

ENTREPRENEURSHIP, ECONOMIC GROWTH AND UNEMPLOYMENT REDUCTION IN SUB-SAHARAN AFRICA

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Abstract

The study investigates whether economic growth affects the impact of entrepreneurship development on unemployment reduction in SSA. Adopted dynamic panel data method of analysis, the study finds that; entrepreneurship development has positive but not significant effects and the result reflects how entrepreneurship is measured. The study for instance, finds that entrepreneurship activities in terms of early-stage Entrepreneurial Activity (TEA) has positive and significant effects on economic growth, while self-employment and high job expectation creation (HJEC) are found to be positive but not significant. The study finds that entrepreneurship development in terms of TEA and SEM has negative but insignificant effect on unemployment reduction, while, HJCE as a measure of entrepreneurship has a negative and significant effects on unemployment reduction, hence the ambiguity in the empirical evidence. Our result indicates that SEM and economic growth also reveal negative but insignificant relationship on unemployment reduction. The study concluded that unemployment is very responsive to TEA –economic growth channel. The study concluded that the marginal impact of HJEC on unemployment reduction is increasing with the level of economic growth. The study concluded that HJEC have contributed to reducing unemployment in countries with robust economic growth systems. The findings that all entrepreneurial development measured employed - TEA, SEM and HJEC have contributed to reducing unemployment in countries with robust bank credit given is a major indication that, credit giving by banks helps invigorate the climate for entrepreneurship development that is fundamental to unemployment reduction.

Keywords: Entrepreneurship, Growth and Unemployment, GMM, Sub-Saharan Africa

JEL Classification: O30, O40, J64, C33

1. INTRODUCTION

The last decades have recorded a growing acceptance of the idea that entrepreneur development is fundamental to economic growth. Analytical arguments supporting this assertion revolve around the fact that, entrepreneurship is a major channel by which change, and innovation create jobs for people by increasing demand in the marketplace through competition (Kumar 2019). Several empirical

researches supported the ‘truly sturdy empirical regularity’ position of entrepreneurship-growth relationship. Thurik (1996) for instance, argued that the excess growth of small firms had a positive influence on percentage change in gross national product for a sample of 16 European countries in the period 1988 through 1993. Reynolds, Hay, and Camp (1999), showed that one-third of the differences in national economic growth rates were attributed to differences in entrepreneurial activity. This is similar to the work of Zacharakis, Bygrave, Shepherd, (2000) that found that, entrepreneurial activity explained approximately one-half of the differences in GDP growth between countries and concluded that the phenomenon is a touchstone of the sixteen developed economies under study. Other studies that supported this position were van Stel Carree, Thurik (2005), Asc (2006), Galindo & Mendez (2013), Calza and Goedhuys (2016), among others.

Meanwhile, the work of Baptista & Thurik (2007), Faria, Cuestas, & Mourelle, (2010), Kritikos (2014) are significant turning point in the debate. Faria *et al* (2010) specifically offered insight into the jobless recovery phenomenon experienced in the U.S. economy while examining entrepreneurship-growth-employment responsiveness. They argued that unbiased effects of entrepreneurship on economic growth are conditional on the job creation elasticity effects of entrepreneurship development. Kritikos (2014) observed that entrepreneurial activity will only benefits the society where entrepreneurs can operate flexibly, develop their ideas, and lead to job creation. They argued that the true relationship between entrepreneurship developments would continue to be shrouded with ambiguity if job creating effects of the phenomenon is left unexamined, especially in an environment with high level of unemployment. Koellinger & Thurik (2012) argued that when people lose jobs and unemployment rate is high, they may engage in entrepreneurial activity to make a living. Baptista & Thurik (2007) pointed out that the relationship between entrepreneurship and growth may vary over level of unemployment, time and across countries, hence, needs to be critically investigated while potential outcomes should be monitored for policy formulation for economic growth purpose.

Based on the foregoing, any study that directly links entrepreneurial activities and economic growth without a critical analysis of the employment effects might have risked arriving at robust implications from the policy front, especially since unemployment reduction was what Schumpeter had in mind while describing entrepreneur as a prime driving motor of employment creation.

The main objective of this study is therefore to examine the entrepreneurship development effects on economic growth and employment elasticity in SSA. Our major assumption is that, if entrepreneur development exerts limited or no employment expansion effects on the economy, which could lead to immiserating employment growth that requires raising the degree of urgency attached to entrepreneurship education, training, financing, legal, regulatory, policy reforms designed to promote entrepreneurship development to tackle the problem of unemployment. There is an undeniable need to create massive employment in SSA to avoid the explosion of the ticking time bomb that is fastly ticking as a result of

youth unemployment according to Alexander Chikwanda (Zambia's former finance minister), in an interview. Mthuli Ncube, the chief economist of the African Development Bank (AFDB) said, the unemployment situation in Africa is an unacceptable reality on a continent with such an impressive pool of creative and talented youth. This analogy draws attention to the World Bank (2011) survey which shows that, high unemployment in Africa is the consequence of easy recruitment of jobless people into rebel movements.

Focusing on issue of unemployment reduction which is a major concern of the government in SSA, our paper addresses the needs of the unemployed, who are often disadvantaged in terms of economic and employment opportunities, this study strongly promotes social inclusiveness. The study would create a platform for the unemployed current and future capacities and improve their opportunities to participate in society and the labour market.

Section 2 reviews the literature. Section 3 describes the empirical strategy. In Section 4, we present and discuss the main results, and provide some robustness checks. Finally, Section 5 concludes the paper.

2. LITERATURE REVIEW

2.1. THE REVIEW OF EMPIRICAL LITERATURE

Entrepreneurship is understood since Schumpeter as the driving motor of economic progress of nations. While Schumpeter describes the link between entrepreneurship and economic growth as a useful model that finds its most immediate foundation in simple intuition, common sense and pure economic observation; Audretsch *et al.* (2001) referred to it as a truly sturdy empirical regularity that constitutes part of the core of practical economic growth that should be celebrated. The Global Entrepreneurship Monitor (GEM) model, first published in Reynolds *et al.* (1999), argued that there are certain relationships between established and new business activity and economic growth at the national level. Thurik (1996) for instance, argued that the excess growth of small firms had a positive influence on percentage change in gross national product for a sample of 16 European countries in the period 1988 through 1993. Other studies that supported 'truly sturdy empirical regularity' position are Reynolds *et al.* (2005), Van Stel *et al.* (2005), Asc (2006), Ahiauzu (2010) and Henderson (2007). Reynolds *et al.* (2005) assessed the level of national entrepreneurial activity and related it to the rate of economic growth. The author concluded that increased entrepreneurial activity is related to increased economic growth. Van Stel *et al.* (2005) argued that, this effect is dependent upon the level of economic development. Asc (2006) and Ahiauzu (2010) asserted that there is a positive relationship between entrepreneurship and economic growth, while Henderson (2007) agreed that entrepreneurship is increasingly being recognized as a primary engine of economic growth.

