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**ENTREPRENEURSHIP AND ECONOMIC GROWTH IN NIGERIA (1972-2013)**

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**Abstract**

Governments in Nigeria since 1972 have formulated and implemented some pro-entrepreneurship policies in the country with a view to fostering economic growth and possibly development. Given the current unimpressive performance of the economy, one wonders whether these policies have had the intended effects on it. This paper therefore sought to identify and examine the growth-influencing entrepreneurship variables that these policies may have overlooked. Secondary data were collected on five entrepreneurship variables in the economy. These variables are: Real Foreign Direct Investment, Real Gross Fixed Capital Formation, Real Research and Development Expenditures, Patent Intensity and Contract Intensive Money. The results of the OLS regression carried out showed that of all the variables only Patent Intensity impacted negatively on economic growth in Nigeria. The study therefore concluded that the entrepreneurship variables that are growth-influencing such as Real Gross Capital Formation and Real Research and Development Expenditures should be those that future entrepreneurship policies should target for better outcomes. The study recommended, *inter-alia*, that governments should encourage process and product development by supporting private sector research and development (R&D) efforts and for an improvement of the nation's patent intensity, more technical and technology-based courses should be introduced into the curricula of the nation's institutions of learning so that the patented technology embodied in capital used domestically is sourced from within.

**Key Words:** Entrepreneurship, Policies, Entrepreneurship Variables, Economic Growth, Nigeria**JEL Classification:** M13, O31, O32, O33.**Introduction**

Prior to the 20<sup>th</sup> Century, economists in their writings did not explicitly link entrepreneurship to economic growth. In the 1750s, Cantillon (1755) and much later, Knight (1921) in the early 1920s in their writings, did not go beyond defining who an entrepreneur is and also stressing the entrepreneur's penchant for risk-bearing under uncertainty. It was not until the early 20<sup>th</sup> Century that economists, notably among them, Schumpeter (1911, 1942) started hinting at the likely contribution of entrepreneurship as an important factor in the economic growth equation. After him, the works of Romer (1986) (who alluded to this nexus based on new knowledge spillover in his Neoclassical endogenous growth model), Kirzner (1973), Lucas (1993), Wennekens & Thurik (1999) to mention a few, have all concurred with Schumpeter's submission on the positive role that entrepreneurship played in fostering economic growth.

Some contributors to the entrepreneurship literature have identified some entrepreneurship variables that can positively contribute to economic growth. Some of these variables are: foreign direct investment (De Backer & Sleuwaegen, 2003; Kosova & Ayyagari, 2006; Acs, *et al.*, 2007), innovation (Franco, 2003; Edquist, 2004; Salgado-Banda, 2005; Radosevic, 2007), knowledge capital (Audretsch & Thurik, 2004), competition (Nickell, 1996; Carree & Thurik, 1999), business ownership (Thurik, 1999; Carree & Thurik, 1999), business death and survival rates (Fisher & Reuber, 2010), self-employment, business birth rate and labour productivity (Dabkowski, 2011), institutions (Scully, 1988).

In Nigeria, since 1972, some growth-promoting entrepreneurship programmes have been instituted by successive governments. These programmes were instituted, perhaps in an attempt to target some of these growth-promoting entrepreneurship variables. For instance, Mohammed (1985) observed that the 1972 Nigerian Enterprises Promotion Decree (NEPD) was the first practical legislative step taken for a progressive movement towards the development of an economy largely dominated by Nigerians.

The 1977 NEPD provided for a continuity of the basically capitalist developmental strategy which had been advanced by the earlier Decree of 1972 with only marginal adjustment (Mohammed, 1985). In 1979, the Patent Right and Design Act No. 60 and the Industrial Development Tax Act NO. 2 were also introduced.

By 1995, there seemed to be a shift in paradigm from that of restricting foreign entrepreneurs' participation to that of wooing them to participate in the economy. During this period, the Nigerian Investment Promotion Commission (NIPC) was established by the NIPC Act No. 16 of 1995 to promote, co-ordinate and monitor all investments in Nigeria. It has been argued that the foreign direct investment that this type of agency can attract may promote entrepreneurship through knowledge spillovers. However, given the not so impressive performance of the Nigerian economy in recent times, it seems as if these programmes have had little or no impact on entrepreneurship development which could spur economic growth.

