

# ***Do Socio-economic Indicators Really Matters for Entrepreneurship? A Latin-American perspective***

***By José Ernesto Amorós, Fernando Borraz and Leonardo Veiga\****

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*This work studies the relationship between entrepreneurial activity and a set of factors such as GDP, the level and composition of unemployment, the impact of the informal economy, the perception of corruption, the macroeconomic stability and labor regulations. We use a panel data from ten Latin-American countries covered by Global Entrepreneurship Monitor; GEM, from 2000 to 2007. We put emphasis on necessity-based entrepreneurship because this type of activities face relative high rates on Latin-American context. The results show that economic development is effectively negative related with necessity-based entrepreneurship. Other factors like perceived corruption and unemployment are positive related with major levels of the necessity-based rates. Future research lines and policy implications are discussed.*

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## ***1. Introduction***

The role that entrepreneurship plays as factor that explain the growth of an economy is quite recent (Acs and Storey 2004; Wennekers and Thurik 1999). Researches regarding economic growth undertaken last century claimed that capital and labor were the sources of economic growth (Solow 1956). The firm was seen as a chain of contracts that showed the transaction's costs (Coase 1937). Later, knowledge was included among the factors that explained economic growth. Scholars believed that companies should be large organizations (Chandler 1990) as knowledge was too expensive and advanced for small business to handle and as success at the international level was associated with larger companies (Gomes-Casseres 1997). During the last

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José Ernesto Amorós is professor and director of the Global Entrepreneurship Research Center, Universidad del Desarrollo, Santiago, Chile. His research focuses on new venture creation, regional development and firm's growth. Fernando Borraz is assistant professor and director of Economic Department, Universidad de Montevideo, Uruguay. His research interests are applied microeconomics and econometrics. Leonardo Veiga is professor in the IEEM Business School, Universidad de Montevideo. His research focuses on innovation and entrepreneurship. Address correspondence to: José Ernesto Amorós. Av. Plaza 700, Las Condes. 761-0658, Santiago, Chile. E-mail [eamoros@udd.cl](mailto:eamoros@udd.cl).

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years, it has been highlighted that entrepreneurial capital and the later creation of small business are vital factors regarding economic growth (Audretsch and Thurik 2001, 2004; Audretsch and Keilbach 2004.)

New firms contribute with competition by means of the increase in quantity and variety of companies. The increase in competition embodied in new methods and new ideas that allow companies to progress, enables the market to find a demand for new companies to support certain niches or particular features of those ideas (Jacobs 1969). In turn, this supports the idea that entrepreneurship contributes with variety and new approaches to the relevant industries (Wong, Ho and Autio 2005), at the same time, allowing the companies to contribute to the creation of employment. Birch (1979, 1981, 1987) stated that in the United States most of new jobs tend to arise from smaller businesses.

Therefore, new ventures acquire an important role on the development of economic policies but at the same time the creation of these policies should arise a complete understanding of entrepreneurship phenomena. Based on this, one of the starting points is the understanding of the reasons that gave birth to entrepreneurs, the features that characterize them, and the effects of such features on the different parameters of their performance. Regarding the typologies of entrepreneurship, it is important to distinguish those entrepreneurships that start with the intention of exploiting an opportunity, in most cases searched for, from those that arise from the lack of labor options for example, necessity-based entrepreneurs.

Based on this typology, the Global Entrepreneurship Monitor (GEM) research project distinguish the necessity-based entrepreneurial activity from the opportunity-based entrepreneurial activity. Both types of entrepreneurship conform what GEM calls early stage entrepreneurial activity (TEA). The difference between both types of entrepreneurship lies on the entrepreneur's motivation (Block and Wagner 2007; Reynolds et al. 2002; Sternberg et al. 2007).

