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Unemployment, Entrepreneurship and Economic Growth: Evidence from Cameroon

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Abstract
The paper investigates the relationship between unemployment, entrepreneurship development and growth in Cameroon. Using co-integration and error correction techniques on time series data from 1980 to 2014 collected from the World Bank Database, the results revealed that there was a negative but insignificant relationship between unemployment and entrepreneurship development in Cameroon both in the short and the long run. However when controlled for factors such as domestic credit to the private sector, trade openness and taxation, further findings indicated that domestic credit to the private sectorpositively and significantly affect entrepreneurship in the short run while trade openness and taxation have a positive and significant effect on entrepreneurship development only in the long run. Also, it was found out that entrepreneurship development was a key determinant of economic growth both in the short and long run. The paper therefore recommends that the government should implement a prudent tax policy that can stimulate entrepreneurship without hampering economic growth as well as put in place measures that will instil entrepreneurial skills in the population and more especially the youth.
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1. Introduction

Employment is an important factor of growth and development in both less developed countries and developed countries. From employment, jobs are seen to be the way throughwhich people generate income to meet their basic needsand much more. In every society, employment has a number of multiplier effects such as: economic freedom for women, better education and health for children, reduction of youth violence, etc(GBSN, 2013). Really, employment is pivotal to successful and sustainable development.

Entrepreneurship has gradually been recognised as a driver of economic growth, innovation and productivity. The Last decade has been characterised by high unemployment both in developed and developing economies which has progressively drawn researchers'attention to the field of entrepreneurship (Baptista et al, 2006). Entrepreneurship has been viewed predominantly as a solution to unemployment especially among the youth (Carree and Thurik, 2003; Thurik et al, 2008; Van Stel et al, 2007).

One of the key indicators of economic activity in an economy is employment. There are costs associated with unemployment in a country which can be economic, social and psychological in nature. By the definition of the International Labour Organization (ILO), the unemployed is the number of economically active population who are without work but available for and seeking work, including people who have lost their jobs and those who have voluntarily left work (World Bank, 2009). In developing nations such as Cameroon where high unemployment coexists with limited economic growth, greater attention is been directed towards entrepreneurship development in order to foster economic progress and to curb unemployment (Baptista and Thurik, 2007).

One of the main objectives of contemporary economics is to identify factors that explain the economic growth of a nation (Smith, 2010). The traditional neoclassical theory suggests that economic growth is a function of capital, labour and technology (Todaro and Smith, 2008). Some neoclassical economists, in addition to the above traditional factors claimed that a nation's economic growth is also determined by the level of knowledge and market friendly policies carried out by the government (Audretsch and Kielbach, 2004; Todaro and Smith, 2008). However, most of these models failed to acknowledge the possible role that entrepreneurship could play in explaining the level of growth of an economy. Van Stel et al (2004) explained that the absence of entrepreneurship in the long list of factors that determine a country's economic progress can be surprising and not at the same. These authors claimed that it is surprising since nearly all economists assert that entrepreneurship is vital for the growth of any nation. Still by the same authors, it not really surprising that entrepreneurship as a determinant of economic growth has not been widely examined since measuring the concept is not an easy task. Unlike other factors which are usually captured using available secondary data, entrepreneurship until recent, apart from self-employment measures which are debatable measures, had no source that could allow for comparison across countries.

Several studies over the last two decades have focused on the determinants of entrepreneurship

development both at the macro level and the micro level. The relationship between unemployment and Entrepreneurship development is quite complex (Ghavidel et al, 2011). On the one hand, increase entrepreneurial activity might lead to decrease in the level of unemployment. On the other side, high level of unemployment can stimulate or hamper entrepreneurship (Audretsch et al, 2005; Verheul et al, 2006). However, there is a lot of ambiguity and contentions in literature concerning the relationship between entrepreneurship and unemployment with studies revealing contrasting results. In addition, most studies have focused mostly either on analysing separately the relationship between unemployment and entrepreneurship or the relationship between entrepreneurship and economic growth Moreover this is so far the first study of its kind in the context of Cameroon.

Therefore, this study vault of any intention to take a final stand on the relationship between unemployment andentrepreneurship, stands as a two stage analysis which intends to examine this relationship in the Cameroon context and to investigate the relationship between entrepreneurship and economic growth. The rest paper consists of foursections including introduction, the literature review, methodology, results discussion and conclusion.