Drawn from the above, this paper thus identified and examined in relative terms the contribution of some key entrepreneurship variables on economic growth in Nigeria between 1972 and 2013.

### **Review of Related Literature**

#### ***Conceptual Clarification: Entrepreneurship and Entrepreneurship Capital***

Two approaches were adopted in finding out what entrepreneurship means. These approaches are the functional approach and the operational approach. The functional approach stresses the importance of the roles of an entrepreneur which in the views of Jaaskelainen (2000) and Friijs, Paulsson & Karlsson (2002) include co-ordination, innovation, uncertainty bearing, capital supply, decision-making, ownership and resource allocation. As observed by Organisation for Economic Co-operation and Development (OECD) (1998), an entrepreneur is a risk-seeker who readily assumes risk in the face of uncertainty, an innovator in the sense that he/she generates, disseminates and applies innovative ideas and an opportunist because he/she is seen as being endowed with the natural ability to perceive and seize new profit opportunities (see also Carree & Thurik, 2002).

From the operational point of view, Acs (2006) described an entrepreneur as an individual or a group of individuals, acting independently of any association or an existing organisation yet creates a new organisation. Hoy (1987) and Gartner (1988) simply put the operational definition of entrepreneurship as the creation of an organisation. Holcombe (1998) pointed out that regardless of the way one looks at the concept, either functionally or operationally; the two are not drastically opposed to each other. This is because both strive to take advantage of unexploited profit opportunities. If the functional and operational definitions are viewed from this perspective, then it can be inferred that both approaches suggest a positive contribution to entrepreneurship supply or capital.

Discussing the concept of entrepreneurship capital also require an understanding of the difference between necessity entrepreneurship and opportunity entrepreneurship. According to Acs (2006), necessity entrepreneurship has to do with when economic agents become entrepreneurs simply because they have nothing else to do, while opportunity entrepreneurship is concerned with when economic agents start new ventures believing that an untapped business opportunity exists in such ventures. By its nature, opportunity entrepreneurship requires that entrepreneurs must constantly look for novel ways of doing things in terms of processes, products, organisation and marketing. For this reason, such activities are referred to as productive entrepreneurship or high-value entrepreneurship and seen as pro-growth. Conversely, economic agents may engage in opportunity entrepreneurship probably out of sheer frustration with their predicament (being unemployed for instance) and may therefore partake in activities that are anti-growth. Examples of such activities are transfers which usually do not generate productive counterparts, and rent-seeking which involves, for example, such acts as corruption, stealing and bribery.

#### ***Meaning of Entrepreneurship Capital***

According to van Stel, Carree & Thurik (2004), entrepreneurship capital is a measure of the capacity to engage in and generate entrepreneurial activities such as business start-ups and spin-offs. OECD

(1998) and Carree & Thurik (2002) see it as the relative share of economic activity accounted for by small firms, level of self-employment, the number of market participants or competition and firm start-ups. Henderson (2006) used the average share of non-farm employment accounted for by non-farm proprietors and the average annual growth rate in entrepreneurs captured by the average number of per capita new business starts that survived five years and the average number of per capita new business starts that produced high-growth during their first five years of operation. From the perspective of innovation, Salgado-Banda (2005) measured innovative entrepreneurship using quality adjusted patent data. Dabkowski (2011) used patent data, as well as, Research and Development (R&D) expenditure to capture innovative entrepreneurship.

### ***Meaning and Indicators of Economic Growth***

The concept of economic growth has been differently defined by many scholars. However, a common theme is that they saw economic growth as an improvement or increase in the productive capacity of an economy with a corresponding quantitative increase in the output of goods and services over a period of time. The increased output is usually referred to in the literature as the Gross National Product (GNP) or Gross Domestic Product (GDP). It has been argued that in order to make inter-period, inter-country and inter-regional comparisons, it is real output i.e. GNP or GDP measured in constant prices and not nominal output i.e. GNP or GDP measured in variable prices that must be used (Commonwealth of Australia, 1964; Haller, 2012).

