

ANALYZING IMPACTS OF ENTREPRENEURSHIP DEVELOPMENT ON ECONOMIC GROWTH IN NIGERIA USING VECTOR ERROR CORRECTION MODEL (VECM)

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Abstract

This paper examines impacts of entrepreneurship development on economic growth in Nigeria for the period 1981 to 2017. In this period, several job creation policies of the Nigerian government focused at attaining free enterprise economy in the country. Data for the paper emerged through a systematic review of annual time series data from the Central Bank of Nigeria (CBN) involving credit to SMEs (CRSM), percentage of commercial banks' shares to SMEs (PTCR), credit to private sector (CRPS), unemployment rate (UEPR), inflation rate (INFR), and interest rate (INTR) as explanatory variables; and Gross Domestic Product (GDP), the proxy for economic growth, as the dependent variable. The vector error correction technique was utilized to check the speed of adjustment from the short run disequilibrium to long run equilibrium position. From the results of the regression, variables such as CRSM, CRPS, PTCR were found to have significant positive impacts on the economic growth of Nigeria; while INTR, INFL and UEPR had insignificant negative impact on the GDP. The F-statistic shows that the variables are jointly statistically significant to economic growth in Nigeria. The study concludes that entrepreneurship development has significant impact on economic growth in Nigeria. The paper recommends that commercial banks should encourage financial inclusion in manners that Nigerian entrepreneurs are given easy access to loans. Consequently, there should be a reduction in interest rates as high interest rates deter aspiring entrepreneurs. Commercial banks in Nigeria should review collateral conditions to encourage entrepreneurs to easily access loans.

Keyword: Entrepreneurship, Economic growth, Development, Entrepreneur, Interest Rate

Introduction

Growing the economy has become the major objective of most governments in the developing economies of the world. Over the years, these governments have adopted a number of measures aimed at accelerating growth and development in their domestic economy (Utile, Okwori & Ikpambese, 2018). The need to improve the living standard of the citizenry, reduce unemployment, increase capacity utilization which leads to increased productivity has led to the introduction of vibrant entrepreneurial policies in Nigeria and other developing nations of the world (Utile, Okwori & Ikpambese, 2018). Conventionally, economic growth is the increase in the value of goods and services produced by an economy. In the same vein, Utile, Okwori and Ikpambese (2018) explain that the economy of a nation is considered to have grown when the nation's capital divided by the total population of such country increases sustainability. Economic growth means an increase in real gross domestic products (GDP) – which means an increase in the value of national output/national expenditure (Abdul & Idris, 2014). It is an important macroeconomic objective because it enables increase in living standards, improved tax revenue and helps to create new jobs.

Entrepreneurship is relevant to the analysis of how new ideas or recipes for reconfiguring objects in the material and social world can be harnessed to enhance a nation's wealth. An entrepreneur as an agent of economic transformation in society is visible in employment and wealth generation (Abdul & Idris, 2014). In the longer term, economic progress depends on the ability of the entrepreneur to increase the value of what she/he produces with his/her factor resource (people, land and capital). The primary concern of the entrepreneur is to create something new, involving the motivation to overcome obstacles, the willingness to run risks, and the desire for personal prominence in whatever is accomplished (Abdul & Idris, 2014). A strong need to build something and to feel that what was built is due to personal efforts is a primary motivation. Therefore, by combining new and existing resources with innovative ideas, entrepreneurs add value through the commercialization of new products, the creation of new jobs and the building of new firms (Udih & Odibo, 2016).

Entrepreneurship has been remarkably resurgent over the past three decades in countries that achieved substantial poverty reduction (Naude, 2013). In the 1980s, stagflation and high unemployment caused a renewed interest in supply side economics and in factors determining growth (Udih & Odibo, 2016). Simultaneously, the 1980s and 1990s have seen a revaluation of the role of small firms and a renewed attention for entrepreneurship. The idea that entrepreneurship and economic growth are

very closely and positively linked together has undoubtedly made its way since the early works of Schumpeter (Prateek, 2017). This effect is a result of the concrete expression of their skills, and more precisely, their propensity to innovate (Abdul & Idris, 2014).

