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## Assessment of the Impact of Entrepreneurship on Economic Growth: A Ghanaian Case Study

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*Abstract: It is interesting to note that entrepreneurship is contributing immensely towards the economic growth and development of most nations. Particularly in less developed economies where it is somewhat difficult to get jobs in the public or private sectors, we see a lot of people trying to start-up their own small businesses and in the long run these business contribute their quota towards economic growth and development. The objective of this write up is therefore to assess the impact of start-ups and own businesses on economic growth and development using Ghana a case study. To achieve this, the Ease of Doing Business data which is measured by the score of starting a business from the world bank databank and the Self-Employment which is also measured as a percentage of total employment are used as proxies for entrepreneurship. To test if the data obtained is authentic and that it is not going to produce any spurious results, a stationary test is conducted using the Augmented Dickey Fuller (ADF) test. After, the study employs the Fully Modified Ordinary Least Square (FM-OLS) to examine the relationship amongst the variables of interest. Using Ghana as the case study and a period between 2000 to 2020, the results from the FM-OLS indicate that the respective dependent variables have a significant and positive impact on economic growth.*

*Keywords: Entrepreneurship, Economic growth and Development, Ghanaian context*

### 1 Introduction

A recent research work, by Awlaqi and Ayah (2019), has thrown more light on the issues of entrepreneurship and growth. According to them, entrepreneurs do not only obtain wealth from entrepreneurial ventures as individuals, but they also create jobs which provides employment opportunities for others in the society and this has a long run effect on growth. The dynamic role of entrepreneurs and small business owners in emerging economies has contributed to vast development opportunities

in the emerging economies. The International Monetary Fund (IMF) Regional Economic Outlook for Sub-Saharan Africa (SSA) has in fact reiterated that small and medium-sized enterprises (SMEs) create over 80% of the region's employment. Over the past decade, the evolution of entrepreneurs has been at the heart of Africa's growing economy. It is worthwhile to zoom the telescope on Sub-Saharan African, specifically on the Ghanaian economy to assess the impact of entrepreneurship on economic growth.

Although, through entrepreneurship the entrepreneur is made better off, there are some extended effects on the population and the planet as a whole. McClelland (1962), throws more light on the aspect of social entrepreneurship. In his theory of the "Achievement Motivation Theory" he explains how entrepreneurship aids economic growth and development by influencing other aspects of the economy. Transferring this theory and knowledge into the Ghanaian context, we can postulate that, entrepreneurship will not only lead to economic growth and development, but the general wellbeing of the of the people and even the planet could be affected. It is of vital importance to pay attention to issues of entrepreneurship.

## 2 Literature Review

The nexus between entrepreneurship and growth has been approached differently by different stakeholders. This sections takes a critical look at some works on entrepreneurship and growth which have been done in past by some proponents.

For instance, Thanti and Kalu (2018) illustrate how institutions and human capital facilitate entrepreneurship, which in turn aids economic growth and development. It is interesting how Thanti and Kalu (2018) first create a robust support for the well-known notion by Adam Smith and Joseph Schumpeter, that for the economy to grow in the long run there is the need to improve human capital and institutions. With the Generalised Method of Moments as the base model, they develop the Entrepreneurship Orientation (EO), which consist of innovativeness, risk taking and

proactiveness. With a sample of 93 countries and a period between 1980 and 2008 they use the Generalised Method of Moments (GMM) to examine institutions and human capital as potential determining factor of the so called Schumpeterian entrepreneurship.

Studying the impact of entrepreneurship on growth, Salgado-Banda (2005) uses data on self-employment and productive entrepreneurship as the two main measures to examine how entrepreneurship affects economic growth. Using 22 OECD countries, the author finds out that, self-employment has a negative relationship with economic growth where as productive entrepreneurship has a positive relationship with economic growth. According to Salgado-Banda (2005), productive entrepreneurship is simply the degree of innovativeness of the entrepreneur as inspired by Baumol (1990), while self-employment is starting up or owning a new business. Due to the nature of his research questions he employs different methods to undertake each specific objective. For instance, he uses the Ordinary Least Square (OLS), Two-Stage Least Square (TSLS) and the Generalized Method of Moments (GMM) to make a cross-sectional analysis using the data from 22 OECD countries within the period 1980-1995.

