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# Cultural-cognitive Dimension and Entrepreneurial Activity: A Cross-country Study\*

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## ABSTRACT

The purpose of this paper is to analyze the relationship between independence, risk taking, creativity, and entrepreneurial activity at the country level, in the light of institutional economics, concretely using the cultural-cognitive dimension. The main findings demonstrate through a regression model that risk taking and creativity have a positive and significant influence on entrepreneurship. Data were obtained from the World Values Survey, for the period 2005–2008, from a sample size of 42 countries. The study advances the literature by providing new information on the effect of environmental factors on entrepreneurial activity. Also, the research contributes to the definition of educational policies that promote favorable attitudes to risk taking and creativity, thereby increasing the number of potential entrepreneurs.

## KEYWORDS

*Entrepreneurship, Independence, Risk Taking, Creativity, Institutional Economics.*

## Dimensión cultural-cognitiva y actividad emprendedora: un estudio comparativo

## RESUMEN

El propósito de este trabajo es analizar el efecto de la independencia, toma de riesgos y creatividad sobre la actividad emprendedora, a nivel de país, utilizando la teoría económica institucional, específicamente a partir de la dimensión cognitivo-cultural. Los principales resultados indican que la toma de riesgos y la creatividad tienen una influencia positiva y significativa sobre el emprendimiento. Los datos se obtuvieron de la Encuesta Mundial de Valores, para el período 2005-2008, considerando una muestra de 42 países. Las implicaciones de este trabajo permiten el avance en la literatura sobre los efectos de los factores del entorno sobre la actividad emprendedora. Además, esta investigación contribuye a la definición de políticas educativas que fomenten actitudes favorables hacia la toma de riesgos y la creatividad, que a su vez incrementen el número de emprendedores potenciales en la sociedad.

## PALABRAS CLAVES

*Emprendimiento, independencia, toma de riesgos, creatividad, teoría económica institucional.*

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## Dimensão cultural-cognitiva e atividade empreendedora: um estudo comparativo

### RESUMO

O propósito deste trabalho é analisar o efeito da independência, o assumir riscos e a criatividade sobre a atividade empreendedora, no âmbito de país, utilizando a teoria econômica institucional, especificamente a partir da dimensão cognitivo-cultural. Os principais resultados indicam que o assumir riscos e a criatividade têm uma influência positiva e significativa sobre o empreendimento. Os dados foram obtidos do Questionário Mundial de Valores, para o período 2005-2008, considerando uma mostra de 42 países. As implicações deste trabalho permitem o avanço na literatura sobre os efeitos dos fatores do ambiente sobre a atividade empreendedora. Além disso, esta pesquisa contribui para a definição de políticas educativas que fomentem atitudes favoráveis para a capacidade de assumir riscos e para a criatividade, que por sua vez aumentem o número de empreendedores potenciais na sociedade.

### PALABRAS CHAVE

Empreendimento, independência, assumir riscos, criatividade, teoria econômica institucional.

Literature suggests that autonomy and independence, risk taking, and creativity are relevant to generating novel and useful products or creative ideas (Amabile 1988; Woodman, Sawyer and Griffin 1993); therefore, these characteristics have been associated with entrepreneurial behavior (Lee, Florida and Acs 2004).

While the previous concepts have been studied from a psychological view, we propose in this paper an institutional or environmental perspective, focusing on the dimensions of institutions and specifically the cultural-cognitive dimension, which reflects the cognitive structures and social knowledge shared by the people in a given country or region.

The majority of studies that have analyzed the concepts of independence, risk taking, and creativity are theoretical (Douglas and Shepherd 1999) or based on specific samples of countries, regions, (Ekelund et al. 2005) or groups such as university students (Brenner, Pringle and Greenhaus 1991; Ctaird 1991; Kolvereid 1996). Few articles have considered the impact of these environmental factors on entrepreneurial activity.

In this paper, the effect of independence, risk taking, and creativity on entrepreneurship is examined at a country level, in the light of institutional economics, concretely using the cultural-cognitive dimension. By using a sample of 42 countries obtained from the World Values Survey (WVS) for the period 2005-2008, it is sta-

tistically demonstrated through regression analysis that risk taking and creativity have a positive and significant impact on entrepreneurial activity.

