Determinants of Economic Growth in Nigeria

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*This paper investigates the role of Frazer Economic Freedom Index on FDI-growth relationship over the period spanning 1980 through 2010 using annual time series data. A Multivariate Regression approach was employed to estimate augmented growth models. Quite intriguingly, the impact of disaggregated economic freedom over aggregated composite index was found profoundly revealing. Emanated results show that the same set of variables like labour, life expectancy, degree of openness and economic freedom are factors affecting the level of economic growth in both but at different levels of significance. However, the estimates of disaggregated components of economic freedom data show that the size of government (**negative effects)** and freedom to trade internationally (**positive effects**) appears as significant out of five variables making the composite (aggregated) index. The following are therefore suggested for policy applications: curbing unfettered liberalization in the degree of openness, improving and strengthening of the components of economic freedom index, specifically, through reduction in excessive government intervention and that more budgetary allocations should be channeled towards health delivery schemes and education promoting activities since the likelihood of elongating life expectancy is in tandem with such exercises.*

Keywords: Economic Freedom, FDI, Economic Growth, Multivariate Regression Approach

JEL Classification: CO1, E22, O43

1.0 Introduction

One of the most fundamental economic issues that have received extensive attention in the economic literature to date centers on: what causes economic growth? Why do countries grow faster than the other? What are the causes of disproportionate rates of growth across countries? Are factors causing differential growth rates country-specific? Attempts at answering these questions have spawned an avalanche of reasons as factors, ranging from economic, social, cultural, political and more recently, institutional reasons have been included. What can be inferred from the diverse causative factors as highlighted in the literature aptly accentuates lack of consensus and general inconclusiveness of growth causal factors. Despite these divergences, the impact of foreign direct investment (FDI, hereafter) on growth remains in large part an empirical regularity. The channel through which FDI impacts is

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transmitted has also stimulated another round of queries that has consequently added a new strand of literature into FDI-growth repository.

Examples of such mediating channels in the literature abound and they include: absorptive capacity of the receiving country (in terms of domestic economy's trade policy, quality of human capital, physical capital accumulation, see Balasubramanyam *et al.* (1996); Borensztein *et al.* (1998) and De Mello(1997) for detail narratives and level of financial sector sophistication (see Alfaro *et al.*, 2004; Durham, 2004; and Ang, 2008)). Amid the identified and various channels which mediate between FDI-growth nexus, the impact of economic freedom (a very key component of institutional quality variables) has so far been less recognized or at best receives limited consideration. Notwithstanding, it has been widely acknowledged among growth analysts that a country which enjoys more economic freedom tends to attract more FDI inflows and growth faster than country that is being denied enjoying the same freedom.

Economic freedom, according to Heritage Foundation has been defined as 'the absence of government coercion or constraint on the production, distribution, or consumption of goods and services beyond the extent necessary for citizens to protect and maintain liberty itself'. Economists have long accorded greater importance to freedom to choose and supply resources, competition in business, free trade with others and secure property rights as representing important ingredients needed for achieving economic development. Several empirical works, however, have shown the importance of economic freedom in explaining cross-country differences in economic performance [see an excellent survey by de Haan *et al.* (2006)].

Further, empirical studies have shown that countries vary in the ways and manners by which economic freedoms are exercised and implemented. Observably, in the developed nations, economic freedom is undeniably a public good as can be observed from unfettered enjoyment of it among and/or between the various economic agents, but contrariwise, lacking and even if exists, scarcely enjoy by various economic agents from the developing countries' counterpart. By implication, economic freedom as a bundle of goods or services in these countries is essentially luxurious in nature. Arguably, countries within sub-Saharan region in particular are seen operating on the negative and extreme end of economic freedom continuum thus raising pertinent issue about economic woes befalling the region.

Nigeria, like any other Africa countries has witnessed a series of violations in socio-politico-economic freedoms over the years. This is particularly the case during the military era which accounted greatly to the political annals of the country. With the emergence and enthronement of the democratic dispensation, a pocket of violations were still observed in virtually all facets of human lives in the country but with some signs of respite. With this background information about the backlog of violations, the paper is, therefore, interested in unraveling the extent to which economic freedom interacts with FDI to generate the desired economic growth.

The novelty of the study stands out on a number of fronts. First, though voluminous works have been conducted on economic freedom and economic growth with foreign direct investment as an intervening variable, we are not aware of any study that has specifically examined the tripartite relationship involving FDI, economic freedom and economic growth for Nigeria. Second, most studies on economic freedom were largely cross-sectional in nature. Examples include: Bengoa and Sanchez-Robles (2003), Javorcik (2004), Kapuria (2007), among others. Empirical studies on FDI-economic freedom-growth relationship are hard to come by or at best limited particularly with respect to country-specific studies.

The rest of the paper is structured as follows. Section 2 contains a succinct review of the literature on the economic freedom and economic growth linkage. Section 3 attempts stylized facts about economic freedom –economic growth in the Nigerian context, while section 4 gives a conceptual framework on which the study is based and section 5 describes the empirical model and dataset. The results are presented and discussed in section 6. The seventh and final section succinctly concludes.

2.0 Literature Review

This section attempts an apt overview of previous empirical studies on FDI inflows, economic freedom and economic growth in order to provide a compelling context for subsequent discussions on the theme.

