Push Factors on Private Investment in Nigeria

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Nigeria offers potential investors a low-cost labour pool, abundant natural resources, and the largest domestic market in sub-Saharan Africa, with an estimated population of 128 million. Nigeria displays the characteristics of dual economy: a modern sector heavily dependent on oil earnings overlays a traditional agricultural and trading sector. At independence in 1960, agriculture accounted for well over 50 per cent of the GDP and was the main source of export earnings and public revenue. However, since the advent of oil in the 1970s crude petroleum have taken over as the main stay of the Nigerian economy. In 2000 the oil sector accounted for about 84 per cent of federal government revenue, about 96 per cent of export earnings and contributed 11 per cent of the country's GDP. Agriculture's contribution to GDP at 41 per cent is still the highest in terms of sectoral contribution.

It has been argued that in much of Nigeria's history, economic policy and political instability have negatively impacted on private investment

and development. Government's dependence on revenue from the oil boom of the 1970s to finance a high level of consumption and unproductive investment, accounted for the heavy debt burden the country faced in latter years. The government had based its expenditures on projected oil receipts which did not flow in as expected after the oil boom of the 1970s. The over dependence on crude oil exports resulted in the accumulation of payment arrears following the oil glut of 1981 as there was no other comparable source of revenue.

The economic crisis following the oil glut of 1981 was characterized by; extensive and persistent macroeconomic imbalances, unprecedented high rates of inflation, chronic balance of payments problems, whopping budget deficit and general down turn in output growth. Indeed, on the average, agricultural output grew by a paltry 1.6 per cent, average industrial output fell by 1.9 percent, capacity utilization in industries declined to less than 40 per cent, while the country's social infrastructure and other public services deteriorated markedly. In all, economic crisis and macroeconomic imbalances that faced the country were severe. In addition, structural weaknesses in the form of decline in the productivity of public

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investment and in exports, dwindling domestic savings, erosion in private sector confidence, and an increase in foreign exchange controls stifled economic growth. There was therefore, a growing need to institute measures aimed at stimulating growth in the economy through the encouragement of private enterprises.

There is no doubt that one of the important areas government needed to examine when faced with such a crisis is the extent and pattern of capital formation in the country. Investment contributes to the growth of output and development in an economy. It's magnitude, pattern and composition, technological form assumed by the capital investment and the degrees of utilization of capital assets are crucial aspects that needed to be understood. The volume of capital formation and its productivity are important and related to the growth of output.

Consequently, during the second-half of 1986, an IMF-supported Structural Adjustment Programme (SAP) was adopted. In the main, SAP was to effectively alter and restructure the consumption and production patterns of the economy, as well as eliminate price distortions and heavy dependence on the export of crude oil and imports of consumer and producer goods.

Specifically the major objectives of the programme were to: restructure and diversify the productive base of the economy in order to

reduce dependence on the oil sector and imports; achieve fiscal and balance of payments viability over the period 1986 – 1988, lay the basis for sustainable non-inflationary growth; lessen the dominance of unproductive investment in the public sector, and improve the sector's efficiency and intensify the growth potential of the private sector.

In sum, the macroeconomic environment, as determined by government policies (monetary, fiscal, trade, exchange rate) and the institutional factors (administrative, legislative and regulatory framework) have bearing on investment and economic growth. The need to have in place appropriate policies on exchange rate, trade, tax, pricing and credit is crucial if private investment is to be boosted. Recent empirical studies have shown that government interventions do not have the right bearing on investment. On the contrary, they usually tend to depress investment and by extension economic growth (see Shmidt-Hebble et al., 1994; Muller and Hebble, 1991).

As indicated earlier, the Nigerian macroeconomic environment has been highly unstable being characterized by, high inflation rates, fiscal and trade deficits. This has discouraged private investors to take financial risks inherent in long-term investment. It has also forced most of the investors, especially the small ones, to prefer commercial and rent

seeking activities with high short-term returns. The various policy changes accompanying the economic reform programmes make most key macroeconomic variables, inflation, interest rates, credit availability, etc., unstable.

