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Does entrepreneurship reduce poverty in developing countries?

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Abstract

This paper examines whether entrepreneurship proxies by Total Entrepreneurial Activity (TEA) reduces poverty in 122 developing countries over the period 2006-2016. We use three measures of poverty Poverty gap at $1.90 a day (2011 PPP) (%), Poverty headcount ratio at $1.90 a day (2011 PPP) (% of population) and Poverty gap at national poverty lines (%). Our results suggest that the TEA has a significant and negative impact on all measures of poverty. The picture remains similar when the countries are dispatched by levels of income. However, when we consider the 2008's financial crisis effect, the impact of TEA on poverty reduction over the period 2009-2016 is lower compared to that of the full period (2006-2016). The focus of developing countries' policy makers should be concerned the creation of more entrepreneurs and enterprises in a rule of law enhancing and property right secured framework with a skillful workforce.

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I- Introduction

Developing countries youth are facing a serious unemployment problem that is slowing down the growth in this region. Since the 2000s, developing countries are in the forefront by attracting more and more investors from all over the world. This has considerably increased the number of business opportunities in these countries. Wanting to take advantage of this momentum and move forward in their drive towards sustainable development, developing countries are trying to follow the footsteps of developed countries, which since the second half of the 20th century have seen entrepreneurship as a means of increasing productivity, innovation and profits (McCloskey, 2013; Ahlstrom, 2010).

Several literature have addressed the link between entrepreneurship and poverty. According to Carree et al. (2002), Carree et al. (2007), Acs and Amorós (2008), and Amorós and Cristi (2008) there is a U-Shaped relationships between entrepreneurship and poverty on the OECD panel while Wennekers et al. (2005) found a L-Shaped relationship. For McCloskey (2010), innovation and new venture alleviate poverty, even much more than institutional change, trade, geography and other development arguments. Kevane and Wydick (2001); Ogundele et al. (2012); Bruton et al. (2013), and Astik et al. (2016) suggest that entrepreneurial propensity remains one of the effective tools to reduce poverty. For Kimhi (2009), entrepreneurship by creating business with competition and innovating strengthens in the long run the private sector. This leads to the increase in GDP (Gross Domestic Product) and then combats poverty according to the same author. Empirical evidence shows that all entrepreneurial activities do not contribute to economic growth, and that wealth creation does not necessarily involve substantial poverty reduction (Singer 2006; Naudé 2007). Shaeikh and Hafiez (2013) found a weak positive relationship between entrepreneurial propensity and poverty in Somalia. With regards to Mensah and Benedict (2010), Medium Size Entreprises (MSEs) in South Africa are at the moment not making inroads against poverty. Bruton et al. (2015) notice that social entrepreneurship ventures, while generating some revenue, do not offer the potential for most poor people to escape poverty. Djankov et al. (2018) using a panel data of 189 economies evidence that business-friendly regulations are negatively correlated with the incidence of poverty.

To the best of our knowledge, there is no systematic panel study on the subject focusing on developing countries. The rare research which has analyzed the impact of entrepreneurship on poverty using panel data are Amoros and Cristi (2011), Djankov et al. (2018), Carree et al. (2002), Carree et al. (2007), Acs and Amorós (2008), Amorós and Cristi (2008), Wennekers et al. (2005), and Djankov et al. (2018). This shortfall of cross-country studies on entrepreneurship and poverty in developing countries is a huge weakness in the literature.

This observation imposes to ask legitimately the following question: Does Total Entrepreneurial Activity (TEA) affect poverty in developing countries? Another crucial question our study addresses is: does the relation between TEA and poverty differ between developing countries according to their income level? Finally, what will be this relationship when taking into account the 2008 financial crisis?

We use TEA following Alderete (2017) and considering panel data (see Djankov et al., 2018; Si et al., 2018) in order to take into account country effects for every unobserved country specificity that does not vary through time (such as educational, cultural, or other institutional factors that do not vary in the short term e.g., willingness to implement conservation policies).

First, this research explores the effects of TEA on poverty in 122 developing countries over the period 2006-2016. Second, we select three measures of poverty namely Poverty gap at $1.90 a day (2011 PPP) (%), Poverty headcount ratio at $1.90 a day (2011 PPP) (% of population) and Poverty gap at national poverty lines (%). According to Foster et al (1984), these measures of poverty are defined as follows: a) the poverty gap is the mean distance separating the population from the poverty line, b) the headcount ratio (poverty rate) assesses the incidence of poverty that is, the share of population living below the poverty threshold, c) a) the poverty gap is the mean distance separating the population from the poverty line, at national poverty lines.

Our results suggest that the TEA has a significant and negative impact on all measures of poverty in developing countries. Entrepreneurship reduces poverty also when countries are dispatched according to their income level, i.e. low income countries (LICs) and middle-income countries (MICs). This poverty reduction relationship is similar when considering the impact of the 2008 crisis, except that the magnitude of this case is smaller. Our results contribute to the discussion on entrepreneurship and

poverty reduction and hence have several policy implications for developing countries policy makers. Thus, policy makers should focus on entrepreneurial activity creation.

The remainder of this article is structured as follows. Section II reviews the state of the literature on how entrepreneurship influences poverty. Section III discusses our methodology and data while section IV presents the results and their implications, the section V provides some robustness check, with our concluding remarks in section VI.

II- Literature on entrepreneurship and poverty

Several approaches exist in the literature in the definition of entrepreneurship. The entrepreneurship in the Schumpeterian sense induces disturbances in the market, through the process of "creative destruction" (Schumpeter, 1951). According to Casson (2003), entrepreneurship, which corresponds to entrepreneur, is someone who resorts into some prior defined category such as self-employment or business ownership. For Gries and Naudé (2011), entrepreneurship is the resource, process and state of being through and in which individual utilizes positive opportunities in the market by creating and growing new business firms.

Some literatures have addressed the issue of entrepreneurship and poverty. Acs et al. (2008) and Naudé (2010) considered entrepreneurship to be an important mechanism to drive welfare and then economic development.

From the perspective of informal sector analysis, Bennett (2010) working on informal firms in developing countries developed a two periods model. In the first period an entrepreneur decides under uncertainty whether he enters the formal or informal sector, or to stay out of the market altogether. After learning about the firm's profitability according to the choice he made, he in the second period under conditions of certainty chooses to maintain the status quo or to change sectors. Bennett (2010) concludes that informal sector is greatly profitable to the entrepreneur and constitutes a stepping stone to escape poverty.

Tamvada (2010) asks if entrepreneurship (self-employment) raises individual welfare. Based on an empirical approach and microeconomic data on India, this author uses 26,485 households and per-capita consumption expenditure as an indicator of welfare. Using quantile regressions, he found that the high-growth firms entrepreneurs (employing others) and own-account workers have an increase in welfare in term of consumption. However, own-account workers have slightly lower returns than salaried employees. Tamvada (2010) also revealed that own-account workers have a higher welfare than casual laborers, which implies that even in the form of limited self-employment, entrepreneurship may improve welfare and contribute to less poverty.