The main results show advances in the application of institutional approaches, specifically regarding the importance of the institutional cultural-cognitive dimension in entrepreneurial activity; likewise, the findings contribute to the definition of educational policies that increase the number of potential entrepreneurs through the training of individuals with favorable attitudes to independence, risk taking, and creativity.

After this introduction, the study is structured as follows. First, we present the theoretical framework concerning the relationship between the cultural-cognitive dimension and entrepreneurship. Next, the methodology used is described. Following this, the results are discussed, and finally the conclusions, implications, and future research are presented.

## Conceptual Framework

According to North, "institutions are the rules of the game in a society, or more formally, institutions are the constraints that shape human interaction" (North 1990, 3). The main function of institutions in a society is to reduce uncertainty by establishing a stable structure for human interaction. North (1990 and 2005) attempts to explain how institutions and institutional frameworks affect economic and social development. Institutions can be either formal, such as political rules, economic rules, and contracts, or informal, such as codes of conduct, attitudes, values, norms of behavior, and conventions, or

rather the culture of a determined society. Therefore, we can state that human behavior is influenced by the institutional environment. Concretely, in the field of entrepreneurship, some scholars have analyzed the effects of institutions on entrepreneurial activity (Aidis, Estrin and Mickiewicz 2008; Alvarez and Urbano 2011a and 2011b; Alvarez, Urbano, Coduras and Ruiz 2011; Stephen, Urbano and van Hemmen 2009; Thornton, Riberio-Soriano and Urbano 2011; Welter 2011; Welter and Smallbone 2011; among others).

Scott (1995, 33) has also defined institutions as a collection of structures and activities that provide stability and meaning for social behavior. Moreover, Scott, based on the work of DiMaggio and Powell (1983), North (1990), and Powell and DiMaggio (1991), proposed three pillars or dimensions of institutions: regulative, normative, and cultural-cognitive.

The regulative dimension consists of laws, regulations, rules, and government policies in particular national environments, which promote certain types of behavior and restrict others. The regulative processes consist of rule-setting, monitoring, and sanctioning activities (Scott 1995). This is the most formal of the three dimensions (Bruton and Ahlstrom 2003).

The normative dimension consists of social norms, values, beliefs, and assumptions about human nature and human behavior that are socially shared and carried by individuals. Normative systems define goals or objectives (e.g. winning the game or making a profit), but also designate the appropriate ways to pursue them (e.g. conceptions of fair business practices). In addition, some mechanisms to guarantee the normative behavior consider more formal regulations such as certifications or accreditations (Scott 2001). Normative dimensions could be applied through informal mechanisms such as trust (Welter 2005); however, this dimension is less formal than the regulative one (Bruton and Ahlstrom 2003).

The cultural-cognitive dimension reflects the cognitive structures and social knowledge shared by the people in a given country or region. The cognitive elements of institutions are shared conceptions that constitute the nature of reality and the frames through which meaning is made (Scott 2001). This dimension is the most informal of the three dimensions (Bruton and Ahlstrom 2003). While the normative dimension refers to a collective sense, the cultural-cognitive elements refer to the individual perception (Welter 2005 and 2011).

Some authors have also considered these institutional dimensions in the context of entrepreneurship and small and medium enterprises SMEs (Busenitz, Gomez and Spencer 2000; Manolova, Eunni and Gyoshev 2008; Veciana and Urbano 2008; Welter 2005; among others).

In this paper, we focus on the cultural-cognitive dimension, which considers that internal interpretive processes are shaped by external or environmental cultural frameworks. Individuals' behavior depends on the interpretation of their context and the consensus within the group. The group of reference contributes to the definition of values, virtues, and beliefs of the individuals (Scott 1995).

Specifically, we consider independence, defined as a preference for decision-making control, to serve one's own objectives rather than follow another's orders, to choose one's own path to that objective and have confidence in one's own abilities, which allows independent decision-making rather than frequent recourse to advisors (Douglas and Sheperd 1999).

