

## **Entrepreneurship by necessity and per capita income: a cross-section analysis with an emphasis on Brazil.**

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### **Abstract**

The article presents an empirical evaluation of the relationship between per capita income and entrepreneurship by necessity with an emphasis on Brazil. The results support the existence of a negative and significant relationship between entrepreneurship by necessity and per capita income, as a robustness test the same model was estimated for entrepreneurship by opportunity and no significant relationship was found between entrepreneurship by opportunity and per capita income. The relationships between entrepreneurship and poverty, human capital and unemployment were also considered.

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### **I. Introduction**

The origin of the term entrepreneurship refers to the French word entrepreneur which means in its literal translation “one who is between” or intermediary. In the Middle Ages, the entrepreneur was considered the individual who managed large production projects, such as works on castles, public buildings and fortifications. Only in the seventeenth century did entrepreneurship become related to risk, it was employed as that person who had contractual agreements with the government to perform a service or product. The price assigned to the contract was fixed, and the entrepreneurs bore the risk of profit or loss entailed by the business.

In the 18th century, capitalists (investors), those people who lent money, differed from capital users (entrepreneurs), individuals who had an idea and needed financial resources to implement a new product, Hisrich and Peters (2004).

According to Filion (1991), the term entrepreneur has its first steps in France in the twelfth century, used to designate “one who encourages fights”. In the mid-15th century, a definition emerged in which it was synonymous with “someone who took on some task”. In the 16th century, its meaning changed to “some violent warlike action”, that is, it was used to characterize those who assumed responsibilities and directed military actions. Thus, the term that gained current meaning was defined in the early 18th century as someone who identifies a business opportunity and assumes the risk for its execution. In that same period, in England, the words projector (projector) and undertaker (entrepreneur) were denominated to refer to the entrepreneurs. The term undertaker was used from the 14th century onwards at the same time as entrepreneur was used in France.

From the 20th century, the importance of companies grew to the point that societies are now composed of organizations. With an increasingly globalized, complex market structure oriented towards quality and customer satisfaction, organizations in the 21st century value individuals with characteristics that include the ability to create, innovate and be flexible.

The Global Entrepreneurship Monitor (GEM), whose main objective is to evaluate the role of entrepreneurship as a driver of economic growth, has a broad definition of the term entrepreneur, conceptualized as any attempt to create a new business or new venture, such as, for example, a self-employed activity, a new enterprise or the expansion of an existing enterprise by an individual, groups of individuals or by established companies, Bosma et al (2008).

Schumpeter developed the field of entrepreneurship by associating it with innovation and its significant importance in understanding economic development. In the economist's approach, entrepreneurship consists of perceiving and exploring new opportunities in the field of business, using available resources in an innovative way. Thus, entrepreneur as an innovation agent, according to Schumpeter (1928), is the one who introduces some innovation and causes growth in the economic system.

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Development, in the Schumpeterian view, encompasses five cases: (i) introduction of a new good, that is, a good with which consumers have not yet been familiarized or of a new quality of good; (ii) introduction of a new production method, i.e. a method which has not yet been tested by experience in the particular branch of the manufacturing industry, which in no way need be based on a scientifically new discovery, and may also consist of new way of handling a commodity commercially; (iii) opening of a new market, ie a market which the particular branch of the manufacturing industry in the country in question has not yet entered, whether that market existed before or not; (iv) conquest of a new supply source of raw materials or semi-manufactured goods, once again regardless of the fact that this source already existed or had to be created; (v) establishment of a new organization of any industry, such as creation of a monopoly position or fragmentation of a monopoly position.

The second section presents a brief review of the literature on entrepreneurship by necessity. The third section presents the data and estimates a model relating entrepreneurship by necessity and the countries' per capita income. The fourth section presents the conclusions.

## **II. Entrepreneurship by necessity**

For more than 50 years, the World Bank, donor nations, various aid agencies, national governments and, more recently, civil society organizations have fought poverty and its causes without succeeding in eradicating it. The statement of the Millennium Development Goals by the United Organizations makes this reality even more transparent: “we have entered the 21st century, but poverty and the lack of freedom that accompanies it continues to be one of the most disheartening threats hanging over the future of our world. What is needed is a better way to help the poor, one that involves them in a partnership to innovate and achieve sustainable scenarios, in which they are actively engaged participants and in which, at the same time, the companies that supply them with products and services make a profit”.