In an empirical analysis approach and using microeconomic data, Kimhi (2009) proved by studying 583 households in Ejana-Wolene (Southern Ethiopia) that when entrepreneurship targets the 80% of lowest income, income increases and lift households out of poverty. Kimhi (2009) concluded that policies that support entrepreneurship could be particularly successful if directed at the low-income, low-wealth. Kimhi (2009) also argued that entrepreneurial propensity increases market competition with business creation. The innovative contribution revitalizes the economic activities and pushes other companies to improve. In the long run, the efficiency of the private sector is strengthened, increasing its contribution to GDP (Gross Domestic Product) and consequently for specific purpose to fight poverty.

Gries and Naudé (2011) formalized a model based on the conceptualization of framework by providing the capabilities approach and argued that entrepreneurship is both resource and process. Hence, it contributes to earn income, and to accumulate wealth. Si et al. (2015) studied entrepreneurship and poverty reduction in Yiwu (China). Through empirical evidence, the authors have verified that poverty alleviation does not merely result from the efforts of governments or large firms but emerges from internal elements such as disruptive innovation and new venture creation that involves multiple internal actors. Thus, they argue that impoverished peasants in poor areas and developing countries need to rely mostly on their own ability to discover and take advantage of business opportunities through entrepreneurial activities generating profits rather than by attempting to depend on multinational corporation investment or government and institutional support to fight poverty.

Vermeire and Bruton (2016) are agreed with the logic that entrepreneurship is a tool for alleviating poverty. But they assert that the lack of initial interest in entrepreneurship as a poverty reduction

instrument was due to the fact that policy makers and development institutions focused on other means to solve or reduce poverty with a capital approach.

For Naudé (2011), the reducing effect of entrepreneurship on poverty is a belief driven and must be proven by facts and research. Acs et al. (2005), and Acs and Varga (2005) prefer higher rates of opportunity-based entrepreneurship than higher rates of necessity-based entrepreneurship, but argue that necessity entrepreneurs are not necessarily less successful or less important. These entrepreneurs contribute to antipoverty interests even though they may not have a substantial impact on economic growth. Shaeikh and Hafiez (2013) by selecting some of small enterprises and medium-sized entreprises found a weak positive relationship between entrepreneurship and poverty in Benadir region (Somalia). Singer (2006) asserted that in absence of the wealth-creating of entrepreneurial businesses, the depth and extent of world poverty would be greater. Hence, the best cure of poverty in any region of the world lies in stimulating more business activity and start-up ventures.

It is important to note that, some works in the literature don't argument in favor about the poverty alleviation provided by entrepreneurship. Amoros and Cristi (2008) recognize that entrepreneurship is not a 'panacea' to poverty reduction. Developing countries must also work to achieve solutions to political stability, basic infrastructure, education and health have. This implies stable and regulatory macroeconomics conditions that help new business creation.

As regards Naudé (2010), in developing countries, entrepreneurship (self-employment) is considered as being driven by necessity (for survival) and offering meager revenue. Yanya et al. (2013) use a model of Beck et al. (2005) and question the positive effect of entrepreneurship on poverty reduction in the case of Thailand. They regressed the log of new firm establishment on the log of lowest income quintile, and Headcount Index respectively and found mixed results and their pooled OLS and random effect suggest that entrepreneurship does not have a significant impact on income of the poor, or number of poor.

With regards to Mensah and Benedict (2010), despite the commitment of the provincial and national governments to bolstering and supporting the sector, Medium Size Entreprises (MSEs) in South Africa are at the moment not realizing their job-creation potential and so are not making inroads for alleviating poverty.

Bruton et al. (2015) noted that subsistence entrepreneurship, while generating some revenue, such entrepreneurial ventures do not offer the potential for most poor individuals to escape poverty.

Najafizada and Cohen (2017) presenting the case of carpet weavers in Bamyan, an extremely poor province in Afghanistan seeked to know if social entrepreneurship can tackle poverty. The authors found that carpet weaving alone is rarely sufficient on its own for poor families to overcome poverty. In fact, the objective of virtually every villager is to acquire a stable income that is sufficient to provide for the basic needs of the family. In Singer's (2006) view, entrepreneurial activity can sometimes have the effect of reducing purchasing power for the least well off in a society.

III- Methodology and data

We use TEA from Global Entrepreneurship Monitor's database, following Alderete (2017). It is the number of adults (18–64 years old) per 100 involved in a nascent and/or young firms (in the case of both, it is still counted as one active person). Two databases of entrepreneurship measures: The Global Entrepreneurship Monitor (GEM) and the World Bank Group Entrepreneurship Survey (WBGES) (Acs et al., 2008). GEM data take into account informality of entrepreneurship, especially in developing countries. Many developing countries host large informal sectors. Informality stems from the fact that starting a business does not necessarily mean registering a business. It is also included in GEM data a wide range of entrepreneurial activities, ranging from companies operating in the formal sector but opting for a legal status different from that of a limited liability company (LLC). Furthermore, GEM considers businesses that can be part of the informal economy and entrepreneurial initiatives that are at a very early stage and can therefore potentially become businesses operating in the formal sector.

To measure poverty we use 3 indicators, namely Poverty gap at $1.90 a day (2011 PPP) (%), Poverty headcount ratio at $1.90 a day (2011 PPP) (% of population) and Poverty gap at national poverty lines (%). These three poverty indicators are from the World Bank database. The model we estimate is as follows:

$$Poverty_{it} = \alpha + \beta_0 Poverty_{it-1} + \beta_1 TEA_{it} + \beta_2 Arable\_land_{it} + \beta_3 GDPpc\_growth_{it} + \beta_4 Inflation_{it} + \beta_5 Population\_Urban_{it} + \beta_6 Trade_{it} + \beta_7 Workforce_{it} + \beta_8 Ruleoflaw_{it} + \beta_9 Freedom\_index_{it} + \beta_{10} Credit_{it} + \beta_{11} Internet_{it+}\mu_t + \gamma_i + \varepsilon_{it} \quad (1)$$

In order to draw more general conclusions about the relationship between poverty and TEA, we begin our empirical strategy with ordinary least squares (OLS) and pooled fixed effects (FE) estimates. Given the heterogeneity of the sample, the results of the OLS estimates may have a heterogeneity bias because they impose a common constant term. Therefore, the estimation of equation (1) by the OLS estimator will be biased. To solve this problem, FE estimation is applied (Wooldridge, 2002).

The explanatory variables on poverty are potentially endogenous because of the likely omission of the explanatory variable and the causality of the reserves between the variables. This could drive the estimation of equation 1 by the ordinary least squares estimator (OLS and FE) to be biased.

Thus, in addition to OLS and FE models, we also use the system GMM estimator (Arellano and Bover, 1995; Blundell and Bond, 1998) which is supposed to solve this problem of Nickell (1981) in the OLS model. We therefore estimate equation 1 using different measures of poverty ($Poverty_{it}$) namely Poverty gap at \$1.90 a day (2011 PPP) (%), Poverty headcount ratio at \$1.90 a day (2011 PPP) (% of population) and Poverty gap at national poverty lines (%) at year t for a country i, μ_t is a time specific effect, γ_i is an unobserved country-specific fixed effects and ε_{it} is the error term.