2. Literature Review

2.1 Entrepreneurship: a complex and multidimensional concept

Entrepreneurship is becoming more and more important as many policy makers view it as a tool to fight against unemployment. There is no consensus among researchers on the definition of entrepreneurship. It is a complex and multidimensional concept that cuts across a variety of contexts. Several definitions of entrepreneurship have been proposed by scholars reflecting the complexity of the concept (Bosma and Acs, 2009). From early definitions by authors such as Cantillon (1755), Menger (1870) and Schumpeter (1912) to recent definitions by Gries and Naudé (2011), entrepreneurship has been developed differently to reflect different realities. However, economic theory defined entrepreneurship in reference to the dichotomy between self employment and wage employment (Evans and Jovanovic, 1989). According to economic theory being an entrepreneur is synonymous to being self employed.

2.2 Unemployment and Entrepreneurship

The relationship between entrepreneurship and unemployment can be described as a bidirectional causal relationship. This relationship has been subject to a lot of debate among researchers. On the one hand, unemployment can boost entrepreneurship. This is known in entrepreneurship literature as the refugee, shopkeeperor push effect. This occurs whenpeople involve into necessity entrepreneurship. They are pushed to start up small businesses on their own because of poor employment. On the other hand, entrepreneurship may lead to increased job creation reducing by the same occasion the level of unemployment because of the ability of individuals to identify and exploit market opportunities. This is the entrepreneurial pull effect or Schumpeter effect.

Empirical studies have revealed divergent findings concerning the relationship between entrepreneurship and unemployment. While some authors found out that high level of unemployment can have a catalytic effect of the rate of start up businesses (Reynolds et al, 1995; Hamilton, 1989; Highfieldand Smiley, 1987; Yamawaki, 1990; Evans and Leighton, 1990), others revealed that there is a negative association between entrepreneurship and unemployment (Audretschand Fritsch, 1994; Audretsch, 1995; Audretschet al, 2001). In addition, a third group of authors could not find any significant relationship between unemployment and entrepreneurial activity (Carree et al, 2001).

Audretsch et al. (2001) attempted areconciliationof the ambiguous relation between unemployment and entrepreneurship. They used a two-equation model where changes in unemployment and in the number of business owners were linked to subsequent changes in those variables. Theyfound that the relationship between unemployment and entrepreneurship is both negative and positive. Changes in unemployment had a positive effect on subsequent changes in self employment rates. Also, changes in self-employment rates were found to have a negative effect on subsequent unemployment rates.

Thurik et al. (2007) examined the relationship between entrepreneurship and unemployment in Japan .These authorsfound that, in addition to specific exogenous factors that have affected the unemployment rate in the country, the influence of entrepreneurship on unemployment is quite similar with that of other OECD countries. More precisely, they came to the conclusion that entrepreneurship affects unemployment significantly and negatively. However, the study indicated that this effect is visible only after a lag of four yearly data.

A study by Baptistaetal (2006) in Portugal analysed the relationship between entrepreneurship as proxied by the variation in business ownership rates and unemployment. The findingsrevealed that, when comparing with the OECD average, Portugal has been a relative outlier in regard to the effects of entrepreneurship on unemployment. They found that the industrial transformation effects characterised by increases in business ownership rates probably do not have a significant impact on the reduction of

unemployment.

Lasch et al (2007) examined the impact of unemployment on entrepreneurship in France using data from 1993 to 2001. The authors used multiple regression analysis and discover that unemployment is a key determinant of entrepreneurship among other variables including population growth and highly qualified working population. Their empirical results therefore highlighted the effects of local economic environment on entrepreneurship and concluded that geographical areas do matter for entrepreneurship. Moreover, the findings demonstrated that unemployment rate was more important than population growth in explaining entrepreneurship in the 348 French labour market areas under study.

Astudy by Plehn-Dujowich (2012) in U.S. Industries investigated the dynamicrelationship between entrepreneurship,unemployment, and growth. The overall results indicated that entrepreneurship and growth reduced unemployment, while unemployment promoted entrepreneurship and growth, which implies that entrepreneurship may be the engineof economic growth in United States. Similarly, the study of Ahmad et al (2011) in Pakistan showed that entrepreneurial activity can only affect unemployment negatively at the early stageindependently of gender.

Ghavidel et al(2011), using panel data from 1995to 2007 of 23 OECD countries and 7 developing countries examined the relationship between entrepreneurship rate and unemployment rate in developed and developing countries. The authors used simultaneous equation model with two-equation to analyse the data. Their findings revealed that, Schumpeter effect for developed and developing countries is established as a definite (impact of entrepreneurship rate on unemployment rate), but refugee effect (impact of unemployment rate on entrepreneurship rate) is not clearly established. The results also indicate that there is a quadratic relationship between unemployment rate and entrepreneurship rate (refugee effect), at first increasing and then decreasing.