With the advent of the democratically elected government in 1999, Nigeria is gradually liberalizing its state-dominated economy. The current administration has taken steps to improve the business climate, and thereby encourage private investment in Nigeria, through economic liberalization, access to foreign exchange, and signing of investment treaty with a number of countries. Despite the modest progress made on reforms, private investment, concentrated almost exclusively in the oil sector, which contributes a paltry 7.5 percent of GDP. This weakness can be attributed to several constraints, including, weak legal and regulatory framework, poor governance and corruption, inadequate infrastructure, limited access to finance, and high cost of services. Along with the risks of political instability, these factors are obstacle to private investment in Nigeria.

Arising from the above, it is useful to empirically examine the factors that determine private investment in Nigeria. The remaining part of this paper is arranged thus: Part II dwells briefly on investment theoretic, while part III reviews relevant literature, in Part IV methodological

issues as well as the results of empirical findings are presented, while summary and recommendations are contained in part V.

2.0   THEORETICAL FRAMEWORK

An investment is an action that costs today but provides benefits in the future. Thus, uncertainty is an important aspect of investment. There is a trade off between costs today and uncertain future gains. Keynes referred to the volatility of investment spending as *animal spirit*. This means that investment is a very volatile component of GDP. The volatility of investment is associated with fluctuations in GDP. Projections of the future and investors' decisions today are likely to move in conjunction with the real GDP growth. A battery of theories has been proffered in the literature explaining variations in private investment. Earlier approaches include: the marginal efficiency theory of investment, which maintains that there is an inverse relationship between private investment and the rate of interest. This is the oldest theory of investment in which the cost of financing has an adverse effect on private investment. The accelerator theory emphasizes the role of expected growth in real GDP on investment spending. When real GDP growth is expected to be high, firms anticipate that their investments in plant and equipment will be profitable and therefore increase their total investment

spending. In his multiplier-accelerator theory, Samuelson explained how a down turn in real GDP leads to a sharp fall in investment, which further reduces GDP through the multiplier of investment spending. The accelerator theory could be functionally expressed thus:

$$I_t = \alpha(Y_{t-1} - Y_{t-2}) \qquad (1)$$

Equation (1) states that net investment in period t is proportional to the change in income between $_{t-2}$ and $_{t-1}$. One of the drawbacks of the accelerator model is that it assumes all investment is a function of a change in income ΔY. It would be more reasonable to assume that only a component of net investment is a function of ΔY. A component that is closely related to change in income as empirical research has proved is the net inventory investment. Secondly, firm may not have to invest if they are operating with spare capacity and can meet an increase in demand by using existing inputs more intensively or with greater efficiency. Thirdly, the model assumes that firms are responding to changes in demand when they adjust the size of their capital stock. In reality most firms adjust their planned investment to predict future level of demand (they have forward looking expectations).

The neoclassical theory of investment, pioneered by Jorgenson asserts that real interest rates and taxes play a key role in determining investment spending. In this approach, the desired capital stock depends on the level of output and the user cost of capital (which in turn depends on the price of capital goods, the real interest rate, and the depreciation rate). The Q- theory links investment spending to stock prices. It states that investment spending increases when stock prices are high. The q theory basically maintains that investment depends on the difference between the value of the firm when sold and the value of the firm in the stock market: the more the stock market value the higher the investment in it. These theories are not mutually exclusive as they overlap, although q theory is not meant for solely predicting investment, Q model can be used to empirically test investment if a number of restrictive assumptions are upheld. On the other hand, if the q theory holds, it should explain changes in investment; however, there is significant correlation between the growth of output and investment. Investment will depend on the value of the firm's capital as well as the risk attitude of investors.

Consequently, the classical dichotomy does not hold in the q theory as investment decisions are not based on interest rates and this theory implies a strong link between real IS (product) and LM (money) segments of the economy. Earlier versions of Q theory maintained that each asset has its own Q, because financial assets were imperfect substitutes. Most recent versions have however concentrated on the question, why are

arbitrageurs not eliminating all the imperfections from the returns of physical and financial assets? The answer is that it takes time to replace physical assets and it requires costs- adjustment cost (AC). They are squared function of investment, as they rise relative to investment, because as more investment is undertaken more machines have to be temporarily stopped and it is harder to train the labour to use them, thus,

$$AC \sim I^2/K$$

This shows that adjustment costs are decreasing as the existing capital stock increases, because of the economies of scale and availability of cheaper credit. An optimizing equation for the Q theory derived from Eulers optimization shows that I/K~ expected income from the extra investment/ purchase price of investment goods (p). Here it becomes clear that the adjustment costs and the optimizing output are different and that gives rise to distributed lags.

