

Trends and Determinants of Foreign Direct and Domestic Private Investment in Nigeria's Agriculture (1981-2000)

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Abstract:- The process of economic transformation and development calls for the participation of all interest groups in the economy hence this study set out to assess trends in domestic and foreign direct investments in Nigerian agriculture sector. The research utilized time series data which were obtain from CBN and other International agencies. Stationarity test (ADF) was carried out to examine the time series characteristics of the data. The unit root test indicated that the variables are integrated of the order 1(1). This was then tested for co-integration or Error Correction Model (ECM). The results of econometric analysis showed that the dependent variables actually co-integrate with their fundamentals. The study observed that the pattern of domestic and foreign investments in Nigeria tended to be volatile, displaying highly variable growth rates, and high degrees of fluctuation or instability. The study revealed that the pattern of domestic investment in Nigeria was very unstable between 1981 and 2000, but more so for investment in agriculture than for the whole economy. There was, however, a measure of relative stability after 1995 in both aggregate and agricultural sector investment. As regards the annual flow of foreign net private investment, the degree of volatility was even higher than for domestic investment. And again, the agricultural sector recorded a higher degree of volatility than the economy as a whole. The result of the empirical estimate of determinants of investment revealed that public investment (GI), inflation rate (INFR), terms of trade (TOT) and total credit plus foreign revenue (TC) significantly influence domestic private investment. On the other hand, public capital expenditure, growth rate of the economy and inflation rate are the variables that significantly influence foreign direct investment in agriculture in Nigeria. It is recommended that all the policies put in place by the Monetary and Fiscal Authorities to encourage flow of funds to the agricultural sector be sustained. More so, Federal government should overhaul its capital budgetary processes and provision so as to make positive impact in development of the sector.

Keywords: Trends, Investment, Agriculture, Econometric model, Nigeria

I. INTRODUCTION

Following independence in 1960, Nigeria enjoyed steady economic growth and relative social stability prior to the economic crisis brought about by the crash in international oil prices and the decline in the country's revenues from oil in the

1980s. The average annual growth rate of the Gross Domestic Product hovered around 5 percent which was driven mainly by the agricultural sector (World Bank, 2016). The country's agricultural sector plays an essential role in the economy and needs to extend its contribution to growth and combating poverty. The sector accounts for 25 percent of GDP and employs over 60 percent of the active population (World Bank, 2016). The agricultural sector a determining role in the war on poverty and food security and it is estimated that about of the food requirements of the country's population is satisfied by domestic production (World Bank, 2016). Agricultural commercialization calls for increased investment and capital formation for more intensive production. Hence, the level of commercialization and the size of investment are positively correlated.

A review of past investment trends in the Nigerian economy reveals that both domestic and foreign flow of private investment into the Nigerian economy as a whole suffered a declining trend between 1970 and 1985. Gross investment in the economy expressed as a percentage of the GDP first increased from about 17 percent in 1970 to about 26 percent in 1975, but declined to about 24 percent in 1980 and to 12 percent in 1985. The patterns of domestic and foreign private investment over this period were highly correlated with the changing states of political and policy instability. Since 1960, government spending (public expenditure) has been the major instrument to reduce poverty in Nigeria. Hence, as recognized by the new growth theory, public expenditures is an important factor for self-sustaining productivity gains and long term growth. The real significance of government expenditures lies in the fact that it impacts a greater amount of "trickle-down" benefits for the poor in the growth process than growth alone (Fan *et al.*, 2000).

Over the years, the aggregate foreign net private investment flow into the economy has declined consistently (Jerome, 2000). Foreign private investment is desirable as it may help to stimulate growth in the economy which is necessary to generate resources required for future spending. Foreign direct investment and gross domestic public

investment affect agricultural growth indirectly through infrastructural development, financial sector development, human resources, research and innovation, targeted programs. Moreover, it also affects agricultural production directly through investment on farm houses, farm employment and buildings. Foreign direct investment increases government through the payment of taxes by foreign investors. Normally, public investment is supposed to complement private investment by providing the enabling environment for a growing private investment. However, this complementarity is based on the assumption that public investment is in such supporting facilities as infrastructure, utilities, research and development, social and human capital, and so on. Sustainable agricultural progress is an adequate means of providing permanent solution to poverty traps and increasing the overall welfare of economy. Therefore there is need to assess the investment trends in Nigeria's agriculture so as to identify key variables of economic interest that are determinants of investment of Nigeria's agriculture. Specifically, the study assessed: (i) levels of domestic public investment in agriculture between 1981 and 2000, (ii) growth rates and variability in investment in agriculture, and (iii) determinants of domestic and foreign direct investment in Nigeria's agriculture.