The different equations use the minimum lagged levels (2) of the regressors as instruments. Efficiency is gained with additional instruments and the System-GMM assumes that the differenced variables used instruments are uncorrelated with country fixed effects.

System-GMM addresses issues of lagged dependent variables, unobserved fixed effects, endogenous independent regressors, as well as presence of heteroscedasticity and autocorrelation across and within individuals or countries (Roodman, 2009)[1].

Several control variables that are used in this study are from the World Bank database contain variables that have been shown to be related to income poverty in previous studies. The vector of control variables from World Bank database are : inflation rate (Easterly and Fisher, 2001; Akhter and Daly, 2009; Jeanneney and Kpodar, 2011), urban population (Beck et al., 2007), trade (the degree of economic openness) (Winters, 2002; Beck et al., 2007; Akhter and Daly, 2009), labor force (Beck et al, 2007), rule of law (Akhter and Daly, 2009), business freedom (Akter and Daly, 2009), arable land (Tebaldi and Mohan 2010), Internet is individuals using the Internet (% of population) and credit is Domestic credit provided by financial sector (% of GDP).

Inflation as measured by the consumer price index reflects the annual percentage change in the cost to the average consumer of acquiring a basket of goods and services that may be fixed or changed at specified intervals, such as yearly. Urban population as measured by urban population/total population (%). Trade as measured by the sum of exports and imports of goods and services measured as a share of gross domestic product (% GDP). Total labor force comprises people ages 15 and older who meet the International Labor Organization definition of the economically active population (%). Rule of law captures perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence. Business freedom index[2] is an overall indicator of the efficiency of government regulation of business. The quantitative score is derived from an array of measurements of the difficulty of starting, operating, and closing a business. The business freedom score for each country is a number between 0 and 100, with 100 equaling the freest business environment.

[1] See also Harris et al. (2008) for an overview of different dynamic panel models

[2] http://www.heritage.org/index/business-freedom

IV- Results and discussions

a) Over all sample

We begin our analyses by interpreting the results of the OLS and FE model estimates. The results are presented in Table 1 (columns 1 and 2), for all developing countries. These findings suggest that entrepreneurship has a negative impact on poverty when we consider the poverty gap at $1.90 per day (2011 PPP).

Let us see if these results are similar to GMM estimates that address endogeneity issues. Before analysing the GMM results, we will first analyse the validity of our models using Sargan's test. According to Roodman (2006), this test for the overidentifying hypothesis in the GMM model suggests that the Sargan p-value should lies between 5% and 10%. The higher the p-value of the Sargan statistic, the better it is. However, Roodman (2006) suggests that the Sargan p-value be greater than 25%. Furthermore, Roodman (2006) also suggests that if the Sargan p-value is less than 5%, it simply means that the instruments are not robust, but not weakened (Leblois et al., 2017).

The results reported in Table 1 columns 3, 4 and 5 show that the TEA in developing countries is negatively correlated with Poverty gap at $1.90 a day (2011 PPP), Poverty headcount ratio at $1.90 a day (2011 PPP) (% of population) and Poverty gap at national poverty lines (%) and having respective coefficients -0.635; -0.881 and -0.589. These negative relationships are significant at 1 percent for Poverty gap at $1.90 a day (2011 PPP), 5 percent for Poverty headcount ratio at $1.90 a day (2011 PPP) (% of population) and 10 percent for Poverty gap at national poverty lines (%). These results are in line with those from the OLS and FE estimates.

Entrepreneurship is therefore an important mechanism to deal with poverty and development in developing countries. Its role is to contribute to prosperity by creating new jobs, reducing unemployment, increasing economic growth and development. Entrepreneurship may increase the income of households and thus stimulates their consumption and ultimately contributes to poverty reduction. Entrepreneurship also could be favorable to the increasing productivity by bringing new innovation and speed up structural changes by forcing existing business to reform and increase competition for economic growth.

Higher entrepreneurship intensities imply that more people participate in entrepreneurship programs and suggest that a greater share of poor have access to different sources of informal or formal capital for creating firms. These informal or formal capitals increase the opportunities of the poor to earn a steady income through self-employment or other income-generating activities. These activities improve their asset base and help them break out of poverty. The reduction role of entrepreneurship on poverty in our study suggests significant policy implication. Governments in these countries must set up favorable conditions for helping economic agents to easily become entrepreneurs and to create more companies.

We continue the analysis of our results by exploring the correlation between poverty and the other variables (control variables) such as institutional quality (rule of law), workforce, urban population, trade, inflation, internet, credit, and business freedom.

The results reported in Tables 1 equally show that Workforce, Freedom index and Internet contribute to the poverty reduction. For example, the coefficients of Internet are -0.712, -0.033 and -0.212 respectively to Poverty gap at $1.90 a day (2011 PPP) (%), Poverty headcount ratio at $1.90 a day (2011 PPP) (% of population), Poverty gap at national poverty lines (%). Dynamic and Operational Capability Theory provides a solid theoretical framework for conceptualizing the capabilities of ICTs (Internet in our case) to make business activities more flexible and help make skills more effective for an entrepreneurial dynamic (Brixiová and Égert, 2017). It is recognized that ICTs can reduce transaction costs, improve organizational routines, and strengthen relationships between clients or suppliers. Exploring and exploiting opportunities for penetration into a new market, forming an alliance, completing a merger could be strengthened in global and competitive environments through the emerging implementation of information technology. ICTs bring to experts, employees, and customers the sharing of knowledge and solving business problems. Thus, ICT not only promote start-up

businesses but also facilitate their development and growth, (Giudice and Straub, 2011) and ultimately to reduce poverty.

Furthermore, Freedom index significantly reduces poverty in developing countries. The essential elements of economic freedom are personal choice, voluntary exchange, freedom of competition and the protection of persons and property. With the economy having put in place institutions and policies that promote economic freedom, it is more feasible to cooperatively and specialized based on its comparative advantage. Likewise, when property rights are protected, individuals are protected from arbitrary government intervention and specialized interest groups are prohibited from receiving favors. So, the costs of economic transactions are reduced. Indeed, economic efficiency is not reduced, and the least empowering segment of society profited.

In addition, Workforce contributes to the reduction of poverty. Approximately one billion people are now considered living in extreme poverty. Since, labor is the primary endowment for people, helping to lift them out of poverty, an increase in employment raises the overall level of workforce as more employment entails more resource. This causes an increase in household incomes and therefore consumption level for a better life.

b) Do levels of income matter for the estimated baseline model?

In this section, we run some regressions of the baseline model for the two subgroups, LICs and MICs. Our objective is to check the robustness of the previous results through the effects of the different levels of income. In other words, we examine the significance of the coefficients of the main explanatory factors, especially the entrepreneurship indictor namely TEA, highlighted in the results reported in Table 1. As the results of the OLS, FE and GMM models are similar, we will continue our study with the GMM estimates. The empirical results regarding the LICs and MICs are reported in Tables 2 and 3.