The expected income is the income entrepreneurs expect to receive from the investment deflated to the present value. It is very hard to find in real life. Most authors have found that if assumptions about the market, such as perfect market, homogeneity of capital and that capital depreciate geometrically, then, the right side of the last equation is Q. If the value of the firm (v) is defined to be equal to expected income from the capital X, then

$$Q=V/Pk \text{ and } I/K=Q.$$

Q follows from the optimization process, unlike the neo-classical model, it does take expectations into account and it is also a very intuitive result, as suggested by Keynes. Essentially it says there is no point in investing if the assets are worth more separately than the firm in the stock market, or conversely, enormous investments are made if they can be floated in the stock market easily. However, besides the poor empirical evidence, the adjustment costs are unreasonably high, as is suggested by empirical studies. But the main reason why the empirical evidence is poor is that the firm's intangible assets are not taken into account. Indeed, q- theory is more important in microeconomics level in determining the investment. However, there is significant correlation between investment and the growth rate of the economy, so the accelerator theory is important too (See Serven and Salimano, 1992 for comprehensive review of investment theories).

3.0   LITERATURE REVIEW

In the developing countries, testing investment models has been difficult due to the fact that key assumptions (including perfect capital markets, perfect flow of information, little or no government investment) are applicable. In addition, the need to place greater emphasis on the effect of certain inhibiting factors to private

investment is generally underscored. For example, it has become apparent that private investors in developing countries face enormous resource constraints, both financial (such as credit rationing) and physical (lack of supportive infrastructure). This has confined research in developing countries to mere identification of economic variables that might be expected to affect private investment (Greens and Villanueva, 1991).

However, there is a line of research, which has attempted to retain the neo-classical model, but address the analytical, and data problems involved in its application to developing countries; in particular, the lack of data and the resource constraints facing private investors in developing countries. Under the neo-classical model private investment is held to be inversely related to the real interest rate (a measure of the user cost of capital), positively related to real per capita growth rate, public investment in infrastructure, negatively related to domestic inflation, positively related to income per capita and negatively related to external debt burden (Greens and Villanueva, 1991).

The macroeconomic environment is critical for investment both domestic and foreign in an economy. Monetary, fiscal and exchange rate policies directed at correcting unsustainable macroeconomic imbalances do affect private investment. For instance, earlier measures in response to the economic crisis in sub-Saharan

African countries attempted to reduce resource gap through autonomous cuts in aggregate demand and reduction in economic activity. Because of the import dependency in both production and investment, reduced import capacity from the decline in exports and cuts in net foreign resource inflow led to import compression and strangulation of economic activity (Ndulu, 1991).

This had negative effect on the investment activity in these countries. In addition, stabilization packages that advocate restrictive monetary and credit policies affect investment. This occurs in two ways: (a) they raise the real cost of bank credit, and (b) by raising interest rates; they increase the opportunity cost of retained earnings. Both mechanisms raise the user cost of capital and lead to reduction in investment (Serven and Solimano, 1992).

However, some studies have found a more direct effect of credit policy on investment, i.e. through preferential credit allocation in the case of repressed financial markets, a feature common in developing countries (Bleger and Khan, 1984). Equally important is the institutional structure of financial markets. It has been observed that interest rates do not affect firms that borrow in the unofficial money markets (Van Wijnbergen, 1983)

With respect to fiscal policy, high fiscal deficits push up interest rates or reduce the availability

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of credit to the private sector, or both, thus crowding out private investment. Hence it is argued that the reduction of the public deficit during macroeconomic adjustment should encourage expansion in private investment. However, the financing mechanism of fiscal deficits is crucial in the directional impacts. The prevalence of large fiscal deficits constitutes another important source of uncertainty as they signal the likelihood of policy changes. Fiscal deficits constitute a significant indicator of lack of sustainability and credibility of macroeconomic policy reforms, and thus can impact negatively on private investment.