An Overview of Past Investment Trends in Nigeria's Agriculture (1960-1980)

At the end of 1960, gross fixed capital formation (GFCF) in Nigeria stood at ₦258.2 million of which the private sector accounted for about 52 percent. By 1963, the GFCF had risen to ₦354 million with the private sector accounting for about 64 percent. The GFCF rose further to ₦485.2 million in 1966 with the share of the private sector being about 63 percent. The civil war disrupted the economy between 1966 and 1970. Nevertheless, the private sector still accounted for about 60 percent of the GFCF in 1970 (Jerome, 2000). The rising oil prices and revenues of the 1970s created a public-sector-led investment boom and altered the share of the total investment in favor of the public sector. Nominal gross domestic investment increased at an average rate of about 56 percent per annum between 1970 and 1975, but increased at a drastically reduced rate of only about 7 percent per annum between 1976 and 1980. By 1974, the public sector was already accounting for more than 50 percent of total gross fixed investment in the economy, up from about 40 percent in 1970. Public-sector share continued to increase thereafter but most of public-sector investments were in large-scale commercial enterprises like fertilizer, iron and steel, aluminum and liquefied natural gas plants, virtually all of which eventually failed. There were also considerable investments in buildings and construction works in the period that were not properly maintained (Jerome, 2000).

Normally, public investment is supposed to complement private investment by providing the enabling environment for a growing private investment (Evuomwam, 2016). However, this complementarity is based on the

assumption that public investment is in such supporting facilities as infrastructure, utilities, research and development, social and human capital, and so on. But in the period under review, public investment was in commercial ventures and public-sector enterprises were competitive rather than complementary to private-sector commercial initiatives, according to Jerome (2000). Hence, public sector investment became a disincentive rather than an incentive to private sector investment. Worse still, most of the public-sector enterprises were very badly managed, with rampant corruption, mismanagement and inefficiency. On top of these were other factors that made Nigeria a hostile environment for foreign investments, factors like political and economic instability, policy discontinuity and inconsistency, negative international image, and so on. Given, therefore, the generally unfavorable private investment climate in the country in the period, both domestic and foreign investment flow suffered a declining trend. Gross domestic investment in Nigeria that increased at a very annual rate between 1970 and 1975, increased at a much lower annual rate between 1975 and 1980, and then declined in absolute terms afterwards. Foreign capital inflow into Nigeria followed a similar deteriorating trend, accompanied by high annual fluctuations. For example, net long-term capital inflow increased modestly between 1970 and 1975, with some fluctuations, then suddenly became negative in 1976 (representing a net capital outflow), only to increase again from 1977 to 1979. There was a net capital outflow in 1980, followed by increasing inflows in the preceding two years, and then followed by net outflows thereafter. Generally, the rate of capital flight was high (Akpokodje, 1998).

Net direct foreign investment flow into the country followed a high fluctuating trend, rising between 1970 and 1975, generally on the decline from 1976 to 1980, becoming negative in 1980. Overall, gross investment in the Nigerian economy expressed as a percentage of gross domestic product was 16.88 per cent in 1970 and rose to 26.0 per cent in 1975 but declined to 23.97 per cent in 1980. It is noteworthy that the fluctuating movements in both domestic and foreign investment were highly correlated with the changing states of political and policy instability in the country. For example, there was relative political and economic stability between 1970 and 1974 after which there was another military coup in 1975. There was a state of uncertainty from 1976 to 1979, especially in view of the tightened indigenization decree of 1977 and other restrictive economic policies. The civilian rule era of 1979 -83 should normally have been expected to generate more confidence in the country's economy and enhance the investment climate; but, unfortunately, there was an economic crisis in the country from about 1980, brought about by the crash in international oil prices and the decline in the country's revenues from oil. It should also be mentioned here that, poor as the aggregate investment record in Nigeria was in this period, investment in the non-oil sectors recorded a still much poorer performance and the agricultural sector recorded about the worst performance (Manyonyet *et al.*, 2003).

II. MATERIALS AND METHODS

The Study Area: The study was conducted in Nigeria. Nigeria is one of the largest countries in Africa with a total geographical area of 923,768square kilometers and an estimated total population of over 200million people (NPC, 2007). It lies wholly within the tropics along the Gulf of Guinea on the western coast of Africa, Nigeria has a highly diversified agro-ecological conditions which makes possible for production of wide range of agricultural products. Hence agriculture constitutes one of the most important factors of the economy. The sector is particularly important in terms of its employment generation and its contribution to Gross Domestic Product (GDP) and export revenue earnings.

Sources of Data and Methods of Data Collection

The data for this study were derived from secondary sources. The secondary data were obtained from publications of Central Bank of Nigeria (CBN), local agencies such as National Bureau of Statistics (NBS) and National Data Bank (NDB) as well as international sources such as World Bank and the International Monetary Fund (IMF). Key data elements collected from the various secondary sources were Gross Domestic Product, terms of trade, foreign and domestic investment, inflation rate, consumer price index, debt service, exchange rate, among others.

Methods of Data Analysis

Both descriptive and inferential statistics were used for data analysis. The descriptive statistics involves the use of means, average growth rates and percentages. The focus was the analysis of levels, trends and variability in the key variables of interest to provide insight into their patterns of movement over time and over space. Regression analysis was used to investigate the significant determinants of both domestic private investment and foreign private investment in Nigeria. The models benefit substantially from the studies of Salako and Adebusuyi (2001).

