as well as the political uncertainty and social tension, particularly during the 90's.

Again, the failure of the foreign exchange management policy to lead Nigeria to an appropriate and realistic exchange rate is clearly borne out by the discrepancies between the official exchange rate, the parallel market exchange rate and the premium on the parallel market as shown in Table 10.

Table 10 below shows that using purchasing power parity calculations based on official and parallel rates, the official exchange rates were overvalued while the parallel market exchange rates were undervalued between 1980 and 1991. Consequently, the realistic exchange rate for the naira should have been between the two PPP calculations (Obaseki and Bello, 1996). This non-optimal exchange rate policy was reflected in the premium earned in the parallel market which ranged from a low of 20 percent in 1990 to 288.2 percent in 1997. Infact, the recorded premiums for 1985 - 1992 and 1993 - 1995 as shown in Table 8 are 80 and 173 percent respectively while that of 1996 - 1997 average was 284 as shown in Table 10. Thus the productive sectors of the economy, particularly agriculture, solid minerals and manufacturing (especially small and medium scale enterprises), where 60 - 70 percent of

the population are employed were unduly penalized by the exchange rate policy.

TABLE 10: SELECTED EXCHANGE RATE INDICATORS

Year	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
Official Exchange rate N/S	0.55	0.61	0.67	0.72	0.76	0.89	1.27	3.60	4.53	7.39	8.04	9.9	17.30	22.07	21.89	21.89	21.89	21.89
Parallel market ER N/S	0.90	0.93	1.14	1.82	3.25	3.79	4.17	5.55	6.05	10.55	9.61	13.40	20.30	36.20	89.96	83.63	83.11	84.97
ER Premium	63.6	52.2	70.1	152.8	327.6	325.8	228.3	54.2	34.1	42.8	20.0	35.2	17.3	69.0	173.9	282.2	279.7	288.2

Source: Central Bank of Nigeria Statistical Bulletin, Vol. 6, No. 2, Dec. 1997.

3.8.5 External Debt

The nation's external debt profile, built up mainly on the acquisition of external resources for developmental and balance of payments support purposes, is inversely related to her foreign exchange earnings. Thus, prior to the oil shocks of the late 1970s and early 1980s, the stock of Nigeria's external debt was relatively small and was contracted at concessionary rates with longer repayment periods. However, owning to the oil glut, the first major external borrowing of US $1.0 billion referred to as "Jumbo loan" was sourced from the international capital market (ICM) in 1978 and it brought the total external loan from US $28 million between 1958 and 1977 to US $2.2 billion. The external debt stock has grown ever since hovering around US $30.0 billion between 1988 and 1997, inspite of the debt rescheduling and conversion efforts

(See Table 9). It has had an excruciating effect on the balance of payments position with negative signals to foreign investors, and has constituted a big strain on resource availability for domestic investment.

And, as Ezenwe (1995) has observed, the external debt problem remained as ever a serious drag on the economy. Outstanding external debt stood at US $29.43 billion (₦648813.0 million) towards the end of 1994, made up of 62% Paris Club; 15% multilateral; 7% London Club or Commercial banks; 11% Promissory notes; and 4.7% non-Paris Club.

As at December 1997, the net external debt stock and reserves were US $27.1 and US $7.7 billion respectively according to the 1998 budget. The nation's external reserves grew from US $712.6 million to US $ 4.1 billion from 1992 to 1996, due mainly to a deliberate policy of limiting debt service at 30.0 percent maximum of foreign exchange earnings (CBN, 1997). However, the true position is that the external debt service has become burdensome as the ratio of external debt stock to total export earnings which was below 25.0 percent in 1981 has remained a three - digit phenomenon from 1982 to 1994 (CBN 1996).

Meanwhile, the total external debt stock in 1998 amounted to US $28,773.5 million (₦633,017.0 million) compared with US $27,087.8 million (₦595,931.6 million) in 1997, showing an increase of US $1,685.7 million. (₦37,085.4 million) or 6.2 percent. The increase was as a result of the US $334.6

million (₦7,361.2 million) draw-down on multilateral and post cut-off loans, interest arrears and penalty interest on overdue rescheduled Paris Club debts.

3.8.6 Public Investment

However, in Nigeria, there is heavy dominance of the economy by the public sector and this has scaled down the contribution of the private sector especially manufacturing sector and also alienated the civil society from the development process.

The government could perpetuate this practice because of its control over the nation's financial resources. Funds from external sources do not help the situation either. All external debts and foreign assistance proceeds accrue to the public sector, and the proportion of funds from foreign sources available to the private sector has almost declined to zero, especially since the mismanagement of the structural adjustment programme (Ariyo 1996).

This is a highly deficient and skewed institutional balance which cannot facilitate the inflow of the required level of private investment nor ensure social harmony. It is gratifying to note that these defects have been noted and addressed by the vision 2010 Committee (Federal government of Nigeria 1997). It is hoped that the recommendations contained in the Committee's report will be implemented with vigour and in a timely manner.

Data relating to the composition and ratio (Table 7) shows the overall decline in investment as a ratio of GDP overtime as well as the crowding - out effect of public investment on private investment. These are serious issues for policy concern, more so, when empirical evidence indicate that fastest growing developing economies are characterized not only by a rising investment ratio but also the dominance of private investment over public investment (Ariyo 1996; Ariyo and Raheem 1991).