Another interesting paper on the entrepreneurship-growth nexus is the work of Stark (2012) where he used the Granger causality methodology to examine the causal relationship between entrepreneurship on economic growth in Alabama. To achieve this aim, he first provides a conceptualized meaning of economic growth and entrepreneurship. In the context of his work, employment growth was used as a proxy to represent the growth of the economy and the measures for entrepreneurial activity were sole proprietorship and patent activity. The former could be owning a business entity which already exist and the owner does not have a legal right to that property while the latter is creating something new and transforming it into a business and having the legal right to own that property. Using data from 1990 to 2008 from the Bureau of Economic analysis, Stark (2012) first test the stationarity level of his variables and then uses the granger causality test to examine the nexus between entrepreneurship and growth.

Dilanchiev (2014), in his work “Relationship between entrepreneurship and unemployment” used regression analysis to examine the impact of entrepreneurship on unemployment using Georgia as a case study. Although in recent years, the link between entrepreneurship and economic growth has become somewhat popular, the relationship between entrepreneurship and employment is gaining immense attention as well. From this assertion, it was determined that the nexus between entrepreneurship and unemployment was analyzed by two main factors; the Schumpeter’s effect and Refugee effect (Audretsch D., 2007) (Varheul et al., 2006). From the refugee effect, it can be concluded that, unemployment encourages entrepreneurship and from the Schumpeter’s effect, entrepreneurship has a negative relationship with unemployment. Activists of refugee effect claim that the high unemployment rate reduces the possibility to get satisfying level of income and decreases the opportunities to get gainful job places, hence, this two conditions “pushes” the individual to start business activity (Tervo H., 2002). Schumpeter’s effect on the other hand assumes that growth of entrepreneurship and new start-ups will offer employment opportunities and ultimately influence the formation of employment in other existing firms. Using these major variables, Dilanchiev (2014), uses simple Ordinary Least Square (OLS) regression analysis to establish a relationship between these variables with data from 2003 to 2013. Two main hypothesis are tested; the first hypothesis is that, higher rate of entrepreneurship decreases unemployment rate and the second hypothesis is that with higher rate of unemployment, more people will start entrepreneurial activity.

### 3 Methodology

#### 3.1 Augmented Dickey- Fuller (ADF) Test

The first test required in estimating a time series data is the unit root test. This test is done in order to know the order of integration of each variable used. In cointegration process, it is very important to test the order of integration for

econometric model specification. Again, most variables according to economic theories should be integrated or have a random walk. In such a situation, it is important to perform this test in order to find exact estimated values. For the purpose of this study this test is done with the help of the Augmented Dickey Fuller (ADF) procedure. The objective of the unit root test is to ensure that the variables are stationary before proceeding to estimate the coefficients of the variables. The tests were conducted at the levels and at the first difference to ensure that the respective variables of interest are all stationary. After making sure that all the variables are stationary, the next step is to examine the relationship among the dependent variable, (GDP per capita, which is used as a proxy for economic growth) variable and the independent variables.

The ADF test may be expressed by the following equation:

$$\Delta Y_t = \alpha_1 + \alpha_2 t + \alpha_3 Y_{t-1} + \sum_{i=1}^P \beta_i \Delta Y_{t-i} + \varepsilon_t \quad (1)$$

Where  $Y_t$  represents the time series variable,  $t$  is the time/trend variable,  $\alpha_1$  and  $\alpha_2$  are the estimated parameters,  $\Delta$  is the first difference operator,  $\beta_i$  denotes the various estimated parameters of the differenced values of the lagged variables and  $\varepsilon_t$  is the white noise error term.