The Global Entrepreneurship Monitor (GEM) (2012) indicates that nations with higher levels of entrepreneurial activity enjoy strong economic growth. Entrepreneurship entail the ability to identify the resources, to perceive their economic potentials, the ability and willingness to utilize these resources and invest in their development defining immediate rewards in favour of future investment (Vanguard Newspaper, 2015). Furthermore, the 2012 Global Entrepreneurship Monitor (GEM) has identified Nigeria as one of the most entrepreneurial countries in the world. In their study, it was revealed that 35 out of every 100 Nigerians (over a third) are engaged in some kind of entrepreneurial activity or the other (GEM Report, 2012). The report confirms that micro, small and medium scale enterprises (MSMEs) account for over 80% of enterprises that employ about 75 % of the Nigeria's total workforce, and therefore formulating and effectively implementing MSMEs friendly policies represents innovative ways of building the capacity to engage in entrepreneurial activities and creating job opportunities thus, playing a central and invaluable role in helping Nigeria realize its quantity advantage (United Nations Industrial Development Organization (UNIDO), 2012). Sadly, the expectation of the resultant positive effect of entrepreneurship has suffered because the system has been crippled politically, economically, socio-culturally and even religiously (Anyadike, Emeh & Ukah, 2012). In addition, Ogundele and Abiola (2006) revealed that the wide-spread level of unemployment in the country could have been minimized if Nigerians of varying age groups and backgrounds were exposed to entrepreneurial education, training and development across levels. Moreover, there are several studies on entrepreneurship development and economic growth; findings emanating from these studies have mixed, as some of the studies show a positive relationship while others show that the relationship is negative. Among studies showing a positive relationship between entrepreneurship and economic growth are Udih & Odibo (2016), Adusei (2016), Chang (2011), and Baumol, Litan and Schramm (2007). However, studies including Reynolds, Bygrave and Autio (2003) found that entrepreneurship may hamper economic prosperity especially when the government is not given financial support to their businesses. Very few studies attempt to find the link between credit to Small and Medium Scale Entrepreneurs (CRSMEs), credit to private sector (CPS) and economic growth. Furthermore, most of these studies failed to include unemployment rate, inflation rate and interest rate which are part of the key variables to achieve stable economic growth. Thus, this study aims at examining the

impact of entrepreneurship development on economic growth in Nigeria. The first part of this paper conceptualized entrepreneurship by providing different definitions of entrepreneurship. The second part discussed the theoretical framework upon which analyses in this paper were based; while the last part of the paper includes the data analysis, presentation of results, conclusion and recommendation sections.

Conceptualizing Entrepreneurship Development in Nigeria

The concept of entrepreneurship is indefinite and many academic disciplines have contributed their perspectives on the concept of entrepreneurship (Oteh, 2009). Existing definitions of entrepreneurship in the literature come from different discipline including economics, sociology, psychology and management. Thus, entrepreneurship can best be described as a multidimensional concept (Bula, 2012). One of the classical definitions of entrepreneurship is the one offered by Schumpeter (1934), a development economist, who sees entrepreneurship from the point of view of value creation and defines an entrepreneur as a risk-taking innovator needed for rapid economic development, through the process of “creative destruction”, by which obsolete technologies and ideas are replaced by new ones. Although this definition comes from the field of economics, but the basic ingredient is ‘value creation’ which has the capability of introducing change in the form of economic development. Closely related to the definition of Schumpeter is the view of Ronstadt (1988) who defines entrepreneurship “as the dynamic process of creating incremental wealth. The wealth is created by individuals who assumed the major risks in terms of equity, time and/or career commitment or provided value for some product or service. The product or service may or may not be new or unique but value must somehow be infused by the entrepreneur by receiving and allocating the necessary skills and resources.

Toppr (2018) defines entrepreneurship development as the process of enhancing the capacity to develop, manage and organize a business venture while keeping in mind the risks associated with it. The process of entrepreneurship development is nothing but helping the entrepreneurs develop their skills through training and application of that training (Toppr, 2018). It instills in them the quality of making better decisions in the day to day business activities. Entrepreneurship development is concerned with the study of entrepreneurial behavior, the dynamics of business set-up, development and the expansion of the enterprise (Toppr, 2018). It also refers to the process of enhancing entrepreneurial skills and knowledge through structured training and institution-building programmes (Toppr, 2018).

In Nigeria, it is accounted that the role of government in entrepreneurship development in the country became significant only after the Nigeria civil

war (1967-70) (Saidi, Sodiq & Olushola, 2016). Since the mid-1980s, there has been an increased commitment of government to entrepreneurship development especially after the introduction of the Structural Adjustment Program (SAP) in 1986 (Udih & Odibo, 2016). Added to this is the establishment of the National Directorate of Employment (NDE), National Open Apprenticeship Scheme (NOAS), and the Small and Medium Enterprise Development Association of Nigeria (SMEDAN) (Thaddeus, 2012). In the early 2000s, entrepreneurship studies were introduced into the Nigerian educational system especially in higher institutions as a mandatory course, the Centre for Entrepreneurship Development (CED), which has the objective of teaching and encouraging students of higher institutions (especially in science, engineering and technological (SET)) to acquire entrepreneurial, innovative, and management skills, was established (Thaddeus, 2012). The Centre's goal is to make the graduates self-employed, create job opportunities for others and to generate wealth (Thaddeus, 2012).

Impact of Entrepreneurship Development on Economic Growth in Nigeria

Kimberly (2018) defines economic growth as an increase in the production of goods and services over a specific period. To be most accurate, the measurement must remove the effect of inflation. Economic growth creates more profits for businesses. As a result, stock prices rise. That give companies capital to invest and hire more employees. As more jobs are created, incomes rise. Consumers have more money to buy additional products and services. Purchases drive higher economic growth. For this reason, all countries want positive economic growth. This makes economic growth the most watched economic indicator.