A concept that is closely related to the concept of economic growth is economic development. While economic growth has to do with quantitative increases in real output over time, the concept of economic development is concerned with how these quantitative increases in output are utilised for the improvement in the living standards of economic agents. So, the concept of economic development has some welfare connotations (Haller, 2012).

The classical literature on economic growth saw growth as purely a product of capital accumulation and size of labour force. But, growth in the classical literature is a short-run phenomenon in that due to an unwitting disregard for the role that technology played in the growth equation by the classicalists, assumed that the phenomenon of diminishing returns would force the growth of the economy to stall in the long-run. This scenario is described as a stationary state. Solow (1956) was not too convinced that the growth in the United States (US) economy during the preceding 100 years was attributable to increased use of labour and capital. So, he ascribed the growth to an unexplained “residual” to technological process which is not determined from within the system (i.e. exogenous to the economy).

Schumpeter (1942) submitted that innovation is the engine of capitalist development. Explaining Schumpeter’s viewpoint, Hanel & Niosi (1998) put it that growth can be attained if entrepreneurs, through innovation, introduce new products, processes and systems, open up new markets and new sources of supply. Earlier though, Lucas (1988), Romer (1990), Grossman & Helpman (1991a) and Aghion & Howitt (1992) had expressed views that the Solow “residual” should not be seen as being brought from the outside but, instead, should be seen as an endogenous feature in the economy. Sachs & McArthur (2008) identified the exogenous feature as adoption which means introducing technologies that have been devised elsewhere and the endogenous feature as developing one’s own technologies.

Grossman & Helpman (1991a, 1991b) and Aghion & Howitt (1992) submitted that economic growth is attainable by developing ones’ own technologies via increasing expenditure on R & D. What is implied here is that growth is achievable either through adoption or imitation or diffusion or by own innovation, all of which can be engendered by domestic R & D efforts. Technology imitation or adoption or diffusion and innovation through R & D efforts can show themselves in an economy through what is known as Total Factor Productivity (TFP). TFP is “a salient feature of countries’ growth experience that cannot be explained by factor accumulation alone” (Easterly & Levine, 2000) and is generally accepted as a good measure of an economy’s innovative prowess (Ranis, 2011).

The factors that can influence TFP are R & D and patents, foreign direct investment (FDI), exports and/or tariffs (Ranis, 2011) institutions, democracy and geography. Human capital has also been identified as a factor in explaining economic growth (Hassan, 2003). This is possible because human capital endows an economy's agents with the ability to, for instance, adapt by innovating around the technology that may be embodied in the equipment brought in through FDI inflows. Other factors that may influence economic growth are population (Hassan, 2003), inflation (Levine & Renelt, 1992), government consumption (Levine & Zervos, 1993) and globalisation (Gallup, Sachs & Mellinger, 1999). It should be stressed that R & D and patents, FDI, human capital and institutions are entrepreneurship capital variables that can positively affect real economic growth and herein lays the nexus between entrepreneurship and real economic growth.

#### ***Entrepreneurship Capital and Economic Growth***

As observed by Schumpeter (1911), the link between entrepreneurship and economic growth is best expressed by innovativeness of the entrepreneur. Schumpeter (1934) further expressed that new innovations by entrepreneurs can destroy other markets and engender growth (i.e. creative destruction) and also spur growth through the creation and transformation of knowledge. Audretsch & Thurik (2004) and Carree & Thurik (2005) have all submitted that entrepreneurship can stimulate growth through knowledge spill over and increased competition. Romer (1986) and Lucas (1988) through their endogenous growth models also identified the crucial role that knowledge played in promoting growth. They are also of the view that entrepreneurship can spur economic growth through competition, especially when new firms are created (see also Audretsch & Thurik, 2004; Carree & Thurik, 2005). However, competition would thrive so long as the business environment is devoid of arbitrary barriers to entry. And for such environment to exist, an institutional framework that frowns at the erection of barriers to entry must be put in place. The two most important core institutions for encouraging entrepreneurship (and by inference promoting growth) are well-defined property rights and the rule of law (Scully, 1988). These institutions (political, legal and cultural) that entrepreneurs operate in, directly influence their activity (possibly productively) to contribute to economic growth.