At first sight, there is no large difference between the two subgroups of countries. Thus, we run similar regressions for the two subgroups of countries; the empirical results regarding the LICs and MICs are somewhat comparable from those concerning the whole sample of developing countries (see Tables 2 and 3). Indeed, when we look at the results reported in Table 2, we observe that a TEA have a significant effect on poverty reduction for this subset of countries. Regarding the results in Table 3, entrepreneurship also contributes to poverty reduction in LICs.

We now analyse the results of the control variables for the two subgroups of countries. Indeed, when we look at the results reported in Table 3, we observe that a few factors have a significant effect on the poverty reduction for this subset of countries compare with those in Table 2.

In Table 2, trade, workforce, credit, internet freedom index and arable land contribute to the reduction of poverty. Whereas in Table 3, only trade, freedom index, credit enhance significantly the poverty reduction.

Table1. Entrepreneurship and poverty in developing countries, 2006-2016

	OLS	FE	GMM	OLS	FE	GMM	OLS	FE	GMM
Variables	Poverty gap at $1.90 a day (2011 PPP) (%)			Poverty headcount ratio at $1.90 a day (2011 PPP) (% of population)			Poverty gap at national poverty lines (%)		
TEA	-0.019**	-0.017*	-0.635***	-0.679	1.759*	-0.881**	-0.101	-0.569	-0.589*
	(-2.019)	(-1.917)	(-3.640)	(-2.51)**	(1.87)	(-2.348)	(-0.74)	(-0.18)	(-1.601)
Poverty gap at $1.90 a day (2011 PPP) (%)(-1)			0.004**						
			(2.516)						
Poverty headcount ratio at $1.90 a day (2011 PPP) (% of population)(-1)						0.407*			
						(1.783)			
Poverty gap at national poverty lines (%)(-1)									0.486*
									(1.806)
Arable_land	-0.014*	-0.310*	-0.226***	-0.223	2.090	-0.004**	-0.203	-0.424	-0.017
	(-1.917)	(-1.822)	(-8.116)	(-0.30)	(2.02)**	(-2.105)	(-0.01)	(-0.44)	(-0.407)
Gdp_pc_Growth	-0.332*	-0.543***	-0.230	-0.481	3.032	-0.028*	-0.249	-0.697	-0.107
	(-1.823)	(-3.014)	(-0.916)	(-1.36)	(-1.23)	(-1.840)	(-1.90)	(-1.62)*	(-1.523)
Inflation	-0.502**	-0.013*	0.001	-1.006	-0.828	-0.017**	-0.482	-1.510	-0.905
	(-1.865)	(-1.820)	(0.609)	(-1.41)	(-1.50)	(-2.067)	(-1.88)	(-1.48)	(-0.098)
Population_Urban	-0.013	-0.011*	0.827	-2.096	-0.062	0.217	-0.848	-0.502	-0.131
	(-0.020)	(-1.918)	(0.712)	(-2.38)**	(-0.87)	(0.402)	(-2.08)*	(-1.23)	(-0.097)
Trade	-0.011	-0.109*	-0.001	-1.610	-0.581	-0.003	-0.620	-0.538	-0.014**
	(-0.018)	(-0.526)	(-0.506)	(-1.85)*	(-0.01)	(-0.904)	(-0.36)	(-2.14)**	(-2.232)
Worforce	-0.421*	-0.402**	-0.071***	-0.436	-0.815	-0.042***	-0.183	-0.934	-0.054***
	(-1.828)	(-1.992)	(-3.951)	(-0.59)	(-2.01)**	(-4.181)	(-0.85)	(-2.06)**	(-3.549)
Ruleoflaw	-0.256**	-0.013*	-0.005	-0.687	-0.848*	-0.003	-0.001	-0.700	-0.008
	(-2.001)	(-1.920)	(-0.599)	(-0.89)	(-1.65)	(-0.548)	(-0.52)	(-1.37)	(-1.060)
Freedom index	-0.012*	-0.010*	-0.075***	-0.550	-2.545	-0.029***	-0.984	-1.477	-0.051***
	(-1.820)	(-1.818)	(-3.726)	(-0.52)	(-0.06)	(-2.715)	(-1.20)	(-0.46)	(-2.952)
Credit	-0.013*	-0.755	-0.015	-0.287	-1.372	-0.007	-0.548	-0.770	-0.017
	(-1.818)	(-0.535)	(-0.745)	(-0.32)	(-0.83)	(-0.246)	(-1.72)*	(-1.01)	(-0.985)
Internet	-0.425*	-0.445**	-0.712***	-2.823	-0.182	-0.033**	-0.005	-0.018	-0.212**
	(-1.830)	(-2.013)	(-3.121)	(-3.60)***	(-0.13)	(-2.187)	(1.50)	(-2.56)**	(-2.628)
Constant	0.018**	0.016*	0.851***	0.142**	0.001**	0.038***	0.851	0.980	1.083**
	(2.020)	(1.925)	(7.726)	(2.10)	(2.75)	(4.277)	(2.07)**	(2.03)**	(2.494)
Country FE	No	Yes		No	Yes		No	Yes	
Time FE	No	Yes		No	Yes		No	Yes	
Observations	1342	1342	1236	1342	1342	1236	1342	1342	1236
R^2	0.540	0.537		0.532	0.529		0.524	0.521	
AB p-value of AR(2)			0.109			0.172			0.687
P-Value of Sargan test			0.021			0.026			0.000
P-Value of Wald test			0.064			0.017			0.000

Notes: t-statistics in parentheses,*, **,*** Significance at the 10%, 5% and 1% levels respectively