Prateek (2017) defines economic growth in an economy by an outward shift in its production possibility curve (PPC). Economic growth is measured by the increase in a country's output or real gross domestic product (GDP) or gross national product (GNP). The gross domestic product of a country is the total value of all final goods and services produced within a country over a period of time. Therefore, an increase in GDP is the increase in a country's production. Growth does not occur in isolation. Events in one country and region can have a significant effect on growth prospect in another. Economic growth is one of the most important indicators of a healthy economy. One of the biggest impacts of long-term growth of a country is that it has a positive impact on national income and the level of employment which increases the standard of living. As the country's GDP is increasing, it is more productive which leads to more people being employed. This increases the wealth of the country and its population. Higher economic growth leads

to extra tax income for government spending, which the government can use to develop the economy. This expansion can also be used to reduce budget deficit. Additionally, as the population of a country grows, it requires the growth to keep up its standard of living and wealth.

Asogwa and Anah (2017) examine the impact of entrepreneurship development on economic growth in Enugu state, Nigeria. The study uses survey research design whereby structured questionnaires were administered on the sample drawn from the population of the study. The data collected were analyzed with Chi-Square (X^2). The study discovers that entrepreneurial activities create job opportunities which subsequently enhance the standard of living of the people of Enugu State, and therefore concludes that the role of entrepreneurial activities in economic development cannot be over-emphasized because it enhances the socio-economic well-being of the people.

Furthermore, Saidi, Sodiq and Olushola (2016) examined the relationship between entrepreneurship development and economic growth in Nigeria, using Asymmetric auto-regressive distributed lag (ARDL). The results suggest an insignificant direct relationship between positive and negative components of finance for SMEs and real gross domestic products (RGDP). The authors attributed their findings to inefficient mobilization of funds for SMEs operators in Nigeria and more so inability of the SMEs operators to operate in economies of scale. Moreover, the work of Farayibi (2015) provides an Error Correction Model (ECM) econometric analysis on the role of entrepreneurship in economic growth in Nigeria. The study assesses the areas where Nigeria has developed enterprise and innovations such as agriculture, information and communication, environmental and waste management, financial and banking. The findings of the empirical study confirm the roles of entrepreneurs as good drivers of economic growth in the country. Specifically, the results reveal that credit to SMEs is statistically significant in enhancing economic growth in Nigeria.

Abdul and Idris (2014) evaluate the relationship between entrepreneurship and economic growth in Nigeria. The authors employed the Autoregressive Integrated Moving Average (ARIMA) model to analyze the data. The study found that aggregate commercial banks financing of Small and Medium Scale Enterprises (SMEs) has significant positive impact on the economic growth and development during the period. In the same vein, Orishede and Charity (2014) analyze the role of entrepreneurial development and implication for Nigeria's economic growth. The descriptive research design was adopted for the study. Three hypotheses were tested using Chi Square statistical tools. The findings indicate that Job creation and increase in national income are the contributions of entrepreneurial development to economic growth. Furthermore, Dandago

and Muhammad (2014) carry out a study on entrepreneurship development programmes and facilitation of youth employment in Kano State, Nigeria, using OLS method to estimate the parameters of the model. The study finds that entrepreneurship development programmes in Kano State lack capacity to support the establishment of entrepreneurial ventures and to produce the desired level of jobs for youth. Moreover, Abosede and Onakoya (2013) research on entrepreneurship, economic development and growth. They employ OLS technique of estimation. The findings reveal that apart from the bottleneck of access to capital, SMEs are also limited by their lack of managerial capacity to direct enterprises. They also note that SMEs will have to survive and guarantee their sustainability first before they can contribute to economic growth of the countries.

Theoretical Framework

Alfred Marshall's Theory of Entrepreneurship

Marshall (1890) in his Principles of Economics, held land, labor, capital, and organization as the four factors of production, and considered entrepreneurship as the driving factor that brings these four factors together. The characteristics of a successful entrepreneur include: thorough understanding of the industry, good leadership skills, foresight on demand and supply changes and the willingness to act on such risky foresights. Success of an entrepreneur however depends not on possession of these skills, but on the economic situations in which they attempt their endeavors. He believed that entrepreneurship is the driving element behind organization, by creatively organizing; entrepreneurs create new commodities or improve "the plan of producing an old commodity". In order to do this, Marshall believed that entrepreneurs must have a thorough understanding about their industries, and they must be natural leaders. Additionally, Marshall's entrepreneurs must have the ability to foresee changes in supply and demand and be willing to act on such risky forecasts in the absence of complete information. Many economists have modified Marshall's theory to consider the entrepreneur as the fourth factor itself instead of organization, and which coordinates the other three factors.