Recent studies have shown that the prevalence of macroeconomic instability plays a crucial role in the evolution of private investment in many developing countries. Dailami and Walton (1992) suggested that the sluggish performance of investment in the corporate sector cannot be attributed solely to the standard macroeconomic factors. Rather, conflicting signals over macroeconomic policy tend to increase the risk and uncertainty perceived by the private sector, leading them to adopt delaying attitude with respect to investment.

Reduction in public investment on infrastructure like roads, communication networks, electricity, etc., has been found to be detrimental to private investment. Such investments are complementary to private investment. Existence

of poor infrastructure presents a disincentive to investment. Bleger and Khan (1984) confirmed this based on a cross-country study. Their result showed that government investment in infrastructure is complementary to private investment while other types of government investment are not. (See Greens and Villanueva, 1991; and Serven and solimano, 1991). Studies on investment in developing countries indicate that variations in output are the most important determinants of private investment (Blejer and Khana, 1984; and Greens and Villanuerva, 1991). It is argued that the contraction in demand induced by adjustment measures is likely to have an adverse short-run effect on investment because of its negative effect on output growth. This is in the spirit of the Q-theory of investment.

Another important discussion relates to the characteristic features of investment expenditure. These are that: most investment expenditures involve sunk cost that cannot be recovered; capital takes time to build and once built it is irreversible; and investment can be delayed, giving a firm an opportunity to wait for new information to arrive about prices, costs and other market conditions before it commits resources (Pindyck, 1991). Thus, investment decisions made by firms today bind them for several periods in the future. This makes investments sensitive to uncertainty about future economic situation, such as product prices,

interest rates, trade regimes, exchange rate variability, inflation, future tax and regulation policy, and the cost and timing of investment itself.

Osuagwu (1982) in his study on the determinants of investment demand in Nigeria from 1960 – 1975 found: the expected rate of return; the supply of funds; the absorptive capacity; and government policies; as the major determinants of investment in Nigeria and concluded that the inadequacy of investments in the economy was caused by government policies, limited supply of investment fund and slow rate of expansion of the absorptive capacity, due to lack of innovation in technological development. This has implications for macroeconomic policy. If the goal is to stimulate investment, stability and credibility are important. There is need to establish a policy environment and an incentive structure that foster investor confidence. Indeed, policies that increase credibility and reduce uncertainty would be expected, all things being equal, to boost investment.

Empirical studies on investment have shown that inflation is one of the most important determinants (Serve and Solimano, 1993). Caballero et al (1988) examined exchange rate viability in the context of irreversible investment in developing countries and reported that uncertainty over the future of the exchange rate can depress exports. Krugman (1988) has also

shown that exchange rate uncertainty combined with sunk costs may prevent firms from entering the market even though current exchange rate would make entry profitable. In general, the exchange rate affects private investment through several conflicting channels. First, exchange rate devaluation will be followed by an increase in the overall price level, leading to a reduction in the real value of private assets, and therefore a reduction of domestic and private investment. Secondly, a devaluation of the exchange rate increases the cost of imported inputs, and given that a large part of capital stock in Nigeria is imported, a fall in private investment may follow a devaluation of the exchange rate.

On the other hand, devaluation leads to an increase in the relative price of tradables to non-tradables, suggesting that investment actually increased. This channel works through an improvement in the competitiveness of exports, where devaluation makes the production of tradables (specifically exportables) more profitable, thus stimulate investment in exportable while depressing it in non-tradables. In addition, if profits are correlated across sectors, overall investment in the economy will increase.

While a devaluation or depreciation of the currency may benefit the tradable goods sector, the volatility of the exchange rate may have adverse effect on the production decisions of

firms, especially those producing for export. Volatile exchange rates affect the domestic costs of an export programme, especially where the production structure is highly dependent on imported inputs as in Nigeria. Firms, thus, become reluctant to get into export production. Exchange rate changes also contribute to uncertainty through its effect on the domestic value of a country's external debt.

Borensztien (1990) identified two channels through which foreign debt will affect investment. The first is termed the "debt overhang" channel, and the second is the credit-rationing channel. The "debt overhang" channel will arise if a country is not able to meet the full contractual value of its debt such that actual debt repayments become subject to some negotiation between the country and its creditors. In this case the debt will have a negative effect on the debtor country's ability to adjust, which in turn may affect the private sector incentive to invest.