In accordance with Bosma et al. (2008), opportunity-TEA consists of those individuals who claim they take advantage of a market opportunity that leads them to the entrepreneurial activity. In turn, necessity-based entrepreneurships are aimed to procuring an income that cannot be obtained through other means. In other words, in this case, "be entrepreneur" is the best alternative for those individuals who have not been able to find a job (Reynolds et al. 2005, p. 217).

A priori, it cannot be stated that this difference poses supremacy of one type of entrepreneurship over the other. Some scholars believe that higher rates of opportunity-based entrepreneurships are preferred to higher rates of necessity-based entrepreneurships (Acs et al. 2005; Acs and Varga 2005). On the other hand, Block and Sandner (2007) discovered that opportunity-based entrepreneurs stayed as self-employed for a longer period of time than necessity-based entrepreneurs, but this difference was explained by the fact that the opportunity-based entrepreneurs were able to set their entrepreneurial activities in relation to an occupation that they had already learned. Once this advantage of opportunity-based entrepreneurs was taken into account, differences were not meaningful. Block and Sandner (2007) state that the importance of the necessity-based entrepreneurship shows some of the starting disadvantages that these entrepreneurships suffer: the opportunity-based entrepreneur

has choices while the necessity-based entrepreneur does not, this means that the entrepreneur will have to embark even when the conditions are not the right ones, as when the entrepreneur's educational profile is not aligned with that of his/her entrepreneurship.

The object of this study is to find, among idiosyncratic factors from developing countries and, especially, Latin America, elements additional to those stated in the literature that will allow for a correct interpretation of the meaning of the necessity-based entrepreneurships seen in each of the countries of the region and, therefore, be able to contribute to the development of adequate policies in order to improve the quality of entrepreneurial activities. The Latin American countries that are members of GEM show high necessity-based entrepreneurship rates, which is common in many other developing countries. As it was earlier stated, we need to fully understand the factors that have effects on those levels and on their development, as vital input at the moment of generating political suggestions.

This study consists of several sections: in the next section you will find an assessment of the literature regarding necessity-based entrepreneurship determining factors, the characteristics of developing countries, and hypotheses generated based on the literature cited; next, in the third section we show a description of the econometric model and of the sources of data used; results are reported in the fourth section, and, finally, implications are discussed from the politics point of view and some ideas regarding further studies are in the last section.

## ***2. Literature and Hypotheses Assessment***

### ***2.1 Entrepreneurship, Income and National Economic Growth***

An increasing number of studies emphasize the relationship between entrepreneurship (business ownership rates) and economic growth, which is generally measured by the gross domestic product per capital income level. Moreover, it is difficult to understand the causality between entrepreneurial activities and economic development at the country level. Some studies emphasize the effect of economic growth or economic development on countries' entrepreneurial rates (Wennekers et al. 2005), while others focus on the effect of entrepreneurial activity on national economic growth (van Stel, Carre and Thurik 2005). Carre et al. (2002, 2007) are a special case in that they develop a simultaneous equation model for economic development and business ownership rate.

Yamada (1996) found a strong negative correlation between self-employment participation data and the level of economic growth of countries by analyzing data from the World Bank's World Development Report 1992 on 31 countries that reflected different stages of economic growth. This relationship weakens in the case of developed countries. Yamada explains this relationship through several factors. First, the scarce consumption ability of less developed countries does not generate the scale needed for the creation of large companies. In these countries, a large portion of self-employment activities consist in providing services related to the repair of items that in developed countries are directly discarded. On the other hand, economic development provides more resources to governments allowing for the development of skills to improve

taxation that will lead, among other things, to the decrease in entrepreneurships, the competitiveness of which is based on tax evasion or regulation non-compliance.

Blau (1987) and Acs et al. (1994) were among the first that proposed this “U-shape” relationship between entrepreneurial rates (self employment) and economic development. Carree et al. (2002), Wennekers et al. (2005), Belso-Martínez (2005) and Amorós and Cristi (2008) also found a “U-shape” curve. Carree et al. (2007), using data for 23 OECD countries, revisited the “U-shape” approach and proposed an “L-shape” curve to describe the effect of economic growth on entrepreneurial activities.