Schumpeter's Innovation Theory

Schumpeter (1949) holds an entrepreneur as one having three major characteristics: innovation, foresight, and creativity. Entrepreneurship takes place when the entrepreneur creates a new product, introduces a new way to make a product, discovers a new market for a product, finds a new source of raw material, finds new way of making things or organization. Schumpeter's innovation theory however ignores the entrepreneur's risk-taking ability and

organizational skills, and places undue importance on innovation. This theory applies to large-scale businesses, but economic conditions force small entrepreneurs to imitate rather than innovate. In Schumpeter’s view the entrepreneur leads the way in creating new industries, which in turn, precipitate major structural changes in the economy. Other economists have added a dimension to imitating and adapting to innovation. This entails successful imitation by adapting a product to a niche in a better way than the original product innovators’ innovation.

Model Specification

In line with the specific objectives of this study, the model for this study was adopted from the work of Owuru (2014), who identified four important variables that matter for the estimation of entrepreneurial development. The variables include real gross domestic product (RGDP) used as proxy for economic growth while credit to small and medium scale entrepreneurial activities (CRSM), credit to private sector (CRPS) and percentage share of commercial banks’ credit to SMEs in relation to the total credit to the economy (PTCR) were used as proxy for entrepreneurship. Owuru (2014) model can be specified in the following functional form as:

$$RGDP = f (CRSM, CRPS, PTCR) \dots\dots\dots 3.1$$

However, equation 3.1 was modified by including unemployment rate (UEPR), Inflation rate (INFR) and interest rate (INTR). Therefore, the new model becomes:

$$RGDP = f (CRSM, CRPS, PTCR, INFR, INTR, UEPR) \dots\dots\dots 3.2$$

- Where:
- INFR = Inflation Rate
- INTR = Interest Rate
- UEPR= Unemployment Rate

Hence, the estimated linear equation in 3.2 posits that real gross domestic product (RGDP) in Nigeria is a function of credit to SMEs (CRSM), credit to private sector (CRPS), Percentage share of commercial banks’ credit to SMEs (PTCR), Inflation Rate (INFR), Interest Rate (INTR) and Unemployment Rate (UEPR).

Equation 3. 2 can be re-written in econometrics form as thus:

$$RGDP_t = \beta_0 + \beta_1CRSM_t+ \beta_2CRPS_t + \beta_3PTCR_t + \beta_4INFR_t + \beta_5INTR_t + \beta_6UEPR_t + \epsilon_t \dots\dots\dots 3.3$$

- Where:
- t=time

β_0 = Intercept

$\beta_1 - \beta_6$ = Coefficient of each exogenous or explanatory variable.

ε_t = Stochastic error term

In a more explicit form, the models can be rewritten in a log-linear form to transform the variables into the same unit and elasticity. Therefore, equation 3.3 becomes

$$\ln RGDP_t = \beta_0 + \beta_1 \ln CRSM_t + \beta_2 \ln CRPS_t + \beta_3 PTCR_t + \beta_4 INFR_t + \beta_5 INTR_t + \beta_6 UPER_t + \varepsilon_t \dots \dots \dots 3.4$$

Where ln = Natural Logarithm

It is theoretically expected that when there is an increase in the level of entrepreneurship, using credit accessibility by SMEs as a proxy, the growth of the economy will increase consequent upon the increase in the performance of SMEs. Also, since entrepreneurship is often reflected in business expression, if the percentage of the share of SMEs loans accessed from the commercial banks' increases, it would have a positive effect on the level of economic growth in Nigeria. In determining the cost of borrowing and the problem of financial inadequacy in relation to the time lag between procurement and repayment, interest rate and inflation were used as the intervening variables. A single digit level of inflation and a moderate level of interest rates are expected to predicate sustainable economic growth.

Methods

This study adopts quantitative method of analysis and specifically employed the Vector Error Correction Model (VECM) using the econometric software, EViews 10. The reason for the choice of this method is drawn from the result of the preliminary test of the series which revealed evidence of co-integration. Engle and Granger (1991), argued that when variables are co-integrated, their dynamic relationship can be specified by an error correction representation in which an error correction term (ECT) computed from the long-run equation must be incorporated in order to capture both the short-run and long-run relationships. The ECT is expected to be statistically significant with a negative sign, implying that any shock that occurs in the short-run will be corrected in the long-run. If the ECT is greater in absolute value, the rate of convergence to equilibrium will be faster. Other complementary econometric techniques employed are Augmented Dickey Fuller Unit Root Test, Johansen co-integration Test, Granger Causality Test, and Diagnostic Test (Normality Test, Heteroskedasticity Test, and Multicollinearity Test). Some of these are discussed below.