Dilanchiev(2014) used regression analysis of two variables namely entrepreneurship and unemployment rate from the year 2003 to 2013 to investigate the relationship between unemployment and entrepreneurship in Georgia. According to this author, entrepreneurship development as a phenomenon generating jobs plays a very important role in particular to fight against high unemployment level in this country. The study concluded that for transition countries such as Georgia, entrepreneurship development plays a vital role for solving the unemployment problem. Testing both the “Schumpeter” effect and the “Refugee” effect, the study revealed that the effect of entrepreneurship development was statistically significant.

The significance of this paper can also been justified from the empirical studies mentioned above. In fact most of the studies that investigated the relationship between unemployment and entrepreneurship laid emphasis on the effect ofentrepreneurship development on unemployment while ignoring the other direction of possible causality. In addition, studies in developing countries such as Cameroon are so far practically inexistent. This paper therefore seeks to add value the existing value of knowledge while looking at the effect of unemployment on entrepreneurship on one hand and the contribution of entrepreneurship to economic growth on the other

2.3 Entrepreneurship and Economic Growth

The relationship between entrepreneurship and economic growth can be traced back to the seminal work of Schumpeter (1963). The hypothesis that entrepreneurship can promote economic growth and development is basically as a result of pure intuition, economic observation and common sense (Afolabi, 2015). Discovery and exploitation of new opportunities is and the heart of entrepreneurial activities. It is a source of innovation and change and as such spurs improvements in productivity and competitiveness (UNCTAD, 2004). However, empirical evidence about this relationship has produced diversified results. Nkwatoh (2015) used the weighted least square technique to analyse the relationship between entrepreneurship development and unemployment; and its implication for economic growth in Nigeria. He estimated different models with time spans of five and nine years respectively within the period 1982 to 2013. The results showed the occurrence of a double causation: entrepreneurship development reduces future unemployment and also unemployment induces entrepreneurship development. However, the duration of impact is after eight years which is quite long.

A study by Van Stel et al (2004) using data from the Global Entrepreneurship Monitor (GEM) database for 36 countries investigated the effect of total entrepreneurial activity on GDP growth. The outcome of the study revealed that entrepreneurship affects economic growth depending on the level of development of the economy measured by GDP per capita. The findings therefore suggest that the role of entrepreneurship in explaining a country’s growth varies across countries depending on the level of economic development of that country.

In Nigeria, Afolabi (2015) analysed the effect of entrepreneurship on economic growth and development. The study used the narrative – textual case study method and interviews to carry out the investigation since sequential data on the main variables were absent. The author found out that entrepreneurship can promote economic progress by primarily generating employment and stimulating the growth of micro, small

and medium size enterprises. The paper therefore recommended that there should be proper policy coordination and stability as well as educational reforms in order to prepare students for self reliance among other things.

3. Methodology

This paper investigates the relationship between unemployment and entrepreneurship development in Cameroon as well as the relationship between entrepreneurship and economic growth in the same country. The paper is therefore guided by two hypotheses all formulated in the null form.

H_1: Higher rate of unemployment increases the level of entrepreneurship development in Cameroon.

H_2: Higher level of entrepreneurship development in Cameroon significantly promotes economic growth.

The causal multivariate research design was employed since it permits us to examine relationship between several independent variables and a dependent variable. The paper used data from Word Development Indicators (WDI, 2016) and UN data (2016) running from 1980 to 2014.This time scope was suitable for the study because it encompasses several economic occurrences that could have affected economic activities in Cameroon. Also, the 35 years period can be justified by data availability of variables incorporated in the study. We specified two equations in order to test the abovementioned objectives. The models were specified as follow:

Model 1 (Entrepreneurship equation)

$$ENT = \alpha_0 + \alpha_1 UN + \alpha_2 DCPS + \alpha_3 OPEN + \alpha_4 TAX + \varepsilon \quad \ldots\ldots(1)$$

Where:

ENT is entrepreneurship measured by Total Value Added (TVA). This is our dependent variable (Vukenkeng and Mukete, 2014).

UN refers to unemployment measured by unemployment rate. As we said earlier, there is consensus on the effect of unemployment on entrepreneurship development. Unemployment can stimulate entrepreneurship or discourage it. Thus our a priori expectation is ambiguous ($\alpha_1 \neq 0$).