Table 2. Entrepreneurship and poverty in MICs, 2006-2016

	OLS	FE	GMM	OLS	FE	GMM	OLS	FE	GMM
Variables	Poverty gap at $1.90 a day (2011 PPP) (%)			Poverty headcount ratio at $1.90 a day (2011 PPP) (% of population)			Poverty gap at national poverty lines (%)		
TEA	-0.016*	-0.032*	-0.605**	-1.80**	-0.71***	-0.706*	-0.21***	-0.38	-0.682***
	(-1.895)	(-1.925)	(-2.162)	(-2.45)	(-3.51)	(-1.997)	(-2.58)	(-1.49)	(-6.528)
Poverty gap at $1.90 a day (2011 PPP) (%)(-1)			0.011***						
			(3.673)						
Poverty headcount ratio at $1.90 a day (2011 PPP) (% of population)(-1)						0.052*			
						(1.581)			
Poverty gap at national poverty lines (%)(-1)									0.015*
									(1.592)
Arable_land	-0.018	-0.020	-0.409	-0.01**	-0.05**	-0.508	-0.11**	-0.21***	-0.308
	(-1.935)	(-1.936)	(-0.111)	(-2.55)	(-2.59)	(-0.294)	(-3.01)	(-2.92)	(-0.204)
Gdp_pc_Growth	-0.172	-0.324	-0.305**	-0.03**	-0.91**	-0.705**	-0.19	-0.72***	-0.805**
	(-1.938)	(-1.945)	(-1.982)	(-2.05)	(-2.01)	(-2.363)	(-1.19)	(-4.29)	(-2.639)
Inflation	-0.025**	-.008***	0.316	-0.32***	-0.03	0.217	-0.12**	-0.21*	0.215***
	(2.001)	(-4.003)	(0.543)	(-4.18)	(-0.40)	(0.195)	(-2.11)	(-1.71)	(10.265)
Population_Urban	-0.021	-0.016*	0.585	-0.21**	-0.14	0.105	-0.12	-0.51**	0.235
	(-0.025)	(-1.925)	(0.729)	(-2.26)	(-1.05)	(0.502)	(-1.24)	(-1.96)	(0.922)
Trade	-0.033	-0.034	-0.081***	-0.81**	-0.78**	-0.079***	-0.03***	-0.07***	-0.064***
	(-1.036)	(-0.037)	(-5.037)	(-2.48)	(-2.18)	(-4.875)	(-2.82)	(-4.31)	(-3.192)
Worforce	-0.730	-0.699*	-0.014**	-0.01***	-0.27***	-0.009**	-0.73**	-0.03**	-0.136**
	(-0.619)	(-1.822)	(-2.2689)	(-5.72)	(-3.03)	(-2.284)	(-1.92)	(-2.82)	(-0.439)
Ruleoflaw	-0.033**	-0.036**	-0.095***	-0.22**	-0.24	-0.073***	-0.33	-0.46***	-0.052*
	(-4.001)	(-2.001)	(-4.299)	(-2.60)	(-1.17)	(-4.750)	(-0.27)	(-2.78)	(-1.918)
Freedom index	-0.032*	-0.031*	-0.041**	-0.53	-0.15**	-0.028**	-0.56	-0.41	0.040*
	(-1.925)	(-1.917)	(-2.252)	(-1.34)	(-1.96)	(-2.445)	(-0.90)	(-1.46)	(1.819)
Credit	-0.069*	-0.052*	-0.213**	-0.07**	-0.26***	-0.044**	-0.11**	-0.57***	-0.113**
	(-1.836)	(-1.931)	(-2.637)	(-2.24)	(-3.21)	(-2.321)	(-2.22)	(-7.19)	(-2.276)
Internet	-0.316**	-0.008*	-0.019*	-0.01**	-0.03	-0.001*	-0.72**	-0.01*	-0.125*
	(-2.625)	(-1.906)	(-1.573)	(-2.13)	(-0.40)	(-1.824)	(-2.29)	(-1.92)	(-1.734)
Constant	0.005*	0.007*	1.037**	0.21**	0.01**	0.094	0.03**	0.02**	1.011***
	(1.925)	(1.926)	(2.240)	(2.26)	(2.23)	(1.183)	(2.82)	(2.50)	(6.268)
Country FE	No	Yes		No	Yes		No	Yes	
Time FE	No	Yes		No	Yes		No	Yes	
R^2	0.532	0.524		0.508	0.500		0.484	0.476	
Observations	1012	1012	926	1012	1012	926	1012	1012	926
AB p-value of AR(2)			0.095			0.158			0.765
P-Value of Sargan test			0.082			0.103			0.000
P-Value of Wald test			0.047			0.046			0.000

Notes: t-statistics in parentheses,*, **,*** Significance at the 10%, 5% and 1% levels respectively

Table 3. Entrepreneurship and poverty in LICs, 2006-2016

	OLS	FE	GMM	GMM	GMM
Variables	Poverty gap at $1.90 a day (2011 PPP) (%)			Poverty headcount ratio at $1.90 a day (2011 PPP) (% of population)	Poverty gap at national poverty lines (%)
TEA	-0.028**	-0.012**	-0.727**	-0.567*	-0.707*
	(-2.027)	(-2.035)	(-1.991)	(-1.948)	(-1.968)
Poverty gap at $1.90 a day (2011 PPP) (%)(-1)			0.014*		
			(1.802)		
Poverty headcount ratio at $1.90 a day (2011 PPP) (% of population)(-1)				0.009**	
				(2.345)	
Poverty gap at national poverty lines (%)(-1)					0.034*
					(1.896)
Arable_land	-0.015	-0.003*	-0.035	-0.002*	-0.014*
	(-0.012)	(-0.015)	(-1.449)	(-1.916)	(-1.899)
Gdp_pc_Growth	-0.734	-0.024	-0.516	-0.017	-0.516*
	(-0.525)	(-0.672)	(-1.240)	(-1.145)	(-1.967)
Inflation	0.602**	0.006*	0.019	0.985	0.067
	(-0.002)	(-0.003)	(0.753)	(0.981)	(0.850)
Population_Urban	-0.007	-0.028	-0.056	0.018	0.056
	(-0.035)	(-0.034)	(1.056)	(1.086)	(1.164)
Trade	-0.004**	-0.004*	-0.041**	-0.056*	-0.044*
	(-0.015)	(-0.015)	(-2.117)	(-1.830)	(-1.912)
Worforce	-0.213	-0.060	-0.035	-0.079	-0.031*
	(-0.659)	(-0.623)	(-1.413)	(-1.449)	(-1.691)
Ruleoflaw	-0.005*	-0.006**	-0.018	-0.011	-0.099
	(-0.002)	(-0.003)	(-1.177)	(-1.242)	(-1.255)
Freedom index	-0.007	-0.012	-0.313*	-0.512*	-0.813**
	(-0.030)	(-0.029)	(-1.912)	(-1.876)	(-2.463)
Credit	-0.021**	-0.014**	-0.514**	-0.023**	-0.054*
	(-4.013)	(-3.013)	(-2.239)	(-1.838)	(-1.848)
Internet	-0.377	-0.217	-0.019	-0.011	-0.026
	(-0.555)	(-0.528)	(-0.804)	(-1.090)	(-0.857)
Constant	0.063***	0.089***	0.019**	0.056**	0.322
	(4.072)	(4.080)	(2.519)	(1.968)	(0.492)
Country FE	No	Yes			
Time FE	No	Yes			
Observations	330	330	286	286	286
AB p-value of AR(2)			0.095	0.158	0.765
P-Value of Sargan test			0.082	0.103	0.000
P-Value of Wald test			0.047	0.046	0.000

Notes: t-statistics in parentheses,*, **,*** Significance at the 10%, 5% and 1% levels respectively

V- Robustness checks

We carry out some tests to verify the robustness and relevance of our previous empirical framework. To do this, we regress by taking into account a possible effect of the recent global financial crisis on the empirical results of our model by shortening the sample size and considering the post-crisis period (2009-2016), a period in which we have more observations than in 2006-2008.

Does the global financial crisis influence the poverty reduction model in developing countries?