Model Specification

The Regression model specifies domestic private investment as:

- (a) Domestic private investment is hypothesized to be determined as:

$$DPI_t = f (GI_{t-1}, INFL_t, RER_t, DSR_t, \Delta TOT_t, DeY_t, \Delta Ct, v) \dots\dots\dots (1)$$

Where:

DPI = Domestic private investment as ratio of GDP

GI = Public investment as ratio of GDP

GR = Growth rate of real GDP

INFL = Inflation rate

RER = Real exchange rate which is defined as nominal exchange rate with respect to the

US Dollar multiplied by the ratio of the US CPI to domestic CPI

DSR = Debt service charge expressed as a ratio of the total exports value of goods and services

ΔTOT = Changes in terms of trade

DeY = Economic instability index proxies by the deviation of actual GDP from its trend line values.

ΔC = Change in domestic credit to private sector plus not foreign capital inflow

V = Stochastic error term

The expected relationships between the dependent variable and its determinants are as follows: Both GI and GR can have either positive or negative relationship with domestic private investment. On the other hand, INFL, RER, DSR, ΔTOT and DeY are expected to negatively influence domestic private investment. Lastly, it is expected that ΔC will have a positive association with domestic private investment.

- (b) The determinants of foreign direct investment is specified as:

$$FDI = f (GI_{t-1}, GR_{t-1}, INFL_t, RER_t, DSR_t, \Delta TOT_t, DeY_t, \Delta Ct; e_t) \dots\dots\dots (2)$$

Where:

FDI = Inflow of foreign direct investment as ratio of GDP and;

GI, GR, INFL, RER, DSR, ΔTOT , DeY, and ΔC are as defined above.

e is the stochastic error term.

The direction of the relationship between foreign direct investment and its determinants can be positive or negative. GI, GR, and ΔTOT can have either positive or negative influence on foreign direct investment. A negative relationship is expected between INFL, DSR and DeY and foreign investment. RER and ΔC are expected to positively influence foreign direct investment. The time series characteristics of the models was examined to avoid spurious results, which can come as a consequence of regressing two or more non-stationary series. In this respect a co-integration analysis, which ensures a long-run relationship among non-stationary series, was carried out. This was done in a two-step procedure using the Augmented Dickey Fuller (ADF) test statistics. The first step is to test for stationarity of the different variables while the second step involves co-integration test of the dependent variables against the independent variable (**see Tables 8 and 9**)

III. RESULTS AND DISCUSSION

Two broad categories of investment in agriculture were identified. These are local and foreign sources. The local sources include public and private investment while the

foreign sources include multilateral, bilateral and private investment.

3.1 Trend in Private Sector Finance to the Agricultural Sector (1981-2000)

Commercial bank's total loans and advances to the Nigerian economy grew from ₦8.60 billion in 1981 to

₦508.30 billion in 2000. Similarly, loans and advances by commercial banks to the Nigerian agricultural sector grew from ₦0.6 billion in 1981 to ₦41.00 billion in 2000. Thus, between 1981 and 2000 loans and advances to the agricultural sector by commercial banks averaged ₦12.3 billion which constituted 12.7 per cent of the total loans and advances by commercial banks to the Nigerian economy (**Table 1**).

Table 1: Trend in Private Sector Finance to Agricultural Sector (1981-2000) in Billion Naira

Period	Commercial bank's loan to Agriculture and Forestry	Commercial bank's Total Credit to the Economy	Commercial bank's loans to Agriculture as % of Total	Total loan Disbursed under the Agric. Credit Guarantee Scheme
1981	0.60	8.60	6.98	0.04
1982	0.80	10.30	7.77	0.03
1983	0.90	11.10	8.11	0.04
1984	1.10	15.50	7.10	0.02
1985	1.30	12.20	10.66	0.04
1986	1.80	15.70	11.46	0.07
1987	2.40	15.70	13.71	0.10
1988	3.10	19.60	15.82	0.12
1989	3.50	22.00	15.91	0.13
1990	4.20	26.00	16.15	0.10
1991	5.00	31.30	15.97	0.08
1992	7.00	42.70	16.39	0.09
1993	10.80	65.70	16.44	0.08
1994	17.80	94.20	18.90	0.10
1995	25.30	14.60	17.50	0.16
1996	33.30	169.40	19.66	0.32
1997	27.90	385.60	7.24	0.24
1998	27.20	272.90	9.97	0.22
1999	31.00	322.80	9.60	0.25
2000	41.00	508.30	8.07	0.36
Averages	12.3	103.21	12.7	0.13

Source: Central Bank of Nigeria Statistical Bulletin, 2020.

Total loans granted to farmers in Nigeria under the ACGSF doubled between 1981 and 1991 to ₦0.04 and ₦0.08 billion, respectively. By 2000, ACGSF loans increased almost fifth fold from the 1991 level to ₦0.36 billion. Thus, between 1981 and 2000, farmers received an average loans of ₦0.13 billion under the ACGSF. However, average loans disbursed to farmers under the ACGSF between 1981 and 2000 represents just 1.10 per cent of that given by commercial banks to the agricultural sector in the same period (see **Table 1**).