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SUMMARY

Investment expenditure has long been recognized as the kinetic force in the growth process; the latter is usually preceded by capital formation and accumulation. This being the case, conscious efforts must be made by policy makers to evolve a favourale environment in order to foster economic growth and development. Having witnessed periods of boom and trough in Nigeria as a result of several factors, including noneconomic ones, the need to examine the macroeconomic policies shaping the performance of the manufacturing sector stable macroeconomic environmment of the 1960s and 1970s, as characterized by low inflation, low interest and exchange rates a low debt profile all encouraged economic growth. This was due principally to the favourbale peformance of the oil market. However the subsequent oil shocks gave way to macroeconomic instabilitgy as a result of ambitious public

sector programmes which were financed with public debt, and was accompanied with poor growth performance. This led to deregulation in an attempt to free the economy from rigid control and reduce government intervention in those areas where the private sector is better equiped. However, due to lack of unrestrained consumption in the face of dwindling resources and maladjustment to SAP initiatives and policy reversals, there were wild swings in such indicators as domestic prices and exchange rate. Thus was exacerbated by burgeoning fiscal deficits financed mainly by high-powered money and external borrowing.

CHAPTER FOUR

MODEL SPECIFICATION AND ESTIMATION OF REGRESSION RESULTS

4.1 EXPLANATION OF THE VARIABLES

The dependent variable used in this research is the manufacturing investment-GDP ratio as a proxy for total private manufacturing investments in Nigeria. The choice of this variable was because private investments in the manufacturing sector account for 80 percent of aggregate manufacturing investment in Nigeria (World Bank 1995).

The independent variables used which captured the influence of macroeconomic instability were inflation rate (which was proxied as percentage changes in consumer price index (CPI), (Exchange rate premium, external debt/GDP ratio fiscal deficit GDP ratio and lending interest rate; while growth in real Gross Domestic Product (GDP), capacity utilization rate and growth in total credit to the sector represent the influence of the structural factors of the manufacturing sector.

The value for credit to the sector was obtained by adding credits from the Commercial and Merchant Banks, then the growth was measured by taking the annual percentage changes. The growth in the real gross domestic product was also measured by taking the annual percentage changes of GDP at 1984 factor cost (otherwise known as the real GDP which equals GDP at 1984 current market prices less indirect taxes net of

subsidies).

Also, the value of foreign exchange premium was obtained by working out the difference between the official exchange rate and the parallel market exchange rate. To avoid the problem of Multicollinearity in this test, the prime lending interest rate was used. Two different functional relationships were used: linear and Logarithmic functions.

From preliminary OLS regression calculations using annual data for the 1981-1997 period, it was found that the partial regression coefficient for the public investment was not statistically significant and fluctuated in direction. This variable was therefore dropped from the equations.

4.2 CRITERIA USED IN ASSESSING REGRESSION COEFFICIENTS

The student T-statistic was used to determine the statistical reliability of the variable as implied in the regression. To test whether the change in the parameter are statistically significant, the student t-statistic was used at 5 percent level of significance. The t-calculated was compared to the t-tabulated to arrive at a conclusion as to whether the change in the parameters are statistically significant. If the t-calculated is greater than the t-tabulated it therefore means that the change in the economic relationship being studied are statistically significant or if the t-calculated is less than the t-tabulated it therefore follows that the change in the economic variables being

studied is not statistically significant.

The F-statistic was used to test the combined influence of parameters in the model. It tells us whether the coefficients of the regressors are significantly different from zero. To know whether the combined influence of the Eight regressors is statically significant, the F statistics was used at 5 percent level of significance. The coefficient of determination (R^2) was used to measure the rate at which the dependent variable is explained by the independent variable. If the coefficient of determination is greater than 50 percent, it therefore means that a significant proportion of the dependent variable has been explained by the independent variables. The Durbin-Watson statistics of approximately 2.0 would be indicative of the absence of serial correlation. (J. Durbin and G.s. Watson, 1951).

4.3 MODEL SPECIFICATION

While the literature is replete with macroeconomic determinants of private investment, the pioneering theoretical framework has always been traced to the neoclassical and keynesian simple and flexible accelerator model. Other investment models include the liquidity theory, expected profits theory, Tobin's Q theory and, in recent times, the debt overhang hypothesis. However, for the purpose of this research, the starting point shall be the accelerator model from where most models derived their essence.