A vast amount of literature exists on the connection between FDI and economic growth in both the developed and developing countries alike with varying emanated empirical outcomes generated ranging from positive, negative and /or at best mixed. One of the main sources of divergences in

results mostly stems from mediating mechanism[2] by which effects of FDI spillovers on the receiving countries are impacted. Observably, several factors like trade policy regime, quality of human resources, level of domestic financial sector sophistication, which were collectively housed under absorptive capacity of the receiving country, and more recently institutional quality were suggested as predisposing the host country to reaping the growth benefits[3] of FDI (see detailed narratives in the following studies: Blomstrom, *et al.*, 1992; Borensztein *et al*., 1998; Balasubramanyam, *et al.*, 1996; Alfaro, *et al*., 2004; Durham, 2004; and Ang, 2008).

Summarily, in the light of the foregoing, three distinct strands of literature can be filtered from the ensuing research efforts so far conducted and these are namely: those that found significant positive impact of FDI on growth (see Ndikumana and Verick (2008), Sylwester (2005) and Lumbila (2005)). Second, are those that established contrary results (Dutt, 1997; Fry, 1993; Hermes and Lensink, 2003) while the last category suggest that the effect of FDI on economic growth, depends on whether the country has minimal level of absorptive capacity. A line by line critical assessment of the empirical outcomes of the first two categories seems too direct thus raising doubts to be casted on the previous research findings. As a consequence and more inventively, focus has been shifted to the third category, which appears albeit, indirect but promising since it encourages the use of multivariate framework which controls for more intervening variables as opposed to bivariate nature of the first-two empirical outcomes.

Realizing the importance of controlling for other conditioning variables in FDI-growth space, subsequent research efforts however, have been shifted to institutional quality given its current global impacts on growth. Specifically, the economic freedom of institutional factors and its role on economic growth has been in sharp focus. The category of empirical studies in this regard include Ayal and Karras (1998); Heckelman and Stroup (2000); Carlson and Lundstrom (2001). However, that strand of literature that craft a role for economic freedom in the FDI-growth space is at best rudimentary. The basic

[2] UNCTAD (1999) found that FDI either had a positive or negative impact on output, depending on the variables that are entered alongside it in the test equation.

[3] Transfer of new technology, innovation, marketing and managerial skills, international best practices etc

argument of most of the studies is that the potential investors' decision to invest in a foreign country is usually hinge on the state of the country's economy as well as the presence of a well-coordinated institutional arrangement. Thus, relating to the latter strand are studies like: Bengoa and Sanchez-Robles (2003), Levina (2011) that specifically examined the tripartite relationship within the context of cross-country empirical investigation. Hence, a terse presentation of empirical literature on the tripartite relationship is pursued in what follows.

Bengoa and Sanchez-Robles (2003) study explored the connection between economic freedom, FDI and economic growth using panel estimation methodology on the sample of 18 Latin-America countries over the period 1970-1999.They used Fraser and Institute index of economic freedom. The results show that countries with higher index have more inflows of FDI and thus have greater growth rates. Using both Fixed Effects and first-difference GMM estimation, Levina (2011), investigated the relationship between foreign direct investment, economic freedom and economic growth. The GMM estimation of dynamic model showed that both of the variables foreign direct investment and economic freedom positively influence the economic growth. However, when employing the decomposed component of economic freedom index, two (namely Business and Monetary Freedoms) out of ten components were found to have had impact on the economic growth.

Pourshahabi *et al.* (2011), also investigated the relationship between Foreign Direct Investment (FDI), economic freedom and growth in OECD countries during 1997-2007. Panel data Method is used to estimate two models. The first model was applied to investigate the factors that stimulate FDI and the second one was applied to find the growth factors in OECD members. The results of first model indicated that Human Capital, Market Size, Political Stability and Inflation have positive and significant impact on FDI in these set of countries. However, the effect of Economic Freedom on FDI in OECD countries is positive, but it is not significant. As to the second model they found that Foreign Direct Investment, economic freedom, Government Consumption Expenditure, public investment and Human Capital lead to growth in these countries. However, inflation and external debt have negative effect on growth but this negative effect is not significant for inflation.

Apparently, empirical attempts at investigating the tripartite relationship among FDI inflows, economic freedom and economic growth are still at its

infancy. Also, most of the typically scanty empirical attempts have been, in the main, conducted at the cross-country levels, thus, making it quite difficult to extrapolating to country-specific cases. This study therefore is filling the void by specifically conducting a tripartite relationship between FDI inflows, economic freedom and economic growth for Nigeria; this remains the focus of this paper.

3.0 Stylized Facts about Foreign Direct Investment, Economic freedom and Economic Growth in Nigeria

Foreign direct investment inflows have been one of the major development financing options often rely upon by the developing countries particularly countries within the Africa sub-Saharan region to drive their stunted economies to a sustainable growth trajectory. However, in the recent times, the debates have shifted to including the degree of economic freedom as an important mediating link towards attaining the growth success. Nigeria, like many other Africa countries, has been enjoying the torrent of foreign direct investment inflows from the developed countries subject to availability of certain economic fundamentals of which economic freedom forms an integral part. Economic freedom, according to Frazer Institutes is made of five components which include size of government (SG); legal structure and security of property rights (LS); access to sound money (AM); freedom to trade internationally (FT); and regulation of credit, labor, and business (RG). The diagrams below show the trends of economic freedom components, aggregate economic freedom, total foreign direct investment and real gross domestic product.

From Figure1, of the components of economic freedom, legal structure and security of property rights seems to be at the lowest and directly followed by gaining of access to sound money while the remaining three components have been moving at par with one another. In fact, the country scored above average virtually in every components, that is 5 out of 10 (being the highest) beginning from 2000 up till 2009. Of the components, access to sound money nosedived close to unity in 1995. Comparatively, the movement of regulation of credit, labour and business smoothen out consistently over the period of review.