Federal Government recurrent expenditure for the agricultural sector maintained a steady increase from ₦0.01 billion in 1981 to ₦59.32 billion in 1999, after which it declined drastically to ₦6.34 billion in 2000. Thus, an average of ₦3.09 billion was allocated to the agricultural sector as recurrent expenditure by the Federal Government between 1981 and 2000 which constituted only 4.10 per cent of the total Federal Government recurrent expenditure.

Table 2: Trend in Public Sector Finance to Agricultural Sector (1981-2000) in Billion Naira

Period	Fed. Govt. Recurrent Exp. on Agriculture	Fed. Govt. Total Rec. Exp.	Rec. Exp. on Agric. As % of Total	Fed. Govt. Cap. Exp. on Economic Sector	Fed. Govt. Total Cap. Exp.	Cap. Exp. on economic Sector as % of Total
1981	0.01	4.85	0.2	3.63	6.57	55.3
1982	0.01	5.51	0.2	2.54	6.42	39.6
1983	0.01	4.75	0.2	2.29	4.89	46.8
1984	0.02	5.83	0.3	0.66	4.10	16.1
1985	0.02	7.58	0.3	0.89	5.46	16.3
1986	0.02	7.70	0.3	1.10	8.53	12.9
1987	0.05	16.65	0.3	2.16	6.37	33.9
1988	0.08	19.41	0.4	2.13	8.34	25.5
1989	0.15	25.99	0.4	3.93	15.03	26.1
1990	0.26	36.22	0.7	3.49	24.05	14.5
1991	0.21	38.24	0.5	3.15	28.34	11.1
1992	0.46	53.03	0.9	2.34	39.76	5.9
1993	1.80	136.73	1.3	18.34	54.50	33.7
1994	1.18	89.97	1.3	27.10	70.92	38.2
1995	1.51	127.63	1.2	43.15	121.14	35.6
1996	1.59	124.49	1.3	117.83	212.93	55.3
1997	2.06	158.56	1.3	169.6	269.65	62.9
1998	2.89	178.10	1.6	200.86	309.02	65.0
1999	59.32	449.66	13.2	323.58	498.03	65.0
2000	6.34	461.60	1.4	111.51	239.45	46.6
Averages	3.90	97.63	1.37	52.02	96.68	35.32

Source: Central Bank of Nigeria Statistical Bulletin, 2020.

Federal Government expenditure for economic services covers; agriculture, road and construction, transportation and communication and other services. This data is not disaggregated. The Federal Government of Nigeria allocated the sum of ₦3.63 billion to economic services for capital expenses in 1981 and this constituted 53.3 per cent of total Federal Government capital expenditure that year. Subsequently, the amount and proportion maintained a downward trend for most of the years until 1993 when the sum allocated to the economic sectors as capital expenditure; improved substantially to ₦18.34 billion and constituted 33.7 per cent of total Federal Government expenditure that year. This upward trend was maintained till 1999 when economic services received ₦323.58 billion and this constituted 65 per cent of the total Federal Government capital expenditure. It declined to about a third of the 1999 sum in 2000 at ₦111.5 billion which constituted 46 per cent of total. On average, the Federal Government of Nigeria allocated ₦52.02 billion to

economic services between 1981 and 2000 and this constituted 35.32 per cent of total capital expenditure of the Federal Government (see Table 2).

Nigeria's agricultural real gross domestic product grew consistently from ₦2364.37 billion in 1981 constituting 15.50 per cent of Nigeria's real total gross domestic to ₦4840.97 billion in 2000 when it constituted 20.40 per cent of total. Growth in Nigeria's real total GDP on the other hand has not maintained the same consistency as that of the agricultural sector, which confirms the resilience of this sector. Nigeria's total real GDP declined compared with their preceding years between 1982 and 1984, and 1991 (Table 3). On average, agricultural real GDP has amounted to ₦3468.16 billion and this constitutes 18.75 per cent of total real GDP in Nigeria between 1981 and 2000, which is very substantial and demonstrates how important the sector is in the Nigerian economy (Table 3).