#### ***Empirical Evidences of the Link between Entrepreneurship and Economic Growth***

There are many strands of empirical literature on entrepreneurship and economic growth utilising different measures of entrepreneurship. Using innovation as a measure of entrepreneurship, Salgado-Banda (2005) found a positive influence of innovation on growth in 22 OECD countries. On the contrary, in a study carried out in Nigeria, Iyoboyi & Na-Allah (2014), found a negative and statistically significant effect of innovation on growth.

Using the national system of innovation (that comprises all important economic, social, political, organisational factors) as a measure of entrepreneurship, Franco (2003), Edquist, (2004) and Radosevic (2007) showed the influence of entrepreneurship on economic growth. They thus concluded that countries with developed solid national system of innovation structure which can engender high entrepreneurial activity thus generating economic growth.

A study by Audretsch & Thurik (2004), using some German regions in the 1990s, included in their model variables such as knowledge capital, physical capital, labour and entrepreneurship capital (the knowledge variant). The outcome of the study was in conformity with the findings of Solow (1956) and Romer (1986) that indicate that a positive relationship exists between knowledge capital, physical capital, labour and output.

De Backer & Sleuwaegen (2003), Kosova & Ayyagari (2006) and Acs, *et al.* (2007) were also of the view that foreign direct investment flows (an important entrepreneurship variable) positively affect economic growth. The study by Oyatoye, *et al.* (2011) on Nigeria that covered the period 1987 and 2006 shared the same outcome. On the contrary, the study by Osuji (2015) (using Autoregressive Distributed Lag (ARDL) method) showed that foreign direct investment had a positive and statistically insignificant and a negative and statistically insignificant effects on economic growth in the short-run and long-run respectively.

A similar study carried out in Pakistan by Saqib, Masnoon & Rafique (2013) found that foreign direct investment had a negative but statistically significant effect on the gross domestic product of the country. Kanu, Ozurumba & Anayochukwu (2014) using a multiple regression analysis showed that gross fixed capital formation had a positive but statistically insignificant effect on economic growth in the short-run in Nigeria. The same study also reported that the Vector Auto-regression performed revealed that in the long-run, gross fixed capital formation positively influenced economic growth.

In linking competition to entrepreneurship and economic growth by using a sample of 14 manufacturing industries in 13 European countries, Carree & Thurik (1998) were of the view that industries with more small enterprises when compared to the same industries in other countries with less small enterprises turn in better performance in terms of output growth.

In relation to the above, Nickell (1996) examined the effect of market competition measured as an increase in the number of competitors relative to companies' production performance. An increase in competitors' number may be viewed as a measure of entrepreneurship since the introduction of a new product or the start-up of a new firm is an entrepreneurial act. Using data collected on 600 United Kingdom manufacturing firms from the periods 1972-1986 and 1982-1994, the study found that competition or an increase in the number of competitors had a positive impact on total factor productivity growth.

Drawing data from 23 OECD member countries, Thurik (1999) found that increased entrepreneurship (measured by business ownership rates) at the country level was associated with higher rates of employment growth. A related study by Carree & Thurik (1999) submitted that OECD countries that demonstrated high entrepreneurial activities (proxied by business ownership rates) enjoyed higher employment and economic growth.

Using the birth rates, death rates and survival rates of businesses in determining the state of entrepreneurship in Canada, Fisher & Reuber (2010) found that except for business birth rates which demonstrated a negative relationship) the other variables were significant and positively impacted economic growth. A similar study by Dabkowski (2011) used a panel data drawn from European countries to test and estimate the importance of entrepreneurship as a driver of economic growth. Total Factor Productivity (TFP) was proxied for economic growth and patents (number of applications to the European Patent Organisation per million of inhabitants), self-employment (rate of self-employment and employers to the total population), birth rate (rate of business start-ups over existing businesses), survival rates (rate of business survival in two consecutive periods over existing businesses), labour productivity (labour productivity percentage growth), R & D expenditure (total business expenditure on R & D as a percentage of GDP) and business investment (total business investment as a percentage of GDP). The results obtained indicate that the signs attached to the estimators were as expected (positive) with the exception of survival rates and business investment which bore negative signs.