Following Chhibber and Pahwa (1994) Akpokodje (1998) Bogunjoko (1998) and Iyoha (1998), we specify equations for private manufacturing investment as follows. The linear form of the model was:

$$\frac{MINV}{GDP} = F\ (GRY, FY, INFL, ERP, DRY, IR, CUR, CMS) \quad .... \quad 4.3.1$$

The functional form of the linear model becomes:

$$\frac{MINV}{GDP} = qo+q_1GRY+q_2Fy+q_3INFL+q_4ERP+q_5DRY+q_6IR+q_7CUR+q_8CMS + Ut \quad ..... \quad 4.3.2$$

The logarithmic form of the model becomes:

$$\text{Log } \frac{MINV}{GDP} = Q_o + Q_1 \text{ Log GRY} + Q_2 \text{ Log FY} + Q_3 \text{Log INFL} + Q_4 \text{ Log ERP} + Q_5 \text{ Log DRY} + Q_6 \text{ Log IR} + Q_7 \text{ Log CUR} + Q_8 \text{ Log CMS} + Ut \quad ..... \quad 4:3:3$$

Where,

$\frac{MINV}{GDP}$ = Manufacturing Investment - GDP ratio

GRY = Real GDP growth

FY = Fiscal deficit as percent of GDP

INFL = Inflation rate (% change in consumer price index (CPI)

ERP = Foreign exchange premium (measured by the ratio of parallel market rate to official rate).

DRY = Ratio of external debt stock to GDP (designed to capture the debt overhang effect).

IR = Prime lending interest rate (used to capture the profitability of investment).

CUR = Capacity utilization rate of the sector

CMS = Growth in total credit to the sector.

In the model qi and Qi (where i = 1,2 ... n) are the various regression coefficients, while qo and Qo are the intercepts of the regression equations. Ut is the error term which takes into consideration the influence of other factors not considered in the equation and the error that occurs in the course of the measurement of data.

Based on previous studies and a prior expectations, q1 Q1, q7 Q7 and q8 Q8 are expected to have positive regression coefficient while q2 Q2 to q6 Q6 are expected to be negative.

The qo and Qo, could be positive or negative signs. In this thesis, equations 4:3:2 and 4:3:3 were estimated.

4.4 THE ESTIMATED RESULTS

4.4.1 The Linear Form

$$\underline{MINV} = 3.073 - 0.038GRY - 0.216FY - 4.999INFL - 7.7335ERP$$
$$GDP \quad (1.588) \quad (-3.442) \quad (-3.121) \quad (-3.051) \quad (-2.872)$$

$$- 3.807DRY - 0.066IR - 0.120\ CUR + 0.061\ CMS$$
$$(-2.663) \quad (-1.380) \quad (-4.045) \quad (3.690)$$

$R^2 = 0.91$

$\bar{R}^2 = 0.82$

F = Value = 10.139

D.W. = 1.918

N = 17

t - Values are in parenthesis

*Significant at 5.0 percent

4.4.2 THE LOGARITHMIC FORM

$$\text{Log } \frac{MINV}{GDP} = \underset{(1.467)}{0.653} - \underset{(-3.159)}{2.784}\ \text{Log GRY} - \underset{(-2.424)}{0.083}\ \text{Log FY} - \underset{(-2.931)}{0.025}\ \text{Log INFL}$$

$$- \underset{(-3.120)}{0.073}\ \text{Log ERP} - \underset{(-2.783)}{0.056}\ \text{Log DRY} - \underset{(-3.644)}{0.071}\ \text{Log IR} - \underset{(-2.706)}{0.341}\ \text{Log CUR}$$

$$+ \underset{(2.888)}{0.072}\ \text{Log CMS}$$

R^2 = 0.88

$\bar{R}^2$ = 0.77

F - Value = 7.865

D.W = 2.077

N = 17

t - Values are in parentheses

* Significant at 5.0 percent

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In the equations, the numbers in parenthesis below each estimated parameter are their respective t-statistics and below each equation is the coefficient of determination (R^2), the $\bar{R}^2$ (which measures the goodness of fit) and F-values and the Durbin-Watson test (D.W) as well as the level of significance.

4.5 DISCUSSION OF RESULTS

4.5.1 The Linear Result

Four macroeconomic variables, viz, fiscal deficit/GDP ratio, External debt/GDP ratio, inflation rate and foreign Exchange premium turned out to be significant in explaining manufacturing investment determinants.

The regression result indicates that a fiscal policy weakened by fiscal deficit has a very strong and significantly adverse impact on manufacturing investment. This negative impact confirms the crowding - out effect of government's fiscal deficit programme on private manufacturing in Nigeria.

Government's expansionary monetary policy directly influences the general price level. This in turn, adversely affects manufacturing investment. The result shows that inflation in Nigeria has a strong adverse impact on manufacturing investment.

The Foreign exchange premium has a negative impact on Manufacturing Investment. A large chunk of investment goods in Nigeria is imported. As a result a real depreciation is anticipated to raise the cost of imported capital goods. A rise in the cost of imported goods raises the cost of production and by extension, lowers the returns to the investors. This constitutes a disincentive to manufacturers.

The result offers a confirmation of the debt overhang hypothesis for Nigeria. The debt overhang variable proxied by the External debt - GDP ratio is negative and highly

significant.

The impact of interest rate on manufacturing investment yielded a negative sign though insignificant; implying that manufacturing investment has not been affected significantly due to changes in interest rate during the period under review.

Quite surprisngly, the structural variables; growth in real GDP and capacity utilization rate are negatively signed and significant. The negative sign of growth in real GDP indicates the decline in economic activities in Nigeria during the 1980s and 1990s tended to undermine private manufacturing investment. Nevertheless, private manufacturing investment grew in the 1970s- due, evidently to the oil boom effect.

The capacity utilization rate is significant and negatively signed, which suggests that deteriorating capacity utilization in manufacturing undermine investment demand in the sector.