Table 3: Trend in Nigeria's Agricultural Gross Domestic Product (1981-2016) in Billion Naira

Period	Total GDP National	Agricultural Sector GDP	% Contribution of Agriculture to Total GDP in Nigeria
1981	15258.00	2364.37	15.5
1982	14985.08	2425.96	16.2
1983	13849.73	2409.08	17.4
1984	13779.26	2303.51	16.7
1985	14953.91	2731.06	18.3
1986	15237.99	2986.84	19.6
1987	15263.93	2891.67	18.9
1988	16215.37	3174.57	19.6
1989	17294.68	3325.95	19.2
1990	19305.63	3464.72	17.9
1991	19199.06	3590.84	18.7
1992	19620.19	3674.79	18.7
1993	19927.99	3743.67	18.8
1994	19979.12	3839.68	19.2
1995	20353.20	3977.38	19.5
1996	21177.92	4133.55	19.5
1997	21789.10	4305.68	19.8
1998	22332.87	4475.24	20.0
1999	22449.41	4703.64	21.0
2000	23688.28	4840.97	20.4
Averages	18333.09	3468.16	18.75

Source: Central Bank of Nigeria Statistical Bulletin, (CBN), 2020

Annual Values of Performance Indicators

The results of the average annual values, annual growth rates is presented in **Table 4**. Four periods were considered for this measurement: 1981-1985, 1986-1990, 1991-1995 and 196-2000. Real gross domestic investment was measured as real gross fixed capital formation (GFCF). That is the total capital expenditure on fixed assets, either for replacing or adding to the stock of existing fixed assets. It is in real value in that it is measured at a constant 1985 purchaser's value. It is a proxy for gross domestic investment. The results indicates that average total gross fixed capital formation declined from a peak in the 1981-1985 sub-period to a low point in the 1986-1990 period, and the increased modestly in both 1991-1995 and 1996-2000 sub-periods. This can be regarded as a poor performance, more so as further analysis showed that gross fixed capital formation's share of gross domestic product declined consistently over the entire 1981-2000 period, from about 15 percent of real GDP in the 1981-1985 sub-period to 9.7 percent in 1981-1990, to 8.4 percent in 1991-1995 and 6.3 percent in 1996-2000.

This consistent decline implies that consistently lower shares of real GDP were going into domestic investment. Agricultural sector GFCF followed the same pattern as the aggregate GFCF of the economy. It was observed, however, that agricultural sector's share of the aggregate GFCF increased consistently over the 1981-2000

period, from about 5 percent in the 1981-1985 sub-period to about 14 percent in the 1996-2000. This implies that the agricultural sector performed better than the economy as a whole in terms of the rate of capital formation. However, the agricultural sector's share of the aggregate GFCF was very low, averaging only about 9.0 percent in the entire 1981-2000 period. The share of public expenditure on infrastructure fell from about 20 percent in 1981-85 to 7 percent in 1996-2000. Net flow of foreign capital into Nigeria in the 1981-2000 period was characterized by increases in mean nominal values in all sub-periods for both the economy as a whole and the agricultural sector. However, in real terms (i.e. at 1985 constant prices), aggregate foreign net private investment flow into the economy declined consistently between the 1981-1985 and 1991-1995 sub-periods, and then increased marginally in the 1996-2000 sub-period.

The reverse is the case for real foreign net private investment flow into agriculture, which increased between 1981-1985 and 1991-1995 and then declined in the 1996-2000 sub-period. However, agriculture's share of total foreign net private investment was generally very low, being only about 0.2 percent in the 1981-1985 sub-period, but rising to 4.6 percent and 9.1 percent in the 1986-1990 and 1991-1995 sub-periods respectively. It then declined again in the 1996-2000 sub-period. In all, there were negative flows (i.e. capital flight from agriculture) of foreign investment into from agriculture in 1981, 1985, 1990 and 1991. For the economy in the

aggregate, the stock of foreign investment in nominal terms increased more than twenty-fold between 1981 and 2000. But in real value, it declined between 1981-1985 and 1986-1990, then increased in the 1991-1995 sub-period, and decreased in the 1996-2000 sub-period.

It is thus evident that there were wide fluctuations in the real values of cumulative total foreign investment in agriculture, however decline persistently over the entire 1981-2000 period. As a result, agricultural sector's share of the total stock of foreign investment declined persistently from about 2.0 percent in 1981-1985 sub-period to less than 1.0

percent in the 1996-2000 sub-period. The general picture that emerges from the fore-going is that the agricultural sector did not perform well in terms of attracting foreign investment in the whole period as revealed by the study. Similarly, the sector's share of the total public domestic investment in the economy was also very low. It follows, therefore, that most of the investments in agriculture was made by small-scale farmers and other local private entrepreneurs who invested their own individual small savings as well as small loans obtained from relatives, friends, commercial and specialized banks, co-operative societies and money lenders in micro enterprises in and outside agricultural sector.

Table 4: Indices of Agricultural Investment Levels and Annual Growth Rate (1981-2000)

A	Mean Annual Values (₦-million)	1981-1985	1986-1990	1991-1995	1996-2000
1	<i>Gross fixed capital formation (at 2004 purchasers' values):</i>				
	• Total GFCF	16186.8	8601.6	11296.7	12798
	• Agricultural sector GFCF	849.2	618.6	1373.2	1747
	• Agriculture's share of total (%)	5.3	7.2	12.2	13.7
2	<i>Public capital expenditure (₦ million):</i>				
	• On infrastructure	42575.6	303184	4831.4	47227
	• On non-infrastructure	8728.0	23042	121033.6	585739.4
	• Infrastructure's share of total (%)	20.5	7.7	3.8	7.2
3	<i>Annual flow of foreign net private investment:</i>				
	• All sectors	1216.8	1820	3827.2	17159.8
	• Agricultural sector	2.2	83.4	349.8	0.00
	• Agriculture's share of total (%)	0.2	4.6	9.1	0.0
4	<i>Cumulative foreign investment:</i>				
	• All sectors	10977.6	20792.8	115859.8	268766.8
	• Agricultural sector	250.6	439.4	2091.2	2418
	• Agriculture's share of total (%)	2.0	2.1	1.9	0.9

Source: Computed with data extracted from CBN (2020).