The motivation to establish a new venture is frequently personal, such as the desire to work for oneself (Gatewood, Shaver and Gartner 1995). In general, entrepreneurs have a higher need for achievement, autonomy, and independence (Caird 1991; Cromie and O'Donoghue 1992; Kirby 2004). Many individuals who have formed enterprises refuse to be employees of another company. In fact, the desire for independence may be both the cause and the result of entrepreneurial activity. Entrepreneurs value individualism and freedom and they have difficulty functioning in constraining environments that stifle creativity and can experience difficulty relating to others (Kirby 2004). In summary, the greater the preference for independence, the greater the incentive to be self-employed (Douglas and Sheperd 1999). Therefore, we hypothesize that:

**Hypothesis 1:** Independence has a positive effect on entrepreneurial activity.

Risk taking was included in early economic theorizing (Knight 1921), which explains the entrepreneur's benefit from risk and the uncertainty inherent in its operations. Thus, classic economic theory suggests that entrepreneurs, by the very nature of their activities and roles in economy and society, cannot be averse to risk (Douglas and Sheperd 1999; Ekelund et al. 2005; Kirby 2004). Any activity related to the identification and exploitation of ideas involves risk. In this line, Kihlstrom

and Laffont (1979) proved a general equilibrium model where it is assumed that individuals differ in their degrees of risk aversion and, given that the earnings of the self-employed have greater variance than the earnings of employees (Ekelund et al. 2005; Hamilton 2000), running a business is equivalent to the choice of a risky prospect. Other authors found that entrepreneurs perceived business situations as less risky than did non-entrepreneurs (Busenitz 1999; Palich and Bagby 1995). In effect, entrepreneurs are more likely to see the business world through “rose-colored glasses” and they tend to derive more positive/optimistic perceptions compared to others when presented with identical business scenarios (Palich and Bagby 1995). Thus, risk-taking individuals are entrepreneurs (Kihlstrom and Laffont 1979; Macko and Tyszka 2009). Therefore, we predict that:

Hypothesis 2: Risk taking is positively related to entrepreneurship.

The entrepreneurship literature suggests that entrepreneurs are more creative than others (Kirby 2004; Timmons 1989; Whiting 1988) and tend to think in non-conventional ways, challenge existing assumptions, and be flexible and adaptable in their problem solving (Kirby 2004; Solomon and Winslow 1988). In general, entrepreneurs must be more creative and willing to take risks (Hayton 2005).

Previous research suggests that creativity is important for generating novel and useful ideas (Amabile 1988 and 1996) and opportunities (Cardon et al. 2009; Ward 2004), which are key factors of the entrepreneurship process. Creativity is required for the idea generation, the development of a good business plan, and especially, the implementation and consolidation of the business. Previous research provides empirical evidence about the relation between creativity and entrepreneurship. Thus, creativity has a positive and significant relationship with regional innovation and creativity increases the regional capacity to generate entrepreneurial activity (Lee, Florida and Acs 2004). Thus, we formulate the following hypothesis:

Hypothesis 3: Favorable attitudes toward creativity have a positive effect on entrepreneurial activity.

## Methodology

As stated before, this article analyzes the effect of the cultural-cognitive dimension, measured as independence, risk taking, and creativity, on entrepreneurial activity.

The data were taken from the WVS, which is a compilation of surveys conducted in more than 80 countries representing about 85% of the world's population (see Inglehart 2000 and 2004). So far, 5 waves of the WVS have been published (1981, 1990–1991, 1995–1996, 1999–2001, and 2005–2008) and the release of the sixth wave is imminent; this last wave has surveyed more than 1000 randomly selected people. The WVS inquires into the individuals' basic values and attitudes across a broad range of issues, including politics and economics, family and religious values, gender issues, and environmental awareness.

Concerning the validity and reliability of this source, many authors have used the WVS for their research studies. For example, this database has been used to investigate cultural, economic, and political change (Inglehart 1997), trust in large organizations (La Porta et al. 1997), trust and well-being across nations (Inglehart 1999), postmaterialism (Inglehart and Abramson 1999), values and cultural change (Inglehart and Baker 2000), and social capital and innovation (Dakhli and De Clercq 2004).

This paper uses data from the 2005–2007 wave, which includes information based on 82992 respondents and 57 societies from 5 continents. The sample size in our analysis is smaller (42 countries) because we eliminated those countries that did not include data pertaining to our research in their survey.

All the variables used in the analysis are described in Table 1. The data from the WVS include, in addition to questions related to values and cultural change, questions about the socio-demographic characteristics of individuals, such as employment status. The WVS coded this variable into eight possible answers: full-time, part-time, self-employed, retired, housewife, student, unemployed, and others. Given that self-employment is seen as a proxy for entrepreneurship,<sup>1</sup> the dependent variable measures the percentage of self-employed people by country.