Using growth regression with a five-year moving average of economic growth as the dependent variable in a panel of 188 countries from 1980 to 2010,

Berthold & Grundler (2012) included entrepreneurship in the standard growth regression model proposed by Barro & Lee (2005) either through the self-employment rate or through early-stage entrepreneurial activity (TEA). They adjusted the self-employment rate by the percentage of micro firms (occupying less than nine employees) in the country to find significant effect on growth. The results are validated when TEA is included as the entrepreneurship variable. Galindo & Mendez (2013) estimated three separate panels for growth, innovation and entrepreneurship found that both innovation (approximated by number of patents) and entrepreneurship represented by TEA from the GEM dataset prove to enhance growth significantly. Moreover, signs of feedback are presented since economic growth promotes entrepreneurship. In contrast however, Blanchflower (2000) using a panel of OECD countries, found no evidence that increases in entrepreneurial activities in terms of self-employment rate resulted in increasing economic growth. Carree *et al.* (2002) suggested that countries with relatively low self-employment rates benefit from increased self-employment in terms of GDP growth, but that countries with relatively high self-employment rates (like Italy) do not. Thus, there are not just theoretical reasons, but also empirical support, albeit contested, that while unemployment leads to increased entrepreneurial activity, self-employment leads to reduced unemployment.

Several scholars have challenged the validity of most studies that examined the direct link between entrepreneurial activities and economic growth arguing that it subsumes employment effects of entrepreneurship developments which might have risky implication from the policy front especially in a high unemployment environment. Others argued that, any study that directly linked entrepreneurial activities and economic growth without a critical analysis of the employment effects might have risked arriving at robust implication from the policy front, especially since unemployment reduction was what Schumpeter had in mind while describing entrepreneur a prime driving motor of employment creation. This is in line with Kritikos (2014) observation that entrepreneurial activities will only benefit the society where entrepreneurs can operate flexibly, develop their ideas and lead to job creation. He therefore argued that, the true relationship between entrepreneurship developments would continue to be shrouded with ambiguity if job creating effects of the phenomenon are left unexamined especially in an environment with high level of unemployment.

On that base, Faria *et al* (2010) argued that the employment creation of entrepreneurial activities matters for policy analysis. Faria *et al* (2010) offered insight into the jobless recovery phenomenon experienced in the U.S. economy by examining entrepreneurship- employment responsiveness and argue that unbiased effects of entrepreneurship on economic growth is conditional on the job creation elasticity effects of entrepreneurship development. Baptista and Thurik (2007) pointed out that the relationship between entrepreneurship and unemployment may vary over time and across countries and needed to be critically investigated and that potential outcomes should be monitored for policy formulation for economic growth purpose.

The empirical work of Koellinger and Thurik (2012) focused on the dynamics of entrepreneurship and business cycle using population of registered businesses, GDP per capita and unemployment rate for 22 OECD countries over the period of years 1972 – 2012. Based on vector autoregressive (VAR) models, entrepreneurship was found to lead to a decline in unemployment rate and increase in economic growth. The author therefore concluded that, when people lose jobs, unemployment would continue to increase, and people would engage into entrepreneurial activity for living. Another study that emphasized the importance of business cycle dynamics when evaluating the relationship between entrepreneurship and unemployment is that of Payne and Mervar (2017).

Cueto, Mayor & Suárez (2015) revealed that self-employment is associated with entrepreneurship and it is often promoted as a way of reducing unemployment. They also reported that increase in unemployment in neighbouring regions serves increases incentives for entering self-employment, implying that there is a 'refugee' effect (self-employment as an answer to the lack of wage employment). Dvouletý (2017) investigated whether, during the periods of higher unemployment rate, individuals in the four countries of the Visegrad (V4) group (the Czech Republic, Hungary, Poland and Slovakia) are more likely engage in entrepreneurial activities. Estimated regressions based on annual data (1998-2015) proved that higher unemployment rate was associated with increase in overall entrepreneurial activity in all the four countries, implying that there is a 'refugee' effect. The time series analysis of Ioana & Dodescu (2018) focused on the analysis of the progresses made by Romania in the field of entrepreneurship programmes for disadvantaged groups on labour market in 2014 - 2020 by comparison with the 2007-2013 period. The main conclusion of the paper is that there is a clear improvement of the inclusive entrepreneurship programmes in Romania for 2014-2020 compared to 2007-2013 in the context of general improvement of Romanian business environment but existing reforms should continue.

This result is contrary to that of Audretsch (2005) in his investigation of the dynamic interrelationship between self-employment and unemployment rates. Based on a two equation vector autoregression model for 23 OECD countries over the period 1974-2002, the author confirmed two distinct relationships between unemployment and self-employment, i.e. refugee and entrepreneurial effects but concluded that the entrepreneurial effects are considerably stronger than the refugee effects. The result is in contrast with the refugee entrepreneurial result of Dellis and Karkalakos (2015) who concluded that past unemployment spurs entrepreneurship in a dynamic inter-relationship between entrepreneurship, growth and unemployment based on panel VAR(1) model and GMM for 30 OECD countries for a period from 1970 to 2011.