### 3.2 Fully Modified Ordinary Least Square (FM-OLS)

Since most of the variables are stationary at the first difference  $I(1)$ , the Fully Modified Ordinary Least Square (FM-OLS) can be used to examine the relationship among the dependent and independent variables. To demonstrate how to estimate a time series analysis using FM-OLS there is the need to ensure that the variables are stationary and that they will not produce spurious results. Phillips and Hansen (1990) initially designed the Fully modified least squares (FM-OLS) regression to provide optimal estimates of cointegration regressions. According to them, “the

method modifies least squares to account for serial correlation effects and for the endogeneity in the regressors that results from the existence of a cointegrating relationship". The FM-OLS method produces reliable estimates for small sample size and provides a check for robustness of the results. In Ordinary Least Square (OLS) estimation, the estimates may suffer from serial correlation and heteroscedasticity since the omitted variables might be captured in the residuals. This may produce biased and unreliable results. Therefore, the FM-OLS take care of endogeneity by adding the leads & lags and in addition. It is interesting to note that the Fully Modified (FM) procedure can be applied to models with cointegrated regressors and even stationary regressors without losing the method's good asymptotic properties.

The foundation model upon which the FM-OLS is built is specified as follows;

$$y_{it} = A_1x_{it} + A_2x_{it} \dots A_nx_{it} + \beta_1x_{it} \dots \beta_{nit} + uit \quad (2)$$

where  $y_{it}$  is the dependent variable,  $A_1x_{it}$  and  $A_2x_{it}$  represents the independent variables and  $\beta_{nit}$  represents the controlled variables to be used in the equation.

Following the original version of the FM-OLS model by Phillips and Hansen (1990) the model to be used in the model is specified as follows;

$$GDP_{it} = A1STARTUP + A2SELF + \beta1EDUC + \beta2GRO\_SAVINGS + uit \quad (3)$$

The dependent variable in the model is economic growth and for the purpose of this study the Gross Domestic Product (GDP) per capita is used as a proxy to represent growth. The independent variable is entrepreneurship and for the purpose of this study, the (STARTUP) and the (SELF) variables are used as proxies to represent entrepreneurship. From the literature, the following controlled variables are selected; Human Capital (HC) which is used as a proxy for education, and the gross saving (GRO\_SAVINGS) variable which also represents private investment. The private investment variable was specifically included in the model because most entrepreneurs after acquiring financial capital either start up a business or invest it in financial institutions. A1 and A2 are the coefficients for the main explanatory



variables (startups and self-employment) while  $\beta_1$  and  $\beta_2$  represents the coefficients for the controlled variables (education and gross saving respectively).

### 3.3 Description of Data

This study consists of 5 variables over the period 2000-2020 using Ghana as the case study. The study period is chosen based on the availability of data in the respective macroeconomic databases and the variables of interest are selected based on evidence from the literature. In all, the variables of interest include, Gross Domestic Product (GDP) per capita, Start-Up, Self-employment, Education and Gross savings.

The dependent variable is economic growth as proxied by Gross Domestic Product per capita. GDP per capita is chosen because it is a good measure of economic wellbeing (Global Economic Prospect Report, 2018). For the purpose of this study the GDP per capita growth (annual %) obtained from World Bank national accounts data, and OECD National Accounts data files was used. This variable shows the annual percentage growth rate of GDP per capita based on constant local currency.

Start-ups is one of the explanatory variables used in the model. It consists of the score for starting a business. It is the simple average of the scores for each of the component indicators: the procedures, time and cost for an entrepreneur to start and formally operate a business, as well as the paid-in minimum capital requirement. Data for this variables was obtained from World Bank Group, Doing Business project (<http://www.doingbusiness.org/>). Economies are ranked on their ease of doing business, from 1–190. A high ease of doing business ranking means the regulatory environment is more conducive and relatively easy to the start and operate a new business or a local firm.

Self-employment are those workers who are working on their own account. Typically, they work as sole proprietors or pair with one or a few partners or in cooperative. They represent a percentage of the total employment that is owned by

the private individuals. For this variable data was obtained from the International Labour Organization, ILOSTAT database.