Finally, the credit to the sector is highly significant and positively signed, which suggest that government's monetary policy as gauged by credit to the sector by banks has a strong positive and significant impact on manufacturing investment. This result shows that, in the long run, sectoral allocation of funds by commercial and merchant Banks is capable of inducing investment in this sector.

Judging from the value of the R^2, it can be concluded that the eight regressors in the equation explain 91 percent

of the systematic variations in manufacturing investment - income ratio during the period studied. The R^2 (which measure the goodness of fit) is high, i.e. 82 percent.

With regards to the issue of autocorrelation, it is observed that the value of Durbin Watson statistic approximate to 2. The value 2, represents a situation of complete absence of autocorrelation. Thus, the closer the value of the calculated D.W. statistic is to 2, the less serious the level of autocorrelation present and the more acceptable is the equation for analysis. In our case, the values of D.W. statistic is appreciable at 1.918, hence autocorrelation does not exist. The F-value of 10.1 is significant at the 5 percent level indicating that there is a significant linear relationship between the eight independent variables taken together and the manufacturing investment - income ratio.

4.5.2 The Logarithmic Result

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The estimated results are presented in equation 4.4.2. The analysis used Logs of the original variables as instruments to remove the simultaneous bias that would result from applying the OLS technique to the linear equation. An examination of the equation shows that with the eight independent variables utilized, viz: Real GDP growth, Fiscal deficit ratio to GDP, inflation rate, foreign exchange premium, External debt ratio, credit to the sector, capacity utilization rate and interest rate, we are able to explain 88

percent of the systematic variations in manufacturing investment GDP ratio during the reference period. The R^2 (which measures the goodness of fit) is high at 77 percent. The equation further revealed that the calculated F^* value was 7.86 while the theoretical F value at the 95% level of significance with $V_1 = 8$ and $V_2 = 8$ degree of freedom was 3.44. Thus, the $F^* > F0.05$. We submit here that F-value is very plausible. Durbin - Watson statistic of 2.077 indicates the absence of serial correlation.

The signs of the coefficients of all the variables are correct and T-values are significant (as previously) with the structural variable; credit to the sector also being significant and positively signed as before.

The growth in real GDP and capacity utilization rate remain negatively signed, though significant as previously, whch suggest that developments within these structural variables will have significant positive effects on private manufacturing investment in Nigeria. Therefore, both the macroeconomic and structural variables are important determinants of private manufacturing investment in Nigeria.

High levels of these macroeconomic variables cause manufacturing investment to decline. While in contrast, the high level of the structural variables, viz: Growth in real GDP, credit to the sector and capacity utilization rate will trigger investment.

In particular, we note that the coefficients of the three variables (Inflation rate, foreign exchange premium and External debt ratio to GDP) designed to capture uncertainty are significantly different from zero and are correctly signed. Thus, increased uncertainty, to a large extent, explains the depressed level of investment in the Nigerian economy in the 1980s and 1990s. The result offers a confirmation of the debt overhang hypothesis for Nigeria. The debt overhang variable, proxied by the debt ratio to GDP, is negative and highly significant. This confirms other results by Chhibber - Pahwa (1994) and Iyoha (1998) that Nigeria's high debt stock has contributed to the sharp and stubborn investment decline.

The result in equation 4.4.2 also indicates that government's fiscal policy (gauged by fiscal deficit) hurts private manufacturing investment significantly. The impact of interest rate on manufacturing investment yielded the expected sign and is highly significant, namely, that interest in Nigeria has a strong adverse impact on private manufacturing investment.

This finding authenticates empirical findings in the literature that a high interest rate impacts negatively on private investment (e.g Hadjimicheal et al (1995). A high rate of interest lowers the credibility of the authorities vis-a-vis the private sector. It also raises the cost of capital, thereby reducing the returns on private investment.

Finally, it can be concluded that the economic distortions, domestic macroeconomic policy deficiencies and exchange rate misalignment as proxied by the parallel market premium have had a dampening effect on manufacturing in the 1980s and 1990s.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 SUMMARY AND CONCLUSION

This study focused on analysis of investment determinants in Nigerian manufacturing sector; seeking particularly to establish the probable impact of macro-economic instability and structural constraints on this sector, as well as suggesting what would need to be taken into consideration to achieve manufacturing investment growth.

In particular, we estimated equation for both linear and logarithmic forms of determinants of investment in the manufacturing sector.

The following pointers summarize the pertinent findings of the study.

The estimation results are consistent with theoretical predictions and provide strong support for the role that macroeconomics stability and structural factors can play in encouraging private manufacturing investment.

The econometric evidence indicated that public policies aimed at keeping interest rate low, and reducing macroeconomic uncertainty can have significant and immediate positive effects on private manufacturing investment.

The results indicated a particularly large adverse impact of macroeconomic uncertainty on private manufacturing investment, thus, underscoring the importance of establishing and maintaining macroeconomic stability.

The results also confirmed the deleterious effects on private manufacturing investment of increases in the ratio of external debt to GDP, suggesting that strategies aimed at alleviating the debt burden of Nigeria would help to raise private manufacturing investment.

