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# Investigating the relationship between entrepreneurship and regional development: case of developing countries

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## Abstract

A lot has been written about the relationship between entrepreneurship and regional development in the past years. However, do we have conclusive empirical evidence for justification of this relationship? Policymakers expect from entrepreneurship positive impact on country's wealth and employment. Nevertheless, several scholars have argued that the impact of entrepreneurship might be even negative, especially, when the institutions are not working well. This might be a case of developing countries. According to our research, a recent empirical study that would be investigating this relationship is missing. Therefore, we utilize the dataset of 48 countries classified according to U.N. as developing for years 2000–2015 and we empirically test the relationship between the established business ownership rate (obtained from Global Entrepreneurship Monitor) and a set of country's economic indicators (Gross Domestic Product, Gross National Income, and Human Development Index). Obtained estimates support a hypothesis assuming a negative influence of entrepreneurship on regional development of developing countries (represented by GDP and GNI). Nevertheless, we failed to prove any impact of entrepreneurship on HDI. These findings have crucial implications for both policymakers and researchers. Based on this study, more efforts need to be put to better understand different forms of entrepreneurial activity in developing countries, its institutional context, and link towards regional economic development.

**Keywords:** Entrepreneurship and regional development, Established business ownership rate, Developing countries, Harmful entrepreneurial activity

**JEL codes:** L260, O12

## Background

In many recent studies, the level of entrepreneurial activity is considered as a measure of the country's well-being and one of the crucial determinants of regional economic development. However, the current empirical evidence supporting this assumption is rather scarce than rich (Fritsch 2017; Dvouletý 2017a; Bjørnskov and Foss 2016; Prieger *et al.* 2016; Carlsson *et al.* 2010; Brixiova 2011; Mueller *et al.* 2008, Wennekers and Thurik, 1999). Exploration of the relationship between the entrepreneurial activity and the country's economic growth is thus important and relevant for both researchers and policymakers. (Hafer 2013; Thurik and Wennekers 2004; Wennekers *et al.* 2010; 2005)

Theoretically, the positive relationship between entrepreneurship and regional economic development is explained by the concept of entrepreneurship capital (Acs and Audretsch 2003; Audretsch and Keilbach 2004; Hébert and Link 1989). Audretsch and Keilbach (2004) furthermore explain that entrepreneurship capital<sup>1</sup> should be considered as an additional part of the neoclassical production function and other R&D models of economic growth, because it mobilizes the mechanism of the creation of new knowledge, innovation spillovers, increase in competition and diversity through the formation of business and start-up activity.

Despite these theoretical assumptions, the empirical scholars report various effects of entrepreneurship's influence on country's economic development (Van Stel et al. 2005; Wennekers et al. 2005; Pinillos and Reyes 2011; Carree and Thurik 2010). Researchers also claim that the obtained findings may differ even over the time and across regions (Bjørnskov and Foss 2016; Bjørnskov and Foss 2013; Hartog et al. 2010; Vivarelli 2013). Therefore at the end of the day, it is very much an empirical question if the relationship is positive or negative.

This particular research originates in the issues associated with the limited data availability (for a discussion on how to measure entrepreneurship and self-employment, see e. g. Dvouletý 2018, Justo et al. 2008; Iversen et al. 2007), that is problematic especially in case of developing countries (Banwo et al. 2017; Adusei 2016; Lafuente and Vaillant 2016). The motivation for studying situation especially in a developing countries lies in 1) a strong assumption of different empirical findings compared to European countries due to different political and institutional environment (Hartog et al. 2010; Van Stel et al. 2005; Wennekers et al. 2005) and 2) an ongoing need to solve economic sustainability of the developing countries (Dhahri and Omri 2018; Pinillos and Reyes 2011; Acs and Szerb 2007).

Therefore we have decided to conduct the empirical research focused on developing countries regarding the impact of entrepreneurial activity on the country's regional development and well-being. To represent the characteristics of the country's regional development, we use the three variables Gross Domestic Product per capita (GDP), Gross National Income (GNI) and the Human Development Index (HDI) and we work with the dataset of 48 countries classified according to U.N. (2014) as developing for years 2000–2015. This classification is intended to reflect basic economic conditions of the particular countries. Then, we empirically test the relationship between the business ownership rate (obtained from Global Entrepreneurship Monitor) and a set of country's economic indicators.

In the following part of the article, we briefly introduce the collected dataset and theoretical justification for the variables. Then we present results of empirical analysis and in a final section, we discuss obtained findings and provide recommendations for future research.