The controlled variable Education measures the gross enrollment ratio, from primary to tertiary for both sexes. It shows the total enrollment in primary, secondary and tertiary education, regardless of age, expressed as a percentage of the total population of primary school age, secondary school age, and the five-year age group following on from secondary school leaving. Data was obtained from the UNESCO Institute for Statistics.

Gross domestic savings are calculated as GDP less final consumption expenditure (total consumption). It is measured by the percentage of the GDP that did not go into consumption. Data is obtained from World Bank national accounts data, and OECD National Accounts data files.

## 4 Results

### 4.1 Unit root test results

The null hypothesis ( $H_0$ ) for the stationarity test states that; the variable in question has a unit root while the alternate hypothesis ( $H_1$ ) states that the variable in question does not have a unit root. If the probability value is greater than 0.05 then we accept the null hypothesis, however if the probability value is less than 0.05 we reject the null hypothesis. At the level the probability values for the variables; GDP per capita, Startups, Self-employment and gross domestic savings are all greater than 0.05. This means we accept the null hypothesis that the variable has unit root, and it means that at the levels these variables are not stationary. The education variable however is stationary at the levels and hence it is integrated to order zero. To make the rest of the variables stationary so as to prevent biased and spurious results we test for unit root again at the first difference. At the first difference, we clearly observe that the rest of the variables; GDP per capita, Startups, Self-

employment and gross domestic savings have become stationary and hence they are integrated to order one I(1). This results pre informs us on the best method to use for the estimation. One of the best estimation technique which can be used to conduct the analysis in this instance is the Fully Modified Ordinary Least Square (FM-OLS). The FM-OLS method also produces reliable estimates for small sample size and provides a check for robustness of the results. As the sample size for the study is relatively small (2000-2020;  $n = 20$ ), the best technique to be used is the FM-OLS

Table 1: Unit Root Test Results

| Variables                        | Critical values         | Levels + Intercept |          | Critical values         | First Difference + Intercept |           | Integration Order |
|----------------------------------|-------------------------|--------------------|----------|-------------------------|------------------------------|-----------|-------------------|
|                                  |                         | t-statistics       | Prob*    |                         | t-statistics                 | Prob*     |                   |
| Dependent & Controlled variables | (5% significance level) |                    |          | (5% Significance level) |                              |           | I(0) / I(1)       |
| GDP per Capita                   | -3.029970               | -2.05872           | 0.0762   | -3.040391               | -5.017235                    | 0.0010*** | I(1)              |
| Start_Up                         | -3.081002               | -2.139257          | 0.2336   | -3.119910               | -3.860399                    | 0.0141**  | I(1)              |
| Self_Emp                         | -3.052169               | -0.029614          | 0.9429   | -3.065585               | -3.660525                    | 0.0164**  | I(1)              |
| Education                        | -3.212696               | -3.851954          | 0.0192** | -3.144920               | -8.192738                    | 0.0000*** | I(0)              |
| Gross_Saving                     | -3.029970               | -0.619818          | 0.8440   | -3.040391               | -4.374696                    | 0.0035*** | I(1)              |