Using a regression technique, Akinwale, *et al.* (2012) examined the impact of R&D and innovation expenditure on the economic growth of Nigeria. The result obtained indicates that nominal gross domestic expenditure on R&D and innovation had a negative but significant effect on gross domestic product at constant prices due to corruption.

van Stel, Carree & Thurik's (2004) study investigated whether entrepreneurship may be considered a determinant of economic growth and whether due to an interaction between entrepreneurial activity and per capita income, a non-linear relationship could be found between entrepreneurship and economic growth, using a regressed data collected on GDP growth over data collected on growth competitive index (GCI) and a linear total entrepreneurship activity (TEA) term and per capita income ( $Y_{CAP}$ ) from 36 countries. The adjusted  $R^2$  of the model with linear TEA was found to be low. However, when TEA was allowed to interact with  $Y_{CAP}$ , the adjusted  $R^2$  increased considerably; suggesting that the relationship between entrepreneurship and economic growth is non-linear in the

sense that the level of economic development of nations may indeed determine their level of entrepreneurial activity.

Henderson (2006) used employment growth as proxy for economic growth and tested a model to determine the relationship between some measures of entrepreneurship and employment growth in all counties in the United States. In the model, proprietor data were used to construct two measures of entrepreneurship, namely: the average share of non-farm employment in the counties accounted for by non-farm proprietors ( $E_{DEN}$ ) and the average annual growth rate in entrepreneurs ( $E_{GROW}$ ). Also included in the model were variables considered likely to influence employment growth in the counties. These variables were transportation infrastructure (I), local labour characteristics (L), degree of agglomeration (U), taxes (T) and amenity characteristics (A). These variables constituted the independent variables and employment growth was regressed over them. The results of the regression showed that both the average share of non-farm employment in the counties ( $E_{DEN}$ ) and average annual growth rate in entrepreneurs ( $E_{GROW}$ ) were positive and significant even at the 1 percent level of significance.

The study by Scully (1988) also revealed that the two key entrepreneurship-promoting institutions (rule of law and well-defined property rights) are relevant to economic growth. When rule of law and well-defined property rights are not adhered to, the consequences will include among others; high cost of interacting with government, poor firms' performance (growth contraction and low start-ups), emergence of underground or unofficial economy and capital flight (Boettke & Coyne, 2010). For instance, a study of five post-communist countries carried out by Johnson, McMillan & Woodruff (2000), found that Russia and Ukraine which were in the backward group were different from the others because of differences in protection of property. The study also confirmed that these countries had the weakest rule of law, courts were less used and the cost of interacting with government is higher. It was found too that some of the causes of the emergence of an underground economy were stringent and excessive business regulations and higher taxes on businesses. These outcomes were in conformity with the study carried out by Johnson, Kaufmann & Zoido-Lobaton (1998) which indicates that Ukraine scored the least in terms of tax structures that helped businesses, with Russia performing marginally better.

Linked to the above and with the introduction of corruption and quality of institutions, Ubi & Udah (2014) used regression analysis to show the effects of corruption (captured by corruption index) and quality of institutions (captured by contract intensive money) on the real gross domestic product per capita of Nigeria. The results obtained showed that in the short-run, corruption had a negative and statistically significant effect on real gross domestic product per capita but in the long-run, corruption had a negative but statistically insignificant effect on real gross domestic product per capita. The regression results also showed that the quality of institutions had a negative and statistically significant effect on real gross domestic product per capita in the short-run while in the long-run, the quality of institutions had a negative but statistically insignificant relationship with real gross domestic product per capita (see also Iyoboyi & Na-Allah, 2014).