## Data

The empirical part of this article is based on the panel data, covering years 2001–2015 and we work with the dataset of 48 countries classified according to United Nations (2014). This selection of 48 countries<sup>2</sup> was driven by the data availability (number of countries in this classification is 108. Thus we work with 44.4% of the countries in our analysis) and the period of analysis was restricted by the main independent variable

measuring the country levels of established entrepreneurial activity (established business ownership rate – EBOR) that was obtained from the Global Entrepreneurship Monitor (2017). For details about Global Entrepreneurship Monitor see for instance Reynolds et al. 2005. EBOR represents the occupational/factor-based definition of entrepreneurship stock (Dvouletý 2018; Dvouletý 2017b; Sternberg and Wennekers 2005) and it is in the study considered to be the main variable of interest. Another option would be to work with registered business activity (as in a studies by Carree and Thurik 2008 and Fritsch and Mueller 2004 and Fritsch 2008), however there is a strong assumption that the registered activity would not be comparable across developing countries (for discussion on measurement of entrepreneurship see e. g. Congregado 2007, Iversen et al. 2007 or Dvouletý 2018). Definitions and sources for all variables can be found in Table 1.

It is also not easy to operationalize complexity of the regional economic development and wellbeing (for a discussion see e. g. Russ and Jones 2008). The previously reported studies (e. g. Audretsch and Keilbach 2004) often work with the Gross Domestic Product (GDP) only. To increase robustness of our findings, we work with the three outcome variables representing the regional economic development and country's wealth: Gross Domestic Product per capita (GDP) that was used as a representation of economic growth for example in a studies by Dvouletý (2017a); Armeanu et al. (2015) or Valliere and Peterson (2009), Gross National Income (GNI) that was used for example in a studies by Smith (2010) or Ahmad et al. (2011), and the Human Development Index (HDI) that was used for example in a studies by Dhahri and Omri (2018) or Gries and Naudé (2011).

Also, we also take into account other control variables determining the country's wealth. The selection of control variables was also driven by the data availability, and thus, we ended up with unemployment rate (representing Okun's law, see e. g. Prachowny 1993 or Guisinger et al. 2018), share of economically active population (representing factor based approach to country's economic development, see e. g. Dellink et al. 2017) and

**Table 1** Definition of Variables

Variable	Source	Description
GDP per Capita	The World Bank Database (2017)	GDP per capita is gross domestic product divided by midyear population. Data are in constant 2010 U.S. dollars.
GNI per Capita	The World Bank Database (2017)	GNI is gross national income converted to international dollars using purchasing power parity rates. Data are in constant 2010 U.S. dollars.
Human Development Index	Human Development Reports (2017)	"The Human Development Index (HDI) is a summary measure of average achievement in key dimensions of human development: a long and healthy life, being knowledgeable and have a decent standard of living. The HDI is the geometric mean of normalized indices for each of the three dimensions."
Established Business Ownership Rate	Global Entrepreneurship Monitor (2017)	The variable represents "percentage of 18–64 population who are currently an owner-manager of an established business, i.e., owning and managing a running business that has paid salaries, wages, or any other payments to the owners for more than 42 months."
Unemployment Rate	The World Bank Database (2017)	Unemployment, total (% of total labour force, national estimate)
Urban Population (% Share)	The World Bank Database (2017)	Urban population refers to % of people living in urban areas as defined by national statistical offices.
Economically Active Population (% Share)	The World Bank Database (2017)	Labour force participation rate (%) is the proportion of the population ages 15 and older that is economically active.

Source: World Bank Database (2017), Human Development Reports (2017) and Global Entrepreneurship Monitor (2017)

share of population living in urban areas that is important especially for the developing countries (for a relationship between urban concentration and economic growth, see e. g. Castells-Quintana 2017). Table 2 reports the summary statistics for all collected variables. The selection of all variables was driven by the knowledge in the field, however also by the availability of the data for the group of developing countries that is quite limited.

**Methods and Background**

To explore the impact of entrepreneurial activity on the developing countries’ regional development and well-being, we utilize multivariate regression analysis, and we present the obtained empirical results below. For each of the dependent variables representing regional development (*Log(GDP per Capita)*; *Log(GDP per Capita)*; *Human Development Index*), we estimate two regression models. In the first model, we test the initial impact of entrepreneurial activity (*Established Business Ownership Rate*), and in the second one, we test the impact of entrepreneurship lagged by 1 year to take into account potential endogeneity of the relationship. We also control for the several determinants of regional development that were selected based on the availability of the data (*Unemployment Rate* (% share of the economically active population), *Urban Population* (% share of the population) and *Economically Active Population* (% share of the population)).