External transfers of this nature depend on a number of factors including the level of world interest rates, and the terms of trade, and may require changes in domestic policies such as the exchange rate change, fiscal and monetary constraints. Secondly, an indebted country also faces credit constraints in the international markets, which will discourage investment. Through these channels, the foreign debt may become a major source of uncertainty. Agents face uncertainty regarding the interest on variable loans and the possibility of future rationing by creditors. In addition, factors that account for international risks, human capital formation, international competitiveness and the country's financial depth are important in investment decisions (Jasperson et al, 1995).

4.0   EMPIRICAL EVIDENCE

Arising from the theories of investment outlined in section 2 of this paper coupled with the empirical works reviewed in the subsequent segment of the paper, it becomes clear that modeling private investment in Nigeria may not strictly depend on any one theory but rather on some form of eclectic model that derives from the various theories and the reality of the Nigerian economic environment.

The above review suggests that private investment is determined by the size of the domestic market, potentiality of the export market, growth of GDP (buoyancy in demand), rate of public sector investment (rendering support to private investment, vital for investment productivity), interest rate (cost of capital), domestic inflation (stability of economic environment), debt service ratio (external obligations), exchange rate premium (to capture direction of capital flows) and credit to private investors (financing possibilities).

Other factors include reserves to import ratio (international risk), school enrollment rate (human capital formation), growth rates of exports and imports (international competitiveness) and the ratio of M2 to GDP (financial depth). Uncertainty, as captured by the index of uncertainty is also an important determinant of private investment. Thus the model is specified implicitly following Blejer and Khan (1984), as follows

$$PINV = f(RR, GGDP, GINV, DSR, IRS, XGR, GM2 PS,)$$

Where

PINV = Private Investment

RR = Real interest rate

GGDP = Growth in GDP

GINV = Growth of Public Investment on Infrastructure

DSR = Debt-Service ratio

IRS = Interest Rate Spread (lending rate minus deposit rate)

XGR = Growth rate of exports

Gm2 = Growth rate of Broad money supply

PS = Dummy variable

In the generic form, the equation is specified thus:

$$PINV = a_0 + a_1 RR + a_2 GGDP + a_3 GINV + a_4 DSR + a_5 IRS + a_6 XGR + a_7 GM2 + a_8 PS + \ldots U_t \qquad (2)$$

Where U_t is the error term.

A priori, we expect a_1, a_2, a_3, a_6, and $a_7 > 0$; and a_4, a_5 and $a_8 < 0$