GEM has systematically discovered throughout the years a relationship between entrepreneurship levels and the economic development level that follow a “U-shape” curve. (Bosma et al. 2008, 2009). Under the U-shape curve approximation, Latin American countries are on the decreasing phase of the curve. The explanation of this phenomenon would be the following: “In countries with low levels of per capita income, the national economy is characterized by the prevalence of many very small businesses. As per capita income increases, industrialization and economies of scale allow larger and established firms to satisfy the increasing demand of growing markets and to increase their relative role in the economy. An important factor for achieving growth is the presence of macroeconomic and political stability, which is reflected by the development of strong institutions. The increase in the role of large firms may be accompanied by a reduction in the number of new businesses, since a growing number of people find stable employment in large industrial plants.” (Bosma et al. 2008 p. 13). This statement has been empirically contrasted in the case of Latin America by Acs and Amorós (2008), and Amorós and Cristi (2008).

Due to the fact that Latin American countries show low and middle levels of per capita income, it might be possible to find a negative correlation between development and necessity-based entrepreneurships; therefore:

*H1a: Per capita income increase in Latin American countries leads to a decrease in necessity-based entrepreneurship levels.*

As we have already referred, authors like Blau (1987) and Acs et al. (1994) have found that the relation between economic development and levels of entrepreneurship adopts a form of “U”, relation that is corroborated by the results that the GEM (Bosma et al. 2008, 2009) has systematically obtained along the years. When one discriminates the entrepreneurship by necessity and opportunity, it exists an inverse relation between entrepreneurship by necessity and economic development. The process of economic development deciphered before generates changes in the productive structure of the country that derive in a greater productivity from the manual labor and greater use, reducing the entrepreneurship by necessity.

Even though in the long term, development affects the structure and productivity of companies and, at the same time, creates paid jobs that are attractive to prospective entrepreneurs, in the short term, the companies’ productivity does not vary substantially. In the short term, economic growth should have the opposite effect to that stated in the previous hypothesis, i.e., economic growth should encourage entrepreneurial activity by creating an environment where identified risks of and expected income from entrepreneurial activity would improve more than advances in

paid jobs. In the case of the entrepreneurs by necessity, our hypothesis is that within the unemployed ones who have not found a job in spite of the increase of the economic activity, this more stimulating atmosphere would take them to undertake.

*H1b: There exists a positive correlation between the per capita GDP growth rate and entrepreneurial by necessity activity levels.*

## **2.2 Unemployment and Necessity-Based Entrepreneurship**

Studies on the relationship between unemployment and the level of entrepreneurship have not been able to reach conclusive results. In some studies, Robson (1996, 1998b) discovered that unemployment had a depressing impact on entrepreneurship in the United Kingdom, while Robson does not find such relationship in other countries (1998a), it being similar to that found by Abell et al. (1995), and Parker and Robson (2004). On the other hand, there exists a set of studies that discovered that an increase in unemployment would increase the number of new entrepreneurs. Among these studies are those of Bogenhold and Staber (1991), and Acs et al. (1994), both on OECD countries and one on United Kingdom local markets conducted by Cowling and Hayward (2000). There exists a non-conclusive study conducted by Blanchflower (1998) on OECD and another by Cowling (2003) on United Kingdom local markets. In a later study, Cowling and Bygrave (2003) assessed the relationship between necessity-based entrepreneurship and unemployment in general, and, in particular, youth unemployment. For this study, they analyzed data from 37 GEM 2002 countries. The only hypothesis of which evidence is found is that which refers to the impact of young people on unemployment, i.e., when their participation within a country increases, necessity-based entrepreneurship increases.