## **Methodology**

### ***Model Specification***

The first step in the use of Ordinary Least Square (OLS) method is to specify the model that examined in relative terms the contribution of some key entrepreneurship variables on economic growth in Nigeria. Following Schumpeter (1911, 1934), Thurik (2004), Carree & Thurik (2005), Dabkowski (2011) and others as stated in the literature, this study specifies its model as follows:

$$RGDP = \lambda_0 + \lambda_1 RFDI + \lambda_2 RGFCF + \lambda_3 RRDE + \lambda_4 CIM + \lambda_5 PAM + U_i \quad (1)$$

Where:

RGDP	=	Real Gross Domestic Product
RFDI	=	Real Foreign Direct Investment
RGFCF	=	Real Gross Fixed Capital Formation (proxy for Total Business Investments)
RRDE	=	Real Research and Development Expenditure
CIM	=	Contract Intensive Money (proxy for Institutions).
PAM	=	Patent Application per million Nigerians (Patent Intensity)
$\lambda_0$	=	Estimator of the intercept term
$\lambda_1$	=	Estimator of the Real Foreign Direct Investment
$\lambda_2$	=	Estimator of the Real Gross Fixed Capital Formation
$\lambda_3$	=	Estimator of the Real Research and Development Expenditures
$\lambda_4$	=	Estimator of the Contract Intensive Money.
$\lambda_5$	=	Estimator of the Patent Applications per million Nigerians
$U_i$	=	Disturbance Term

( $\lambda_1, \lambda_2, \lambda_3, \lambda_4$  and  $\lambda_5 > 0$  and the positive nature of  $\lambda_4$  implying functioning institutions)

#### **Sources of Data and Definition of Variables**

Secondary data on the measures of entrepreneurship capital in the Nigerian economy were generated. These entrepreneurship capital variables were Gross Fixed Capital Formation (proxy by total business investment), patent applications per million population, nominal Research and Development (R & D) expenditures and foreign direct investment. Data on some key macroeconomic variables were collected for the study. The variables include currency in circulation, rate of population, broad money supply ( $M_2$ ), rate of inflation, and Nominal Gross Domestic Product. The data on these variables covered the period from 1972 and 2013 (years when Nigeria's indigenisation policy was decreed, period of boom and glut, military coups, structural adjustment programme and transition to democracy and democratic rule).

The data used for the study were obtained from the Central Bank of Nigeria (CBN) Annual Report and Statement of Accounts (various issues), CBN Statistical Bulletin (various issues) and Akinwale, *et. al.* (2012).

The figures on the nominal Foreign Direct Investment, nominal Gross Domestic Product, nominal Gross Fixed Capital Formation, and nominal Research and Development expenditures were expressed in real terms by using the Price Index (PI) constructed with the inflation figures to deflate them. Thus, nominal figures were converted to real figures.

Foreign direct investment (as in De Backer & Sleuwaegen, 2003; Kosova & Ayyagari, 2006 and Acs, *et. al.*, 2007), R & D expenditures (as in Dabkowski, 2011), Gross Fixed Capital Formation were used as proxy for total business investments (as in Dabkowski, 2011), contract intensive money proxied for institutions (as in Boettke & Coyne, 2010) and patent applications per million population (as in Salgado-Banda, 2005) were chosen over General Equilibrium Model's (GEM's) Total Entrepreneurship Activity (TEA) ( business birth rate, business death rate, degree of competition in markets, self-employment and the relative share of SMEs) in that the former entrepreneurship variables are readily available in published time-series forms, while the latter entrepreneurship variables are not, especially in Nigeria.

The population figures were used to divide the Utility Patent Application figures to get PAM which was viewed as the Utility Patent Intensity variable. The currency in circulation and the broad money supply were used to construct the Contract Intensive Money (CIM) variable. The CIM is essentially an institution variable and also an entrepreneurship variable that attempts to capture whether the institutions of a country are functioning properly or not. It does this by gauging the level of trust that

economic agents repose in the institutions by their willingness to enter into long-term equity or securitised contracts (Appendix 1).

**Results and Discussion**

The results of the OLS regression showed that the model initially may have suffered from some form of serial correlation with a Durbin-Watson (DW) statistic of 2.30. The regression results also revealed that real foreign direct investment, institutions proxied by contract intensive money and patent intensity had high standard errors relative to the values of the coefficients of these variables and also low t-values causing them to be statistically insignificant.