The World Bank and the United Nations emphasize the complex and multidimensional nature of poverty. From an initial understanding of poverty as a lack of resources – such as food, shelter, clothing or income, it is perceived that poverty implies other limitations that must also be considered. The World Bank identifies five dimensions of poverty. Material deprivation, lack of education, health problem, vulnerability and voicelessness and exclusion.

According to Prahaklad, (2008), Entrepreneurship on a large scale and wide-ranging is at the very heart of eradicating poverty. It is a solution that already exists and that has, in various circumstances, reached far beyond the stage where it does not go beyond ideas and plans, often successfully, to the creation of markets at the base of the pyramid.

## **III. Entrepreneurship by necessity and per capita income**

To analyze the relationship between entrepreneurship by necessity and social vulnerability, measures of entrepreneurship by necessity available in the Global Entrepreneurship Monitor (GEM) were used, data on GDP per capita, unemployment, human capital and poverty rate were obtained from the World Development Indicators of the World Bank (WDI/World Bank). For comparison purposes, the measures of entrepreneurship by opportunity available in the GEM were also used.

The measure of entrepreneurship by necessity considers the fraction of the population between 18 and 64 years old that is trying to start a company or owns a company with less than three years of activity and that chose to become an entrepreneur because they did not find better job opportunities. Per capita GDP is corrected for purchasing power and measured in 2017 international dollars, the measure of unemployment is the proportion of unemployed people in the labor force according to country estimates, as a measure of human capital the enrollment rate in the secondary education and the enrollment rate in tertiary education. For the poverty rate, three measures were used: population living on less than \$1.90, \$3.20 and \$5.50 per day. All data refer to 2018 and the final sample has 49 countries with different income levels.

The lowest rate of entrepreneurship by necessity was observed in Poland, 0.44%, and the highest occurred in Angola, 15.84%. The average for the 49 countries in the sample was 3.12% and the median was 2.32%. In Brazil, the rate of entrepreneurship by necessity was 6.71%, the fourth highest in the sample, behind only Angola, Guatemala and Lebanon. Figure 1 shows the distribution of entrepreneurship by necessity.