Domestic credit to the private sector (DCPS) as a percentage of GDP is our second independent variable which captured credit availability to the private sector. Credits are complementary funds available for entrepreneurs to start up new businesses or to expand the existing one. Thus, we postulate a positive association between DCPS and entrepreneurship development ($\alpha_2 > 0$).

Trade Openness (OPEN) measured by the sum total of imports and exports as a percentage of GDP. The more the economy is opened to international markets the more local entrepreneurs can find new market and business opportunities out of the national territory. Higher level of openness may therefore translate into higher level of business opportunities. Thus, we expect a positive sign of OPEN ($\alpha_3 > 0$).

TAX captured direct taxes as a percentage of GDP. It is widely believed that a higher rate of taxes negatively influence expected revenue and can deter potential entrepreneurs from starting new business or existing ones to expand their business(Baliamoune-Lutz and Garello, 2012). We therefore expect a negative association between taxation and entrepreneurship development ($\alpha_4 < 0$).

Model 2 (Growth equation)

$$EG = \beta_0 + \beta_1 ENT + \beta_2 DCPS + \beta_3 OPEN + \beta_4 TAX + \mu \quad \ldots\ldots(2)$$

Where:

EG (economic growth) is our dependent variable measured by the logged value of real GDP.

It is widely believed that entrepreneurship (ENT) is beneficial for economic growth and development. Entrepreneurship has been remarkably resurgent over the past three decades in countries that achieved substantial poverty reduction (Naudé, 2013). Entrepreneurs add value by discovering new methods of combining resources with innovative ideas and by commercialising new products, exploring new markets, creating new jobs and building of new firms. By so doing, they promote economic growth. Henderson (2007) viewed entrepreneurship as the engine of economic growth. Therefore we expect a positive sign of ENT ($\beta_1 > 0$).

The a priori expectations of the coefficients of the control variables are: β_2, $\beta_3 > 0$and $\beta_4 < 0$.

The procedure for estimating the above equations drew inspiration largely from co-integration analysis and the error correction model (ECM) which has been used to explore several economic phenomena (Adams, 1992: Egwaikhide, 1999 and Mafimisebi, 2002). The basic idea behind this analytical framework is the determination of characteristics of the time series variables. Most importantly, to ascertain the order of integration and, therefore, the number of times a variable has to be differenced to arrive at stationarity. The underlying principle behind econometric estimation method is the thinking that the mean and variance computed from such economic variables that are stationary would be unbiased estimates of the unknown population mean and variance. However, due to fluctuations in the economy, non-stationarity has become an extremely common phenomenon in macro-economic variables. The implication of non-stationarity in econometric modelling is grave as it leads to spurious regression. Egwaikhide (1999) argued that using one or more non stationary series in a regression equation could produce biased estimates, thereby leading to incorrect statistical inferences when such series are estimated at their levels, except in the case of a co integration relationship. Therefore, identification of the time series properties of model variables assists in avoiding the problem of spurious

estimates.

This is the testing of the presence or otherwise of co-integration between the series of the same order of integration through forming a co-integration equation. The basic idea behind co-integration is that if, in the long-run, two or more series move closely together, even though the series themselves are trended, the difference between them is constant. It is possible to regard these series as defining a long-run equilibrium relationship, as the difference between them is stationary (Hall and Henry, 1989). A lack of co-integration suggests that such variables have no long-run relationship: in principal they can wander arbitrarily far away from each other (Dickey et. al., 1991). Robust methods for testing whether macroeconomic variables are co-integrated have been put forward by Engle and Granger, (1987); Stock and Watson (1989); Johansen and Juselius (1990).

Although the Engle-Granger (1987) procedure is easily implemented, it has several shortcomings (Enders, 1995). Firstly, it arbitrarily takes one variable as dependent variable and the remaining as independent variables. However, reversing the order could indicate no cointegration even if the variables were earlier found to be cointegrated. Secondly, there may be more than one co-integrating relationship if there are three or more variables but this approach allows at the most one cointegrating relationship. Third problem with this approach is that it generates the error series in the first step and the second step uses these generated errors to estimate a regression equation of error correction model. Thus the errors committed at the first step carry over to the second step.