The last global financial crisis had a greater or lesser impact on developed or developing economies. These repercussions have affected the factors of production as well as the output, innovations, productivity and entrepreneurship. This leads to a reconsideration of the contribution of entrepreneurship to poverty reduction especially in developing economies, LICs and MICs. To do so, we estimate the baseline models over a shorter sample (2009 to 2016) which does not include the financial crisis period or phases. The results are reported in Tables 4, 5 and 6. Concerning the overall sample, the results regarding the full period and the post-crisis period are quietly different: for example, while in the full period TEA contributes to poverty reduction

in table 1, the coefficients are generally higher than those after the crisis (see Table 4). We observe the same trend of coefficients in MICs (see Table 5) and LICs (see Table 6). The 2008 financial crisis had attenuated the effect of poverty reduction through entrepreneurship. In addition to this, in the full sample, inflation did not increase poverty. On the other hand, over the period 2009-2016, inflation increased poverty very significantly in developing countries, in LICs and MICs. Financial distortions during the crisis period leads companies to raise prices in response to financial shocks and to in reaction to unfavourable demand shocks. This reflects the decision of firms to preserve internal liquidity and avoid access to external financing, which reinforces the countercyclical behaviour of margin increases and reduces the response of inflation to output fluctuations. The problem of poverty is exacerbated when the prices of commodities in general, and food in particular rise. Thus, inflation is an influential factor in the determination of poverty. For this reason, several arguments have been put forward to support the idea that inflation increases poverty (see Ravallion, 1998; Braumann, 2004; Chaudhry and Crick, 2008). Inflation has therefore often been described as the "most cruel tax" for the poor. The fight against inflation must be a priority for the governments of developing countries, LICs and MICs.

Table 4. Entrepreneurship and poverty in developing countries, 2009-2016

Variables	Poverty gap at $1.90 a day (2011 PPP) (%)	Poverty headcount ratio at $1.90 a day (2011 PPP) (% of population)	Poverty gap at national poverty lines (%)
TEA	-0.133***	-0.267***	-0.181*
	(-3.587)	(-2.696)	(-1.841)
Poverty gap at $1.90 a day (2011 PPP) (%)(-1)	0.019		
	(0.325)		
Poverty headcount ratio at $1.90 a day (2011 PPP) (% of population)(-1)		0.405***	
		(3.509)	
Poverty gap at national poverty lines (%)(-1)			0.051*
			(1.859)
Arable_land	-0.227***	-0.036*	-0.032*
	(-8.198)	(-1.559)	(-1.762)
Gdp_pc_Growth	-0.707	-0.307	-0.607
	(-0.847)	(-1.031)	(-1.265)
Inflation	0.002*	0.053*	0.135**
	(1.799)	(1.826)	(2.258)
Population_Urban	-0.917	-0.267	-0.817
	(-0.598)	(-0.337)	(-0.171)
Trade	-0.025*	-0.038*	-0.003***
	(-1.893)	(-1.584)	(-2.452)
Worforce	-0.381*	-0.451*	-0.812**
	(-1.797)	(-1.887)	(-2.301)
Ruleoflaw	-0.853	-0.823	-0.612
	(-0.062)	(-0.056)	(-1.080)
Freedom index	-0.621**	-0.421***	-0.911*
	(-2.363)	(-3.384)	(-1.905)
Credit	-0.211***	-0.362*	-0.461*
	(-3.621)	(-1.861)	(-1.898)
Internet	-0.511**	-0.912**	-0.761*
	(-2.517)	(-2.475)	(-1.546)
Constant	1.870***	1.037***	-0.149
Observations	(7.937)	(3.745)	(-0.902)
AB p-value of AR(2)	0.094	0.105	0.709
P-Value of Sargan test	0.005	0.006	0.000
P-Value of Wald test	0.062	0.064	0.000

Notes: t-statistics in parentheses,*, **,*** Significance at the 10%, 5% and 1% levels respectively

Table 5. Entrepreneurship and poverty in MICs, 2009-2016

Variables	Poverty gap at $1.90 a day (2011 PPP) (%)	Poverty headcount ratio at $1.90 a day (2011 PPP) (% of population)	Poverty gap at national poverty lines (%)
TEA	-0.408***	-0.308**	-0.116**
	(-2.388)	(-1.969)	(-1.996)
Poverty gap at $1.90 a day (2011 PPP) (%)(-1)	0.063***		
	(2.649)		
Poverty headcount ratio at $1.90 a day (2011 PPP) (% of population)(-1)		0.915***	
		(4.125)	
Poverty gap at national poverty lines (%)(-1)			0.019***
			(4.293)
Arable_land	-0.805	-0.206	-0.139
	(-1.594)	(-0.712)	(-0.078)
Gdp_pc_Growth	-0.096	-0.315***	-0.446
	(-0.590)	(-8.171)	(-0.336)
Inflation	0.625*	0.010**	0.416*
	(1.925)	(2.603)	(1.798)
Population_Urban	0.613	0.093	0.206
	(0.616)	(0.7873)	(0.458)
Trade	-0.713	-0.011	-0.613
	(-0.822)	(-0.533)	(-1.226)
Worforce	-0.913	-0.313	-8.514
	(-1.429)	(-0.823)	(-0.636)
Ruleoflaw	-0.114	-0.513	-0.813
	(-0.908)	(-0.898)	(-1.183)
Freedom index	-0.843	-0.813	0.974
	(-1.346)	(-0.688)	(0.375)
Credit	-0.018***	-0.705**	-0.473*
	(-3.819)	(-2.495)	(-1.991)
Internet	-0.818***	-0.705**	-0.705**
	(-3.224)	(-2.499)	(-2.742)
Constant	0.045***	-0.029***	0.054***
	(4.702)	(9.118)	(3.214)
Observations	524	524	524
AB p-value of AR(2)	0.106	0.105	0.776
P-Value of Sargan test	0.061	0.062	0.000
P-Value of Wald test	0.047	0.051	0.000

Notes: t-statistics in parentheses,*, **,*** Significance at the 10%, 5% and 1% levels respectively

Table 6. Entrepreneurship and poverty in LICs, 2009-2016

Variables	Poverty gap at $1.90 a day (2011 PPP) (%)	Poverty headcount ratio at $1.90 a day (2011 PPP) (% of population)	Poverty gap at national poverty lines (%)
TEA	-0.138***	-0.190***	-0.210*
	(-2.704)	(-2.730)	(-1.952)
Poverty gap at $1.90 a day (2011 PPP) (%)(-1)	0.005***		
	(2.982)		
Poverty headcount ratio at $1.90 a day (2011 PPP) (% of population)(-1)		0.296***	
		(2.996)	
Poverty gap at national poverty lines (%)(-1)			0.035***
			(9.276)
Arable_land	-0.909*	-0.461***	-0.521*
	(-1.582)	(-2.784)	(-1.831)
Gdp_pc_Growth	-0.001	-0.406	-0.160
	(-0.521)	(-0.131)	(-0.391)
Inflation	0.011**	0.001*	0.009**
	(2.141)	(1.934)	(2.700)
Population_Urban	0.171	0.135	0.001
	(0.413)	(0.042)	(1.265)
Trade	-0.038***	-0.055	-0.042
	(-2.737)	(-0.916)	(-1.083)
Worforce	-0.734	-0.587	0.742**
	(-1.016)	(-0.656)	(1.981)
Ruleoflaw	-0.323*	-0.089**	-0.486*
	(-1.941)	(-1.999)	(-1.867)
Freedom index	-0.105	-1.586	-0.325
	(-0.674)	(-0.288)	(-0.196)
Credit	-0.018	-0.026	-0.001
	(-0.939)	(-0.970)	(-0.008)
Internet	-0.015	-0.025	-0.183**
	(-0.227)	(-0.541)	(-1.831)
Constant	0.711	0.801***	0.331***
	(0.255)	(2.736)	(2.611)
Observations	196	196	196
AB p-value of AR(2)	0.090	0.049	0.009
P-Value of Sargan test	0.030	0.007	0.082
P-Value of Wald test	0.069	0.041	0.091