Results of the econometric analysis are based on software STATA 14. All models were estimated with robust standard errors that are consistent with the consequences of autocorrelation and heteroscedasticity. We also control for the cross-country differences and year-to-year variation by a set of country and year dummies, to increase the stability of our estimates. The presented models were found to be statistically significant, and the statistical significance of all variables is indicated in line with the classical econometric literature (Wooldridge 2010).

We interpret the obtained estimates in the following way. From the first two estimated models (1 and 2) we may observe a statistically significant negative impact of entrepreneurial activity on national GDP per capita. This result also holds for the variable lagged by 1 year. The very similar pattern can be found in the second pair of regression models (3 and 4) where we can also see a statistically significant impact of entrepreneurship on national GNI per capita. On the other hand, a mixed pattern can be observed for the impact of entrepreneurship on Human Development Index (HDI) that is presented in models 5 and 6. Unfortunately, both variables were not found to be statistically significant, and therefore we cannot say anything clear about the relationship between entrepreneurship and HDI. The statistical significance of the control

**Table 2** Summary Statistics

Variable	Mean	Standard Deviation	Number of Observations (N)
GDP per Capita	9832.27	13142.58	715
GNI per Capita	9592.09	12881.45	642
Human Development Index	.72	.11	330
Established Business Ownership Rate	9.71	6.60	243
Unemployment Rate	7.92	5.04	693
Urban Population (% Share)	62.47	22.96	720
Economically Active Population (% Share)	64.05	6.96	720

Source: STATA 14, own calculations

variables is generally in line with the previously mentioned studies mentioned in the previous section and thus, in line with the economic assumptions (Table 3).

### **Discussion and conclusions**

The presented study aimed to empirically contribute to the ambiguous debate on the link between the entrepreneurial activity and regional economic development in developing economies. To achieve our main goal we have utilized data for 48 developing economies (classified according to United Nations) over the years 2000–2015 and we have regressed entrepreneurial activity (represented by the established business ownership rate) on a set of country's economic and wealth indicators Gross Domestic Product, Gross National Income, and Human Development Index). To increase the robustness of our findings and to take into account potential threat of endogeneity bias, we have tested the impact of entrepreneurship on economic development initially and with a one-year time-lag. The obtained estimates proved a negative impact of entrepreneurial activity on country's GDP and GNI, both initially and with a time-lag. Nevertheless, we failed to prove any impact of entrepreneurship on HDI.

These findings do not represent good news for the policymakers and stakeholders. Several reasons might explain the negative, unproductive or harmful impact of entrepreneurship on country's economic development. These were discussed for instance by Lucas and Fuller (2017), Naudé (2011), Hartog et al. (2010) or decades ago by Wiliam Baumol. Wiliam Baumol (Baumol 1996; Baumol et al. 2007) classified entrepreneurs into two prevailing types: replicative and innovative entrepreneurs. According to his view, a large number of replicative entrepreneurs (that do not significantly contribute to the country's economic growth) can be found in developing countries, and thus the overall effect on country's growth cannot be positive. To shed more light on this issue, we would need to deeper investigate the structure of the national entrepreneurial activity and to see, the differences between necessity, opportunity, and high-growth entrepreneurship. Unfortunately, having more data on these types of entrepreneurship would require more time until more years would be available for the empirical analysis.

Adusei (2016) later argued that entrepreneurship cannot make an impact on economic growth because many developing countries are at the peak of technological development, and such a state makes it difficult for small-medium-sized enterprises (SMEs) to innovate and to grow. Therefore some scholars argue that this is a place for public entrepreneurship policies and support through an establishment of a national entrepreneurship ecosystem, at least by a reduction of barriers to business entry (e. g. Muñoz and Otamendi 2014).

Another explanation can be offered by Antony et al. (2017), Naudé (2011) or North (1990) who see a problem in the imperfection of the public institutions in developing countries. This problem was also highlighted by the GEM scholars, (e. g. Bosma et al. 2012), who argue that if the government fails to establish the rule of law, then the positive effect of entrepreneurship might diminish. Robson and Obeng (2008) and Altenburg and Lütkenhorst (2015) namely mention as a problems of developing economies imperfection of the financial system (difficult access to financial capital by new entrepreneurs), poor entrepreneurship infrastructure, high level of corruption, unfavorable trade policy, inefficient state policy and weak management of human resources.