The above mentioned problems are linked with our analysis; therefore, we used the Johansen approach, which overcomes these shortcomings. In this approach no variable is set exclusively as the dependent variable, the co-integrating equation and error correction mechanism is a one step procedure, and there can be more than one co-integrating vector. Broadly speaking, cointegration test is equivalent to examine if the residuals of regression between two non-stationary series are stationary (Lee, 2000). For Engel-Granger test, regress Y_t on X_t (or vice versa), and use the residual to see if it is stationary. If it is stationary, two series X_t and Y_t are cointegrated. Johansen uses more complicated VAR structure to test the cointegration. In a multiple non-stationary time series, it is possible that there is more than one linear relationship to form a cointegration. This is called the cointegration rank. The decision rule using the cointegration rank is that we accept the null hypothesis of no cointegration when the rank is equal to 0 and reject the null hypothesis otherwise.

Briefly, the paper used the one stage cointegration procedure of Johansen and one stage errorcorrection model of Hendry(1995) to examine the long and short run dynamic among the variables. Cointegration is a necessary condition for ECM. ECM describes the long run equilibrium relationship between non-stationary series. Even though individual series are non-stationary, when they are cointegrated, there is a long run equilibrium relationship, and ECM explains this relationship (Lee, 2000).

Prior to the cointegration and ECM estimation, unit roots tests of the variables were conducted to ascertain the degree of integration of the variables. This paper used the Augmented Dicker Fuller test for stationarity. In order to ensure that the results were reliable and predictable, we further carried out the Breusch-Pagan test of heteroscedasticity, the Durbin Watson test for autocorrelation and Variance Inflation Factors (VIF) test to make sure multicolinearity was not a problem in the model.

4. Presentation and Discussion of Results

The result of the trend (graph) analysis could not be presented here due to space constraint. However, it can be noted that most of the variables did not depict a particular trend. They mostly revealed a stochastic evolution of the variables with drift which account for fluctuations in economic activities in Cameroon following various phases of the economic life of the country. The characteristics of the variables were formally tested using the ADF unit root test which the results are presented in table 1 below:

Table 1: ADF unit root tests results of the variables

Variables	test statisticsatlevel	Critical value at 5%	test statistics after first difference	Critical value at 5%	Order of integration
ENT	3.208034	-2.976263	-3.192885	-2.954021	I(1)
EG	-2.700466	-3.562882	-3.954229	-3.595026	I(1)
UN	-1.952161	-2.951125	-8.657262	-2.954021	I(1)
DCPS	-1.666897	-2.951125	-4.722466	-2.954021	I(1)
OPEN	-1.172296	-2.960411	-3.137666	-2.963972	I(1)
TAX	-1.984214	-2.951125	-4.449865	-2.954021	I(1)

Source: The authors

The results from the Augmented Dicker Fuller stationary tests indicate that all the variables were not stationary at level. However, after first difference, all the variables achieve stationarity. The number of times a series is differenced to achieve stationarity determine the order of integration. We therefore conclude that all the variables are integrated of order one(I(1)). This justifies the error correction specification done above.

The summary of descriptive statistics presented in appendix A reveals that the average direct tax as a percentage of GDP of Cameroon over the period of study stands at 2.77%. Similarly, the mean value of DCPS to GDP ratio and unemployment are respectively 16% and 6%. The standard deviation values indicate that there is relatively low variability of the variables around their mean value except for DCPS where the standard deviation is estimated at 8.41 indicating high variation of DCPS during the 35 years. The JaqueBera values of the variables show that all the variables were normally distributed as all the JaqueBerawere less than 5.99. This is later on confirmed by the probability values.

Further pre-tests results indicate that there were no serious correlation among the independent variables as the correlation coefficients were all below 0.6 except between DCPS and OPEN where the correlation coefficient was estimated at (-0.8) suggesting possible problem of multicolinearity which was further verified using the VIF. The pair wise correlation matrix is presented in AppendixB.

4.1 The long and short run relationship between unemployment and entrepreneurship in Cameroon

This section presents and discusses the results of the cointegration test and ECM of entrepreneurship equation. The co-integration technique makes it possible to test the existence of a relationship of long run equilibrium among non stationary variables. A summary result of the fivetrend and intercept assumptions of the Johansen test are presented in table 2 below:

Table 2: Cointegration result of entrepreneurship equation

Data Trend:	None	None	Linear	Linear	Quadratic
Test Type	No Intercept No Trend	Intercept No Trend	Intercept No Trend	Intercept Trend	Intercept Trend
Trace	2	3	3	4	4
Max-Eig	2	3	3	4	4

Source; The authors from Eviews 8

From the table above it can be observed that the trace tests and maximum eigen value test provides the same results for all the 5 options. Moreover, it is clear that all the 5 trend assumptions reject the null hypothesis of no cointegration among the variables as they reveal at least two cointegrating equations at 5% level of significance. It therefore means that there is cointegration among the variables specified in the equation implying that there is a long run equilibrium relationship between the variables. Since there is cointegration among the variables, it therefore implies that there exists an error correction mechanism.