Three independent variables are considered in this study.

*Independence.* Using a scale of 10 points, the respondents of the WVS indicated their degree of independence in performing their tasks at work, where “1” means “no independence at all” and “10” means “complete independence.” We

<sup>1</sup> Self-employment is a labor-market-related parameter, but it is an adequate indicator of entrepreneurial activity (Vinogradov and Kolvereid 2007; Wennekers and Thurik 1999).

Table 1. Definition of variables

	Variable	Description	Source
<b>Dependent variable</b>	Entrepreneur	The respondents were asked to provide their employment status at the time of the survey. This variable measures the percentage of self-employed people by country.	WVS
<b>Independent variables: Cultural-cognitive dimension</b>	Independence	The respondents were asked “how much independence do you have in performing your tasks at work?” using a scale where 1 means “no independence at all” and 10 means “complete independence.” This variable measures the percentage of responses equivalent to 8, 9, or 10 per country.	WVS
	Risk taking	The respondents were asked whether “adventure and taking risks are important to this person, to have an exciting life” using a scale where 1 means “very important” and 6 means “not at all important.” This variable measures the percentage of responses equivalent to 1 or 2 per country.	WVS
	Creativity	The respondents were asked about the “importance to this person to think up new ideas and be creative; to do things in one’s own way” using a scale where 1 means “very important” and 6 means “not at all important.” This variable measures the percentage of responses equivalent to 1 or 2 per country.	WVS
<b>Control variables</b>	Education level	The respondents were asked to provide the highest education level they had attained. The responses were harmonized across all countries, by the WVS, into a three-category variable: Lower, Middle, and Upper. We included the percentage of people with a lower education level.	WVS
	GDP-PPP	Gross domestic product (GDP) at purchasing power parity (PPP), average 2004–2006.	IMF

Source: WVS – World Values Survey. <http://www.worldvaluessurvey.org/>. IMF – International Monetary Fund, World Economic Outlook Database, October 2009.

calculated the percentage of responses equivalent to “8”, “9”, or “10” by country; therefore, this variable reflects the percentage of people who perform independent tasks.

*Risk taking.* The WVS respondents were asked about the importance of adventure and taking risks to having an exciting life, using a 6-point scale, where “1” is very important and “6” is not at all important. Thus, the scale indicates that smaller values correspond to lower risk aversion, while higher values indicate greater risk aversion. We calculated the percentage of responses equivalent to “1” or “2” by country; therefore, this variable reflects the percentage of people who consider adventure and taking risks to be very important.

*Creativity.* The WVS includes questions related to favorable attitudes toward creativity and new ideas. Specifically, the respondents were questioned about the importance of coming up with new ideas and being creative, and doing things in one’s own way. The responses were coded on a 6-point scale, where “1” is very

important and “6” is not at all important. Later, we estimated the percentage of responses equivalent to “1” or “2” by country; therefore, this variable reflects the percentage of people who consider creativity and new ideas to be very important.

Although we were interested in developing an institutional model, other factors may also influence the behavior of entrepreneurs and employees; we thus included the following control variables to ensure that the results were not unjustifiably influenced by such factors: education level at the micro level and gross domestic product at purchasing power parity per capita (GDP-PPP) at the macro level.

*Education level.* Recent research has shown the importance of socio-demographic factors in explaining entrepreneurial behavior (Arenius and Minniti 2005; Langowitz and Minniti 2007), especially education level. Formal education frequently produces nonlinear effects in entrepreneurial activity (Davidsson and Honig 2003; Evans and Leighton 1989). Despite the fact that no clear evi-

dence has been found on the relationship between education and entrepreneurship (Blanchflower 2004), the likelihood of becoming an entrepreneur increases with a higher level of education (Arenius and Minniti 2005). We controlled for education level through a variable that estimates the percentage of people with lower (elementary education) education.

GDP-PPP. Moreover, given that the level of development of countries is a key factor in explaining entrepreneurial activity (Carree et al. 2007; Wennekers et al. 2005), we included the GDP at purchasing power parity (PPP) per capita as a measure of the development of countries. The data source used for the GDP-PPP variable is the International Monetary Fund World Economic Outlook database.