Figure 1: Distribution of the entrepreneurship by necessity rate

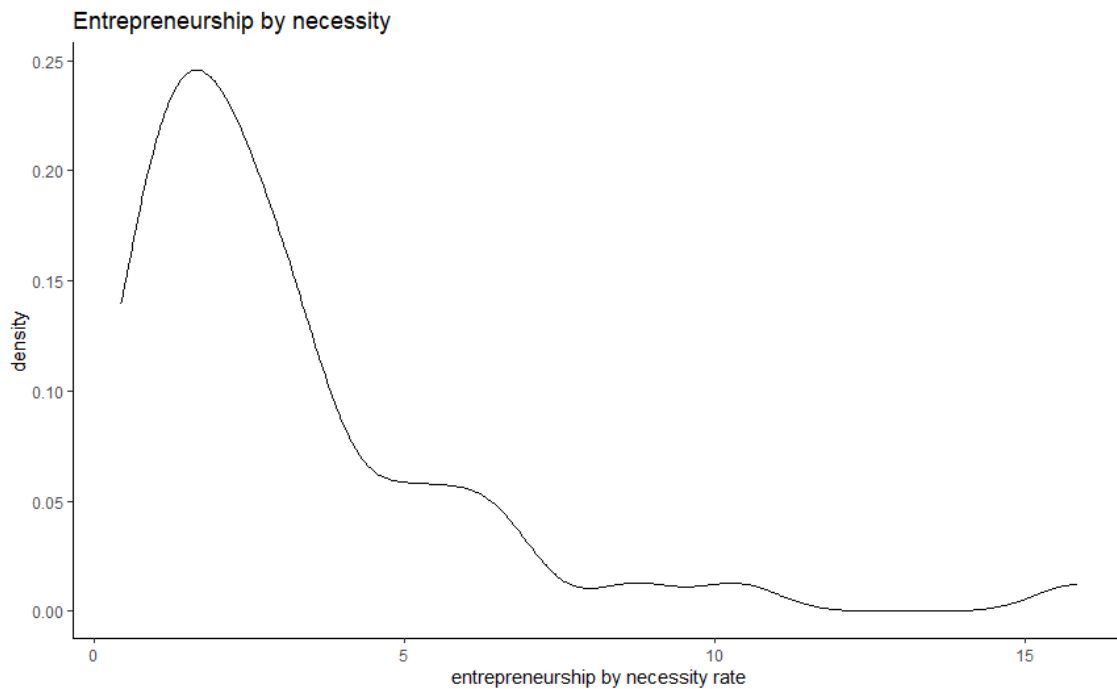


Table 1 shows the behavior of the need-based entrepreneurship rate according to the classification of countries by the World Bank. Both the mean and median rate of need-based entrepreneurship increase in lower-income country groups. The result reinforces the thesis that poorer countries offer fewer good job opportunities, which pushes part of the workforce towards entrepreneurship.

Table 1: Entrepreneurship by necessity rate and country groups by income

	Mean	Median	Maximum	Minimum
High income countries	1.90%	1.49%	5.92%	0.44%
Upper-middle income countries	4.00%	2.73%	10.40%	1.71%
Lower middle income countries	6.24%	4.68%	15.80%	2.07%
Low income countries	6.34%	6.34%	6.50%	6.18%

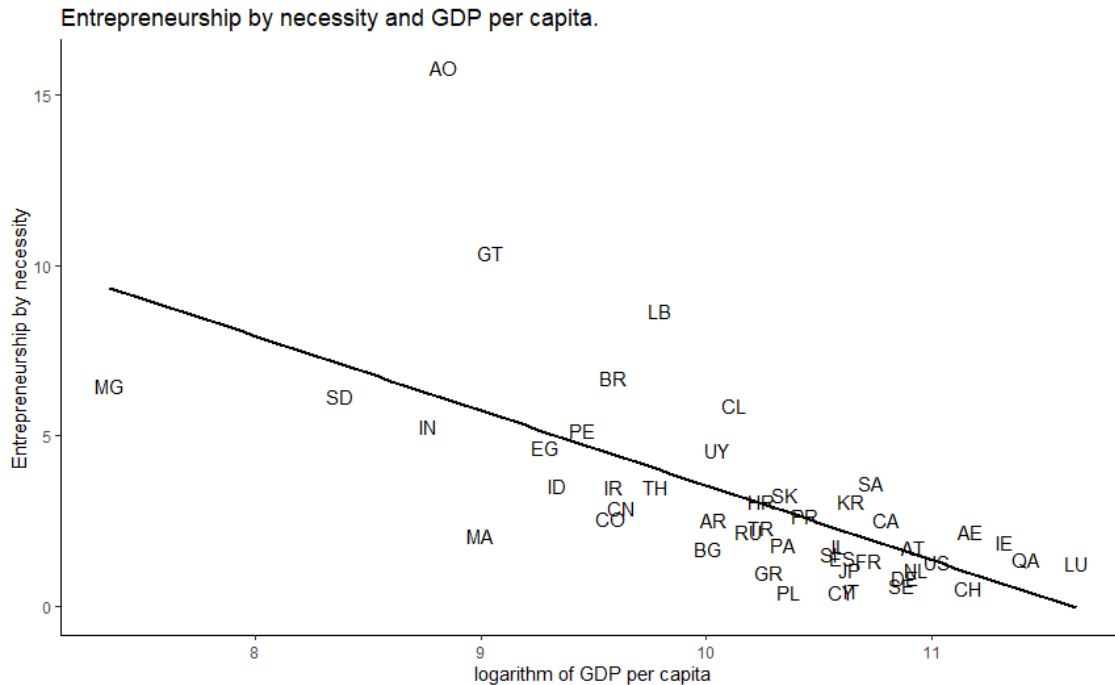
Table 2 shows the behavior of the entrepreneurship rate per opportunity according to the classification of countries by the World Bank. As in entrepreneurship by necessity, the lowest values for mean and median occur in the group of high-income countries and the highest in low-income countries, however, among middle-income countries there is an inversion with the highest mean and median in upper-middle-income countries than in lower-middle-income countries. This result suggests that opportunity entrepreneurship may be less related to labor supply constraints than necessity entrepreneurship.