In aggregate terms, Figure 2 shows that consistent pattern of growth in economic freedom movement was recorded over the period of review but with

some noticeable troughs between 1990-1995, which can be attributed partly to the fall in both the size of government and access to sound money. Correspondingly in Figure 3, there have been positive inflows of FDI into the country except for 1980 when negative value was recorded. However, between 2004 and 2008, Nigeria experienced some remarkable improvements in the inflows of FDI but later plummeted after financial crises of 2008 occasioned by subprime mortgage crisis which started in 2007 in the US housing sector.

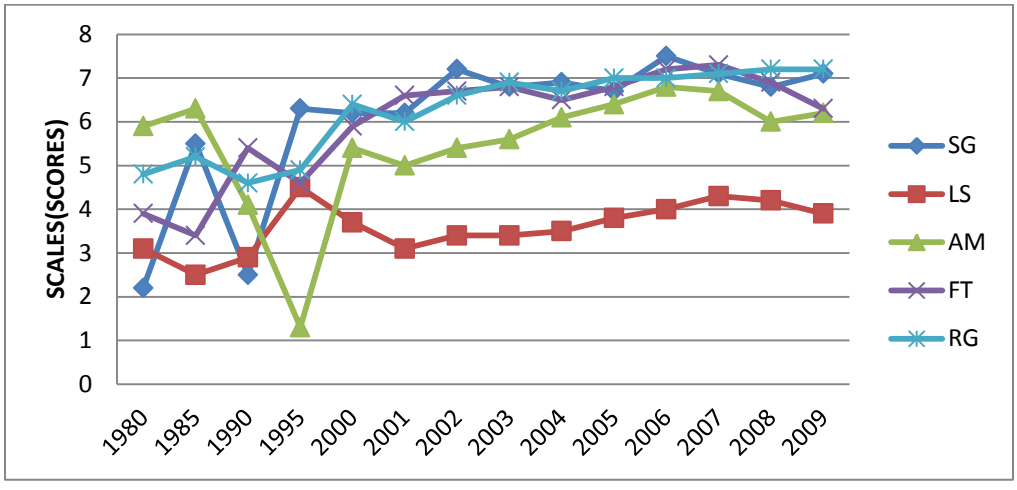

Figure1: Trends of Components of Economic Freedom for Nigeria

Source: Underlying data are obtained from World Development Indicator, Data, 2012.

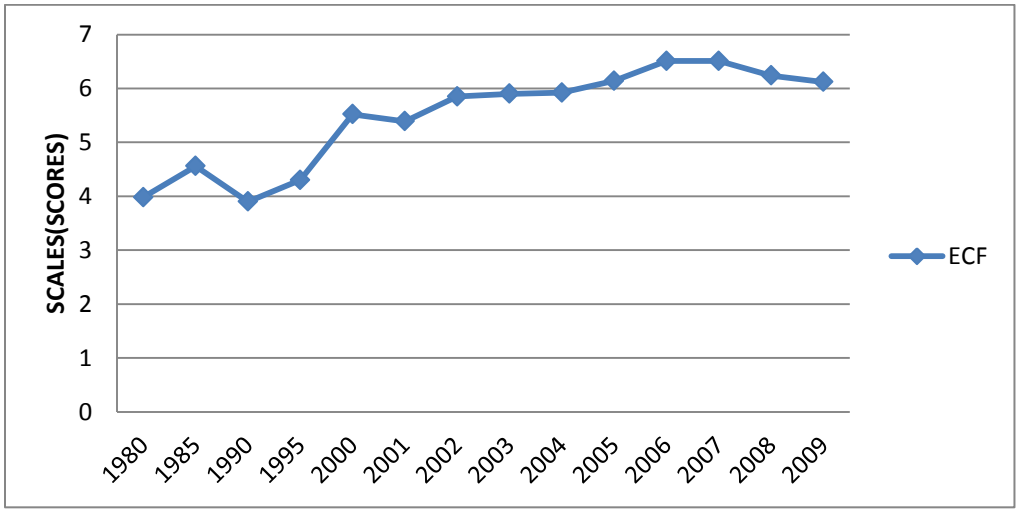

Figure 2: Trend of Economic Freedom for Nigeria

Source: Underlying data are obtained from World Development Indicator, Data, 2012.

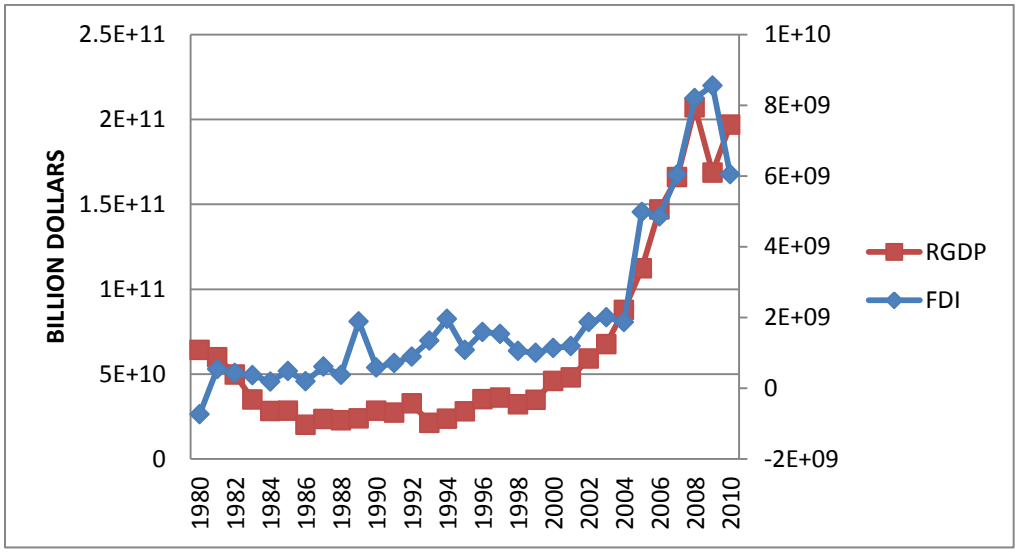

Figure 3: Trend of Movements in Real GDP and Aggregate Foreign Direct Investment in Nigeria

Source: Underlying data are obtained from World Development Indicator, Data, 2012.