Cowling and Bygrave (2003), and Parker and Robson (2004) agree on their interpretation of the fact that unemployment has contradictory effects on entrepreneurship. On the one hand, when unemployment rises, unemployed individuals will most probably think that job opportunities have become scarce or less attractive and decide to set up a business. However, as unemployment rises, the amount of people thinking that setting up a business is an alternative increases. These statements would lead to an unemployment-entrepreneurship positive relationship. But the increase in the unemployment rate might show that there exists a global reduction of the economic activity level, creating conditions seen by the unemployed as less favorable to start a successful entrepreneurship. Starting a business implies a risk that reduces when the entrepreneur knows that in the event he/she failed, he/she would still have other labor opportunities. These reasons lead to a negative unemployment-entrepreneurship relationship.

Even though no conclusive evidence has been found regarding the unemployment-entrepreneurship relationship, as it is possible that the contradictory effects that unemployment has on entrepreneurship have different degrees of impact in each case in particular; we believe that it is foreseeable to find a positive correlation in Latin American countries. The difference primarily lies on the fact that in the case of developed countries the generous unemployment benefits give individuals the chance to wait for a job opportunity during longer periods of time. In the case of youth unemployment, faced with the lack of job opportunities, young people may decide to

continue studying and, in the mean time, rely on the economic support of their families. Both factors should lead to a positive correlation much weaker in the case of youth unemployment. Therefore:

*H2a: The increase in unemployment leads to an increase in the necessity-based entrepreneurship.*

*H2b: The increase in youth unemployment leads to an increase in necessity-based entrepreneurship.*

### **2.3 Income Tax, Unemployment Benefits and Entrepreneurship**

Parker and Robson (2004) were able to identify the determining factors of self-employment rates of 12 OECD countries for the period 1972-1996. They used a wide range of explanatory variables that had been collected by previous literature, to wit: per capita income, participation of women in workforce, participation of labor in the GDP, income tax, employees contributions to social security (which results in the income tax average rate), employers contribution to social security, and unemployment benefits. They found that self-employment was positive and substantially related to unemployment benefits and women's participation in the workforce.

In accordance with Parker and Robson, the correlation found between income tax rates and self-employment has background in the literature: Blau (1987), Parker (1996, 1999, 2001, 2003), Robson and Wren (1999), Bruce (2000), and Scheutze (2000). High income tax rates usually allow those who are self-employed differential expense deductions related to their work, as well as evasion, which represents an economic advantage over those who are employed.

On the other hand, unemployment benefits work as a discouragement to self-employment through several channels. Firstly, self-employment is discouraged because such status implies the loss of those benefits. Moreover, as the self-employed lack the employment benefits that employees have access to, high benefits discourage employees from leaving their jobs to start a business on their own, as they are afraid of losing such benefits. Staber and Bogenhold (1993) had discovered a negative correlation between unemployment benefits and self-employment at the OECD.

In turn, income tax encourages entrepreneurial status as opposed to employed status. However, inflation can act as a tax on income and it is felt as such. Inflation's tax differs from ordinary taxes in that it incorporates an uncertainty element, as it is not certain how much income will finally be deducted and which variations will take place in this respect. Therefore, we believe that inflation behaves as a stimulus for entrepreneurial activity as the entrepreneur has more independence than the employee to regulate his/her net income in order to be able to keep the actual income. On the other hand, inflation creates more labor conflicts that arise from the companies' implementation of more conservative policies regarding personal employment. Contracting employment policies will lead to the scenario where for many individuals job alternatives will not exist and where paid jobs are less attractive as those companies' protecting policies not only reduce activity levels but also create an overload of work for those individuals the companies employ.

It is possible that informality will have the opposite effect: it shall act as an “exemption” from income taxes. In that respect, it is expected that the rise in informality levels leads to increases in entrepreneurial levels.