Error Correction Model (ECM): As pointed out by Engle and Granger (1991), if the variables are co-integrated, then any classical Granger test which does not consider the error correction vector is not appropriate; hence, the need for Error Correction Model (ECM). ECM is a category of multiple time series model that directly estimates the speed at which a dependent variable returns to equilibrium after a change in an independent variable. ECM incorporates the long-run equilibrium in the dynamic adjustment (that is the short-run model). The ECM is also closely bound up with the concept of co-integration. Such models can be specified thus;

$$\ln\Delta(RGDP)_t = \beta_0 + \beta_1 \ln\Delta(CRSM)_t + \beta_2 \ln\Delta(CRPS)_t + \beta_3 \Delta(PTCR)_t + \beta_4 \Delta(INFR)_t + \beta_5 \Delta(INTR)_t + \beta_6 \Delta(UPER)_t + \phi ECM_{t-1} + \varepsilon_t \dots \dots \dots 3.5$$

Where:

Δ = Delta, which means change

ECM = Error Correction Model

ε_t = Error term or white noise

ϕ = the speed of adjustment which shows how variables revert to long-run equilibrium

t-1 = the time lag of variation in the variable

Results and Discussions

Presented here are results of the Unit Root Test. The Augmented Dickey-Fuller (ADF) test was employed to determine the integration level of the variables. The null hypothesis states that each variable under investigation has a unit root, meaning that they are non-stationary in their level form. The lag length, which was determined by the Akaike Information Criterion (AIC) for the ADF test was selected to ensure that the residuals were white noise.

The results of these tests are reported in Table 1:

Variable	ADFStatistic	Criticalvalue(5%)	Order of Integration	Prob (5%)	Remarks
<i>ln</i> RGDP	-4.661787	-2.948404	I (1)	0.0006	Stationary
<i>ln</i> CRSM	-7.354824	-2.948404	I (1)	0.0040	Stationary
<i>ln</i> CRPS	-4.449870	-2.948404	I (1)	0.0012	Stationary
PTCR	-5.135301	-2.948404	I (1)	0.0002	Stationary
INFR	-5.955670	-2.948404	I (1)	0.0000	Stationary
INTR	-5.715527	-2.948404	I (1)	0.0000	Stationary
UEPR	-5.989435	-2.948404	I (1)	0.0000	Stationary

Source: Researcher’s Computation Using Eviews 10.0

The Augmented Dickey-Fuller Unit Root test results show that the entire series employed real GDP (RGDP), credit to SMEs as a proxy for entrepreneurship (CRSM), credit to private sector (CRPS), percentage share of commercial banks' credit to SMEs (PTCR), inflation rate (INFR), interest

rate (INTR), unemployment rate (UEPR) become stationary after taking the first difference because their respective ADF test-statistics, in absolute terms, are greater than the critical value at 5% significance level. As a result, the null hypothesis of non-stationarity is rejected. The stationarities of all the series in the same order was thus a motivation to run for co-integration tests. This aims at finding the presence or absent of any long run relationship among the series. This corroborates the submission of Woodridge (2002) that when more than one variable is not stationary at levels, there is every need to run a co-integration test in order to verify if the series have any long run equilibrium relationship. In view of the above therefore, since the variables are stationary at first difference, there was the need for a test of co-integration using the Johansen (1991) co-integration technique. The result is presented in Table 2 as shown below.

Results of the Johansen Cointegration Test: Having obtained the order of integration of the variables (and given that they are all integrated of order 1), the study tests for cointegration among the series. Cointegration indicates the presence of a combination of non-stationary variables that are stationary. The summary of the Johansen co-integration is presented in table 2:

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**	Max-Eigen Statistic	0.05 Critical Value	Prob.**
No. of CE(s)	0.803153	161.4010	125.6154	0.0001	56.88658	46.23142	0.0026
At most 1 *	0.617724	104.5145	95.75366	0.0109	33.65647	40.07757	0.2209
At most 2 *	0.539856	70.85799	69.81889	0.0412	27.16753	33.87687	0.2545
At most 3	0.430281	43.69045	47.85613	0.1166	19.69143	27.58434	0.3629
At most 4	0.298244	23.99902	29.79707	0.2005	12.39591	21.13162	0.5091
At most 5	0.248381	11.60311	15.49471	0.1770	9.993416	14.26460	0.2124
At most 6	0.044950	1.609697	3.841466	0.2045	1.609697	3.841466	0.2045

Source: Researcher's Computation Using Eviews 10.0

Table 2 shows the results of the Johansen co-integration test. The standard statistics used in the interpretations of the test are the likelihood ratio trace statistic and maximum eigen value statistic discussed in Johansen (1988). The trace statistic clearly shows two co-integration equations at 5% level, i.e. where the trace statistics has a higher value than the corresponding critical value. On the basis of maximum eigen value statistic, there is an evidence of one co-integration equation at 5% level i.e. where the Max-Eigen Statistic has a higher value than the corresponding critical value. The results unveil the existence of a long run equilibrium relationship between economic growth (proxied by real GDP) credit to private sector (CRPS), credit to small and medium scale entrepreneurial activities (CRSM), percentage share of commercial banks' credit to SMEs (PTCR), unemployment rate (UER), inflation rate (INFR), and interest rate (INTR). Since Johansen and Juselius (1990) as earlier stated in the methodology

supports maximum eigen value test as most accurate test for co-integration due to improvement in the power of test, it can therefore be concluded that one long-run equilibrium equation exists between economic growth and the explanatory variables considered in this study. Therefore, the null hypothesis which states that there is no long-run relationship between entrepreneurship and economic growth can be rejected. This result conforms with the Finding of Farabiyi (2015), of a long run relationship between entrepreneurship and economic growth.