4.0 The Basic Conceptual Framework

Within the neoclassical growth framework of Solow (1956) the impact of FDI on the growth rate of output was highly constricted owing to diminishing returns to physical capital. As such, a level effect rather than a rate effect could only be exerted on the output per capita. In effect, the flow of FDI has no appreciable impact on growth rate of output in the long run. Thus, with neoclassical models, FDI as a veritable engine of growth was seriously undermined. However, with exposition on new growth theory, FDI is capable of affecting both the level as well as rate of growth of output per capita. Literature has clearly delineated on how FDI may potentially enhance the growth rate of per capita income in the host country.

Apart from factors like existence of human capital resources, absorptive capacity of the host country, good trade policies, size of the market and a host of other factors that had earlier been explained. The importance of economic freedom has been well stressed in the emerging FDI literature. Economic freedom, according to Heritage Foundation has been defined as ‘the absence

of government coercion or constraint on the production, distribution, or consumption of goods and services beyond the extent necessary for citizens to protect and maintain liberty itself".

Economists have long accorded greater importance to freedom to choose and supply resources, competition in business, free trade with others and secure property rights as representing important ingredients needed for achieving economic development. According to Frazer economic freedom index, there are five major components of index and these include are size of government, expenditures, taxes, and enterprises; legal structure and security of property rights; access to sound money; freedom to trade internationally and regulation of credit, labour, and business.

Figure 4 presents the conceptual framework which illuminates the mechanics through which FDI indirectly impacts on growth through the economic freedom.

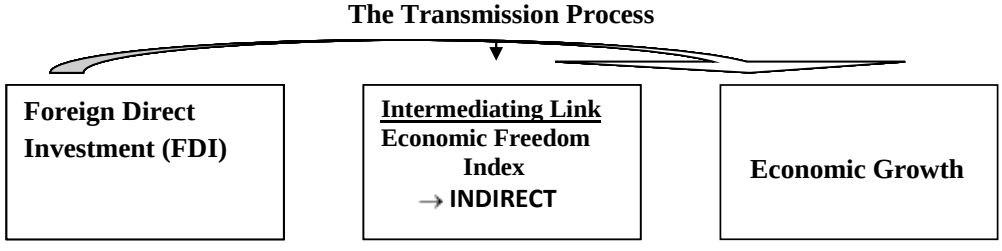

Figure 4: Conceptual framework
Source: Author's conceptualization

5.0 Methodology

This section contains the specification of the relationship between FDI and growth via economic freedom index. Also, the description and measurement of the variables used in the empirical analysis is presented.

5.1 Variables and Model Description

We assume a simple production function where the factors of production in the economy determine the level of economic output. This is summarized as:

$$Y = f(K, L) \quad (1)$$

Where Y measures economic growth (proxy with real GDP), K denotes the amount of capital (measured by Gross Fixed Capital Formation), and L

denotes the amount of labor (measured by total population). Following the work of Rivera-Batiz (2004) and N'Zue (2011), we consider a Cobb-Douglas type of production (although restrictive) which is specify as follows;

$$Y = AL^{\alpha}K^{\beta} \quad (2)$$

Where L and K are as previously defined and A is parameter that captures the effects of other factors of production. Technically speaking, A is a measure of Total Factor Productivity (TFP) but it is through it that the study intends to capture the impacts of both FDI and economic freedom on economic growth. Traditionally, changes in A are thought to captures technological changes Solow (1956) but these may not necessarily be due to technology. The effects of other factors like war, natural disaster, and economic reforms may also stems from A channels. On the basis of this, we therefore specify an explicit model with some other control variables, and thus we have:

$$Y = f(CAP, LAB, FDI, ECF, LE, OPN, FIV) \quad (3)$$

Where FDI, a foreign direct investment (measured by net inflow of foreign direct investment), economic freedom denoted by ECF and is measured using Fraser Economic Freedom Index. The index quantifies forty-two data points in five broad areas: size of government (SG); legal structure and security of property rights (LS); access to sound money (AM); freedom to trade internationally (FT); and regulation of credit, labor, and business (RG) into a composite score on a scale of 0 to 10, with 10 representing the highest degree of economic freedom (see Gwartney *et al.*, 2011). LE is a life expectancy at birth, (measuring the quality of Human Capital Development)[4] and FIV which is a financial variable, measures the level of domestic financial sector sophistication. This is measures by domestic credit to private sector as a percentage of GDP. The above specification does not have several other variables that some empirical works like Alfaro *et al*. (2004) and Durham (2004) have included because the EF index already captures most of the other variables such as government consumption, inflation and black market premium.