4.1 Data/Method of Analysis

Data for the study were obtained from the Central Bank of Nigeria's Statistical Bulletin, Annual Reports, and the International financial Statistics (IFS) of the International Monetary Fund. The period of study is 1970 –2000. Regression analysis was employed to determine the relationships between private investment and the identified variables. Most variables are growth rates.
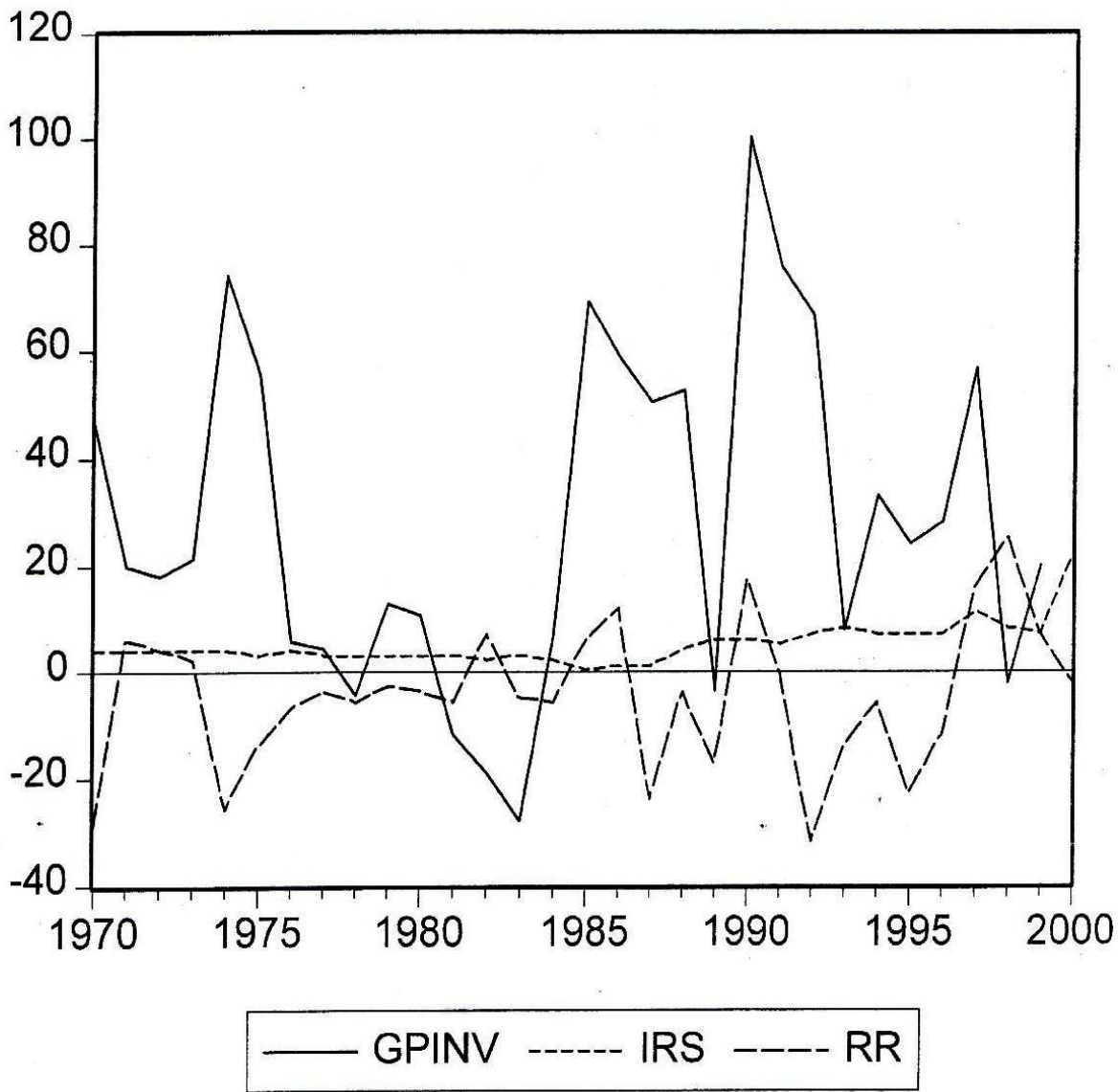
Figure 1 shows the graphical presentation of the three major variables in the study: Private investment, interest rate spread and real interest rate. It is instructive to see how the graph conforms to the theoretical expectations. In the period of positive real interest rates, private investment grew. In addition, regarding the interest rate spread, in period when the spread narrowed, investment responded positively and the reverse applied in period of high interest rates spread.

The novel contribution of this present work is the transformation of most variable into policy format. For instance, instead of just looking at the impact of inflation and interest rates separately as done in earlier studies in Nigeria we sought to determine the impact of the real interest rate. This is very instructive, as the results of earlier studies have indicated that both inflation and interest rate do not influence private investment in Nigeria, despite the robust theoretical expectations. It was in the bid to go around this seemingly empirical heresy that motivated us to use the real interest rate in the model.

Regarding, interest rate, there has been conflicting evidence of which rate to use, while some authors have favoured the use of domestic savings rate, arguing that, that is the rate that determine capital formation and by extension investment, others have used the lending rate, maintaining that, that is the rate that influence the choice to borrow, consequently, the empirical results concerning this variable have been inconclusive. We considered that what is indeed crucial for both segments of the financial market is the spread between the two rates, the higher the spread, the lower will be the incentive to save and to borrow, the converse also holds true.

With respect to the variable on political instability, we departed from the conventional method of assuming that all the years of military rule in Nigeria was politically unstable, rather we adopted a more pragmatic approach, while maintaining the years of military coups as unstable, we actually classified the years of serious civil disturbances during civil or military administration as unstable. Other variables included in the model were mainly derived from theory and the empirical literature, thus they follow conventional definitions.