In order to correct for the serial correlation earlier noted, the model was treated with 4 rounds of Cochrane-Orchutt iteration procedure. The D.W statistic thereafter improved to 2.06. The other results of the regression are shown in Table 1.

Table 1: Regression Results of Entrepreneurship and Economic Growth in Nigeria

Independent Variables	Coefficients	t-Values	Probability Values
Intercept	-8.17	-0.31	0.76
RFDI	0.04	0.16	0.87
RGFCF	8.59*	67.76	0.00
RRDE	130.48*	10.06	0.00
CIM	17.96	0.49	0.63
PAM	-42.52	-0.20	0.85
AR(1)	-0.65	-2.18	0.05
AR(2)	-0.31	-0.76	0.46
AR(3)	0.22	0.58	0.57
AR(4)	0.34	1.17	0.26
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R <sup>2</sup>	= 0.99		
Adj. R <sup>2</sup>	= 0.99		
D.W	= 2.06		
F-Statistic	707.19		0.00

Dependent Variable: RGDP

\*Statistically significant at 5 per cent level

Source: Author’s computation, (2015)

As indicated in Table 1, total business investments proxied by real gross fixed capital formation and real research and development expenditure conformed to the *a-priori* expectations and were all statistically significant. Real foreign direct investment and institutions proxied by contract intensive money conformed to the *a-priori* expectations but were not statistically significant. Patent intensity did not conform to the *a-priori* expectation and was not statistically significant. With an R<sup>2</sup> of 0.99, it means that the regressors accounted for about 99 percent of the variations in economic growth proxied by real gross domestic product. Based on this, it can be said that the model is quite appropriate.

That real foreign direct investment had a positive but insignificant effect on economic growth could be linked to the fact that foreign direct investment (FDI) inflows into the country were not impressive because the Nigeria’s workforce lack sufficient technical expertise and discipline in coping with modern day innovations. As a result, such inflows would not gravitate and drive economic growth and development. Thus, entrepreneurial activities that usually accompany such inflows in form of new knowledge spillovers and spin-offs from incumbent Nigerian firms and the agglomeration effect were not realised. This result is in conformity with the finding of Usoji (2015) that stipulates that foreign direct investment had a positive but statistically insignificant effect on the economic growth of Nigeria.

The positive effect of real gross fixed capital formation on economic growth is quite conceivable in that new business start-ups and business growth call for acquisitions of equipment and employment of manpower by business firms. Expenditures on equipment are also productivity-enhancing which boost economic growth. This result also confirms the finding of Kanu, Ozurumba & Anayochukwu (2014)



that stipulates that in the long-run, gross fixed capital formation positively influenced economic growth in Nigeria.

The positive effect of real research and development expenditure on economic growth as indicated in this study may plausibly have been caused by the fact that incumbent firms and to a certain degree, some governmental agencies do budget for and carry out research mainly in the area of product innovation. Some of the products innovated may have been commercialised, possibly leading to economic growth.

The role of institutions in shaping the nation's economic growth is positive but statistically insignificant. That the institutions are statistically insignificant can be linked to their inability to improve the quality of services they provide due to, among other reasons, bureaucratic bottlenecks and corruption. This outcome is in conformity with the outcome of the study by Egunjobi (2013) and Ubi & Uдах (2014).

The negative but statistically insignificant nature of patent intensity may be due to the fact that the patents that produced the technology embodied in the capital that flowed into the Nigerian economy were of foreign sources, thus implying that the country's patent intensity in the area of process innovation is low. The unavailability of processes to commercialise what was innovated may have caused the inability of this variable to contribute to economic growth in Nigeria. This result also conforms to that of Iyoboyi & Na-Allah (2014).