[4] There are other measures like secondary and tertiary enrolment rates and health expenditures etc

Explicitly, in an estimable form, equation (3) is re-written as:

$$RGDP = \omega_0 + \omega_1 CAP + \omega_2 LAB + \omega_3 FDI + \omega_4 ECF + \omega_5 LE + \omega_6 OPN + \omega_7 FIV + \varepsilon \quad (4)$$

To remove variances inherent in the variables, we rewrite equation (3) as:

$$\log RGDP = \omega_0 + \omega_1 \log CAP + \omega_2 LAB + \omega_3 FDI + \omega_4 ECF + \omega_5 \log LE + \omega_6 OPN + \omega_7 \log FIV + \varepsilon \quad (5)$$

All the variables are as earlier defined while ε is an error term which is identically and independently distributed with mean zero and constant variance. Summarily, this can be compactly expressed as:. $\varpi_1, \varpi_2, \varpi_4, \varpi_5, \varpi_6, \varpi_7 \succ 0$ while $\varpi_3 \succ or \prec 0$

As earlier said, all variables are expressed in natural logarithmic forms because apart from helping to produce a better result as compared to linear functional form, it also helps to reduce problem of heteroscedasticity. Annual data spanning the period 1980-2010 was deployed in the study. These data were sourced from IMF's International Financial Statistics (IFS), World Development Indicators, 2012, Central Bank of Nigeria (CBN) Statistical Bulletin (2010) and various issues of the CBN annual reports.

A priori expectation posits a positive relationship between capital (CAP) and the real GDP. Growth theory has clearly delineated that growth occurs from the accumulation of physical capital accumulation. Labour (LAB) also bears a direct and positive relationship with real GDP, the extent of such relationship is believed to depend on the type and quality of labour involved. Skilled and educated labour is expected to contribute more than unskilled and illiterate labour. Traditional economic theory emphasizes the importance of labour to capital since the latter cannot on its own operate itself but to rely on efforts of the former to be functional.

5.2 Unit Root Test

Confirming the order of integration is a pre-requisite for almost all time series analysis. In this study, we applied the Augmented Dickey-Fuller (ADF), Phillips-Perron (PP) and Kwaitkowski-Phillips-Schmidt-Shin (KPSS) unit root tests to determine the order of integration for each series. Since the ADF test is low power in small sample Cheung and Lai, (1995), we also applied the PP and KPSS unit root tests to check the robustness of the estimation results.

5.3 Empirical Results and Discussion

Table.1 presents a descriptive statistics on all the variables of interest. The mean value of real GDP is N5237.87 billion with maximum and minimum being N11057.27 and 3038.04 respectively. In terms of the FDI ratio to GDP, the average value stands at 20.28 with a maximum of 85.55 and crashes to the negative minimum value of 7.40 while the dispersion from the mean value stands at 23.74. The mean value of economic freedom is 4.94 which is a reflection of the extent of economic freedom enjoyed in Nigeria. The maximum is as high as 6.51 and as low as 3.90 but with a wider dispersion from mean of 0.89.

Table. 1: Descriptive Statistics

	RGDP	CAP	LAB	FDI	ECF	LE	OPN	FIV
Mean	5237.87	22.4	106.75	20.28	4.94	46.74	65.17	26.44
Median	4033.42	22.24	103.85	11.4	4.56	46	70.6	24
Maximum	11057.27	30.48	156.05	85.55	6.51	51	97.32	49.9
Minimum	3038.04	13.82	68.45	-7.4	3.9	45	27.8	4.9
Std. Dev.	2340.59	3.9	26.47	23.74	0.89	1.9	18.68	12.32
Skewness	1.2	-0.01	0.27	1.58	0.54	1.12	-0.609	0.29
Kurtosis	3.06	2.89	1.88	4.4	1.7	2.94	2.39	2.2
Jarque-Bera	7.38	0.02	2	15.36	3.68	6.52	2.41	1.27
Probability	0.02	0.99	0.37	0	0.16	0.04	0.3	0.53
Sum	162374	694.33	3309.16	628.64	153.17	1449	2020.37	819.7
Sum Sq. Dev.	164000000	456.4	21022.7	16908.8	23.72	107.94	10465.6	4553.32
Observations	31	31	31	31	31	31	31	31

Source: Computed from the World Development Indicators, (WDI) 2012 and Frazer Institute Economic Freedom Datasets

Apart from the first moment statistics of the series, the results of other statistics are also evident from the table. For instance, Jarque-Bera which measures whether the series is normally distributed or not also rejects the null hypotheses of normal distribution for RGDP, FDI and LE while accepts for that of CAP, LAB, ECF and FIV. Kurtosis measures the peakedness or flatness of the distribution of the series. The statistics show RGDP as only variable that is normally distributed. However, only FDI is leptokurtic, since the distribution is peaked relative to the normal while other variables like CAP,LAB, ECF, LE, OPN and FIV are platykurtic, suggesting that the distribution are flat relative to the normal. Lastly, skewness is a measure of asymmetry of the distribution of the series around the mean. The statistic for skewness shows that all the variables except for CAP is positively skewed, implying that these distributions have long right tails.

Having described the characteristics of the data, we begin by testing the order of integration using the ADF, PP and KPSS unit root tests. The results of the three unit root tests are reported in Table 1. At the 1 per cent significant level, the results of ADF unit root test suggest that all variables are integrated of order one, $I(1)$ process. However, the PP and KPSS unit root tests exhibit that all variables are stationary at the first difference. As noted in the earlier section, the ADF test often has weak power when the sample size of a study is small, so we preferred to use the results provided by PP and KPSS unit root tests. For this reason, we surmised that the variables can be well characterized as $I(1)$ process.