In addition, measures aimed at restricting the budget deficit without lowering government investment and at promoting structural reforms would help to raise private manufacturing investment. Although efforts to lower the deficit would stimulate manufacturing investment, doing so by cutting government expenditure on the economic and social infrastructure would be largely detrimental to these efforts. Thus, alternative means of lowering the budget deficit ratios need to be considered.

Structural variables, viz: Growth in real GDP, capacity utilization rate and credit to the sector are also other key determinants of private manufacturing investment.

Growth in real GDP was found to be positively signed and highly significant.

It was discovered that banks' sectoral allocation of fund will induce private manufacturing investment. It may be suggested therefore that policies that constrain the flow of fund should be avoided. In particular high debt service burden should be discouraged.

Also, capacity utilization rate was found to have a significant positive association with private manufacturing

investment; Thus, if there is high capacity utilization rate it would inevitably have a positive effect on private manufacturing investment.

The development in human capital and technological capability are considered to be crucial determinants of the growth process in the private manufacturing investment in Nigeria. The theory posits that countries with better trained entrepreneurs and high technology are more likely to ensure the investment requirements of their business, thus raising the quality of their product and per capita GDP.

Well trained entrepreneurs are more innovative and easily adapt to technology, thus, improving the efficiency of physical capital and the productivity of the society.

In essence, human capital investment and technology capability are positively related to growth. The finding from the study indicates that the relationship is weak in Nigeria. Also a virtually collapsed social and economic infrastructure climaxed by unprecedented energy crisis affected private manufacturing. The sharp slow-down in the economy precipitated by shortage of petroleum products and collapsed electricity supply affected manufacturing production.

Expectedly, the unemployment problem became more explosive, making the poverty situation more grim as the various measures of poverty alleviation begged for effective implementation.

The empirical findings of this study indicate that maintenance of a stable macroeconomic condition and removal of

structural and institutional constraints are critical for the efforts toward encouraging private manufacturing investment, and thus towards laying the foundation for sustained economic growth.

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5.2 RECOMMENDATIONS

The relative poor performance of Nigeria's manufacturing investment profile, especially since the oil shocks of the mid - 1980s, will continue to stall growth and development in the country and worsen the standard of living of the people. For as long as investment is low, there cannot be any meaningful growth and development. This is why manufacturing investment must be encouraged at all levels if the Nigerian economy must grow first to serve as an impetus to usher in development. Thus, the proportion of the GDP devoted to investment by the economy must be raised to about 20.0 percent as is the case in the fast growing countries, in order to move the economy on the path of growth. In the light of this, conscious efforts must be made to install policies that would improve the business environment under which investment takes place, including public investment in social and economic infrastructure. The opportunity offered by the oil boom has been sub-optimally utilized as the infrastructure is both insufficient and ineffective while the macro-economy and the political economy are unstable. For the future, it is necessary to reorient the thrust of macro-economic policy

management, infrastructural technological and more importantly, the removal of both structural and institutional constraints and human capital development to rectify the pitfalls of the past. This is necessary if government policy intervention in economic management is to engender accumulation of resources, efficient allocation of resources, productivity, growth and equity in the benefits of growth.

5.2.1 REORIENTATION OF MACRO-ECONOMIC POLICIES FOR RAPID MANUFACTURING INVESTMENT

Macro-economic stability has been identified by the World Bank as an important key element to growth and development. Here, a stable macro-economic environment is defined as one which keeps inflation low and under control, manages internal and external debt profile and quickly resolves macro-economic shocks or crises. In other words, the authorities should pursue policies where monetary and fiscal policy complement one another, where deficit is kept within the limits that the economy can absorb in order to maintain stable domestic price level. It also means that the exchange rate is kept in line and that internal and external debts are managed at low levels. Above all, the macro-economic policies should be credible and transparent. Moreso, the authorities should pursue policies which promote macro-economic stability in the short run and rapid sustainable growth in the long run.

5.2.2 Fiscal Policy

A concerted effort should be made to avoid high and unsustainable fiscal deficits. In general, high fiscal deficits jack up interest rates or reduce credit to the private sector, or both, thus crowding out private investment in the manufacturing sector. The fiscal deficit, as a ratio of the GDP, should be kept as low as 2 to 3 per cent per annum as is the case in the fast and moderately growing economies. A situation where the fiscal deficit/GDP ratio is more than 5.0 percent or approaching two digits, as has been the case in recent years in Nigeria, should be discouraged forthwith.
When reducing deficits, it is necessary to engineer reductions in unproductive government spending (like costly prestige projects and purchase of expensive military weaponry) and safeguard public expenditure on infrastructure, primary health care and education.
In general, sustaining or increasing public expenditure on infrastructure will encourage the resurgence of manufacturing investment and lead to economic development.

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5.2.3 Monetary and Credit Policy

The relatively stable macro-economic environment of the 1960 and 1970s, as characterized by low inflation, low interest and exchange rates and low debt profile, all encouraged manufacturing investment and economic growth. This was due principally to the favourable performance of the oil

market. However, the subsequent oil shocks gave way to macro-economic instability as a result of ambitious public sector programmes which were financed with public debt, and was accompanied with poor growth performance. This led to deregulation in an attempt to free the economy from rigid control and reduce government intervention in those areas where private sector is better equipped.