It can be observed that empirical studies on the effects of entrepreneurship on growth appear ambiguous, covering the full gamut from positive effects to negative effects, to no discernible effect, and to conditional effect. This inconclusiveness might not be unconnected with the reliance of the earlier studies on the direct relationship between entrepreneurship on growth without Bearing Faria

et al (2010) and Kritikos (2014) observations that the true relationship between entrepreneurship developments would continue to be shrouded with ambiguity if job creating effects of the phenomenon is left unexamined especially in an environment with high level of unemployment and coupled with fact that unemployment reduction was what policy makers had in mind when encouraging entrepreneurship left, right and centre, this study therefore focuses on the critical examination of the effects of entrepreneurship development and unemployment reduction. Moreover, unlike previous studies which mainly focused on OECD and other developed countries, this study is unique by filling the literature gaps while focusing on Sub-Saharan African countries in general and thoroughly investigating the comparative entrepreneurship development measures. One measure most often used to operationalize the extent of entrepreneurship in a country is the number of self-employed individuals in country owners, largely because they are measured in most countries and measured in comprehensive ways facilitating comparisons across countries and over time (Blau, 1987). This study acknowledges that self-employment and entrepreneurship are related but not synonymous concepts. Thus, this study acknowledges that Schumpeterian entrepreneurs may be a small fraction of the self-employment which is the essence of differentiating between different employments effects of entrepreneurial activities. Generally, therefore, this study is unique especially by extending the frontier of the literature towards providing answers to the questions that do not only link entrepreneurship development to growth through employment creation effects but also focused on Sub-Saharan Africa, where such study has been given very limited attention. Ultimately, this study bridges the empirical gap that currently exists regarding the entrepreneurship development-growth nexus in the case of SSA.

3. METHODOLOGY

3.1. MODEL SPECIFICATION - ENTREPRENEURSHIP AND ECONOMIC PERFORMANCE

Based on Schumpeter’s argument that entrepreneurship’s link to economic growth is a useful model that finds its most immediate foundation in simple intuition, common sense and pure economic observation as well as the frameworks posited by Audretsch,, Carree and Thurik(2001), Calza and Goedhuys(2016), Payne and Mervar(2017), Audretsch,, Carree and Thurik(2001) Cueto, Mayor and Suárez (2015) and Dvouletý(2017), the relationship that we want to estimate can be written as:

$$gdppg_{it} = \psi_0 + \psi_1gdppg_{it-1} + \psi_2newneo_{it} + \psi_3neo_{it} + \psi_4maenv_{it} + \psi_5inst_{it} + \psi_6entr_{it} + \varepsilon_{it} \dots \dots \dots 1$$

where all errors ($\varepsilon_{i,t}$) are normally distributed and independent of each other.

i indexes countries, t denotes time, $\varepsilon_{i,t}$ is an error term; $gdppcg$ is the measure of GDP per capita growth (annual percentage growth), ψ_1 is the elasticity of lagged dependent variable-GDP per capita growth (a method that helps fix dynamism issues) (Baltagi & Levin 1986). ψ_2 is the elasticity of infrastructure proxy by electricity consumption and gross fixed capital formation (GFCF) with respect to GDP growth (annual percentage). ψ_3 is the elasticity of economic environment(wage and business freedom; Electric power consumption is based on (kWh per capita); macroeconomic stability is proxied by rate of consumer price index and ψ_4 is the elasticity with respect to the variable; ψ_5 is the elasticity with respect to governance institution. This is proxied by political stability; fiscal factor is represented by the total debt and the size of the country is proxied by the population growth rate; the financial environment is represented by domestic credit to private sector by banks (percentage of GDP). Our main variable is entrepreneurship development proxied by two main indicators (total early-stage entrepreneurial activity (TEA) and high job expectation creation (HJEC). Self-employment was though used, but only as a benchmarked and comparison with the measures of entrepreneurship. This is based on the argument that, entrepreneurship was quite different from just establishing a business especially if the business created was as a result of unemployment. The study is mainly interested in testing whether the coefficient of entrepreneurial development ψ_9 , is positive and statistically significant.

Bearing Faria *et al* (2010) and Kritikos (2014) observations that the true relationship between entrepreneurship developments would continue to be shrouded with ambiguity if job creating effects of the phenomenon is left unexamined especially in an environment with high level of unemployment and coupled with the fact that unemployment reduction was what policy makers had in mind when encouraging entrepreneurship left, right and centre, this study therefore focuses on the critical examination of the effects of entrepreneurship development and unemployment reduction. Based on the framework posited by Audretsch *et al.* (2005), Galindo and Mendez(2013), Kritikos (2014) and Dellis and Karkalakos(2015) the relationship we want to estimate can be written as:

$$unem_{it} = \psi_0 + \psi_1 unem_{it-1} + \psi_2 entr_{it} + \sum_k \chi^k X_{it}^k + \varepsilon_{it} \dots \dots \dots 2$$

All errors are independent of each other and among themselves. All variables are as described before except that the rate of unemployment (unemployment per work force) is now the dependent variable, domestic interest rate and the lagged value of the dependent variable which are newly included. The study is mainly interested in the level of significance of the entrepreneurial parameter individually and its interactive coefficients with economic growth since it would present either Schumpeterian or refugee effects.

This study adopted dynamic panel data method of analysis. One major advantage of this method is the argument that it combines cross-section and several points data, hence, allows researchers to better understand the dynamics of adjustment (see Blundell *et al.* 1992; as in Baltagi 1998, Galindo & Mendez 2013). Baltagi(2008, p 7) for instance asserted that panel data give more informative data, more variability, less collinearity among the variables, degrees of freedom and more efficiency(Galindo & Mendez 2013). However, dynamic panel data regression are characterized by two sources of persistence over time, autocorrelation due to the presence of a lagged dependent variable among the regressors and individual effects characterizing the heterogeneity among the individual country.

Indeed, countries can experience high growth for reasons other than strict entrepreneurship activities (see Galindo & Mendez 2013; Kritikos 2014). Thus, to consider this potential problem of simultaneity bias, this study used generalized method of moment (GMM) estimation strategy. Acemoglu *et al* (2009) concluded that the best way to solving endogeneity inherent in institutions-growth dynamics may be the use of panel generalized method of moment (GMM). GMM is efficient in solving endogeneity and other econometric problem since it provides more reliable and robust inference (Temple 1999). Another advantage of the estimation techniques is that the model needs not be homoscedastic and serially independent (Nawaz *et al*, 2014). Although there are variants of panel GMM, this study, adopts system GMM estimation based on Arellano and Bover (1995) and Blundell and Bond (1998), to confront issues of endogeneity and adjust for dynamism at the same time. The Arellano-Bover/Blundell-Bond estimator augments Arellano-Bond by making an additional assumption that first differences of instrument variables are uncorrelated with the fixed effects. It builds a system of two equations – the original equation in levels and the transformed one in differences – and is known as system GMM. This method allows more instruments and hence leads to improved efficiency. Although Arellano-Bover/Blundell-Bond has one and two step variants, this study makes use of the two-step because it is more robust and asymptotically more efficient than the one step (Nawaz *et al*, 2014).