Table 2: Unit Root Test

Variables	ADF	PP	KPSS
$\ln RGDP$	-1.341	-1.446	0.650 ***
$\Delta \ln RGDP$	–4.327 ***	–4.369 ***	0.086
lnCAP	–1.343	–1.052	0.394 ***
$\Delta \ln CAP$	–5.268***	–9.486***	0.043
$\ln LAB$	-0.587	–1.399	0.232 ***
$\Delta \ln LAB$	–4.410 ***	–4.455 ***	0.099
FDI	–0.816	–1.437	0.551***
ΔFDI	–5.398***	–5.380***	0.085
$\ln ECF$	–0.448	–0.358	0.624***
$\Delta \ln ECF$	–6.196***	–6.196***	0.029
$\ln LLE$	-1.123	-1.345	0.732***
$\Delta \ln LLE$	-4.324***	-4.141***	0.022
$\ln OPN$	-1.228	-1.1412	0.897***
ΔOPN	-4.421***	-4.532***	0.037
$\ln FIV$	-0.563	-0.768	0.685***
$\Delta \ln FIV$	-2.768**	-4.987***	0.039

Note: ***, ** and * denote the significant at the 1, 5 and 10 per cent level, respectively. The optimal lag order for ADF test is determined by AIC, while the bandwidths for PP and KPSS tests are determined by using the Newey-West Bartlett kernel.

5.4 Estimation of Growth-Augmented Model

Having presented the time series properties of the data, attempts are therefore made to present multivariate regression results for FDI-Economic freedom and Economic growth. The results of the estimation are presented in Table 3.

From the results all the variables have the expected signs except for degree of openness variable which carries a negative sign. Also, the magnitude of the level of their significances varies from one variable to another. For instance,

capital denoted by LCAP has the expected positive sign. By implication, it shows that a 1% increase in investment proxied by gross fixed capital formation raises output by 0.08% but statistically insignificant. This is not unexpected as most of capital infrastructural facilities in Nigeria have deteriorated and outdated. Special references are made to erratic electricity supply and bad road networks across the country.

Table: 3 Estimates of Economic Growth and Foreign Direct Investment in Nigeria (1980-2010)

Independent variables	**Model I: Coefficients (Without Correction for Autocorrelation)**	**Model II: Coefficients (With Correction for Autocorrelation)**
Constant	-12.612 (0.125)***	-16.259 (0.146)***
LCAP	0.078 -0.517	0.029 -0.049
LLAB	0.982 (1.2126)***	1.11 (0.321)**
FDI	0.012 -1.23	0.053 -0.078
ECF	0.501 (1.019)*	0.574 (0.184)*
LLE	3.333 (0.109)**	2.127 (0.432)*
OPN	-0.015 (0.035)**	-0.019 (0.114)**
LFIV	0.044 -0.076	0.048 -1.016
AR(1)	-	0.885 (0.039)***
R-squared	0.762	0.78
Adjusted R-squared	0.708	0.708
Durbin-Watson stat	1.064	1.894
F-statistic	129.09	128.82
Prob(F-statistic)	0	0
Diagnostic Statistics		
χ^2_{NORMAL}	1.8841[0.3091]	0.5082[0.6376]
χ^2_{WHITE}	0.0325 [0.8113]	1.0115[0.5733]
χ^2_{ARCH}	2.1216[0.1292]	0.3990[0.6821]
χ^2_{RESET}	4.2582[0.0058]	1.6220[0.5505]
χ^2_{SERIAL}	6.1718[0.0294]	0.2074[0.8374]

Note: ***(**)* represent 1%, 5% and 10% level of significance. Standard Errors are in parentheses.

The situations have particularly led to closure of most businesses in Nigeria occasioning their opting to other neighbouring Africa countries where investment climate are relatively conducive for businesses to flourish. Examples can be cited of Dunlop Tyres and Paterson Zochonis (PZ) that has opted to Ghana because of high cost of doing in Nigeria. Labour variable

denoted as (LAB) also has a positive sign and also statistically significant at a conventional level of one percent. This can be attributed to industrious nature of an average Nigerian even in the face of unemployment problem confronting the country most especially in government occupations. Available statistics have shown that over 70% of the Nigerian economy is dominated by informal sector activities. The inference that can be drawn from this is that, the informal sectors provide job employments to a large number of people in the country. Instances abound to support this assertion. The organized informal sectors had largely contributed to the country's gross domestic product unlike unorganized informal sector whose activities are mostly not recorded.

The coefficient on Foreign direct investment (FDI) variable theoretically complies with apriori expectation of positive sign but not significant at any conventional levels. This can be attributed to the fact that most of the inflows are concentrated on petroleum sector whose impact in terms of employment generation is negligible. This finding has equally been confirmed by several studies for Nigeria. Examples include: Konings (2001); Zukowska-Gagelmann (2002) and Ajide and Adeniyi (2010). Economic freedom denoted by ECF is positively associated with economic growth and statistically significant only at a 10% conventional level. The implications of the results are that there might have been considerable improvements in some of the components of economic freedom like the size of government, legal structure and security of property rights, access to sound money, freedom to trade internationally and regulation of credit, labour and business. Such improvements in the components can be explained in part by the enthronement of democratic structures in the country since 1999 till date.

Also, the life expectancy (a surrogate for human capital development) has the expected positive sign. A 1 % increase in life expectancy tends to increase the country's economic growth by multiple of 3. Not only that the coefficient on life expectancy variable is positively related to the level of economic growth but it is also statistically significant at a 5% level. This can plausibly be explained by improved healthcare service delivery and continued health enlightens programs by the government. OPN which measures the degree of openness of the economy is also significant in both model I and II at 5% levels but has contradictory signs of negative. This may be attributed to devastating impacts that may be associated with openness of economy to the host country. For instance, many indigenous industries have been shut down

as well as most businesses due to the low level of patronage for their products in preference for imported products. Further, financial sector development (FIV) proxied by credit extended by banking system is in consonance with apriori expectation. More importantly, it shows that banking credit has not been channeled towards productive real sectors thereby failing to drive the desired changes expected in the economy.