Monetary policy should be such as to prevent inflation which is a source of instability and leads to reduction in investment. Monetary and credit policy should be designed to bring about a low but positive interest rate.

A low positive interest rate will encourage capital accumulation. Financial repression should be eschewed and a deregulated financial environment embraced. An important aim of monetary and credit policy should be a sound banking system kept in check with strong prudential regulation as supervision.

5.2.4 Debt Policy

Efforts to bring about debt reduction so that the high debt stock and accompanying debt service burden do not continue to reduce investment and hamper economic development will succeed to the extent that we are able to harness several internal and external factors.

However, the debt reduction techniques that have been used by Nigeria include debt restructuring and rescheduling,

debt buy-backs, interest rate options, and debt conversion schemes like the debt equity swap. Unfortunately, so far, there has been only minimal success in reducing the debt stock which still exceeds US $28 billion.

New steps that could be taken to effectively reduce Nigeria's external debt stock include:

i) Pressing for debt forgiveness or cancellation through diplomatic action.

ii) Adoption and implementation of macro-economic policies which would encourage repatriation of flight capital estimated at nearly US $100 billion and,

iii) Establishing favourable terms of trade and stable exchange rates.

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5.2.5 Exchange Rate Policy

For a developing country like Nigeria that is highly dependent on trade, the exchange rate, which is the price of foreign exchange, plays a significant role in the ability of the economy to attain its optimal productive capacity. In addition, the exchange rate level has implications for balance of payments viability and level of external debt stock. These will, in turn, lead to a declining level of investment. Thus, it is imperative to let the exchange rate find its equilibrium level. It is only when the equilibrium exchange rate prevails that there is viability of the balance of payments position. In general a stable foreign exchange rate regime will lead

to macro-economic stability and encourage investment and growth.

Meanwhile, an overvalued exchange rate tends to encourage capital flight. Stability of the exchange rate regime will, therefore, reduce capital flight and encourage capital inflows in form of foreign private investment in the manufacturing sector.

5.2,6 TRADE POLICY

A liberalized trade policy is recommended as this would encourage investment. In addition to establishment of a low and uniform tariff regime, there is a need to liberalize the payments regime. This will contribute in no small measure to an increase in private manufacturing investment (both local and foreign).

5.2.7 REDUCING UNCERTAINTY

Uncertainty plays a key role in investment decisions because such decisions are by and large irreversible. In general, the greater the uncertainty, the lower the aggregate level of investment. It has been shown theoretically that changes in uncertainty can have a strong effect on investment. This perhaps explains the observed result in many developing countries undergoing structural adjustment that investment response to incentives is sluggish and weak. In the case of Nigeria, we have internally - generated and externally

generated types of uncertainty. The internally - generated ones include high, unpredictable inflation and price variability; uncertain demand; increased volatility of demand/output; interest rate volatility; frequent policy reversals, and above all, political unrests.

Forms of uncertainty arising from the external sector include external shocks (such as foreign exchange fluctuations and terms of trade changes) and uncertainty arising from a high and raising external debt stock and debt service payments.

The uncertainty arising from erratic policy reversals is likely to have a significant effect on investment. Trade reform is a case in point. If economic agents are not persuaded that a trade reform measure is permanent, they will postpone any action. The reaction to devaluations is also similar when the action is not credible. It is the duty of government to minimize policy reversals and persuade economic agents of the credibility of its policy measures.

Many of the other sources of uncertainty (such as inflation, interest and Foreign Exchange rate volatility) are automatically handled if the authorities follow sound policies which promote macro-economic stability.

5.2.8 OPENNESS AND GLOBALIZATION

We are aware that increased openness with respect to both trade and capital flows will be beneficial to a country. Increased openness facilitates greater integration into global

markets. Integration and globalization are beneficial to developing countries although there are some potential risks (as exemplified by the 1994 Mexican crisis).

One of the gains from increased openness and integration into the global economy is increased investment. Openness and integration tend to promote growth through the channels of better resource allocation, greater competition, innovation, transfer of technology, and access to foreign savings. According to the world Bank (1996) "trade and investment will accelerate in countries that have opened up to the global economy."

Thus, as has been exemplified by the record of the East Asia countries, increased openness and greater integration into the global economy leads to increased investment and rapid economic development.

What is required in Nigeria is a continuation of trade liberalization started under SAP which will bring about a quantum jump in investment.

5.2.9 POLITICAL AND SOCIAL STABILITY

During the past two decades, uncertainty in the Nigerian economy has been brought about as much by economic factors (mainly macro-economic policy inadequacies) as by social and political instability. A case in point is the early 1990s when the nullification of presidential election results brought about an acute political crisis that has had grave

economic implications for the Nigerian economy. In addition, there is the perennial problem of "governance" and the lack of grassroots participation and democratic principles. And currently, the Nation is experiencing religious conflict over the adoption of Sharia law by some Northern States and also the ethnic crisis in several parts of the country.
Resolution of these stubborn socio-political problems will go far in reducing perceived uncertainty and increasing Foreign confidence in the stability of the Nigerian economy. In turn, this will clear the way for more foreign participation which will mean increased foreign investment in the manufacturing sector in Nigeria.