4. PRESENTATION AND DISCUSSIONS OF EMPIRICAL RESULTS

4.1. ENTREPRENEURIAL DEVELOPMENT AND ECONOMIC GROWTH

The empirical results from estimating the effects of entrepreneurship on economic growth in SSA are presented in Table 2. The results are based on unstructured robust Generalized Method of Moments (GMM) regressions from 13 countries over the period 2001-2018. The results pass a battery of diagnostic tests. The Hansen J 18.5 with 0.67 statistics of over identifying restrictions confirms that the instruments employed are acceptable and healthy for the SEM model i.e., uncorrelated with the error term, and that the excluded instruments are correctly excluded from the estimated equation. The same healthy results can be derived from

the other model(see table 2). The F statistics for various estimations show adequacy of the estimated models. Following Van Stel *et al.* (2005), this study used a set of explanatory variables that make up the standard growth determinants. These include the standard controls that have been used competitively in the literature in addition to the entrepreneurship variables described above. They are initial growth, gross fixed capital formation, GDP per person employed, electricity consumption, population growth, commercial bank domestic credit to private sector, total debt, trade openness, institutional quality variables- political stability and business freedom, property right as well as the indicator for entrepreneurship. The dependent variable is GDP per capita growth. The study employs two main measures of entrepreneurship - total early stage entrepreneurial activity (TEA) rate and high job expectation creation (HJEC). Although we benchmarked the measures with - self-employment (SEM) and established business ownership (EBO) in the first result so as to confirm differences or sameness in the results.

Across all estimations, this study finds that initial income as a measure of past realization of growth has a positive impact on its current levels. As expected, the coefficient of GFCF as a measure of domestic investment remains positive and significant in all the regression functions. On average, one point increase in gross fixed capital formation increases economic growth by 0.36 point in SEM model, 0.05 in the total early-stage entrepreneurial activity rate (TEA) model, 0.34 in EBO and 2.59 in HJEC model. These results are in line with classical, neo-classical and endogenous growth positions that domestic capital formation is generally a catalyst for rapid growth and development of any economy, be it developed, developing or under-developed. This supports the idea that rapid domestic investment is capable of increasing the pace of economic growth and ensuring swift structural transformation of the economy (Easterly 2001, Barro & Sala-i-Martin 2003 & Aghion *et al* 2005). Accordingly, these results show that domestic capital formation plays crucial role in economic growth of SSA.

The coefficient of employment and wage rate are positive and significant across all models. On average, one point increase in wage increases economic growth by 4.6 point in model 1, 0.05 point in model 2, 2.05 point in model 3 and 0.12 point in model 4. Population is negatively and significantly related with economic growth at 5 percent significant level only in SEM. The coefficient of commercial bank credit are not significant in any of the models. The insensitive effect of the exogenous component of bank domestic credit and economic growth is shocking.

Table 1: *Entrepreneurial development and economic growth*

Variable	SEM Model	TEA Model	EBO Model	HJEC Model
C	-23.799 (0.1743)	-4.8564 (0.8508)	252.019** (0.0390)	9.5631 (0.4166)
GDPPCG(-1)	0.2242** (0.027)	0.1221 (0.6559)	-0.5259 (0.3284)	0.2024*** (0.0770)
GFCF	0.3637* (0.0002)	0.0487*** (0.0523)	0.3395* (0.0049)	2.5845* (0.0069)

GDPPE	-1.7874 (0.1581)	-0.1662 (0.9438)	-27.016** (0.0274)	-0.4943 (0.6946)
WAGES	4.6546 (0.0852)	0.0597*** (0.0459)	2.0500* (0.0001)	0.1232* (0.0000)
PG	-3.4002** (0.0363)	-10.768 (0.2325)	-0.4930 (0.9291)	0.2467 (0.9269)
BCPS	-0.1689 (0.8444)	0.92127 (0.7349)	11.466 (0.1266)	0.0145 (0.9938)
ELECTRICPCONPC	0.4016 (0.2116)	1.6859 (0.2795)	-2.81219 (0.1428)	-0.3559 (0.5790)
TOTALDEBTS	-0.6336* (0.0038)	0.0182 (0.9751)	-3.3999** (0.0119)	-0.7244* (0.0055)
TPOEN	0.0404 (0.2043)	0.1646 (0.3467)	-0.0478 (0.6744)	-0.0450 (0.4543)
BUSFREEDOM	0.0320 (0.1652)	0.3787 (0.2341)	0.0550 (0.2988)	0.0134 (0.8354)
PSAVT	1.6869* (0.0000)	2.0500* (0.0001)	4.4599* (0.0007)	0.1232* (0.0001)
PRORIGHT	0.0416 (0.5960)	8.1225 (0.0423)	0.5978*** (0.0693)	-0.0257 (0.7324)
SELFEMPLOY	0.6995 (0.1994)			
TEA		6.4599** (0.0107)		
EBO			0.0385** (0.0443)	
HJEC				0.0138 (0.9015)
Instrument rank	25	25	25	25
Hansen J Stat(Prob J- Sta)	18.5(0.67)	23.23(0.67)	26.78(0.78)	23.23(0.67)
F statistics	78.17(0.000)	81.33(0.000)	89.10(0.000)	81.33(0.000)
Stand Error value	0.67	0.66	0.67	0.67
Number countries	13	13	13	13

Note: Probability in parentheses ***p<0.1, **p<0.05, *p<0.01

TEA means total early stage entrepreneurial activity, HJEC means high job expectation creation, SEM means self-employment and EBO means business ownership (See Appendix-Table 4 for detail explanations)

One possible explanation is the argument of the decades-long downward spiral of commercial bank financing of innovative and long gestation economic activities. The 4.8 percent of annual lending of commercial bank lending to agriculture for instance in 2016 (AfDB 2016) implies that the institutions have so far not been able to significantly reach innovative enterprises. The result of this is a significantly unmet demand for credit in the economy, although such credit is crucial to addressing the increasing demand for growing economic activities and shifting preferences towards innovative products sources. While the result points to the view ascribed to Diamond and Dybvig(1983), Krugman, (1998) and Singh(1997) Lucas, (1988), Oluitan & Hakeem, (2013) which stated that financial development is an obstacle to economic growth, it is less consistent the results that favoured the growth-

enhancing view of financial intermediation espoused by King and Levin (1993a) and the empirical works of King and Levin (1993b) and Levin *et al* (2000).