4.2   Regression Results

Table I shows that real interest rate, interest rate spread, growth in broad money supply, debt service and political instability variables were highly significant in explaining private investment in Nigeria. Thus, the *aprori* expectations about the signs of these variables were met. However, growth in exports and

growth in government expenditure on public infrastructures were wrongly signed and not significant in explaining private investment in Nigeria.

In the Nigerian situation one was not surprised that Federal Government Capital expenditure was not significant. The behaviour of the variable in the model could be attributed to the era of wasteful projects that characterized Nigeria's capital expenditure outlay during most period of analysis. Concerning the behaviour of exports in the model, it could be explained by the dominance of crude oil which until very recently had no backward linkages with the domestic economy.

The structural variables explain private investment adequately well as reflected by the adjusted R^2 which is 0.97. The Durbin-Watson is 1.96, showing the absence of serial correlation and the *apriori* expectation for the explanatory variables were largely satisfied, confirming the plausibility of the estimates. The independent variables used in the model jointly account for 97 per cent of the variations in private investment. Also, the F-value is quite high; confirming further that the model adequately explains the private investment in Nigeria.

Table 1

Dependent Variable: PINV

Method: Least Squares

Date: 03/29/02   Time: 16:35

Sample: 1970 2000

Included observations: 31

Variable	Coefficient	Std. Error	t-Statistic	Prob.
RR	1.404937	0.660854	2.125942	0.0450
IRS	-9.875547	4.823610	-2.047335	0.0528
GGDP	1.323612	1.545928	0.856193	0.4011
GINV	-2.229011	2.397814	-0.929601	0.3627
XGR	-0.745907	0.552273	-1.350615	0.1905
GM2	1.176640	0.075390	15.60738	0.0000
DSR	-1.487635	0.773155	-1.924109	0.0674
PS	-47.78471	19.12933	-2.497981	0.0205
C	112.8427	41.27094	2.734192	0.0121

R-squared	0.977804	Mean dependent var	151.1613
Adjusted R-squared	0.969732	S.D. dependent var	264.7164
S.E. of regression	46.05426	Akaike info criterion	10.73522
Sum squared resid	46661.88	Schwarz criterion	11.15154
Log likelihood	-157.3959	F-statistic	121.1449
Durbin-Watson stat	1.959729	Prob(F-statistic)	0.000000

5.0   SUMMARY AND RECOMMENDATION

In this paper, we attempted to ascertain empirically the determinants of private investment in Nigeria. The paper observed that investment contributes to the growth of output and development of the economy. Its magnitude, pattern and composition, technological form assumed by the capital investment and the degree of utilization of capital assets are crucial aspects that need to be understood.

The empirical results showed real interest rate, interest rate spread, and growth in broad money supply, debt service and political instability variables were highly significant in explaining private investment in Nigeria

This result is basically very instructive for policy purpose. There is need for continued guided deregulation of the economy through appropriate admixture of trade, foreign exchange and financial liberalization so that the country might reap the benefits of the current globalization trend. The non-significance of some of the variables well established in the literature also calls for policy concern. For instances, the non-significance of exports and growth in GDP which have been established as major determinants of investments in other developing countries also calls for policy action.

There is need to effectively monitor the financial system to ensure that it operates efficiently and effectively so that the spread between lending and savings rates could be narrowed over time. This will have two main advantages; it will encourage savings as well as investment that the savings could be channeled into.

For the real interest rate to continue to be positive, there is need to reduce inflation while liberalizing the financial sector. To reduce inflation the three tiers of government would have to abstain from borrowing from the central bank. In addition, since food accounts for about 70 per cent of the CPI basket, the government would need to intensify efforts aimed at boosting agricultural output. The need to maintain a stable political environment through orderly transfer of political power by free and fair electoral practices is central. The central bank should continue to pursue time consistent monetary policies that would take into account the absorptive capacity of the economy.

In all, Nigeria has great potentials for investment, given its market size and human and material resources; all that is needed now is appropriate policy regime. The need to carry through the announced privatization and commercialization policies of the government is crucial for private investment to be attracted to the country. Overall the economic environment should be stable through the

reduction in the volatility in macroeconomic aggregates and maintenance of stability in the policy regime.

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