Growth and Variability in Investment

The results of the analysis in **Table 5** shows that the pattern of both domestic and foreign investment in Nigeria in the period tended to be volatile, displaying highly variable growth rate and high degrees of fluctuations or instability. As shown in the **Table 5**, real gross fixed capital formation in the economy as a whole displayed highly variable average annual growth rates, first declining in the 1981-1985 sub-period, then increasing in the 1986-1990 sub-period, then decreasing again in the 1991-1995 sub-period, and then increasing in the 1996-2000 sub-period.

The agricultural sector gross fixed capital formation displayed more positive but equally unstable growth rates. On the whole, the coefficients of variation in the real gross fixed capital formation for the economy as a whole declined from a very high level in the 1981-1985 period to much more modest levels thereafter, indicating some relative stability in the post-

1985 period. The agricultural-sector coefficients of variation in real gross fixed capital formation were very high in the 1981-1985 and 1986-1990 sub-periods, but also declined to more modest levels in the post-1990 period. It appears, therefore, that the pattern of domestic investment emerged from a highly volatile state in the 1981s to a more steady state thereafter. This pattern conforms very much to progression from an unstable policy and political regime of the pre-1995 era to the more stable regime thereafter (Anyanwu *et al.*, 1999).

The average annual growth rate for infrastructure investment was negative in the 1981-1985 sub-period, but improved rapidly in both 1986-1990 and 1991-1995 sub-periods before coming down to a more modest rate in the 1996-2000 sub-period. The rate of growth for non-infrastructure expenditure followed a similar trend. On the whole, the degree of variability in both infrastructure and non-infrastructure expenditures was equally high in the 1981-2000 period. The

patterns of growth and variability in the total annual flow of foreign net private investment into the economy as revealed by the study indicates a very high growth rate in the 1981-1985 sub-period, followed by a negative growth in the 1986-

1990 sub-period, followed by a very high growth rate in the 1991-1995 sub-period, and followed by a positive but small growth rate in the 1996-2000 sub-period. On the whole, the growth pattern was highly unstable.

Table 5: Indices of Agricultural Growth Rates and Variability (1981-2000)

		1981-1985	1986-1990	1991-1995	1996-2000
B	Average Annual Growth Rate (%)				
1	<i>Gross fixed capital formation(at 2004 purchasers' values):</i> <ul style="list-style-type: none"> • Total GFCF • Agricultural sector • Agriculture's share of total (%) 	-27.2 -29.9 -3.8	5.6 24.5 17.7	-6.0 36.0 4.7	6.4 7.1 0.6
2	<i>Public capital expenditure (₦ million):</i> <ul style="list-style-type: none"> • On infrastructure • On non-infrastructure 	-38.3 0.2	15.3 35.7	54.0 41.2	23.4 12.5
3	<i>Annual flow of foreign net private investment:</i> <ul style="list-style-type: none"> • All sectors • Agricultural sector 	88.9 -	-27.7 155.7	79.1 58.1	1.5 0.00
4	<i>Cumulative foreign investment:</i> <ul style="list-style-type: none"> • All sectors • Agricultural sector • Agriculture's share of total (%) 	15.6 1.3 -12.4	36.3 39.5 17.8	78.6 25.6 -21.1	4.5 0.0 -4.3

Source: Computed with Data extracted from CBN, 2020

Table 5 Cont'd.

C	Annual Variability (%)				
1	<i>Gross fixed capital formation(at 2004 purchasers' values):</i> <ul style="list-style-type: none"> • Total GFCF • Agricultural sector • Agriculture's share of total (%) 	50.7 61.5 21.7	23.7 74.5 49.9	6.8 5.6 9.8	13.2 13.2 3.7
2	<i>Public capital expenditure:</i> <ul style="list-style-type: none"> • On infrastructure • On non-infrastructure 	69.8 15.6	23.6 61.3	63.2 57.6	39.7 43.8
3	<i>Annual flow of foreign net private investment:</i> <ul style="list-style-type: none"> • All sectors • Agricultural sector 	85.8 92.7	60.1 63.2	54.1 72.3	61.0 -
4	<i>Cumulative foreign investment:</i> <ul style="list-style-type: none"> • All sectors • Agricultural sector • Agriculture's share of total (%) 	27.3 15.0	75.7 58.3	74.8 35.2	9.6 -
		29.0	54.9	40.0	9.0