Increasing debt is negatively and significantly related with economic performance individually. The findings individually support Krugman (1988), Sachs (1988), Elbadawi *et al.* (1997) and Chowdhury (2001) proof of debt-overhang phenomenon. Krugman (1988) called the negative relationship between debt and economic growth as debt overhang where the potentials of repayment of outstanding facilities fall lower than the signed value.

Political stability and absence of violence terrorism show positive and significant effect on growth in all the models. On average, a unit increase in political stability and absence of violence terrorism suggests around a 1.68 point increase in economic growth in SEM model, 2.05 in TEA model, 4.45 in EBO model and 0.12 in HJEC model. The results favour the political stability and absence of violence terrorism – growth enhancing view that, this variable matter for economic stability and growth as they shaped the incentives in the society, in particular as they influence investments in physical and human capital and technology, and the organization of production (Smith 1776, North 1990, Acemoglu, Johnson & Robinson 2005, Bruinshoofd 2016, Mullings 2018, Arshad 2019). The coefficients of business freedom are positive but insignificant across all regressions. The reason for this might not be unconnected with report that the SSA business environment suffers from several challenges that make carrying out business operations costly and inefficient (World Bank 2018). According to the details of global financial institutions, SSA countries' position in the Doing Business rankings which on the average improved between 2016 and 2017 recorded a dropping by 2017 to 2018. These reports are not too different from that of the World Economic Forum's and Global Competitiveness Indices.

One innovative aspects of this paper is the inclusion of patent right. The coefficients of innovation proxied by patent right have positive but insignificant in SEM, and EBO models, positive and significant in TEA model but negative relationship in HJEC model. On average, a unit increase in patent right suggests around 8.12 point increase in economic growth in TEA at 0.0423 probability value. This contradiction can be explained from the argument that SEM is not the same as entrepreneurship. This result is in contrast with the work of Galindo and Mendez (2013) which says innovation is key to economic growth in all fronts. One possible explanation for this is that innovation is not generally facilitating economic activities in SSA. Meanwhile, it is innovation that needs to facilitate higher levels of economic activity to create new business opportunities, which may let entrepreneurs have an interest in accessing new markets and business opportunities by supplying products with a higher degree of competitiveness are lacking. The lack of innovation facilitates possibly reduces entrepreneurs' interest in introducing new technological processes.

For instance, the involvements in early-stage Entrepreneurial Activity (TEA) provided strong and positive evidence of the impact of economic growth in general. While the estimation reveals a positive at 5 percent level of significance for

total early stage entrepreneurial activity (TEA), 10 percent level of significance for established business ownership (EBO), the coefficient for self-employment (SEM) and high job expectation creation (HJEC) is positive but not significant. On average, a unit increase in total early stage entrepreneurial activity (TEA) suggests around a 6.45 point increase in economic growth, while established business ownership (EBO) leads to a marginal 0.03 point increase in economic growth. In general, entrepreneurship activities and other related measures provide strong and positive evidence of the impact of economic growth in SSA resonating supports for the Schumpeter argument that the relationship between entrepreneurship and economic growth is a useful model that finds its most immediate foundation in simple intuition, common sense and pure economic observation; Audretsch, Carree and Thurik(2001) ideas that the relationship is a truly sturdy empirical regularity that constitutes part of the core of practical economic growth, which should be celebrated and United Nations Conference on trade and Development(UNCTAD 2004) assertion that the phenomenon is a converter of ideas into economic opportunities that lie at the very heart of economic growth. It supports Kumar (2019) arguments which revolve around the fact that entrepreneurship is a major channel by which change, and innovation creates jobs for people by increasing demand in the marketplace through competition. The result supports the empirical regularity position of Reynolds *et al* (1999), Zacharakis *et al* (2000), van Stel *et al* (2005), Galindo & Mendez (2013), Calza and Goedhuys (2016), among others. Meanwhile, the result is in contrast with Baptista and Thurik (2007), Faria et al (2010), Koellinger and Thurik (2012) Kritikos (2014) conclusion that unbiased effects of entrepreneurship on economic growth are conditional on the job creation elasticity. Based on the Koellinger and Thurik (2012) argument that the true relationship between entrepreneurship developments would continue to be shrouded with ambiguity if job creating effects of the phenomenon is left unexamined, any analysis that link entrepreneurial activities with issue of unemployment is important, especially since unemployment reduction was what Schumpeter had in mind while describing entrepreneur a prime driving motor of employment creation. Again, given the ambiguities in the empirical evidence of the relationship between entrepreneurial development and economic growth, reflecting in the possible limited employment contribution and coupled with the expectation of the political authorities that increase in economic growth can be realized by encouraging entrepreneurial activity, it is pertinent to analyse the effects of entrepreneurship development on economic growth while determining whether the effect is unemployment reducing or not, hence the next results.

4.2. ENTREPRENEURIAL DEVELOPMENT AND UNEMPLOYMENT REDUCTION

Table 3 presents the empirical result for the effects of entrepreneurship on unemployment reduction. The result is based on different measures of entrepreneurship as before for policy purpose. The regression results pass a battery of diagnostic and sensitivity tests. Consistent with the earlier results table 3 shows that the joint significance of variables that are omitted from a panel or pool equation is considerably satisfactory with a 5% level of significance as indicated by 6.71 F

statistics values. The Hansen J 18.6 with 0.67 statistics of over identifying restrictions confirms that the instruments employed are acceptable and healthy for the SEM model i.e., uncorrelated with the error term, and that the excluded instruments are correctly excluded from the estimated equation. The same healthy results can be derived from the other model (see table 3). The analysis was conducted using the policy conditioning information set, and includes initial unemployment rate, GDP per capita growth, domestic investment, population growth, domestic interest rate, electricity consumption, trade openness, wage rate, credit to private individual by commercial bank, self-employment and the three entrepreneurial development measures as used earlier.

Across all estimations, the study finds that initial unemployment as a measure of past realisation of unemployment rate has positive impact on its current levels, although the results came with different levels of significance. This is a very interesting result as it shows how unemployment responds positively to itself, implying that more unemployment may continue to generate more unemployment in SSA.