Latin America is characterized by a high inflation volatility, which is considered in our model as equivalent to a high and uncertain tax pressure. At the same time there is not an important protection of employ, which takes to a high level of informality. We consider that the effects that the inflation and informality have on entrepreneurship by necessity and opportunity will be similar, although with different emphases. In the case of the entrepreneurship by opportunity it will be more important the attractiveness loss of attractiveness of the jobs caused by these phenomena. In the case of the entrepreneur by necessity it will be its pernicious effect on the jobs creation. From these elements we propose:

*H3: The rise in the inflation rates generates greater necessity-entrepreneurship levels.*

*H4: The rise in the economy’s degree of informality generates greater necessity-entrepreneurship levels.*

#### ***2.4 The Existence of Entrepreneurial Skills and their Impact on Wages***

In many cases the being an entrepreneur by opportunity or necessity will depend on the personal circumstances. In addition to the examination of those factors it is necessary to analyze if there are differences based on the skills and capacities of the entrepreneur. The starting point of Blau (1985) is that there exists a variable that is not capable of being observed: the “entrepreneurial skill,” which is of importance at the time the individual has to choose between self-employment and a job. This statement is supported by several studies that contribute empirical evidence regarding the fact that self-employed people from developing countries have greater income than their counterparts who are employed (Rosenzweig 1980; Chiswick 1977; Bertrand and Squire, 1980; Teilhet-Waldorf and Waldorf 1983; Mazumdar 1981; Blau 1984; House, 1984; Sumner 1981). This would be consistent in the case of competitive labor markets. The entrepreneur wins a price due to his/her entrepreneurial skill and the risks undertaken; these are features that distinguish him/her from those who are employed. Based on these statements Blau (1985) tries to analyze and estimate an individually chosen model between employment and self-employment within the context of countries with less relative development. This model states that entrepreneurs are not a random sample of the population regarding the entrepreneurial skills variable, which would be seen stronger among those who undertake entrepreneurial activities. The existence of minimum wages, trade unions, and certain employment practices within the public sector keep the labor market over the balance point, creating an excess of job offers in the market. In this respect, in the event staff employment criteria directly or indirectly took into account entrepreneurial skills (for example, because it is related to the education level), many individuals with entrepreneurial skills would chose to be employed as they would have advantages (to the extent reallocations are greater to the income they would receive in the event the market was in a clearing level, the individual with entrepreneurial skills chooses the most advantageous situation, as he/she does not

undertake risks). However, individuals with low entrepreneurial skills will have to choose to be self-employed, leading to low-income levels. This, in turn, will strengthen the negative perspective regarding self-employment among those who are employed and possess entrepreneurial skills.

The hypothesis that states that, in the absence of strong distortions in the labor market, self-employment generates more income than paid jobs has been proved by Yamada (1996) on informal self-employment and employment, based on the information from Lima, Peru, from 1985/86 to 1990, and a country comparative analysis based on World Bank's data. In this respect, the informal economy is the greatest indicator of lack of distortions in the market's natural performance.

To conclude, labor market regulations reduce job offers, but, at the same time, make the remaining positions more attractive. In the event a set of skills, which we have named "entrepreneurial skills" and can be used in any job position, existed, as labor market distortions increased – rising wages over the price set by the market – greater the level of necessity-based entrepreneurship would be. Faced with a higher compulsory minimum wage, the market is not cleared. Entrepreneurial skills would be useful to procure jobs that have become attractive enough to compete with the entrepreneurial option regarding the environment and risks. On the other hand, it may be thought that a competitive advantage of regulatory nature is created for those entrepreneurships that are able to provide services competing directly with paid jobs. Therefore:

*H5: The higher the actual compulsory minimum wage is, the higher the level of necessity-based entrepreneurships will be.*