Source: Computed with Data extracted from CBN, 2020

Determinants of Domestic Private Investment

In order to fully understand the nature of the determinants of investment in Nigeria, five equation were estimated. Of these, three were related to the domestic private

investment while the remaining two were related to foreign direct investment. The three variants of domestic private investment were such that the first equation used aggregate public expenditure as one of its determinants, along with six other variables. In the second variant, another variable (total

credit to the economy plus foreign reserve) was added to the variables in the first equation. The third equation split public expenditure into its components; viz. infrastructure and non-information expenditure. In the case of foreign direct investment, the first equation used aggregate public spending as an argument, while this was split into its components (infrastructure and non-infrastructure expenditures) in the second equation, the results of the determinants of domestic private investment is presented in **Table 6**. The adjusted coefficient of determination was 0.369. The Durbin Watson statistics does not indicate positive auto-correlation while the F-statistics shows that the models generally perform well.

In the first equation on domestic private investment, the coefficients of all the variables, with the exception of debt service ratio (DSR) and terms of trade (TOT), conform to *a priori* expectation. However, only inflation rate (INFR) and the terms of trade (TOT) have significant influence on domestic private investment. While inflation rate tends to dampen domestic private investment, the term of trade enhances it. The effect of inflation rate is that it increases the riskiness of longer-term investment projects and reduces the average maturity of commercial lending (Dornbusch and Reynoso, 1989). However, external shocks as mirrored by the TOT actually have positive effect on domestic private investments. Hence, the higher the TOT is, the higher the domestic private investment and vice versa. The coefficient of the ECM shows high rate of adjustment of short equilibrium to long run equilibrium value.

The inclusion of total credit and foreign reserve variable (TC) in equation two for domestic private investment

actually improves the model. The debt service ratio (DSR), the RER and the TOT do not conform to expectations. Four variables, namely public investment (GI_{-1}), inflation rate (INFR), terms of trade (TOT) and total credit plus foreign reserves (TC) significantly influence domestic private investment. However, both public investment and inflation rate dampen domestic private investment. On the other hand, the terms of trade and the total credit positively influence domestic private investment. The negative relationship between public investment and domestic private investment can be attributed to higher fiscal deficits which may crowd out private investment through high interest rates and credit rationing, among others. The higher the flow of domestic credit into the private sector and the higher are foreign reserves, the more likely is an increase in investment in the domestic private sector as investors would have access to investible funds for their operations. The ECM parameter also indicates a high feedback mechanism.

The third equation for the domestic private investment replaces public investment with its components – investment in infrastructure and non-infrastructure goods. While investment in infrastructure positively influences domestic private investment, investment on non-infrastructure has negative influence on it. Both inflation rate and investment on non-infrastructure by the public sector have negative but significant effects on domestic private investment. The negative sign of the coefficient of non-infrastructure public investment confirms the earlier result on the crowding out of domestic private investment by public investment.

Table 6: Determinants of Domestic Private Investment

Independent variables	Domestic Private Investment (DDPI)		
	(1)	(2)	(3)
C	0.042 (0.106)	-0.099 (-0.266)	0.171 (0.400)
D(DEY)	1.421 (0.298)	0.429 (0.099)	0.367 (0.114)
D(DSR)	-2.297 (-0.408)	0.007 (0.001)	-8.369 (-1.169)
D(GI-1)	-1.868 (-1.202)	-5.433** (-3.285)	-
D(GRT)	0.247 (0.3210)	-0.076 (-0.110)	-2.829 (1.297)
D(INFR)	-0.82** (-3.530)	-0.105** (4.65))	-0.061* (-2.337)
D(RER)	0.046 (0.100)	0.229 (0.569)	0.363 (0.595)
D(TOT)	0.027* (2.398)	0.029* (2.774)	0.015 (1.246)
D(TC)	-	3.792* (2.498)	1.327 (0.626)
D(IGI-1)	-	-	40.310 (0.983)
D(GNI-1)	-	-	-6.455* (-2.721)
ECM1-1	-0.786** (-3.626)	-	-
ECM2-1	-	0.859** (-4.364)	-
ECM3-1	-	-	-0.733
R2	0.583	0.678	0.612
Adjusted R2	0.416	0.525	0.396
Durbin Watson	1.666	1.691	1.875

Log Likelihood	-53.610	-52.913	-52.564
Akaike info. Criterion	1.480	1.291	1.546
Schwarz Criterion	1.904	1.762	2.064
F-statistic	3.489	4.435	2.835
Prob (F-statistic)	0.011	0.003	0.026

Source: Computed with Data extracted from CBN (2020).

Determinants of Foreign Direct Investment

In the case of foreign direct investment, the first equation used aggregate public spending as an argument, while this was split into components (infrastructure and non-infrastructure expenditures) in the second equation. The results of the determinants of foreign direct investment is presented in **Table 7**. The adjusted coefficient of determination was 0.733. The Durbin Watson statistics does not indicate positive auto-correlation while the F-statistics shows that the models performed well. The first equation of the foreign direct investment shows that only real exchange rate significantly influences the inflow of foreign direct investment. This has a positive relationship, thus indicating the positive effect of a rise in foreign prices measured in domestic currency. In this instance, there will be a boost to investment in tradable relative to non-tradable. The ECM coefficient agrees with those of earlier equations.