Oddly, the growth rate in GDP has a negative but insignificant effect on unemployment reduction in all the models under consideration. This result is a confirmation of the assertion that economic growth in SSA is not trickling down as well as inclusive. The reason for this unexpected outcome might not be unconnected with the persistent increase in population growth, large number of graduates that higher education turns out every year coupled with the global economic crisis that always rock down on less developed countries. The result is in line with the view of Arewa and Nwakanma (2012), Bankole and Fatai (2013) that opined that, the kind of economic growth many developing countries celebrate do not translate to solving the unemployment problem. This is quite contrary to Okun’s hypothesizes that, one-percent point change in the unemployment rate is associated with an approximately three- percent change in economic growth in the opposite direction. Since the level of economic activities according to Okun’s law depends on the quantity of labour engaged in the economy, it naturally follows that an increase in output should be followed by an increase in labour demand, which can either come through the engagement of new workers or making existing employees put in extra hours of work, hence increase in economic output. The result from this study is however not in tandem with the work of Bajo-Rubio, Díaz-Roldán, & Esteve (2007); Maza and Villaverde, (2007); Mankiw (2012) and Romer (2012); Marth(2015); Dixon, Lim and Ours (2016) that argue that Okun’ s law could be considered a near-rationale rule of thumb to be used by all economies.

Table 2: Entrepreneurial Development and Unemployment Reduction

Variable	SEM Model	TEA Model	EBO Model	HJEC Model
C	-0.1363 (0.9782)	-1.109261 (0.7528)	-5.1803 (0.1127)	-54.019* (0.0070)
UNEM(-1)	0.7193* (0.0000)	0.7078* (0.0000)	0.7311* (0.0000)	0.1260 (0.0979)

GDPPCG	-0.0633** (0.0351)	-0.048926 (0.1445)	-0.0501 (0.1390)	0.1518 (0.4904)
LGFCF	0.370420*** (0.0855)	0.340981 (0.1705)	0.3575 (0.1570)	-6.1075* (0.0041)
LGDPPE	0.4157 (0.0364)	0.312920 (0.2437)	0.4284 (0.1236)	8.6075* (0.0002)
LIRATE	-0.0096 (0.2983)	-0.0187*** (0.0841)	-0.0025 (0.7885)	-0.0742*** (0.0618)
PG	-1.512795* (0.0000)	-1.5864* (0.0000)	-1.4540* (0.0001)	-0.0780 (0.9758)
ELECTRICPCONPC	0.1795*** (0.0577)	0.1718 (0.1095)	0.2699* (0.0047)	-0.5133 (0.4140)
TPOEN	0.0101** (0.0279)	0.0111*** (0.0488)	0.0092 (0.1112)	-0.0999** (0.0326)
WAGES	0.2357 (0.5209)	0.5533 (0.1777)	0.3472 (0.4175)	1.6438 (0.3704)
BCPS	0.0752 (0.2235)	0.5484 (0.5535)	1.2299 (0.2330)	1.2803 (0.4032)
PR	-0.7532 (0.4145)	-0.6853 (0.3145)	-0.5324 (0.2145)	-0.8543 (0.4146)
SELFEMPLOY	-0.6532 (0.3145)			
TEA		-0.036636 (0.0288)		
EBO			-0.0050 (0.7685)	
HJEC				-1.0037* (0.0000)
Instrument rank	25	25	25	25
Hansen J Stat(Prob J- Sta)	18.6(0.77)	23.23(0.67)	26.78(0.78)	23.23(0.67)
F statistics	79.16(0.000)	81.33(0.000)	89.10(0.000)	81.33(0.000)
Stand Error value	0.77	0.76	0.77	0.77
Number countries	13	13	13	13

Note: Probability in parentheses ***p<0.1, **p<0.05, *p<0.01

As expected, the coefficient of GFCF as a measure of domestic investment remains positive and significant in all the regression functions. Specifically, one point increase in domestic investment reduces unemployment by 4.6 point in self-employment model, 0.05 point in TEA model, 2.05 point in EBO model and 0.12 point in HJEC model. This result is similar to that of wage- economic growth relationship. On average, one point increase in wage increases economic growth by 4.6 point in model 1, 0.05 point in model 2, 2.05 point in model 3 and 0.12 point in model 4.

Population growth rate has a positive effect on unemployment rate with the indications that one point increase in population increases the rate of unemployment SSA by 0.013 point, by 0.02 point in SEM and EBO, while TEA and HJEC are

positive but not significant. Although the variable gained its significance at 5 percent and 1 percent levels, the positive relationship could be as a result of the rapidly increasing population in SSA which adds a substantial number to the total labour force every year with low per capita income and low capital formation which implies ‘a circular constellation of forces tending to act and react upon one another in such a way as to keep a poor country in a state of high unemployment rate’.

The relationship between bank credit and unemployment reduction are positive but insignificant in all models. The insignificant coefficients imply that bank credits to unemployment reduction has not been adequate to effectively spark-off unemployment reduction in the country. This poor performance of bank credit in reducing unemployment might be attributable to the unwillingness of banks to grant credit to jobless people due to their inherent insolvency problems. Again, banks normally charge high interest rate in SSA and demand for collaterals before loans are offered to business owners and these have in turn drastically reduced demand for bank credit thus affecting the level of unemployment rate. This finding is in line with the studies such as Ismaila (2012) and Abubakar & Yahya (2013) who maintained that domestic bank credit do not play significant role in reducing unemployment in developing countries while the study disagrees with that of Aremu & Adeyemi (2011) Safiryu & Njogo (2012) and Hudson, Andrew & Ibrahim (2014) who argues that bank credit reduce unemployment rate.

One innovative aspects of this paper is the inclusion of innovations as measured by patent right. The coefficient here is the number one determinant of the employment effects of entrepreneurship in terms of Schumpeterian or refugee effects. Oddly, our results show that patent right has negative but insignificant effects on unemployment reduction in all model estimates. This shows that higher levels of patent that need to create new business opportunities which may let entrepreneurs have an interest in accessing new markets and business opportunities by supplying products with a higher degree of competitiveness are lacking. The lack of innovation facilities possibly reduces entrepreneurs' interest in introducing new technological processes, hence affects the employment creation capability which signals refugee effects in SSA.

While the coefficient of SEM has negative but insignificant effect on unemployment reduction, that of TEA and HJEC are negative and significant. Specifically, one point increase in entrepreneurship in terms of TEA reduces unemployment by 0.03 point and 1.0 point in HJEC model. These results suggest that TEA and HJEC are critical to job creation.