## **2.5 Entrepreneurship, Corruption and Risk Perception**

There exists another factor that may lead to differences between necessity-based entrepreneurship and opportunity-based entrepreneurship regarding entrepreneurial activity and risks. It is usually presumed that entrepreneurs are individuals particularly daring, however, studies do not provide evidence showing that these individuals are more prone to undertaking risks than those individuals who are not entrepreneurs (Brockhaus 1980; Brockhaus and Horwitz 1986). However, we all consider that entrepreneurs behave differently from those who are not. An alternative study approach is based on the cognitive theory (Palich and Bagby 1995). Pursuant to this theory, entrepreneurs do not necessarily prefer to undertake risky actions; they just see situations from a different point of view. They spot opportunities where others do not and they do not let threats prevent them from undertaking an entrepreneurial activity; they have more faith in their strengths and in their ability to surpass or counterbalance their weaknesses. Consequences are very important from the businessman training point of view, as the difference between entrepreneurs and non-entrepreneurs would have a vital dimension regarding differences in the understanding and assessment of business situations according to the skills they possess that may be altered by means of training providing the relevant analysis framework (Mount and Thompson 1987). Studies in line with cognitive theory would show that entrepreneurs possess more faith in their ability to meet the challenges that their surroundings pose. The faith they have in their ability to face threats – and, from time to time, to turn them into opportunities – is one of their most important elements that build their faith. Corruption is one of the clearest threats to

entrepreneurial activity (Amorós 2009). In this respect, we believe that the opportunity-based entrepreneur feels he/she is able to face the threat that corruption poses to his/her entrepreneurial activity while the necessity-based entrepreneur does not.

*H6: When the perceived corruption rate increases, necessity-based entrepreneurship decreases.*

### 3. Methodology

In order to prove the different aforementioned hypotheses, we will estimate econometrically models of panel data for Latin American countries. The dimension of time series that is added to the transversal dimension upon calculating data panel presents several advantages:

- Control among the countries by means of heterogeneity. The data panel assessment presumes that countries are heterogeneous and it allows controlling the effects that were not seen by country and by period of time. This is necessary because, otherwise, the estimates might be correlated with explanatory variables and, therefore, if omitted, estimates are blinded. In the case of vertical dimension studies, the country variable that is not observed is omitted and, therefore, only blinded estimates are obtained.
- Add variability and, first and foremost, informative content, therefore, panel data studies provide more information, more variability, and less collinearity among variables
- Study the adjustment dynamics, obtaining richer model specificity. It also allows for the analysis of the variation of the entrepreneurial activity rate through the economic cycle.
- Allows for the control of time effects that may affect equally all countries such as the world economic growth level, etc.

In particular, the following models of panel data will be estimated:

$$y_{it} = \alpha_i + X_{it}\beta + \lambda_t + u_{it} \quad i = 1, \dots, 10$$

where  $y_{it}$  is the entrepreneurial rate (TEA) with  $t=2000, \dots, 2007$ , opportunity entrepreneurial rate (OPP) and necessity entrepreneurial rate (NEC) with  $t=2001, \dots, 2007$ .

$\alpha_i$  is the country effect that has not been observed as the quality of the institutions, compliance with legislation, the quality of policies, etc.

For the purposes of explaining TEA, OPP, and NEC, the following  $X_{it}$  explanatory variables are considered:

- Gross domestic product GDP, per capita PPP.
- Growth rate of the gross domestic product

- Inflation rate
- Unemployment rate
- Youth unemployment rate
- Real minimum wages
- Corruption perception
- Informality

### 3.1 Data

The countries considered in the analysis were the following: Argentina, Brazil, Colombia, Chile, Ecuador, Mexico, Peru, Dominican Republic, Uruguay, and Venezuela.

The following Table 1 shows data source; the variables used in the analysis are shown next.

**Table 1**  
**Variables and Sources**

Variable	Data source
Gross Domestic Product per capita	International Monetary Fund
Inflation	International Monetary Fund
Unemployment rate	International Labor Office
Youth unemployment rate	International Labor Office
Real minimum wages	International Labor Office
Corruption Perception Index	Transparency International
Informality	International Labor Office

GDP per capita derives from the International Monetary Fund and is measured in American dollars adjusted by Purchasing Power Parity. This allows for control of different purchasing power of American dollars in different periods.

Real minimum wages were set at a base of 100 in 1990.