In order to test the hypotheses presented in the previous section, we constructed a model that includes the cultural-cognitive dimension and entrepreneurship, plus a number of control variables:

$$Y_i = \alpha + \beta_1 S_i + \beta_2 Z_i + \varepsilon_i (1)$$

$i = 1, 2, \dots, 42 \text{ countries}$   
 $H_0: \beta_{1,2} \neq 0$

where  $Y_i$  denotes the entrepreneurial activity of country  $i$ ,  $S_i$  is a vector of the cultural-cognitive dimension of

country  $i$ ,  $Z_i$  includes control variables of country  $\varepsilon_i$ , and  $Z_i$  is a random disturbance.

## Results and Discussion

Summary statistics for all the variables used in this analysis are reported in Table 2. Annex 1 shows the list of countries and the percentage of entrepreneurship. Descriptive statistics indicate that, on average, 10% of people are entrepreneurs, 44% realize tasks with much independence, 23% look toward taking risk, 50%<sup>2</sup> show a favorable attitude towards creativity, 36% of people have a lower education level, and GDP-PPP is 16,201 current international dollars.

The countries that show more favorable attitudes toward independence, risk taking, and creativity are Andorra, Argentina, Australia, and Brazil. Likewise, those that show less favorable attitudes are Zambia and Vietnam.

Following the descriptive statistics, the correlation matrix of the variables is also presented in Table 2. Almost all the variables considered are correlated with entrepreneurship. Independence is negatively correlated with entrepreneurship, although this correlation is not

**Table 2.** Descriptive statistics and correlation matrix

	Media	Std Dev.	Min.	Max.
Entrepreneurship	0.100	0.064	0.007	0.256
Independence	0.442	0.145	0.153	0.707
Risk taking	0.228	0.091	0.084	0.447
Creativity	0.503	0.124	0.273	0.741
Education level (lower)	0.359	0.205	0.045	0.803
GDP-PPP	16201.51	13351.43	648.45	47467.7

  

	Entrepreneurship	Ln (Independence)	Ln (Risk taking)	Ln (Creativity)	Education level (lower)	Ln (GDP-PPP)
Entrepreneurship	1.000					
Ln (Independence)	-0.057	1.000				
Ln (Risk taking)	0.455**	-0.215	1.000			
Ln (Creativity)	0.482**	0.400**	0.546***	1.000		
Education level (lower)	0.565***	0.061	0.167	0.399**	1.000	
Ln (GDP-PPP)	-0.596***	0.335*	-0.461**	-0.272	-0.437**	1.000

Note: \*\*\*p < .001, \*\*p < .01, \*p < .05

Source: table made by the authors.

<sup>2</sup> The mean values and standard deviations refer to variables without the logarithmic transformation.

significant. On the other hand, favorable attitudes toward risk taking and creativity have a positive correlation with entrepreneurship. Likewise, a lower level of education increases entrepreneurial activity and GDP-PPP is negatively and significantly correlated with entrepreneurship, which is associated with high rates of entrepreneurship in less developed countries (Wennekers et al. 2005).

The correlation matrix also shows other interesting and significant correlations between some independent variables.<sup>3</sup> For example, creativity has a positive and significant correlation with risk taking and a lower education level. Also, GDP-PPP has a negative and significant relationship with risk taking and a lower education level, while it has a positive correlation with independence.

Given the correlations among the several independent and control variables, we tested for the problem of multicollinearity, one that might affect the significance of the main parameters in the regressions through variance inflation-factor (VIF) computations. The VIF values were low (lower than 4.31). Also, according to the Breusch-Pagan test (p-value = 0.5450), there are discarded problems of heteroskedasticity, and the Ramsey regression specification-error test for omitted variables indicates no specification problems (p-value = 0.1781). The regression results are presented in Table 3 and show five models that test which factors of the cultural-cognitive dimension determine the entrepreneurial activity.