5.2.10 INVESTMENT IN HUMAN CAPITAL

One of the appropriate roles of government in a market - friendly development strategy is adequate investment in people, not only for the supply of skilled labour, but also to advance the course of the private sector in leading the pace of development and bringing about equity in the gains of economic growth. In view of this, it is necessary for the state to direct resources at human capital formation by devoting substantial resources to education, health, and water facilities, and services for a healthy and skilled manpower. In this regard, basic education (primary and secondary) must be funded by the state to prepare the ground for technological progress. Equally important is the provision of health

services and safe water and sanitation to ensure good health of the people without which labour becomes unproductive.

5.2.11 OTHER POLICY MEASURES

The collapse of the oil refineries in the country and the electricity generating and distribution systems ought not to have occurred but for lack of commitment to a culture of maintenance. With specific reference to the refineries, the present structure of the Nigerian National Petroleum Corporation (NNPC) is a recipe for management inefficiency. Serious consideration should therefore be given to its restructuring with a view to making some of its subsidiaries independent profit centres in the interest of effective control and management. Ultimately, however, privatization of the utilities represents the lasting answer to their present poor performance, and government should therefore proceed with its implementation without undue delay and this will lead to rapid manufacturing investment.

Again, faced with this depressing situation, the starting point for the country to pull itself up is to accept a total commitment to establish a strong infrastructural support services. The primacy of this action imperative derives from the critical place of infrastructure in social and economic progress. No meaningful economic activity can be undertaken in any society without efficient infrastructure, hence its apt description as the fabric of the nation. Therefore, lasting

solution to the debilitating energy crisis and dilapidated national road network should be found without further delay.

Apart from infrastructure, future industrial policy should go beyond market or price incentives. Government should complement these with establishing the business environment and infrastructure. Deteriorating capacity under utilization is pervasive in Nigerian manufacturing. This is undesired excess capacity - a situation where various features of the Nigerian economy prevent producers from reaching their target/desired level of capacity utilization due to inadequate domestic demand, inadequate foreign exchange, and various bottlenecks in assimilating foreign technology. One way to obviate this problem is to encourage industries with backward linkages to the economy.

In addition there should be transparency in the conduct of business, both in the public and private sectors. Lack of transparency leads to corruption. The World Bank (1996) confirms earlier studies that corruption is negatively correlated with both investment and growth. Thus corruption hurts economic performance as it reduces the rate of investment, economic growth and hence development.

Provided the above recommended macro-economic policies and measures are implemented, we can reasonably expect a resurgence of private manufacturing investment and rapid economic development in Nigeria in the years ahead.

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APPENDIX I

DATA USED IN ESTIMATING DETERMINANTS, OF INVESTMENT IN NIGERIAN MANUFACTURING FOR LINEAR MODEL

Year	Min GDP	GRY	FY	INFL	ERP	DRY	IR	CUR	CMS
1981	9.80	-26.80	7.80	17.38	52.50	3.30	9.00	73.30	0.00
1982	11.20	- 0.30	4.60	7.08	70.10	12.57	9.30	63.60	16.90
1983	8.40	- 5.40	3.00	18.85	152.80	15.93	10.10	49.10	2.10
1984	7.80	- 5.10	2.10	28.38	327.60	23.50	10.40	42.00	2.10
1985	8.60	9.40	2.30	5.20	325.80	25.10	9.20	37.10	5.40
1986	8.00	3.20	10.60	5.12	228.30	58.32	9.60	38.90	44.00
1987	8.40	- 0.60	5.50	9.22	54.20	142.48	14.00	40.50	19.10
1988	8.70	0.00	7.10	56.07	34.10	172.29	16.60	41.50	22.30
1989	8.20	7.30	6.70	33.55	42.80	289.91	25.50	42.40	15.10
1990	8.10	8.30	8.50	6.99	21.00	330.53	25.50	40.40	19.40
1991	8.50	4.50	12.40	11.39	35.20	346.73	20.00	42.00	40.80
1992	7.90	4.10	7.20	30.83	17.30	558.61	29.80	38.10	37.10
1993	7.40	2.30	15.20	36.37	64.00	633.05	36.10	35.00	51.00
1994	6.90	1.40	7.90	36.32	175.90	642.13	20.20	30.40	54.50
1995	8.20	2.20	1.01	42.16	282.30	692.60	21.00	29.10	45.50
1996	6.50	3.40	3.51	24.96	279.70	577.64	19.10	32.50	21.30
1997	6.20	3.80	4.50	5.48	288.20	536.63	17.90	37.20	17.40