The Corruption Perception Index is a composite index obtained by Transparency International arising out of several expert opinion polls that analyze perceptions on public sector corruption in 163 countries worldwide. It is the most ambitious issue of every CPI performed up to these days. It is a rating of countries according to a zero to ten ranking, where zero is the value indicating the highest levels of perceived corruption and ten is the value which indicates the lowest levels. The index ranks 180 countries according to their perceived corruption levels.

Informality index was obtained from the International Labor Office and is based on surveys conducted in homes with urban coverage. Said index is calculated as the proportion of workers with no social security coverage and no labor rights.

Table 2 shows descriptive surveys of data used in the economic analysis. The important variation in explanatory variables must be taken into account, therefore, for example, Latin American countries with a GDP per capita from USD 4,300 to USD

13,000 are considered

**Table 2**  
**Descriptive Statistics**

	<b>Observations</b>	<b>Average</b>	<b>Std. Dev.</b>	<b>Min.</b>	<b>Max.</b>
TEA	37	16.4	8.0	5.3	40.3
OPP	35	10.4	5.8	3.4	29.6
NEC	35	5.9	2.9	0.9	13.1
GDP per capita	80	8166.5	2496.2	4595.7	13936.5
Economic Growth	80	5.4	5.3	-10.2	19.0
Inflation	80	9.6	13.1	-1.1	96.1
Unemployment	80	11.6	4.1	3.4	19.7
Youth Unemployment	80	22.6	8.7	4.1	40.0
Minimum Wages	79	137.8	67.6	47.0	433.7
Corruption	78	3.9	1.5	2.0	7.5
Informality	80	48.1	8.8	31.9	63.8

Source: GEM, IMF, TI, ILO.

The Table 3 shows the correlation coefficient between the different variables used in the economic analysis.

**Table 3**  
**Correlation Coefficient among Variables Used in the Analysis**

TEA	OPP	NEC	GDP Per cap.	Corruption	Unemployment	Youth Unemployment	Minimum Wage	Inflation	Economic Growth	Informality
1										
0,98	1									
0,90	0,79	1								
-0,59	-0,48	-0,72	1							
-0,26	-0,23	-0,29	0,41	1						
0,17	0,08	0,37	-0,43	-0,35	1					
0,00	-0,07	0,18	-0,24	-0,15	0,88	1				
-0,17	-0,13	-0,23	0,32	-0,03	0,04	0,25	1			
0,09	0,00	0,28	-0,06	-0,39	0,52	0,39	-0,13	1		
0,09	0,19	-0,14	0,22	0,01	-0,33	-0,05	0,28	-0,42	1	
0,60	0,52	0,69	-0,81	-0,73	0,36	0,14	-0,21	0,20	0,00	1

#### **4. Results**

Table 4 shows the economic estimate results.

The results indicate that the rates of entrepreneurship depend negatively on the wealth of the countries approximated by their GDP per capita. This can be explained because we are considering solely to countries of low income and means. These results are consistent with our Hypothesis 1a. On the other hand, entrepreneurship is positively related on the economic cycle calculated by the GDP per capita growth rate. The higher the growth level is, the lower the entrepreneurship rate. This confirms Hypothesis 1b.

Results confirm a positive and significant correlation between unemployment and necessity-based entrepreneurship. This indicates that in the countries of Latin America the benefits by unemployment or the perception of adverse economic surroundings are not sufficiently powerful factors to dissuade the unemployed to try their entrance by the route of entrepreneurship. This confirms our Hypothesis 2a. Results also show a relationship with similar characteristics between unemployment and opportunity-based entrepreneurship. It may also indicate that when unemployment rises, there is a depreciation of paid job attraction to such an extent that the entrepreneur has the opportunity to set up his own business despite having a job and facing a difficult context. This is also related with Hypothesis 1.