Notes: t-statistics in parentheses,*, **,*** Significance at the 10%, 5% and 1% levels respectively

Controlling for GDP growth effect

GDP growth is an endogenous variable which can be correlated with entrepreneurship. Keeping this in mind, we re-estimate the models by removing GDP growth from the equations and analyse whether there is a change in the previous results. The results of these estimations are presented in Table 7 for all countries, MICs and LICs. These findings are similar to those found previously, that is to say entrepreneurship has a poverty-reducing effect regardless of the poverty measure considered. Entrepreneurship thus remains an effective tool for poverty reduction in developing countries, MICs and LICs.

Table 7. Entrepreneurship and poverty , controlling for GDP effect in developing countries, MICs and LICs, 2006-2016

	All countries			MICs			LICs		
Variables	Poverty gap at $1.90 a day (2011 PPP) (%)	Poverty headcount ratio at $1.90 a day (2011 PPP) (% of population)	Poverty gap at national poverty lines (%)	Poverty gap at $1.90 a day (2011 PPP) (%)	Poverty headcount ratio at $1.90 a day (2011 PPP) (% of population)	Poverty gap at national poverty lines (%)	Poverty gap at $1.90 a day (2011 PPP) (%)	Poverty headcount ratio at $1.90 a day (2011 PPP) (% of population)	Poverty gap at national poverty lines (%)
TEA	-0.082***	-0.078***	-0.071**	-0.083***	-0.079***	-0.084***	-0.012*	-0.018**	-0.013*
	(-4.030)	(-4.030)	(-2.030)	(-5.001)	(-5.032)	(-4.002)	(-1.920)	(-2.020)	(-1.820)
Poverty gap at $1.90 a day (2011 PPP) (%)(-1)	0.214*			0.145***			0.117**		
	(1.901)			(4.940)			(2.004)		
Poverty headcount ratio at $1.90 a day (2011 PPP) (% of population)(-1)		0.345***			0.147***			0.203**	
		(5.002)	-0.246***		(5.001)	0.015***		(2.012)	0.321***
Poverty gap at national poverty lines (%)(-1)			(4.004)			(4.006)			(4.013)
Arable_land	-0.163***	-0.519**	-0.382**	-0.342**	-0.542**	-0.251*	-0.013*	-0.017*	-0.011*
	(-4.009)	(-2.697)	(-2.698)	(-2.002)	(-2.102)	(-1.801)	(-1.818)	(-1.817)	(-1.718)
Inflation	-0.1033*	-0.293**	-0.104***	-0.027*	-0.011*	-0.016*	-0.117**	-0.203**	-0.321***
	(-1.819)	(-2.052)	(-4.054)	(-1.844)	(-1.846)	(-1.746)	(-2.004)	(-2.012)	(-4.013)
Population_Urban	-0.559***	-0.914**	-0.401***	-0.351*	-0.265**	-0.322**	-0.425*	-0.310*	-0.109*
	(-4.965)	(-2.030)	(-4.074)	(-1.901)	(-2.001)	(-2.001)	(-1.930)	(-1.822)	(-1.726)
Trade	-0.258*	-0.165**	-0.262*	-0.045**	-0.015*	-0.119*	-0.051*	-0.312**	-0.301**
	(-1.802)	(-2.003)	(1.703)	(-1.821)	(-1.803)	(-1.816)	(-1.931)	(-2.001)	(-2.521)
Worforce	-0.504*	-0.328**	-0.581***	-0.014	-0.001	-0.015	0.958**	-0.543***	-0.402**
	(-1.914)	(-2.011)	(-4.130)	(-0.100)	(-0.084)	(-0.101)	(-2.001)	(-2.014)	(-2.002)
Ruleoflaw	-0.009	-0.003	-0.020	-0.010	-0.002	-0.051	-0.147	-0.015	-0.036
	(-0.204)	(-0.108)	(-0.217)	(-0.214)	(-0.102)	(-0.121)	(-0.201)	(-0.106)	(-0.006)
Freedom index	-0.104*	-0.107*	-0.019***	-0.051	-0.017	-0.001	-0.002*	-0.013*	-0.042*
	(-1.915)	(-1.764)	(-4.007)	(-0.131)	(-0.201)	(-0.301)	(-1.707)	(-1.807)	(-1.707)
Credit	-0.899	-0.025*	-0.203*	-0.405*	-0.604*	-0.746*	-0.096*	-0.318**	-0.499*
	(-0.684)	(-1.947)	(-1.884)	(-1.710)	(-1.813)	(-1.908)	(-1.801)	(-1.802)	(-1.804)
Internet	-0.323***	-0.218**	-0.412***	-0.145***	-0.147***	-0.015***	-0.010*	-0.147***	-0.145***
	(-4.011)	(-5.001)	(-5.007)	(-4.040)	(-5.001)	(-4.006)	(-4.412)	(-4.040)	(-4.142)
Constant	6.575*	6.508*	9.320**	4.914**	4.602***	1.981***	0.188**	0.073*	0.154**
	(3.648)	(3.713)	(3.794)	(3.451)	(3.479)	(3.556)	(2.021)	(2.033)	(2.022)
Observations	1236	1236	1236	926	926	926	286	286	286
AB p-value of AR(2)	0.633	0.902	0.629	0.920	0.906	0.624	0.851	0.837	0.765
P-Value of Sargan test	0.015	0.035	0.011	0.054	0.035	0.032	0.019	0.017	0.024
P-Value of Wald test	0.956	0.876	0.898	0.870	0.870	0.801	0.870	0.780	0.780

Notes: t-statistics in parentheses,*, **,*** Significance at the 10%, 5% and 1% levels respectively

VI- Conclusions

The contribution of entrepreneurship to poverty reduction is part of the Sustainable Development Goals (SDG) agenda in most developing countries (Nhamo, 2016; Quental et al., 2011). The top 12 poorest countries in the world are in developing countries with over 500 million living in poverty (Beegle et al., 2016; Whiteside, 2002; Sahn and Stifle, 2000). Understanding the contribution of entrepreneurship to the poverty reduction agenda necessitates a deeper knowledge of the dynamics of the effects of entrepreneurship and contingents variables in the developing countries context.