Error Correction Model Estimates: The establishment of the presence of cointegration among the variables avails the study the opportunity to separate long-run equilibrium relationship from the short-run dynamics. Thus, necessitating the application of the Error Correction Model (ECM) for the regression estimates.

Table 3: Presents the summary of the Error Correction Model

Dependent Variable: D(RGDP)				
	Coefficient	Std. Error	t-Statistic	Prob.
CointEq1	-0.586332	0.179842	-3.260257	0.0324
D(RGDP(-1))	0.171507	0.044343	3.867694	0.0335
D(CRSM(-1))	0.201842	0.049815	4.051803	0.0251
D(CRPS(-1))	0.118483	0.034151	-3.469363	0.0427
D(PTCR(-1))	0.014124	-0.118438	-0.119252	0.9060
D(INFR(-1))	-0.022546	0.080480	-0.280142	0.7816
D(INTR(-1))	-0.019263	0.039761	-0.484482	0.6321
D(UEPR(-1))	-0.013921	0.004532	-3.071338	0.0437
C	0.117475	0.099604	1.794167	0.0344
R-square	0.544088		Durbin-Watson stat	2.095056
Adjusted R-squared	0.511500		Schwarz criterion	-3.589056
F-statistic	23.04944		Akaike info criterion	-3.989003
Prob(F-statistic)	0.046532			

Source: Researcher's Computation Using Eviews 10.0

Table 3 presents the results of error correction model regression results. In this context, the estimated parameters were subjected to test based on economic theory so as to ascertain whether they agree with the expected sign. In other words, the model seeks to relate the proxy for economic growth (Real Gross Domestic Product (RGDP) to its explanatory variables; credit to SMEs used as a proxy for entrepreneurship (CRSM), credit to private sector (CRPS), percentage share of commercial banks' credit to SMEs (PTCR), inflation rate (INFR), interest rate (INTR), and unemployment rate (UEPR) to ascertain the conformation with the 'a priori' expectation underlying each variable.

The coefficient of the error correction term which measures the speed of adjustment towards long-run equilibrium is negative and significant at 5%

level. The ECM has the expected negative sign which stands at -0.586332 . This implies that the rate at which variation of growth of RGDP at time t , adjusts to the single long-run co-integrating relationship is different from zero. In other words, the equation of growth of real gross domestic product (RGDP) contains information about the long run relationship since the co-integrating vector enters into this equation.

The coefficient of past value of real gross domestic product is 0.1715 . This implies that holding other independent variables constant, a 1 percentage increase in the one period lagged value of RGDP translates to approximately 0.17% increase in its present value. Based on the rule of thumb that a variable is said to be statistically significant if the absolute value of its t-statistic is approximately 2 or above, it can therefore be concluded that the one period lagged value of RGDP significantly impacted its present value. Moreover, further evidence of its significance can be seen from the p-value of 0.03, which is less than 0.05 (i.e. at 5% level of significance).

The coefficient of one period lagged of credit to SMEs $D(CRSM(-1))$ is 0.2018 implying that a percentage increase in one period lagged of credit to SMEs will increase the rate of economic growth by approximately 0.20%. Going by the rule of thumb as stated earlier, the t-statistics of 4.0518 is statistically significance with its corresponding p-value of 0.0251 which is less than 5%. This means that, credit to SMEs being a proxy for entrepreneurship is a major contributing factor to the growth of Nigerian economy within the period of investigation. Therefore, the null hypothesis which states that entrepreneurship has no significant impact on economic growth can be rejected. This finding is in line with the result obtained by Afolabi (2015) and Abiola (2014) which reveal that entrepreneurship play a pivotal role in stimulating the economy. However, this finding is inconsistent with the outcome of the study of Ogbo and Agu (2012).

In addition, the coefficient of credit to private sector $D(CRPS(-1))$ is 0.1185 . This implies that credit to private sector has positive impact on economic growth. Therefore, a percentage increase in credit to private sector will lead to approximately 0.12% increase in real gross domestic product provided that all other variables are held constant. The absolute value of the t-statistics is 3.469363 with a significance corresponding p-value of 0.0427 at 5% level of significance. This result implies that the null hypothesis which states that credit to private sector has no significant impact on economic growth is rejected in favour of the alternative hypothesis.