**Table 4**  
**Panel Data Model Estimate Random Effects**  
**(Standard errors in brackets)**

	<b>TEA</b>	<b>OPP</b>	<b>NEC</b>
GDP per capita	-0.004 (0.001)**	-0.003 (0.001)**	-0.001 (0.0004)**
GDP Growth Rate	1.071 (0.384)***	0.812 (0.304)***	0.285 (0.112)**
Inflation	0.666 (0.259)**	0.486 (0.225)**	0.246 (0.083)***
Unemployment	3.881 (1.284)***	2.875 (1.029)***	1.082 (0.381)***
Youth Unemployment	-2.129 (0.621)***	-1.631 (0.490)***	-0.549 (0.181)***
Real Minimum Wages	0.026 (0.015)*	0.020 (0.012)	0.008 (0.004)*
Corruption Perception Index	1.602 (1.225)	0.702 (0.967)	0.983 (0.358)***
Informality	-0.347 (0.538)	-0.486 (0.433)	0.085 (0.160)
Constant	43.524 -41.864	44.947 (31.801)	2.462 (12.172)

Notes:

\*\*\* means 1% significance. \*\* means 5%, and \* means 10%.

Regressions include temporary dummies.

According to Hausman test, the random effect model is the appropriate model.

On the other hand, results indicate that there is a negative and significant correlation between youth unemployment and opportunity-based and necessity-based entrepreneurship. This not supports our Hypothesis 2b. It is difficult to find possible explanations for the adverse effect that general unemployment and youth unemployment may have over different entrepreneurship types. For future research it should be explore the role that families and education could have in this results.

A positive correlation between inflation and entrepreneurial activity in Hypothesis 3 is proved. If our interpretation is correct, this can be explained because inflation behaves as an income tax. On the contrary, informality incidence as an explanatory factor has not been proved, consequently, Hypothesis 4 cannot be confirmed. While there is an inverse relationship between informal workers' percentage and per capita income, this relationship vanishes when a vast set of explanatory variables is controlled. A possible explanation for these results is that informality levels are so high in most

Latin American countries, with countries reaching 60%, that informality is not a distinctive advantage for entrepreneurs in relation to established companies.

Real minimum wages positively affect necessity-based entrepreneurship rates but they do not impact on opportunity-based entrepreneurship rates. This is consistent with Hypothesis 5.

Corruption Perception Index positively affects necessity-based entrepreneurship rate. As a result, lower corruption is associated with higher NEC. Consequently, corruption appears as a limitation to necessity-based entrepreneurship rate in Latin America, as it is shown in Hypothesis 6.

## ***5. Future Research Lines and Policy Implications***

Evidence shows that necessity-based and opportunity-based entrepreneurs have clearly different characteristics based on the existence of entrepreneurial skills. It is unclear whether they are real skills or it is a different self-perception among them. In the event they were real skills, it is still not clear if it is something “genetic”, that is, unable to generate said skills by means of the relevant training.

Apart from development level of the country measured in terms of per capita income, there are other factors that affect the entrepreneurship level of the economy, such as trust in macroeconomic policies, labor regulations, and institutional quality.

Explanatory variables of real wages and corruption affect opportunity-based and necessity-based entrepreneurship in a different way. Real minimum wages positively affect necessity-based entrepreneurship rates but they have no impact on opportunity-based entrepreneurship rates. This may indicate that regulations in labor markets drive those who are displaced from labor market to necessity-based entrepreneurship. Corruption Perception Index positively affects only the necessity-based entrepreneurship rate. It means that lower corruption is associated with higher NEC. As a result, corruption appears as a constraint to the necessity-based entrepreneurship rate in Latin America.

A set of future research lines is derived from this report. First of all, the absence of correlation between informality and necessity entrepreneurship by the use of different data to study informality in Latin America economy is analyzed more in depth. Secondly, the incidence of labor market regulations and their impact on entrepreneurship levels is explored more closely. Finally, the hypothesis of differences between opportunity-based and necessity-based entrepreneurs in connection with entrepreneurial skills, whether real or perceived, and their consequence in different threats/opportunities/strengths/weaknesses is verified.

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