The results of the one stage error correction model of entrepreneurship are presented in table 3 below:

Table 3: ECM results for entrepreneurship model

Dependent Variable: D(ENT)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(UN)	-0.006053	0.008519	-0.710490	0.4842
D(DCPS)	0.005256	0.002769	1.897943	0.0698
D(OPEN)	0.368215	0.271130	1.358074	0.1871
D(TAX)	0.014685	0.011247	1.305724	0.2040
ECT	-0.156497	0.053452	-2.927785	0.0074
UN(-1)	-0.005503	0.008738	-0.629850	0.5347
DCPS(-1)	0.001801	0.001649	1.092183	0.2856
OPEN(-1)	0.801455	0.287423	2.788418	0.0102
TAX(-1)	0.031443	0.006598	4.765295	0.0001
C	4.240997	1.562649	2.713979	0.0121

R-squared	0.617616	Breusch Pagan (Prob.)	0.0540
Adjusted R-squared	0.474222	Serial corr LM test (Prob.)	0.1629
F-statistic	4.307127	Durbin-Watson stat	1.213393
Prob(F-statistic)	0.001999	JaqueBera	5.110621

Source; The authors from Eviews 8

As expected and required by the stability condition of the dynamic model, the error correction term coefficient is negative (-0.16497) and statistically significant at 1% (Prob. = 0.0074). This result confirms the existence of cointegration relation among the variables. An ECT coefficient of 0.156497 means that 15.65% of the disequilibrium in entrepreneurshipdevelopment (say deficit of entrepreneurship) observed at period *t-1* will

be eliminated at period t. This outcome also indicates that the speed (rate) at which entrepreneurshipdevelopment adjusts itself to its long term level in the Cameroonian economy following shocks is relatively low. It therefore implies that any shock on entrepreneurship in Cameroon requires more than 6 years to be fully eliminated to restore the long term equilibrium.

The short run elasticities are given by the coefficient of the differenced variables while the long run elasticities are calculated by dividing the coefficient of the lagged variables by the coefficient of the ECT multiplied by negative one (-1). As such, the results reveal that there is a negative association between unemployment and entrepreneurship development in Cameroon both in the long run and the short run. However, the results are insignificant as their P-value is greater than 10%. This result is in line with that of Carree et al (2001) who found no statistically significant relationship between unemployment and entrepreneurship. This can be explained by the fact that involving into entrepreneurship in Cameroon does not really depend on employment status but on other factors such as capital availability and personal and environmental characteristics. It is quite common that business owners in Cameroon are most often paid workers at the same time.

Further results indicate that there is a positive effect of DCPS on entrepreneurship in Cameroon in the short and long run. However, the relationship is significant only in the short run as the P-value of the short run coefficient (0.0698) is less than 01 (10%). This finding therefore suggests that, in the short run, an increase of credit to private sector by 1% will bring about 0.0052% increase in entrepreneurship development every other thing being equal. More credit facilities may translate into more funds available to start new businesses or to expand existing ones. This result is in line with our a priori expectation.

As expected, trade openness has a positive influence on entrepreneurship development in Cameroon in the long and short run. Unlike the short run result, the long run coefficient is significant at 5% level of significance. The more the national economy opens t international trade, the more entrepreneurs find new markets for their products which entail more investment into entrepreneurship in order to produce more. This result is not surprising and conforms to our expections.

Contrary to our prior expectations, the coefficient of TAX is positive in the short run (0.014685) and in the long run (0.031443) which implies that higher direct taxes stimulate entrepreneurship development in Cameroon. However, the findings show that the short run relationship is insignificant while the long run association is significant at 1 percent since the P-value is calculated at0.0001. This result can be backed by the fact that a higher level of taxation might discourage paid job workers who in turn will join entrepreneurship where it is believe that tax evasion and avoidance is high. Though contrary to our prior expectation, this outcome falls in line with the finding of Robson (1998) who, using time series data for United Kingdom, also found out that there was a positive effect of average tax rate on entrepreneurship development measured by self employment.