The results show that changes in TEA and HJEC are critical to unemployment reduction and that of SEM and EBO are not. The results resonate with the argument that unbiased effects of entrepreneurship on economic growth are conditional on the job creation elasticity effects of entrepreneurship development. They argue that the true relationship between entrepreneurship developments would continue to be shrouded with ambiguity if job creating effects of the phenomenon which is left unexamined especially in an environment with high level of unemployment. The result is in line with the earlier findings (Reynolds, Miller and

Makai, 1995; Reynolds, Storey and Westhead (1994), Highfield and Smiley (1987), Yamawaki (1990). This is the entrepreneurship Schumpeterian effect of unemployment reduction.

Table 3: Entrepreneurial development and economic growth on unemployment reduction

Variable	Self-employment GDPPG Model	TEAGDPPPG Model	HJCEGDPPG Model
C	1.0259 (0.8232)	-1.3224 (0.7310)	-6.6602** (0.0405)
UNEM(-1)	0.6701* (0.0000)	0.7119* (0.0000)	0.7385* (0.0000)
GDPPCG	-0.0723* (0.0081)	-0.0490 (0.1492)	-0.0386 (0.2804)
SLGFCF	0.8249* (0.0001)	0.3530 (0.1717)	0.4066 (0.2113)
LGDPPE	0.5369* (0.0030)	0.3025 (0.2656)	0.5649** (0.0744)
LIRATE	-0.0097 (0.2522)	-0.0192*** (0.0802)	0.0008 (0.9303)
PG	-0.8309** (0.0465)	-1.6005* (0.0000)	-1.3467* (0.0019)
ELECTRICPCONPC	0.1325 (0.1422)	0.1667 (0.1281)	0.2805* (0.0068)
TPOEN	0.0018 (0.7341)	0.0107* (0.0767)	0.0082 (0.2435)
WAGES	-2.1814* (0.0028)	0.5580 (0.1892)	0.2850 (0.5217)
BCPS	0.2356 (0.4865)	0.6195 (0.1071)	1.0178* (0.0064)
SELFEMPLOY	-30.7018* (0.0001)		
SELFEMPLOY* GDPPCG	-0.0152 (0.6826)		
TEA		-45.8157* (0.0001)	
TEA* GDPPCG		-0.0965 (0.0010)	
HJCE			-1.1179* (0.0044)
HJCE* GDPPCG			-2.1814* (0.0028)
Instrument rank	25	25	25
Hansen J Stat (Prob J-Sta)	18.6(0.77)	23.23(0.67)	26.78(0.78)
F statistics	79.16(0.000)	81.33(0.000)	89.10(0.000)
Stand Error value	0.77	0.76	0.77
Number countries	13	13	13

Note: Probability in parentheses ***p<0.1, **p<0.05, *p<0.01

The coefficient of SEM has a negative but insignificant effect on unemployment reduction. The interactive coefficient of SEM and economic growth also reveals a negative but insignificant relationship on unemployment reduction. Meanwhile, the coefficients of TEA and unemployment reduction and that of HJEC and unemployment are negative and significant.

Specifically, one point increase in HJEC model leads to 0.01 point decrease in unemployment rate. These results suggest that HJEC are critical to unemployment reduction. The elasticity of unemployment with respect to TEA–economic growth interaction is about 0.09 point, suggesting that if TEA–economic growth channel improve by 10 point, on average, unemployment would reduce by 0.09 point. This implies that unemployment is very responsive to TEA –economic growth channel. The coefficient for HJEC- economic growth responses indicates that if HJEC-economic growth improves by 10 point, SSA unemployment will grow by 1.1 point on average. These findings suggest that the marginal impact of HJEC on unemployment reduction is increasing with the level of economic growth. In other words, HJEC have contributed to reducing unemployment in countries with robust economic growth systems.

The results which suggest that TEA reduces unemployment within SSA robust economic growth system and that the effect of HJEC on unemployment reduction becomes even more significant when indicator of growth is included are novel and, in our view, extremely interesting results. These results confirm the conclusions from our theoretical model: if Schumpeterian entrepreneurship activities (TEA and HJEC) are properly developed and efficiently used within a robust economic growth, one should expect a greater effect of the phenomenon on unemployment reduction. This result is in consonance with the work of Audretsch *et al* (2005) on 23 OECD countries.

5. CONCLUSION AND POLICY RECOMMENDATIONS

The literature addressing the relationship between entrepreneurial activity and economic growth has produced ambiguous results at best. While several studies found a positive link between entrepreneurial activities and economic growth, some argued that the conclusion cannot be relied upon based on the argument that most of the studies jettisoned the job creating effects of entrepreneurship. They argued that the true relationship between entrepreneurship developments would continue to be shrouded with ambiguity if job creating effects of the phenomenon is left unexamined especially in an environment with high level of unemployment. Accordingly, any study that directly links entrepreneurial activities and economic growth without a critical understanding of the employment effects of entrepreneurship developments might have risked arriving at a robust implication from the policy front, especially since unemployment reduction was what Schumpeter had in mind while describing entrepreneur as a prime driving motor of employment creation.

Based on the ambiguities in the empirical evidence of the relationship between entrepreneurial development and economic growth, reflecting in the possible limited employment contribution and coupled with the expectation of the political authorities that increase in economic growth can be realized by encouraging entrepreneurial activity, this study examined the effects of entrepreneurship, growth and unemployment, given the increasing rate of unemployment in SSA. In particular, the study examined whether employment effects of entrepreneurship on economic growth are expansive or limited. These are important issues considering the extensive literature that has documented the growth enhancing effects of entrepreneurship without considering the unemployment reduction effects.

Using early-stage Entrepreneurial Activity (TEA) and high job expectation creation (HJEC), this study found that entrepreneurial effects individually has positive and significant entrepreneurship depend on economic growth though has a lot to do with how the phenomenon was measured. In general, entrepreneurship activities and other related measures provide strong and positive evidence of the impact of economic growth in SSA resonating supports for the Schumpeter argument that the relationship between entrepreneurship and economic growth is a useful model that finds its most immediate foundation in simple intuition, common sense and pure economic observation and the assertion that entrepreneurship is a converter of ideas into economic opportunities that lie at the very heart of economic growth.