The R^2 which is a measure of model goodness of fit stand at 71% even when adjusted for. By implication, the explanatory prowess of the model is undoubtedly substantial to have explained growth to the tune of about 71% while the error term can be held liable for the remaining percent. However, the model is seriously fraught with serial autocorrelation problem as Durbin-Watson (DW) statistic remains unacceptably low with a value of 1.064. Unlike DW statistics, F-statistics falls within the acceptance region with a value of 129.09 showing the level of joint significance of the explanatory variables.

Model II presents the corrected estimates of the model having adjusted for autocorrelation problems. This is achieved having conducted First Order Autoregressive, AR (1). With such estimation, the value of Durbin-Watson statistics eventually falls within an acceptable region. It is quite interesting however to note that there was no marked differences in results when compared with Model I except for variations in the level of significances.

In addition, the Model II passes all diagnostic tests for non-normality of error term, white heteroskedasticity, autoregressive conditional heteroskedasticity, model specification and serial correlation, whereas Model I fails to accept the null hypothesis of no serial autocorrelation and model specification.

Table 4: Augmented Dickey Fuller Test for Residuals (Null Hypothesis: Has a Unit Root)

Exogenous: None

Lag Length: 0 (Automatic based on SIC, MAXLAG=10)

Augmented Dickey-Fuller test statistic		t-Statistic	Prob.*
		-3.023824	0.0095
Test critical values:	1% level	-2.604746	
	5% level	-1.946447	
	10% level	-1.613238	

*MacKinnon (1996) one-sided p-values.

A cointegration test using the Augmented Dicken Fuller test procedure was conducted on the residuals from the estimated static long run equation in Table 3. In Table 4 the table statistics of -3.0238 is less than the critical value of -2.6047, -1.9464 and -1.6132 percent levels of significance. Thus, the null hypothesis that the least squares residuals contain a unit root is rejected. This means there is a long run cointegrating relationship among the variables namely: economic growth and all the regressors, and this occurs at 1%, 5% and 10% levels of significance.

When non-stationary variables are found to be cointegrated, the conventional wisdom is to estimate an error correction model (Engle and Granger, 1987). This shows the short run response of the economic growth to changes in the explanatory variables. It includes the speed of adjustment to equilibrium when the short run position of the economic growth deviates from the long run position. Table 4 shows the results of the error correction model of economic growth.

Table5: Results from the Error Correction Model

Regressor	Coefficient	Probability
Constant	0.2153(7.6255)***	0.0000
ΔLRGDP	0.1851(1.0512)	0.2157
Δ LCAP	0.2718(1.2126)	0.3613
ΔLCAP(-1)	0.1972(1.1001)	0.5189
Δ LLAB	0.0511(3.6219)***	0.0000
ΔLLAB(-1)	0.0477(2.8219)**	0.0005
ΔFDI	0.2271(1.3347)	0.3199
ΔFDI(-1)	0.3881(1.2663)	0.2781
ΔECF	0.0026(2.4091)**	0.0071
Δ ECF(-1)	0.0518(2.7117)**	0.0006
Δ LLE	0.0177(1.8791)*	0.0517
ΔLLE(-1)	0.0117(1.5718)	0.2115
ΔOPN	-0.0255(1.9912)*	0.0008
ΔOPN(-1)	-0.0239(2.1818)**	0.0071
ΔLFIV	0.1776(1.3133)	0.1771
ΔLFIV(-1)	0.2149(1.5178)	0.2191
ECM(-1)	-0.2105(-2.5155)**	0.0001
Adjusted R-Square	0.839	
Durbin-Watson	2.099	
F-Statistic	31.98	
Standard Error	0.075	

Note: ***(**)* represent 1%, 5% and 10% level of significance. T-Statistics are in parentheses

From Table 5, it can be observed that all the explanatory variables comply with the theoretical apriori signs with the exception of degree of openness variable. The results of the error correction model are not significantly different from that static long run regression model. It is interesting to note that the lagged values of economic freedom also impact positively on economic growth as indicated on the table. Contrariwise, FDI is insignificant at any levels.

Table 6: Regression Results of Components of Economic Freedom Index on Economic Growth

Variables	Effect of Size of Government	Effect of Legal System and Property Rights	Effect of Sound Money	Effect of Freedom to Trade Internationally	Effect of Regulation
Constant	-6.0389 (0.0087)***	-4.9419 (0.0097)***	-6.7191 (0.0065)***	-7.0476 (0.0119)***	-8.1726 (0.0092)***
LCAP	0.0251 -0.1041	0.0194 -0.0924	-0.0079 -0.0907	0.0399 -0.0724	0.0178 -0.0992
LLAB	1.7012 (0.1331)*	1.7996 (0.0432)**	1.3498 (0.2212)***	0.9005 (0.1009)**	1.5606 (0.0707)**
FDI	0.0092 -0.7218	0.0063 -0.9859	0.0022 -0.6922	-0.0012 -0.9029	0.0093 -0.7971
LLE	1.7772 (0.0132)**	1.7944 (0.1170)*	2.6511 (0.1773)*	2.6908 (0.0166)**	2.3402 (0.4331)*
OPN	-1.2314 (0.1002)**	-1.0919 (0.0899)*	-1.0918 (0.1534)*	-1.7871 (0.2211)**	-1.5416 (0.0991)*
LFIV	0.0147 -1.2761	0.0191 -0.8765	0.0393 -0.8133	0.0399 -0.8765	0.0331 -0.9679
SG	-0.0194 (0.0134)*				
LS		0.1663 -0.4332			
MA			0.09 -0.1876		
FT				0.9675 (0.3145)*	
RG					0.0909 -0.6578
AR(1)	0.8812 (0.0119)***	0.8643 (0.1876)***	0.7726 (0.0178)***	0.7404 (0.0312)***	0.8297 (0.1101)***

Note: ***(**)* represent 1%, 5% and 10% level of significance. Standard Errors are in parentheses.