Furthermore, the coefficient of one lagged period of percentage share of commercial banks credit to SMEs $D(PTCR(-1))$ stands at 0.014124 , implying that a percentage increase in $D(PTCR(-1))$ will lead to approximately 0.0014% increase in gross domestic product. Although, this impact is not significant because the p-value of 0.9060 is greater than the

level of significance which is 5% (i.e. 0.05). Therefore, the study accepts the null hypotheses which states that commercial banks credit to SMEs $D(PTCR(-1))$ has no significant impact on economic growth in Nigeria within the period of investigation.

The coefficient of both inflation rate $D(INFR(-1))$ and interest rate $D(INTR(-1))$ stands at -0.022546 and -0.019263 respectively. This shows that the two variables have a negative impact on economic growth, as such, holding other independent variables constant, a percentage increase in either inflation rate or interest rate will lead to approximately 0.022% or 0.01% decrease in real gross domestic product. Meanwhile, going by the result of their respective p-values (0.7816, 0.6321), it shows that both inflation rate and interest rate do not have a significant impact on economic growth in Nigeria within the period of investigation.

Moreover, the coefficient of one period lagged of unemployment is -0.0139, meaning that unemployment has a negative impact on the economic growth. This is absolutely inconsistent with a-priori expectation. The implication of this negative value implies that a percentage increase in unemployment has an adverse effect on economic growth by reducing the value of the real gross domestic product by approximately 0.013%. Furthermore, the results of both the t-value and corresponding p-value (t-value = -3.071338, p-value = 0.0437) shows that they are significant. Hence, the null hypothesis which states that unemployment has no significant impact on economic growth is rejected. The constant (C) also known as the intercept is the value of gross domestic product when other independent variables have a value of zero. The result of the regression in table 3 shows that the constant (C) is 0.117475 and it is significant at 5% level of significance (i.e. 0.034 < 0.05). This implies that real gross domestic product will increase by approximately 0.11% when other independent variables in the model is zero.

Evaluating the fitness of the model analyzed above, the coefficient of determination also known as Goodness of Fit is 0.544088 which suggests that about 54 percent variation in economic growth is explained by credit to SMEs (CRSM), credit to private sector (CRPS), percentage share of commercial banks' credit to SMEs (PTCR), inflation rate (INFR), interest rate (INTR), and Unemployment Rate (UEPR). The remaining 46% percent can be attributed to other variables which influence economic growth but not captured in the model, as such they are regarded as the error term denoted by ε_t in equation 3.3. In the extreme case, one can always be obtained if many independent regressors are included as there are sample observations. The adjusted R-squared penalizes the R-squared for the addition of regressors which do not contribute to the explanatory power of the model. The Adjusted R-squared is never larger than the R-squared and can decrease as more

regressors are added and for poorly fitting models, may be negative. The Adjusted R-squared as shown in the regression in table 3 is 0.511500, which is not far from the estimated R-squared.

The F-statistic reported in the regression output is from the test of the hypothesis which shows that all of the slope coefficients (excluding the constant, or intercept) in a regression are zero. The p-value (0.046532) given just below the F-statistic, which denotes Prob(F-statistic), is the significance level of the F-test. The rule of thumb is that if the p-value is less than 0.05 or 5% (at 5% level of significance), the null hypothesis that all slope coefficients are equal to zero will be rejected. Going by the result of Prob(F-statistic) which is 0.046532, the null hypothesis is rejected, meaning that the independent variables: credit to SMEs (CRSM), credit to private sector (CRPS), percentage share of commercial banks' credit to SMEs (PTCR), inflation rate (INFR), interest rate (INTR), and unemployment rate (UEPR) jointly explain the dependent variable which is real gross domestic product.

Another interesting measure of the precision of this analysis is the Durbin-Watson (DW) statistic. The rule of thumb shows that when the DW statistic is less than 2 in a model, not minding the significant level, such model is said to suffer from multicollinearity, positive first order autocorrelation and spurious regression. Therefore, with the DW statistics (2.095056) being greater than the 2 in this study, and with reasonable number of the significant factors, these models are said to be free from multicollinearity, positive first order autocorrelation and estimation bias emanating from wrong specification of model and spurious regression.

Causality Using Unrestricted VAR: The causal relationship between economic growth and entrepreneurship was examined with the help of Granger-Causality procedure based on Unrestricted Vector Auto Regression using the error correction term. This procedure is particularly attractive over the standard VAR because it permits temporary causality to emerge from first, the sum of the lagged differences of the explanatory differenced variable and second, the coefficient of the error-correction term. In addition, the ECM allows causality to emerge even if the coefficients lagged differences of the explanatory variables are not jointly significant, (Miller and Russek ,1990). It must be pointed out that the standard Granger-causality test omits the additional channel of influence. VAR model was estimated to infer the number of lag terms required (with the help of simulated results using VAR) to obtain the best fitting model and appropriate lag lengths were then used in the causality tests yielding the F-statistics and respective p-values. For any F-statistic, the null hypothesis is rejected when the p-value is significant (less than 0.05 or 5% level of significance or those

stated otherwise). A rejection of the null hypothesis implies that the first series Granger-causes the second series and vice versa.