The study found that entrepreneurship development in terms of TEA and SEM has negative but insignificant effect on unemployment reduction, while, HJEC as a measure of entrepreneurship has a negative and significant effects on unemployment reduction, hence the ambiguity in the empirical evidence. Our result indicates that SEM and economic growth also reveal negative but insignificant relationship on unemployment reduction. The study concluded that unemployment is very responsive to TEA –economic growth channel. The study concluded that the marginal impact of HJEC on unemployment reduction is increasing with the level of economic growth. The study also concluded that HJCE have contributed to reducing unemployment in countries with robust economic growth systems. The findings that all entrepreneurial development measured employed - TEA, SEM and HJCE have contributed to reducing unemployment in countries with robust bank credit given is a major indication that, credit giving by banks helps invigorate the climate for entrepreneurship development that is fundamental to unemployment reduction. These findings underscore the need for policy makers to continue to provide enabling financial infrastructures while designing entrepreneurship development policies to complement entrepreneurship-economic growth that are unemployment reducing in SSA.

Governments should play a critical and important role in creating a climate that encourages entrepreneurship and assists existing business to grow and remain sustainable. Some of the suggestions to policy makers to improve this in SSA include: Improve the physical infrastructure – power, transportation, water and broadband internet, especially in the more rural areas; Reduce bureaucracy and red tape in starting a business. Make it quicker and less costly; Implement incentives to

encourage entrepreneurs to start new businesses and companies to invest in small businesses through internships and apprenticeships;

Fixing SSA's basic infrastructure can do the magic in reviving entrepreneurship development in the region and promoting the micro, small and medium enterprises sector to facilitate economic growth and development. If the government of the day will face square the daunting problem of epileptic power supply, entrepreneurs would survive, and their businesses sustained. The resultant effect on the economy would be immense because jobs will abound, and wealth created in abundantly.

For future coordination of entrepreneurial policies of SSA countries we strongly support domestic bank financing to promoting engagement into entrepreneurial activity, especially during times of higher unemployment rates. Policy makers should be however familiar with fact that effect of bank financing on entrepreneurship development and growth to reduce unemployment rate. Another implication of our results is that business environment and administrative barriers have significant impact on entrepreneurial activity. Therefore, any efforts aiming at reducing interest rate and administrative barriers for potential entrepreneurs should be definitely supported for unemployment reduction.

Institutions such as the World Bank and others stress the advantages of indirectly creating the appropriate conditions for enterprises to be set up and mature over subsidizing them directly. The creation of a business-enabling environment refers to the deregulation and improvement of the legal framework for enterprises, most importantly in the fields of property rights, market access, free competition, low taxes and the deregulation of labour markets. In broader terms it also includes improved access to road and other physical infrastructure such as electricity, water and telecommunications, financing and business development services as well as the importance of political stability and good governance. The setting up of quality testing and certification infrastructure also contributes to an improved business environment.

Barriers to credit and financial markets are a particularly severe problem for small-scale businesses, agricultural activities and youth enterprises. Not only is access to credit limited; the cost of credit is typically high in the commercial banking sectors of low-income countries. Several factors contribute to the relatively high costs of credit. The risk premium that borrowers must pay in formal credit markets is often extremely high due to perceptions, i.e. that

Monetary authorities are advised to lower the high interest rate in the country to single digit. This will not only promote SMEs access to bank credit but also enhance their profit. In their quest to make to benefit from the rising profit will embark on expansion which will invariably lead to fall in unemployment in the country.

Encourage and, if necessary, incentivise banks to create a pool of funds that is available to entrepreneurs, not on asset-based assessment, but upon different ideas, such as co-operative funding, which is used by many African villages; Established

financial institutions that will provide low cost funding for nascent, new and established entrepreneurs.

Introduce new funding models, possibly backed by government, that enable entrepreneurs to obtain seed capital without the stringent requirements required by commercial banks of providing collateral. This is particularly important for female entrepreneurs, who often face additional barriers to access to finance. The danger of this is that most governments and government agencies in SSA are not good at assessing and working with entrepreneurs.

Government should establish and fund specialized financial institution to mobilize financial contribution from the prospective entrepreneur. The institution should provide 90 percent of what the prospective entrepreneur investor contributed as loan at a single digit interest. This will encourage the growth of entrepreneur and contract unemployment in the country.

Monetary authorities should adopt a policy that will abrogate stringent measures attached to loans by banks. The measure makes it almost impossible for entrepreneur to access banks loans due to their inability to meet those conditions. This has dire impact on the role of entrepreneurship- unemployment reduction in SSA.

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APPENDIX

Table 4: Variables, Definitions of the variables and Sources

Variable	Definitions	Sources
UNEM	Unemployment rate	World Bank World Development Indicators database
GDPPCG	GDP per capita growth (annual %)	World Bank World Development Indicators database
LGFCF	Gross fixed capital formation (% of GDP)	World Bank World Development Indicators database
LGDPPE	GDP per person employed (constant 2011 PPP \$)	World Bank World Development Indicators database
LIRATE	Deposit interest rate (%)	World Bank World Development Indicators database
PG	Population growth (annual %)	United Nations World Population Prospects
ELECTRICPCONPC	Electric power consumption (kWh per capita)	World Bank World Development Indicators database
TPOEN	Trade (% of GDP) this is the sum of exports and imports divided by the value of GDP, all in current US dollars	International monetary fund, Balance of Payments Statistics Yearbook and data files, and World Bank and OECD GDP estimates 2019
WAGES	Wage and salaried workers, total (% of total employment)	International Labour Organizations estimate
BCPS	Domestic credit to private sector by banks (% of GDP)	World Bank World Development Indicators database
SELFEMPLOY	Self-employed, total (% of total employment)	International Labour Organizations estimate
TEA	Total Early-Stage Entrepreneurial Activity (TEA)	Global Entrepreneurship Monitoring

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EBO	Established Business Ownership	Global Entrepreneurship Monitoring
HJEC	High Job Creation Expectation	Global Entrepreneurship Monitoring
TOTALDEBTS	Total debt stocks (% of GNI)	World Bank World Development Indicators database
PRORIGHT	The data on the institutional variables are collected from the	Worldwide Governance Indicators (WGI) published by the World Bank
PSAVT	Political stability and absence of violence/terrorism	Worldwide Governance Indicators (WGI) published by the World Bank
BUSFREEDOM	Business freedom	Heritage Foundation

Source: Author's