### **Conclusion and Recommendations**

Based on the above findings, it can be concluded that entrepreneurial activities as captured by real gross fixed capital formation and real research and development expenditure positively affected economic growth in Nigeria. Those captured by real foreign direct investment, quality of institutions and patent intensity did not significantly influence economic growth in the country. Based on these, the recommendations which follow are made:

- the need to encourage the inflow of foreign direct investment. This encouragement may come through a regime of tax-inducements, provision of requisite infrastructure like electric power supply at low cost, good roads and rail network, increased telecommunication services and uninterrupted potable water supply. Coupled with all these, budgetary allocation to the education sector must be increased and genuine efforts must be made to ensure that the increased allocation is spent judiciously. Concerted efforts must also be made by Nigerian governments to improve the nation's security infrastructure and personnel by providing the personnel with enough state-of-the-art equipment, trainings and better remunerations. The presence of these, it is believed, would further spur foreign entrepreneurs' participation in the economy;
- maintaining growth-promoting monetary and fiscal policies stance. In order for capital formation to occur, businesses must either, during start-up or expansion base their investment decisions on their perception of the prevailing outlook of the economy. A weak aggregate demand would portend poor future macroeconomic performance to the entrepreneurs, which consequently, may postpone investing in plants and equipment and diminish entrepreneurial activities. However, a continuous institution of appropriate monetary and counter-cyclical fiscal policies may reverse the outlook of entrepreneurs from a bleak one to a bright one. The earlier banking reforms must be further strengthened through adequate monitoring of this sector by the monetary authorities so that the industry can better support the real sector by effectively playing its traditional role of intermediation. Efforts must also be made by governments to remove all barriers to business registration in the country by reducing red-tapes and abolishing all kinds of arbitrary statutory levies;
- subsidising private sector research and development (R & D) efforts especially in the area of product development. It may be true that Nigeria's entrepreneurs do undertake some R & D in the area of product development. These efforts may be prone to being stymied by easy

diffusion of innovations or the social nature of R & D which makes it extremely difficult for the private sector entrepreneurs to fully appropriate returns on R & D investments. The government can change the situation by granting indirect subsidies in form of accelerated depreciation on capital and tax breaks to business outfits that really undertake R & D investments. For instance, Nigeria's patent intensity is very low. The outcome is a dearth in the process of innovations. This situation can be reversed if governments can establish technology villages in Universities, Polytechnics and research institutions in the country where the best brains in academia are assembled to conceive original innovative ideas and to invent around the innovations embedded in imported equipment. This must be done with linkages between industries and the village;

- improving the quality of institutions. Existing facts have shown that Nigeria's institutions such as the judiciaries, legislatures and bureaucracies are dysfunctional. It is also known that the country is highly insecure in terms of lives and properties. The portfolio type of investment, irrespective of its source would naturally be averse to establishing long-term residency in this kind of environment. A wholesale reform of Commissions and other law enforcement agencies in the country needs to be carried out so that the country's institutions become functional so that the Nigerian business environment can become an attractive destination of choice for investors keen on putting their funds in securitised instruments; and
- revising the curricula of institutions of learning in the country to include more technical and technology-based courses. The inclusion of these courses would ingrain in the minds of the graduates of these institutions an innovative culture such that the proclivity to engage in creative thinking and concomitant generation of ideas (which can be patented) would be provoked in them.

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### Appendix 1

According to Meyer (2002), the CIM may be used as a proxy for institutional quality because longer-term commitments such as savings deposits are only accepted when people feel that their property rights are respected. Without trust, they would hold only very short-term assets or cash including foreign currency. In this study, the CIM is preferred over the Business Environmental Risk Intelligence (BERI) index and the International Country Risk Guide (ICRG) index as in Knack & Keefer (1995) and Knack (1996) because these aggregated business risk indicators (BERI and ICRG) are very subjective.

The CIM as in Claque *et al.* (1999) on the other hand is very objective and it side-steps or avoids the problem of ordinality inherent in the use of other indexes of institutional quality. Its formula is of the form:

$$\text{CIM} = M_2 - C/M_2 \quad (2)$$

Where:

CIM = Contract Intensive Money

C = Currency in circulation

M<sub>2</sub> = Broad Money Supply

Contract intensive money value of one (1) shows a high degree of trust in the economy while a value of zero (0) indicates an absolute lack of trust in the economy.