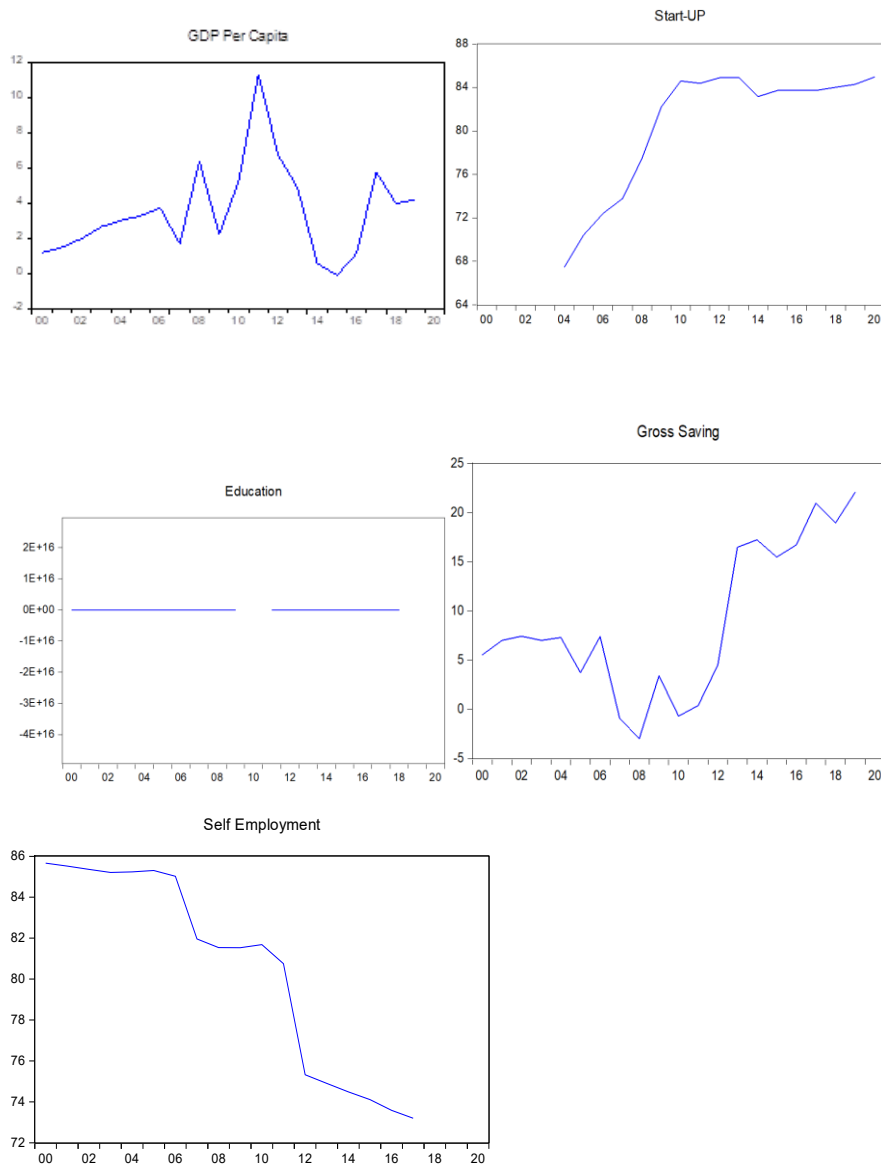
Note: \*\*and \*\*\* denote rejection of the null hypothesis at 5% and 1% significance level respectively

#### 4.1.2 Graph of Variables at the level

The graphical analysis of the variables helps to identify the behavior of the series over time. This is important to the study as it provides the trends in the variables and also an alternative way to check the level of the stationarity of the variables.

**Figure 1**

**Trend Analysis of Variables**



## 4.2 Results of Regression Analysis

Method: Fully Modified Least Squares (FMOLS)

Dependent variable: LNGDP

Sample (adjusted): 2005 2017

Included observations: 8 after adjustments

Cointegrating equation deterministic: C

Long-run covariance estimate (Bartlett kernel, Newey-West fixed bandwidth = 3.0000)

| Variable           | Coefficient | Std. Error            | t-Statistic | Prob.    |
|--------------------|-------------|-----------------------|-------------|----------|
| LNSELF_EMPLOYMENT  | 48.99389    | 63.14751              | 0.775864    | 0.0373   |
| LNSTART_UP         | 3.427591    | 46.32020              | 0.073998    | 0.0434   |
| LNGROSS_SAVING     | 2.925606    | 1.434608              | 2.039307    | 0.7875   |
| LNEDUCATION        | 10.82593    | 37.90256              | 0.285625    | 0.0848   |
| C                  | 282.7611    | 380.9176              | 0.742316    | 0.4859   |
| R-squared          | 0.796571    | Mean dependent var    |             | 3.860928 |
| Adjusted R-squared | 0.712618    | S.D. dependent var    |             | 3.259796 |
| S.E. of regression | 2.672997    | Akaike info criterion |             | 5.107233 |
| Sum squared resid  | 42.86948    | Schwarz criterion     |             | 5.288094 |
| Log likelihood     | -23.08978   | Hannan-Quinn criter.  |             | 4.993225 |
| F-statistic        | 2.218124    | Durbin-Watson stat    |             | 1.798516 |
| Prob (F-statistic) | 0.048173    |                       |             |          |