Table 2: Entrepreneurship by necessity rate and country groups by income

	Mean	Median	Maximum	Minimum
High income countries	7.65%	7.52%	18.60%	3.26%
Upper-middle income countries	11.00%	10.80%	18.10%	3.01%
Lower middle income countries	9.82%	5.92%	23.3%	4.29%
Low income countries	14.50%	14.50%	15.00%	13.90%

Figure 2 illustrates the correlation between entrepreneurship by necessity and GDP per capita. Although it has endogeneity problems, it is worth noting that the coefficient of the logarithm of GDP per capita was -2.2 with a p-value lower than 1%. It is possible to observe in the figure that the rate of entrepreneurship by necessity in Brazil is higher than what would be expected considering only the Brazilian GDP per capita.

Figure 2: Entrepreneurship by necessity and GDP per capita.



Before moving on to the regressions, it is worth exploring the relationship between entrepreneurship by necessity and the poverty rate. In simple regressions of the rate of entrepreneurship by necessity against the rate of the population below the poverty line, this last variable showed a positive and significant coefficient with the three poverty measures used. Again, there are endogeneity problems that compromise the results of the regressions, but the result points out that a high rate of entrepreneurship may be associated with a lack of opportunities.

Figure 3 shows the relationship between entrepreneurship by necessity and the poverty rate using the threshold of \$3.20 per day. As in the case of GDP per capita, the rate of entrepreneurship by necessity in Brazil is higher than what would be expected considering only the Brazilian poverty rate.

The regression analysis will be performed using a model relating the need-based entrepreneurship rate to per capita GDP, the country's human capital (measured by secondary and tertiary enrollment), the unemployment rate and the poverty rate (measures with the three poverty lines). Regressions will also be run for the entrepreneurship rate per opportunity for comparison purposes.

Table 3 shows the results of the regressions for necessity entrepreneurship rate. In the second column is the reference model, as expected the coefficient of the logarithm of GDP per capita is negative and significant and the tertiary enrollment rate has a negative and significant coefficient at 5%, but not at 1%. This last result may result from students with a tertiary level having better job opportunities, even considering the per capita income of the countries. The coefficient of unemployment was not significant, this may be because the analysis was done in just one year, the most likely is that persistent unemployment leads to entrepreneurship out of necessity. Contrary to what was expected by simple regression, the poverty rate was also not significant.

Table 3: Determinants of the rate of entrepreneurship by necessity

Explanatory variables	Dependent variable: Rate of entrepreneurship by necessity			
Constant	19.08*** (4.58)	20.16*** (5.31)	17.42*** (4.34)	19.81*** (5.90)
GDP per capita	-1.53*** (0.42)	-1.87*** (0.50)	-1.39*** (0.40)	-1.59*** (0.53)
Secondary school enrollment rate	-	0.01 (0.02)	-	-

Tertiary education enrollment rate	-0.02** (0.01)	-	-0.02* (0.01)	-0.02** (0.01)
Unemployment	0.07 (0.06)	-0.03 (0.06)	0.06 (0.06)	0.07 (0.06)
Poverty Rate, \$1.90 per day	-	-	0.03 (0.12)	-
Poverty Rate, \$3.20 per day	-0.01 (0.03)	0.02 (0.03)	-	-
Poverty Rate, \$5.50 a day	-	-	-	-0.01 (0.02)

In parentheses is the standard error of the estimators. \*\*\* Significant coefficient at 1%, \*\* Significant coefficient at 5%, \* Significant coefficient at 10%.

To assess the robustness of the model to variable choices, the third column illustrates a regression where the tertiary enrollment rate is replaced by the secondary enrollment rate as a measure of human capital. In qualitative terms, the relevant difference is that human capital ceases to be significant to explain the rate of entrepreneurship by necessity. The following regression takes tertiary enrollment rate as a measure of human capital and the poverty rate is defined by the poverty line with \$1.90 per day. The last regression uses the \$5.50 a day line as a measure of poverty, the qualitative results are the same as in the first regression.