It is worth noting that the overall model was significant at 1% since the probability value of the Fischer test (0.001999) is less than 0.01. In addition, the adjusted R-square reveals that more than 47% of the variation in entrepreneurship development in Cameroon was explained by a joint variation of all the explanatory variables specified in the model. Furthermore, the probability values of the Breusch Pagan heteroscedasticity test (0.0540) and the serial correlation test (0.1629) reveal that we respectively accept the null hypotheses of homoscedasticity and no serial correlation in the model since the P-values are all greater than 5%. Similarly, the JaqueBera of residuals (5.11) shows that the errors follow a normal distribution since the JaqueBera is less than the critical value at 5% level of significance (5.99). The VIF results as presented in appendix C also indicates that multicolinearity was not a major concern in the model as the VIF values never exceeded the critical value of 10 as suggested by Gujarata (2004).

4.2 The effect of entrepreneurship development on economic growth in Cameroon

Similarly to the previous section, the present section presents and discusses results of the one stage cointegration and ECM. Table 4 gives a summary of the two variants of Johansen cointegration test following the 5 options representing the 5 trend and intercept assumptions.

Table 4: Johansen Cointegration test results for economic growth

Data Trend:	None	None	Linear	Linear	Quadratic
Test Type	No Intercept No Trend	Intercept No Trend	Intercept No Trend	Intercept Trend	Intercept Trend
Trace	1	2	2	2	3
Max-Eig	1	2	2	2	2

Source: The authors using Eviews 8

The table above shows that no matter the assumption chosen, there is at least one cointegrating equation

among the variables implying that we reject the null hypothesis of no cointegration. In other words, both the trace and maximum eigen value tests reveal that there is a long run equilibrium relationship among the variables which makes the error correction representation suitable for the study.

Below (table 5) is the result of the ECM for economic growth in Cameroon measured by real gross domestic product.

Table 5: Regression results
Dependent Variable: D(EG)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(ENT)	0.997364	0.040047	24.90489	0.0000
D(DCPS)	-0.001668	0.000568	-2.938160	0.0072
D(OPEN)	0.122274	0.060221	2.030414	0.0535
D(TAX)	-0.001473	0.002616	-0.563247	0.5785
ECT	-0.713697	0.193122	-3.695580	0.0011
ENT(-1)	0.715799	0.191551	3.736851	0.0010
DCPS(-1)	-0.000260	0.000361	-0.721275	0.4777
OPEN(-1)	0.170741	0.071482	2.388597	0.0251
TAX(-1)	-0.002619	0.001798	-1.457187	0.1580
C	-0.066847	0.250262	-0.267107	0.7917

R-squared	0.984297	Breusch Pagan (Prob.)	0.2061
Adjusted R-squared	0.978408	Serial corr. LM test (Prob.)	0.5724
F-statistic	167.1489	Durbin-Watson stat	2.073902
Prob(F-statistic)	0.000000	JaqueBera	1.642287

Source: The authors using Eviews 8

Again, the ECT coefficient fulfils the stability condition which requires the error correction term coefficient to be negative and significant. A negative value of the ECT coefficient (-0.713697) signifies that economic growth will always converge to its long run equilibrium after a shock. This result is therefore in conformity with economic theory and means that 71.58% of economic growth disequilibrium of the previous year will be corrected the current year. This outcome also implies that it takes less than 2 years for disequilibrium caused by any shock of economic growth to be totally eliminated.

As expected, the findings show that entrepreneurship development has a positive effect on economic growth both in the long and the short run. Going by the level of significance of the finding, the short run and long run coefficients are significant at 1% since their P-value are less than 0.01. The coefficient of D(ENT) is 0.997364 implying that an increase of entrepreneurship by 1% will result in a 0.997% increase in real GDP in Cameroon in the short run. Meanwhile, in the long run a 1% increase in entrepreneurial value added will bring about 1.003% ($-\left[\frac{0.715799}{-0.713697}\right]$) increase in economic growth which implies that there is a multiplier effect of entrepreneurship development on economic growth in Cameroon in the long run though the effect is very low. This result conforms to that of Van Stel et al(2004) and Afolabi (2015). This result can be explained by the fact that entrepreneurship development create new jobs and provide income to both the entrepreneurs and the workers. This finding is also in line with Henderson (2007) view who sees entrepreneurship development as the engine of economic growth.

Further results indicate that DCPS exerts a negative and significant effect on economic growth in Cameroon in the short run though the effect is very marginal (0.0017%). In the long run this result becomes insignificant. This can be explained by the fact that the cost of credit might be high for entrepreneurs which in the short run might incurrelosses in their businesses. As time passes the business becomes worthwhile rendering the negative effect on growth insignificant.