In the second equation, which incorporates a public investment variable (in terms of infrastructure and non-infrastructure capital expenditures), four variables have significant effects on foreign direct investment. The variables are the two components of public capital expenditure, the growth rate of the economy and the inflation rate. However, inflation rate coefficient has positive sign, contrary to expectation. While public investment in infrastructure promotes foreign direct investment, investment in non-infrastructure inhibits it. The growth rate of an economy is an indicator of the performance of that economy which tends to affect the confidence of would-be investors in terms of guaranteed returns from investment. Its positive sign is a signal of potential earnings to foreign investors. The ECM value also indicates a high rate of adjustment of short-run equilibrium to long-run equilibrium values. Finally, economic instability index (DeY) and debt service ratio (DSR) do not significantly influence both domestic private and foreign direct investment in Nigeria.

Table 7: Determinants of Foreign Direct Investment

Independent variables	Foreign Direct Investment (FDI)	
C	0.012 (0.799)	0.008 (0.527)
D(DEY)	-0.023 (-0.126)	-0.054 (-0.318)
D(DSR)	0.359 (1.662)	-0.106 (-0.434)
D(GI-1)	0.068 (1.183)	-
D(GRT)	0.025 (0.773)	3.301** (3.709)
D(INFR)	0.001(0.673)	0.002 (1.810)
D(RER)	0.047* (2.468)	0.018 (0.808)
D(TOT)	-0.001 (-1.285)	-0.003 (-0.830)
D(IGI-1)	-	3.361** (3.743)
D(GNI-1)	-	-3.509* (-3.639)
ECM5-1	-	-1.82**(-4.849)
R ²	0.789	0.819
Adjusted R ²	0.702	0.733
Durbin Watson	1.520	1.893
Log Likelihood	41.090	43.404
Akaike info. Criterion	-5.051	-5.142
Schwarz Criterion	-4.627	-4.670
F-statistic	9.271	9.548
Prob. (F-statistic)	0.000	0.000

Source: Computed with Data extracted from CBN (2020).

Figures in parentheses are t-values

* Significant at 5%

** Significant at 1%

Table 8: Augmented Dickey Fuller (ADF) Unit Root Test for the Variables Used in Regression

Variable	ADF test statistics	No. of Lags	Stationary at level
DEY	-1.5276	1	NO
FDI	-0.6698	1	NO
TC	3.0665	1	NO
DSR	-1.7709	1	NO
GNI	-0.5348	1	NO
TOT	-3.0399	1	NO
IGI	1.4804	1	NO
GI	-0.9102	1	NO
RER	-2.5388	1	NO
GRT	-1.8076	1	NO
DPI	-2.2384	1	NO
95 Percent ADF critical value = 3.6178			

Source: Author computation, 2020

Table 9: Co-integration Test of the Dependent Variable (Philip Perron Procedure)

Series	Eigen Value	Likelihood Ratio	5% critical value	1% critical value	Hypothesized No of Ccs
DPI	0.9997	538.7984	192.94	205.88	None**
ONE	0.9786	275.7462	156.02	167.42	Almost 1**
DSR	0.7626	166.2711	124.33	134.42	Almost 2**
GI	0.7335	117.9843	93.21	103.09	Almost 3**
GRT	0.6656	78.2356	68.55	76.05	Almost 4**
INFR	0.5505	48.0442	47.05	54.38	Almost 5*
IGI	0.6140	71.3252	68.52	76.06	Almost 6*
RER	0.3347	24.1184	29.77	37.52	Almost 7
TC	0.2851	11,6871	15.33	21.17	Almost 8
TOT	0.4481	1.3814	3.86	6.84	Almost 9

Source: Author computation, 2020. ** Significant at ($P \leq 0.1$), LR test indicates 6 co-integrating equations at ($P = 0.05$)

IV. CONCLUSION AND RECOMMENDATIONS

The conclusion that may be drawn from the study is that the pattern of domestic investment in Nigeria was very unstable between 1981 and 1995, but more so for investment in agriculture than for the whole economy. There was, however, a measure of relative stability after 1995 in both aggregate and agricultural sector investment. As regards the annual flow of foreign net private investment, the degree of volatility was even higher than for domestic investment. And, again, the agricultural sector recorded a higher degree of volatility than the economy as a whole. The pattern of investment growth and variability described above was a direct reflection of the unstable and sometimes inconsistent policy regime that prevailed in much of the 1981-1995 period. It was a reflection of the generally very unstable investment climate in the country in the period. The degree of political and social instability in the country was particularly high for

most of the period, creating an unduly high degree of uncertainty for investors, particularly foreign investors

It is recommended that all the policies put in place by the Monetary and Fiscal Authorities to encourage flow of funds to the agricultural sector be sustained and the Federal Government should overhaul its capital budgetary processes and provision so as to make positive impact in development of the agricultural sector.

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