The lack of significance for unemployment and poverty rate can be explained by the static character of the model. It is possible that these two variables induce entrepreneurship out of necessity only when they persist over time, someone who becomes unemployed or falls into poverty may first look for new placements in the labor market and only then resort to entrepreneurship. Future research could address this issue using a panel of countries to assess the effect of lagged unemployment or, even better, using microdata to assess the behavior over time of families left to face long periods of unemployment or poverty.

The estimated model is not intended to make predictions, but it is worth noting that the need-based entrepreneurship rate estimated for Brazil in the base regression, the second column of Table 3, was 3.99% against an observed rate of 6.71 %. This result suggests that there are factors that are not in the model and that have a relevant impact on the decision to undertake out of necessity.

Table 4 presents regressions with the same explanatory variables as in Table 3, but with opportunity entrepreneurship as the dependent variable. The only significant explanatory variable was GDP per capita in the second regression. This suggests that the opportunity entrepreneurship relationship depends less on the socioeconomic variables of the countries than necessity entrepreneurship.

Table 4: Determinants of the rate of entrepreneurship by opportunity

Variável explicativa	Dependent variable: Rate of entrepreneurship by opportunity			
Explanatory variables	28.95* (16.83)	42.14** (18.44)	20.76 (16.04)	15.84 (21.72)
Constant	-1.82 (1.55)	-3.37* (1.75)	-1.13 (1.48)	-0.70 (1.95)
GDP per capita	-	0.03 (0.05)	-	-
Secondary school enrollment rate	-0.02 (0.04)	-	-0.01 (0.04)	-0.00 (0.04)
Tertiary education enrollment rate	-0.16 (0.22)	-0.30 (0.20)	-0.18 (0.22)	-0.18 (0.22)
Unemployment	-	-	0.09 (0.44)	-
Poverty Rate, \$1.90 per day	-0.06 (0.11)	-0.07 (0.11)	-	-
Poverty Rate, \$3.20 per day	-	-	-	0.03 (0.07)

In parentheses is the standard error of the estimators. \*\*\* Significant coefficient at 1%, \*\* Significant coefficient at 5%, \* Significant coefficient at 10%.

The empirical analysis carried out in this section shows that it is important to separate entrepreneurship by necessity from entrepreneurship by opportunity when analyzing what leads an individual to become an entrepreneur. For example, in the case of entrepreneurship by necessity, higher education tends to reduce the

incentive to be an entrepreneur, while this does not occur in entrepreneurship by opportunity. A negative relationship was observed between entrepreneurship by necessity and GDP per capita, in the case of entrepreneurship by opportunity no relationship was found between these variables. No evidence was found relating unemployment or the poverty rate to any type of entrepreneurship.

Another record is that the rate of entrepreneurship by necessity in Brazil was higher than predicted in the models presented here. This indicates that there are characteristics in the Brazilian economy that are not in the model and that have a relevant impact on entrepreneurship by necessity in Brazil. A possible explanation lies in the lack of variables that capture the persistence of poverty and unemployment, which, as already mentioned, may explain the fact that we did not find significant effects of these variables on entrepreneurship. Other possibilities involve cultural or institutional issues that are also not in the model. It would be interesting to assess whether the entrepreneurial culture in Brazil is stronger than the average of countries.

#### **IV. Conclusions**

The article sought to explore the relationship between entrepreneurship by necessity and income in different countries. For this, World Bank data were used regarding per capita income, human capital, unemployment and poverty, entrepreneurship data were obtained from GEM.

The data show that the rate of entrepreneurship by necessity is lower in high-income countries and drops monotonously, reaching the highest value in low-income countries. The same pattern was not observed in opportunity entrepreneurship. These results are valid for both mean and median. Next, a negative correlation was found between the rate of entrepreneurship by necessity and per capita income in the sample countries.

The regression analysis found that per capita income has a negative and significant coefficient on the need-based entrepreneurship rate. This result was robust to changes in human capital and poverty line measures. When the regression is performed for opportunity entrepreneurship, the negative and significant relationship is no longer observed. This suggests that dependence on per capita income is a feature of necessity entrepreneurship rather than entrepreneurship in general. Future research should seek to use panel data to assess the long-term effects of unemployment and the poverty rate on entrepreneurship by necessity.

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