Substituting the results into the model (as shown in equation 3) we generate the following (as shown in equation 4):

$$GDP_{it} = A1STARTUP + A2SELF + \beta1EDUC + \beta2GRO\_SAVINGS + uit \quad (3)$$

$$GDP_{it} = 3.43STARTUP + 48.99SELF + 10.83EDUC + 2.93GRO\_SAVINGS + uit \quad (4)$$



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From the coefficients of the results, we can generally observe that all the variables have a positive impact on economic growth. The main explanatory variables which also serve a proxy for entrepreneurship are the startup and self-employment variables.

As we can see in equation 4, when startup increases by one unit, GDP increases by 3.43 units, holding all other variables constant. This means when the score for starting a business is high, it is relatively easier for people to start a business and they contribute to the growth of the economy positively. The score of starting a business consists of the general procedures involved to startup, like the time and cost for an entrepreneur to start and formally operate a business, as well as the paid-in minimum capital requirement. Also the variable is significant as it has a probability value of 0.0373, which is less than 0.05. This means the independent variable startup explains the dependent variable in a good way.

It can also be observed that the self-employment variable plays a very important role in the economic growth and development of the Ghanaian economy. From the results we see that when self-employment increases by one unit, GDP increases by 48.99 units holding all other variables constant. This results was not surprising as it depicts a real picture about the Ghanaian situation. Within the Ghanaian context most people who do not find jobs in the public or private sectors venture into own business, typically Micro and Small and Medium Scale Enterprises (SME's). The percentage of total employment that is owned by the private individuals is very huge in Ghana. According to data from the Ghana statistical service more than 80 percent of the employed are working in the informal sector (SME's). Over half of the employed (55.9 %) are own-account workers (self-employed); 20.4 percent are employed in family enterprises and 17.6 percent are wage employees. (Ghana Statistical Service reports, 2018).

The controlled variables education and gross savings have a positive impact on economic growth. As we see in the results, if education increases by one unit, GDP will increase by 10.83 units and if gross savings increase by one unit, GDP will



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increase by 2.93 units respectively. Within the Ghanaian context, the more people are educated the higher their chances of acquiring jobs or starting up their own businesses. Through education, people are able to contribute their own quota to the Gross Domestic Product (GDP), in the form of jobs. Savings on the other hand contribute positively to the economic growth and development within the Ghanaian context. The higher the level of income the higher the level of savings and higher incomes and savings level portray higher GDP growth.

## 5 Conclusion

To assess the impact of entrepreneurship on economic growth using Ghana as a case study, the variables startup and self-employment have been used as a proxy to represent entrepreneurship. Both show a positive and significant impact on economic growth. Hence, it is worthwhile for government to make policies which will boost entrepreneurship. For instance, policies to reduce long bureaucratic procedures before starting up a business could be implemented. This will increase the score of starting a business index and make it relatively easier to start up a business in the Ghanaian context.

Also, the government should create a conducive environment which will encourage more people to startup their own businesses. For instance, giving out financial aids, tax exemptions for businesses which are less than two years and inculcating entrepreneurship into the education curriculum could boost self-employment within the Ghanaian context. Currently in Ghana, the National Board for Small Scale Industries (NBSSI) is restructuring to provide the needed assistance to SMEs. This is indeed a step in the right direction if an economy wants to use entrepreneurship as a bait for economic growth (<https://nbssi.gov.gh/>).

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