The error correction term has the right sign, it is at the 5%, and lies in the relevant range. The speed of adjustment of the ECM term shows that 21% of the deviation of the short run economic growth from the long run is recovered within a year. The coefficient of determination (R-square) shows that 83.9 % of the variation in growth is explained by the explanatory variables in the model.

Table 6 shows the importance of decomposing the components of economic freedom variable on economic growth. The rationale for this is to show which of the components specifically represents a driving force in the aggregate composite index of economic freedom for Nigeria. The use of aggregative composite index tends to mask some salient factors relating to causal impact of economic freedom-growth relationships. It is on the basis of this, the study presents the decomposition analysis in what follows.

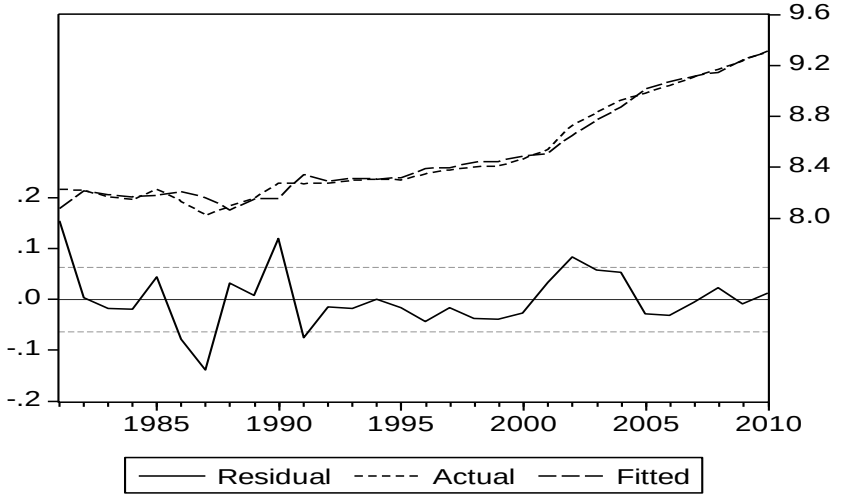

Figure 5: Actual and Fitted Values of Economic growth in Nigeria

Just like what was obtained in Table 3, all the variables theoretically comply with apriori expectation except degree of openness variable whose signs are negative for the entire models estimated. Labour and degree of openness appear as the most important variables influencing economic growth as their level of significances vary from 1%, 5% and 10% respectively across the models. Similar to what was obtained in Table 3, coefficients on capital variable are not statistically significant in all the estimated models but carry the expected signs. Life expectancy is also very important factor significantly affecting economic growth but just in two models, specifically when access to sound money and regulation of credit, labor, and business are controlled for in models 3 and 4 respectively. Financial sector development is also not statistically significant in any of the models. More importantly, of all components of economic freedom, size of government (SG) and freedom to trade internationally (FT) are the only variables whose coefficients are statistically significant at a conventional level of 10%. These results further confirm what was displayed in figure 1 of the diagram. It is interesting to note

that the value of both R-squared and the adjusted are the same for all the models. The Durbin-watson statistics also lies within the range of 1.7797 and 1.9216 which to a large extent reveals a fairly absence of autocorrelations in the models. The joint significances of the models are also satisfactory.

Figure 5 further lends credence to our estimated results in Model II. The fit is quite impressive and since fitted value is able to track the actual date. Notably, the ability of the model to capture turning points is remarkable.

6.0 Conclusion and Policy Recommendations

Research on the causes of growth has generated and received a wide attention in the economic literature to date but a particular strand that crafts a role for economic freedom in growth-FDI space is still at its infancy. This study contributes to the debate by further our understanding on the tripartite relationship among the trio using a multivariate regression approach in a growth-augmented framework over the period covering 1980 through 2010. It was discovered that labour, economic freedom and life expectancy have significant associations with economic growth in Nigeria albeit, at different conventional levels. Similar results were obtained when first-order autogressive was made to correct for autocorrelation problem in the estimated model. Intriguingly, at a disaggregated level, we found only size of government and freedom to trade internationally variables as key economic freedom components whose impacts on economic freedom appear to be more profound since their coefficients are statistically significant at a conventional level of 10%. This therefore suggests the import of using disaggregative rather than aggregative composite index which tend to mask the consequences of certain policy variables, thereby encouraging wrong policy diagnosis and thus assist in formulating bad policy prescriptions.

Some key implications which can be drawn from this study include: first, improving and strengthening the components of economic freedom will certainly create a more friendly investment climate conducive for businesses to flourish. Since a business environment consistent with economic freedom can foster economic growth in order to attract inflows of FDI. Second, Openness is another important predictor for driving growth but must be cautiously allowed in order not to discourage indigenous manufacturers or shut them out of business. Third, excessive intervention by government in the economy should be drastically reduced so as to allow freedom to be enjoyed

and exercised by private individuals who might want to operate freely. Fourth, working labour force should be more engaged and allowed to participate more in the country since their contributions to economic growth is felt. This can be achieved through provision of enabling working environment. Lastly, more budgetary allocations should be channeled towards health delivery schemes and education promoting activities since the likelihood of elongating life expectancy is tandem with such exercises.

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