By conducting this preliminary analysis, we also need to acknowledge several limitations of our analysis. First, we could study only limited period of years 2000–2015 and thus, it

**Table 3** Estimated Regression Models: Relationship between Entrepreneurship and Regional Development

Model Number	(1)	(2)	(3)	(4)	(5)	(6)
Independent / Dependent Variable	Log(GDP per Capita)	Log(GDP per Capita)	Log(GNI per Capita)	Log(GNI per Capita)	Human Development Index	Human Development Index
Established Business Ownership Rate	-0.00709*** (0.00166)	-0.00526*** (0.00196)	-0.00428*** (0.00146)	-0.00240* (0.00145)	-0.000287 (0.000190)	0.000227 (0.000235)
Established Business Ownership Rate (-1)						
Unemployment Rate	-0.0175* (0.00341)	-0.0167*** (0.00385)	-0.0191*** (0.00361)	-0.0195*** (0.00370)	-0.00224*** (0.000724)	-0.00148** (0.000657)
Urban Population (% Share)	0.0371*** (0.00694)	0.0372*** (0.00800)	0.00688* (0.00368)	0.00351 (0.00542)	0.00174* (0.00108)	0.00231* (0.00123)
Economically Active Population (% Share)	-0.00708 (0.0132)	-0.00470 (0.0135)	-0.00956 (0.0134)	-0.00554 (0.0115)	-0.00365 (0.00186)	-0.00257 (0.00222)
Constant	6.413*** (1.026)	6.212*** (1.108)	8.526*** (0.921)	8.478*** (0.871)	0.869*** (0.168)	0.751*** (0.181)
Country Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Observations	243	218	227	203	118	113
R <sup>2</sup>	0.994	0.995	0.996	0.996	0.999	0.998
Adjusted R <sup>2</sup>	0.992	0.993	0.994	0.995	0.998	0.998
AIC	-528.7	-495.1	-558.1	-510.6	-940.3	-897.1
BIC	-333.1	-319.1	-373.2	-328.4	-832.3	-801.6

Models were estimated with robust standard errors. Estimated models include fixed effects for countries and years. Standard errors are reported in parentheses. Statistical significance \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$   
 Source: STATA 14, own calculations

would be very necessary to wait for more years, to fully answer the question of a long-term impact of entrepreneurship on economic development. Second, due to an insufficient number of observations, we could not conduct a dynamic analysis of the relationship, by working with the annual growth rates of both, dependent and independent variables. Third, we believe that it would be very important to use different forms of the entrepreneurship activity and to see if their influence of the regional economic growth is different. Fourth, other important determinants of economic development need to be taken into account, especially the role of R&D and educational structure of the population. Fifth, we believe that additional measures of the regional development and well-being should be analyzed to provide scholarship with a more robust empirical evidence.

From a research perspective, we have raised an important concern that negative impact of entrepreneurship on regional development might also be caused by the imperfection of public institutions in developing countries. We believe that scholars should investigate the role of institutions, administrative barriers and other determinants of entrepreneurial activity to identify sources for policy-improvement. Also, we believe that the policymakers should carefully monitor the structure of the national entrepreneurial activity (and types of enterprises in the economy) and to discuss supportive actions and policies for the fast-growing and innovative companies.

## Endnotes

<sup>1</sup>Audretsch and Keilbach (2004) operationalize in their early work entrepreneurship capital as the sum of the number of start-ups divided by 1000 of the population.

<sup>2</sup>Countries included in the analysis based on U.N. (2014, Table C: Developing economies by region): Algeria, Argentina, Barbados, Bolivia, Botswana, Brazil, Burkina Faso, Cameroon, Colombia, Costa Rica, Dominican Republic, Ecuador, Egypt, El Salvador, Ghana, Guatemala, Hong Kong Sarc, Chile, China, India, Indonesia, Iran, Israel, Jamaica, Jordan, Lebanon, Libya, Malaysia, Mexico, Morocco, Nigeria, Pakistan, Panama, Peru, Philippines, Qatar, Saudi Arabia, Singapore, South Africa, Thailand, Trinidad and Tobago, Turkey, Uganda, United Arab Emirates, Uruguay, Venezuela, Viet Nam, Zambia.

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## Authors' contributions

OD conceived the study, participated in its design and theoretical review, performed the regression analysis and drafted the manuscript. AG collected the data and contributed to the review of existing studies and to the discussion. DP contributed to the review of existing studies and to the discussion. All authors read, reviewed the intermediate versions and approved the final version of the manuscript.

## Competing interests

The authors declare that they have no competing interests.

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