NB. All in percentages

APPENDIX II

DATA USED IN ESTIMATING DETERMINANTS OF INVESTMENT IN NIGERIAN MANUFACTURING FOR LOGARITHMIC MODLE

Year	Min GDP	LGRY	LFY	LINFL	LERP	LDRY	LIR	LCUR	LCMS
1981	0.99	-1.43	0.8921	1.2401	1.72	0.5200	0.95	1.87	0.00
1982	1.05	-0.52	0.6625	0.8499	1.85	0.0994	0.97	1.80	1.23
1983	0.92	-0.73	0.4771	1.2753	2.18	1.2022	1.00	1.69	0.32
1984	0.89	-0.71	0.3222	1.4529	2.52	1.3711	1.02	1.62	0.33
1985	0.93	0.97	0.3617	0.7160	2.51	1.3997	0.96	1.57	0.73
1986	0.90	0.51	1.0231	0.7095	2.36	1.7658	0.98	1.59	1.64
1987	0.92	-0.22	0.7404	0.9646	1.73	2.1537	1.15	1.61	1.28
1988	0.94	1.00	0.8513	1.7487	1.53	2.2362	1.22	1.62	1.35
1989	0.91	0.86	0.8261	1.5257	1.63	2.4593	1.41	1.63	1.18
1990	0.91	0.92	0.9294	0.8446	1.32	2.5192	1.41	1.61	1.29
1991	0.94	0.65	1.0934	1.0566	1.55	2.5399	1.30	1.62	1.61
1992	0.90	0.61	0.8573	1.4890	1.24	2.7471	1.47	1.58	1.57
1993	0.87	0.36	1.1818	1.5608	1.81	2.8014	1.56	1.54	1.71
1994	0.84	0.34	0.8976	1.5601	2.25	2.6096	1.31	1.48	1.74
1995	0.91	0.15	0.9943	1.6249	2.45	2.8405	1.31	1.46	1.66
1996	0.81	0.53	0.5453	1.3973	2.45	2.7616	1.28	1.51	1.33
1997	0.79	0.58	0.6532	0.7392	2.46	2.7296	1.25	1.57	1.24

NB. All in percentages

2/15/2000

MULTIPLE REGRESSION

Listwise Deletion of Missing Data

Equation Number 1 Dependent Variable Y

Beginning Block Number 1 Method: Enter

X1 X2 X3 X4 X5 X6 X7 X8

Variable(s) Entered on Step Number

1	X8
2	X4
3	X3
4	X1
5	X6
6	X2
7	X7
8	X5

Multiple R	.95406
R Square	.91023
Adjusted R Square	.82046
Standard Error	.49277

Analysis of Variance

	DF	Sum of Square	Mean Squares
Regression	8	19.69626	2.46203
Residual	8	1.94256	.24282

F = 10.13932 Signif F= .0018

--------- Variable in the Equation ----------

Variable	B	SE B	Beta	T	Sig T
X8	.06097	.01652	.93439	3.690	0.0061
X4	-7.73519E-04	2.08003E-03	-07921	-2.872	.0196
X3	-4.999952E-04	9.87785E-03	-6.6560E-03	-3.051	.0609
X1	-.03795	.026631	-.37570	-3.442	.0872
X6	-.06600	.04782	-.45675	-1.380	.0049
X2	-.21593	.06918	-.70821	-3.121	.0142
X7	-.11974	.02960	-1.15536	-2.663	.0287
X5	-3.80693E-03	1.42957E-03	-.84705	-2.663	.0287
(Constant)	3.07258	1.93485		1.588	.1509

End Block Number 1 All requested variables entered.

Equation Number Dependent variable Y

Residuals Statistics:

	Min	Max	Mean	Std Dev	N
*PRED	6.4916	11.2291	8.1647	1.1095	17
*RESID	-.4832	.6335	-.0000	.3484	17
*ZPRED	-1.5080	2.7619	-.0000	1.0000	17
*ZRESID	-.9805	1.2855	-.0000	.7017	17

Total Cases = 17

Durbin-Watson Test = 1.91807

Equation Number 2 Dependent Variable LY

Beginning Block Number 1. Method: Enter

LX1 LX2 LX3 LX4 LX5 LX6 LX7 LX8

Variable(s) Entered on Step Number.

1	LX8
2	LX3
3	LX4
4	LX1
5	LX2
6	LX5
7	LX7
8	LX6

Multiple R	.94191
R Square	.88720
Adjusted R Square	.77440
Standard Error	.02877

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Analysis of Variance

	DF	Sum of Squares	Mean Square
Regression	8	.05208	.00651
Residual	8	.00662	.00083

F = 7.86528 Signif F = 0043

---------- Variables in the Equation ----------

Variable	8	SE B	Beta	T	Sig T
LX8	.07152	.02476	.62685	2.888	.0203
LX3	-.02487	.02672	-.14682	-2.931	.0792
LX4	-.07275	.03432	-.53408	-3.120	.0668
LX1	-2.784425E-03	.01752	-.03250	-3.159	.0777
LX2	-.08328	.03112	-.42020	-2.424	.0116
LX5	-.05549	.03112	-.58374	-2.783	.0124

LX7	-.34097	.19986	-.57299	-2.706	.0264
LX6	-.07097	.11028	-.23086	-3.644	.0379
(Constant)	.65322	.44514		1.467	.1804

End Block Number 1 All requested variables entered

Residuals Statistics:

	Min	Max	Mean	Std Dev	N
*PRED	.8237	1.0564	.9079	.0571	17
*RESID	-.0313	.0323	.0000	.0203	17
*ZPRED	-1.4758	2.6033	-.0000	1.0000	17
*ZRESID	-1.0893	1.1221	-.0000	.7017	17

Total Cases = 17

Durbin-Watson Test = 2.07700

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