As expected the coefficient of OPEN is positive in the short and long run meaning therefore that trade openness positively affect economic growth in Cameroon. The higher the trade openness of the economy the higher will be the economic growth of the economy. In termsof the level of significance of the finding, both the long run and short run result are significant though at different levels. The short run result is significant at 10% since the P-value (0.0535) is lower than 0.1 while the long run result is significant at 5% given that the P-value (0.0251) is less than 0.05.More openness might translate into more business opportunities as highlighted earlier which will in turn translate into more profit and foreign exchange for the economy. As expected, the coefficients of TAX are all negative but insignificant in the short and long run.

The post estimation reliability tests confirm that the results are reliable and predictable. Detailly, the

probability of the Breusch Pagan heteroscedasticity reject the alternative hypothesis of heteroscedasticity given that the P-value was greater than 5%. The same observation can be made for the Breusch Godfrey serial correlation LM test which permitted us to accept the null hypothesis of no serial correlation among the variables. The residuals were also normally distributed as the JaqueBera value is far below its critical value of 5.99.

5. Conclusion and Policy Implications

The main objective of this paper was to investigate the relationship between unemployment, entrepreneurship development and growth in Cameroon. Using cointegration and error correction techniques on time series data from 1980 to 2014, the results reveal that there was a negative but insignificant relationship between unemployment and entrepreneurship development in Cameroon both in the short and the long run. However when controlling for factors such as domestic credit to the private sector, trade openness and taxation, further findings indicated that DCPS positively and significantly affects entrepreneurship in the short run while OPEN and TAX had a positive and significant effect on entrepreneurship development only in the long run.

When examining the relationship between entrepreneurship and economic growth in Cameroon, the results show that entrepreneurship development was a key determinant of economic growth both in the short and long run as it positively and significantly affects the real GDP of the country. Further determinants of Cameroon economic growth alongside entrepreneurship include domestic credit to the private sector and trade openness. In addition further tests prove that the results were robust that is reliable and predictable.

From the above results, the paper therefore recommends that government should implement a prudent tax policy that can stimulate entrepreneurship without hampering economic growth. Entrepreneurship can serve as an important tool for Cameroon's economic growth. Therefore, the government authorities should put in place measures that will instil entrepreneurial skills in the population and more especially the youth. In addition, credit facilities should be guaranteed by the financial system stakeholders in order to permit entrepreneurs to carry on their ventures.

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Apendices

Appendix A: Summary of descriptive statistics

	ENT	LEG	DCPS	OPEN	TAX	UN
Mean	29.46617	29.53831	16.02296	0.394444	2.768571	5.928395
Median	29.44168	29.50283	12.52026	0.409088	2.800000	6.400000
Maximum	29.95625	30.04265	31.24235	0.516034	6.400000	8.100000
Minimum	28.99231	29.05660	6.538039	0.278429	1.100000	4.100000
Std. Dev.	0.237946	0.242804	8.415973	0.055847	1.188615	1.306404
Skewness	0.255163	0.295283	0.625303	-0.291092	1.253137	-0.261540
Kurtosis	2.275486	2.296343	1.774974	2.609762	5.338094	1.728353
Jarque-Bera	1.145307	1.230690	4.469359	0.716367	17.13264	2.757268
Probability	0.564027	0.540455	0.107026	0.698945	0.000190	0.251922
Observations	35	35	35	35	35	35

Source: The authors

Appendix B: Correlation Analysis Results

Correlation	ENT	LEG	DCPS	OPEN	TAX	UN
ENT	1.000000					
LEG	0.997632	1.000000				
DCPS	-0.304201	-0.357657	1.000000			
OPEN	0.531147	0.578313	-0.800633	1.000000		
TAX	0.245289	0.207412	0.376854	-0.276213	1.000000	
UN	-0.718324	-0.722459	0.277178	-0.390645	-0.196574	1.000000

Source: The authors

Appendix C: Variance Inflation Factors Test Result

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
D(UN)	7.26E-05	1.577218	1.568550
D(DCPS)	7.67E-06	1.549791	1.515658
D(OPEN)	0.073512	1.641516	1.557223
D(TAX)	0.000126	2.123719	2.123258
ENT(-1)	0.002857	65257.19	3.712256
UN(-1)	7.63E-05	75.06660	3.269439
DCPS(-1)	2.72E-06	23.47840	5.069639
OPEN(-1)	0.082612	338.1237	5.810426
TAX(-1)	4.35E-05	10.25185	1.601021
C	2.441872	64293.65	NA

Source: The authors