Table 4: Granger Causality/Block Exogeneity Wald Tests

Dependent variable: D(RGDP)			
Excluded	Chi-sq	Df	Prob.
D(CRSM)	0.002684	1	0.9587
D(CRPS)	0.220302	1	0.6388
D(PTCR)	0.014221	1	0.9051
D(INFR)	0.078479	1	0.7794
D(INTR)	0.234723	1	0.6280
D(UEPR)	0.005089	1	0.9431
All	0.750560	6	0.9933

Source: Researcher's Computation Using Eviews 10.0

The above test presented in Table 4 was run on the model with optimal lag of 1. The essence of this test is to establish the direction of causal relationship between economic growth and its selected determinants. It is preferred to traditional correlation which measures only relationship without direction. Establishing which variable causes or promotes the other, will enhance effective economic planning especially in determining the relative weights to be assigned to these macroeconomic variables in achieving sustainable economic growth. As presented in Table 4 and capitalizing on the p-value at 5% level of significance, the result reveals that none of the independent variable (credit to SMEs (CRSM), credit to private sector (CRPS), percentage share of commercial banks' credit to SMEs (PTCR), inflation rate (INFR), interest rate (INTR), and unemployment rate (UEPR)) granger causes real gross domestic product, as they all have a p-value that is greater than 0.05.

Residual Heteroskedasticity Tests: The study applies ECM Residual Heteroskedasticity Tests. This is to check for the reliability data in making statistical inference. The result is presented in table 5:

Table 5: Residual Heteroskedasticity Tests: No Cross Terms (only levels and squares)

Joint test:		
Chi-sq	Df	Prob.
469.4066	448	0.2338

Source: Researcher's Computation Using Eviews 10.0

Table 5 presents the summary of the Residual Heteroskedasticity test. This test was carried out to check if the residuals are heteroskedastic or not,

as it is required for a time series data to pass the heteroskedasticity test. The null hypothesis states that there is no heteroskedasticity in the model while the alternative states that model is heteroskedastic.

The decision rule is if the p-value is less than 0.05(5% level of significance) H_0 would be rejected; otherwise H_0 is accepted while H_1 is rejected. From the heteroskedasticity test result, the p-value is 0.2338, which is greater than 0.05 (5% level of significance). Therefore, the study accepts the Null hypothesis (H_0) and rejects the Alternative hypothesis (H_1), i.e., there is no heteroscedasticity in the model, thus indicating that the residual or errors term has the same variance regardless of the value of the independent variable.

Conclusion and Recommendations

The study examines the impact of entrepreneurship development on economic growth in Nigeria from 1981 to 2017. The vector error correction model was utilized to check the short run dynamics of the model after establishing that there exist long run relationships among the variables. The result of the model thus reveals that the lagged values of RGDP, CRSM and CRPS have positive and significant impact on economic growth in Nigeria. The results further show a positive but insignificant impact between PTCR and GDP. However, there exists negative and insignificant impact among INFR, INTR and GDP in Nigeria. Also, the relationship between UEPR and GDP is negative but significant during the period 1981 to 2017. The error correction result of -0.5863 shows the expected sign and that it is also statistically significant. This implies that about 59 percent disequilibrium would be corrected for in the current year. The causality test carried out reveals that none of the variables of interest granger cause economic growth. The F-statistic of 23.049 indicates that all the variables are statistically significant with economic growth of Nigeria.

The study therefore concludes that entrepreneurship development has significant impact on economic growth in Nigeria. Effective entrepreneurial development can improve the quality, number and variety of employment opportunities for the unemployed. It also has several multiplier effects on the economy, spurs innovation and foster investment which is a better source of competitive advantage than other natural resources which can be depleted. Entrepreneurs, however cannot work in isolation, they need the right environment to thrive. The judicial system, the educational system, the financial system and general government policies should be such that encourage and promote entrepreneurship. To a large extent, environmental factors have been major constraints to entrepreneurial development in Nigeria. However, it should be noted that basic infrastructure such as power,

water and transport systems are necessary to boost entrepreneurship in Nigeria.

Based on the findings of this study, the study thus recommends that government should endeavour to improve infrastructural facilities in the country as the poor state of infrastructural development is major obstacle to the transformation of ideas into reality. In addition, government should create enabling business environment and policies that encourage entrepreneurship as well as guarantee the security of lives and properties to encourage both local and foreign investors to take risk in order to generate employment opportunities. The study further suggests that there should be easy access to loans and a reduction in the rate of interest because high interest rate can deter aspiring entrepreneurs. This would grant entrepreneurs the financial inclusion needed to bring ideas into reality through investment which would help cushion the effect of inflation on the growth of the economy and bring the economy to the path of development.

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