This paper makes important contributions to the literature on the economics of entrepreneurship. We have extensively examined entrepreneurship poverty reduction effect in developing countries, area that has received little study attention up until now. We work on 122 developing countries over the period 2006-2016. We use TEA as entrepreneurship indicator and three measures of poverty namely Poverty gap at $1.90 a day (2011 PPP), Poverty headcount ratio at $1.90 a day (2011 PPP) (% of population) and Poverty gap at national poverty lines (%). Our results indicate that TEA has a greater reduction effect on poverty in developing taken as a whole, in LICs and in MICs countries and even when we control the crisis effect of 2008. Thus, entrepreneurship should therefore be the initial focus of developing countries policy makers.

Our study sheds light of indirect linkages of some factors contributing to poverty's reduction in developing countries. These are: rule of law, freedom index, available skillful population, domestic credit from financial sector and internet.

Policy makers in developing countries should therefore target and focus on creating more individual entrepreneurs and businesses, include entrepreneurship promotion as a critical part of their poverty reduction strategy and implement policies that reduce corruption, improve property right and forge a skillful labor population.

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Appendices

Appendix 1. Variables definitions and summary statistics

Variables	Definitions	Mean	Median	Max	Min	Std. Dev.	Obs.
TEA	Total Entrepreneurial Activity (entrepreneurship rate). It is the number of adults (18–64 years old) per 100 involved in a nascent and/or young firms (in the case of both, it is still counted as one active person). Source: GEM, Global Entrepreneurship Monitor	9,68	4,5	38,6	2,4	6,05	1236
Poverty gap at $1.90 a day (2011 PPP)	is the mean shortfall in income or consumption from the poverty line $1.90 a day	17,56	13,91	63,59	0,40	13,23	1236
Poverty gap at national poverty lines (%)	is the mean shortfall from the poverty lines	16,78	16,30	35,60	1,90	8,46	1236
Poverty headcount ratio at $1.90 a day (2011 PPP)	is the percentage of the population living on less than $1.90 a day	42,36	42,71	94,05	1,99	23,11	1236
Inflation	Inflation as measured by the consumer price index	7,96	6,61	47,31	-35,83	8,18	1236
Population urban	Urban population/total population (%)	21,06	18,34	37,44	3,26	11,39	1236
Arable land	Arable land (% of land area) Arable land includes land defined by the FAO as land under temporary crops (double-cropped areas are counted once)	13,214	9,708	48,722	0,173	12,676	1236
Trade	Trade is the sum of exports and imports of goods and services measured as a share of gross domestic product (%GDP)	73,78	67,91	209,89	30,74	29,95	1236
Ruleoflaw	Rule of law captures perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence.	33,12	33,50	67,00	0,01	14,72	1236
Freedom_index	Business freedom is an overall indicator of the efficiency of government regulation of business. The quantitative score is derived from an array of measurements of the difficulty of starting, operating, and closing a business. The business freedom score for each country is a number between 0 and 100	52,74	55,70	77,00	0,01	15,58	1236
Gdp_pc_growth	GDP per capita growth (annual %)	2,65	2,70	121,78	-48,39	4,58	1236
Workforce	Total labor force comprises people ages 15 and older who meet the International Labour Organization definition of the economically active population(%)	55,54	54,12	69,36	47,01	5,21	1236
Internet	Individuals using the Internet (% of population)	24,61	78,78	0,18	19,14	20,27	1236
Credit	Domestic credit provided by financial sector (% of GDP)	38,89	160,12	0,44	28,24	34,27	1236

Appendix 2. The correlation coefficients between the variables

	Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	TEA	1													
2	Poverty gap at $1.90 a day (2011 PPP)	-0,006	1												
3	Poverty gap at national poverty lines (%)	-0,164	-0,482	1											
4	Poverty headcount ratio at $1.90 a day (2011 PPP)	-0,111	-0,182	-0,099	1										
5	Inflation	-0,071	0,338	0,403	0,376	1									
6	Population urban	-0,177	0,04	0,125	0,063	0,014	1								
7	Arable land	0,215	-0,392	-0,001	-0,041	-0,494	0,015	1							
8	Trade	0,167	-0,318	-0,082	-0,823	0,083	-0,092	-0,575	1						
9	Ruleoflaw	0,016	-0,575	-0,175	-0,075	-0,127	0,047	0,056	0,059	1					
10	Freedom_index	0,073	-0,54	-0,374	-0,022	-0,153	0,015	0,449	0,207	0,24	1				
11	Gdp_pc_growth	0,017	-0,123	-0,016	-0,031	-0,177	0,146	0,053	0,209	0,113	0,279	1			
12	Workforce	0,021	-0,107	-0,024	-0,013	-0,09	0,151	-0,074	0,155	0,1	0,299	0,139	1		
13	Internet	0,334	-0,025	-0,365	-0,373	0,358	0,026	0,335	0,061	0,19	0,064	0,245	0,162	1	
14	Credit	0,012	-0,166	-0,095	-0,047	0,586	0,296	0,068	0,038	0,016	0,31	0,009	0,43	0,02	1

Appendix 3. List of 122 countries

LICs (30)	MICs(92)		
Afghanistan	Albania	Grenada	Romania
Benin	Algeria	Guatemala	Russian Federation
Burkina Faso	Angola	Guyana	Senegal
Burundi	Argentina	Honduras	Serbia
Central African Republic	Armenia	India	Solomon Islands
Chad	Bangladesh	Indonesia	South Africa
Congo,Dem.Rep.	Belarus	Iran,Islamic Rep.	Sri Lanka
Eritrea	Belize	Jamaica	St.Lucia
Ethiopia	Bolivia	Jordan	St.Vincent and the Grenadines
Gambia	Botswana	Kazakhstan	Sudan
Guinea	Brazil	Kenya	Suriname
Guinea-Bissau	Bulgaria	Lao PDR	Thailand
Haiti	Cabo Verde	Lebanon	Timor-Leste
Korea,Dem.People's Rep.	Cambodia	Lesotho	Tonga
Liberia	Cameroon	Macedonia,FYR	Tunisia
Madagascar	China	Malaysia	Turkey
Malawi	Comoros	Maldives	Turkmenistan
Mali	Congo,Rep.	Marshall Islands	Ukraine
Mozambique	Colombia	Mauritius	Uzbekistan
Nepal	Costa Rica	Mexico	Vanuatu
Niger	Cote d'Ivoire	Moldova	Venezuela,RB
Rwanda	Croatia	Mongolia	Vietnam
Sierra Leone	Cuba	Montenegro	West Bank and Gaza
Somalia	Djibouti	Morocco	Zimbabwe
South Sudan	Dominica	Nicaragua	Myanmar
Tajikistan	Dominican Republic	Nigeria	Namibia
Tanzania	Ecuador	Pakistan	
Togo	Egypt, Arab Rep.	Panama	
Uganda	El Salvador	Papua New Guinea	
Yemen,Rep.	Equatorial Guinea	Paraguay	
	Fiji	Peru	
	Gabon	Philippines	
	Georgia		
	Ghana		