Initially, in model 1, we enter the control variables that measure the education level (lower) and development level (GDP-PPP). This model explains 47% of the entrepreneurship variation across countries. The ordinary least squares (OLS) estimated coefficients shown in Table 3 are consistent with the existing literature which indicates a negative and significant correlation between entrepreneurial activity and development level. This result could be explained by necessity entrepreneurship (people who start their own business because other employment options are either absent or unsatisfactory), which usually occurs in less developed countries (Reynolds et al. 2001). Possibly, due to necessity entrepreneurship, a lower educational level has a significant positive relationship with entrepreneurial activity. In this case, the adjusted R-squared increases to 49%, and the Akaike criterion (AIC) and

the Schwarz criterion (BIC) confirm that the explanatory potential of the creativity variable increases the fitness of the model significantly.

Model 2 shows that with the inclusion of all the cultural-cognitive dimension variables, the R-squared remains almost constant. However, the Akaike criterion (AIC) and the Schwarz criterion (BIC) increase slightly, indicating that it is not a good model. In this model, none of the variables are significant, which could be explained by the correlation between creativity and risk taking (0.546 with a p-value < 0.001).

In model 3, we include only the independence variable. The results show that independence has the expected sign; however, there is no significant influence on entrepreneurship. Thus, it does not confirm hypothesis 1. Moreover, in model 1, the R-squared decreases and the AIC and BIC criteria increase, indicating that it is a good model for entrepreneurial activity.

Model 4 shows that the variable risk taking has a positive and significant influence on entrepreneurship, confirming hypothesis 2 and, according to theory, suggesting that entrepreneurs cannot be averse to risk (Douglas and Sheperd 1999; Ekelund et al. 2005; Kirby 2004). On comparing model 1 and model 4, the adjusted R-squared increases; thus, model 4 is better for explaining entrepreneurial activity.

Finally, in model 5, we include only the creativity variable. On comparing model 5 with the previous models, the adjusted R-squared shows an increase and the AIC and BIC measures reduce, suggesting that model 5 is better than the previous ones for explaining entrepreneurship. Creativity has a positive and significant impact on the entrepreneurial activity, thus confirming hypothesis 1. This result is in line with other empirical findings such as those of Lee, Florida and Acs (2004), who confirm that entrepreneurship is strongly associated with creativity and that entrepreneurs are more creative than others (Kirby 2004; Timmons 1989; Whiting 1988).

Although not shown in the results, in an additional model we included the creativity and risk-taking variables, but these variables are not significant. This result can be attributed, as mentioned earlier, to the high correlation between creativity and risk taking.

3 We modified the independent variables (except education) by logarithmic transformation.

Table 3. Explaining entrepreneurial activity

	Model 1		Model 2		Model 3		Model 4		Model 5	
	Coef.	Std Err.	Coef.	Std Err.	Coef.	Std Err.	Coef.	Std Err.	Coef.	Std Err.
<b>Cultural-cognitive dimension</b>										
Ln (Independence)			-0.002	0.028	0.011	0.022				
Ln (Risk taking)			0.022	0.027			0.039*	0.020		
Ln (Creativity)			0.047	0.047					0.063**	0.031
<b>Control Variables</b>										
Lower education	0.120***	0.040	0.101**	0.043	0.114***	0.042	0.122***	0.039	0.091**	0.041
Ln (GDP-PPP)	-0.024***	0.007	-0.019**	0.008	-0.026***	0.008	-0.017**	0.008	-0.022***	0.007
Constant	0.276***	0.074	0.302***	0.090	0.303***	0.092	0.277***	0.071	0.318***	0.074
Number of obs.	42		42		42		42		42	
F(2, 39)	17.59		8.39		11.58		13.73		14.05	
Prob > F	0.0000		0.0000		0.0000		0.0000		0.0000	
Adj R-squared	0.4743		0.4739		0.4364		0.4822		0.4885	
Root MSE	0.0480		0.04687		0.04851		.0465		0.0462	
AIC	-132.9279		-132.3599		-131.198		-134.7542		-135.2699	
BIC	-127.7149		-121.9339		-124.2473		-127.8036		-128.3192	

Note: \*\*\* significant at  $p \leq 0.01$ ; \*\* significant at  $p \leq 0.05$ ; \* significant at  $p \leq 0.1$ .

Source: table made by the authors.

## Conclusions

Although extant research has shown the importance of the institutional context or environmental factors for promoting entrepreneurship, there is little evidence of how the cultural-cognitive dimension influences entrepreneurial activity. In this paper, based on the definition of Scott (1995 and 2001), we measured the cultural-cognitive dimension as independence, risk taking, and creativity.

Thus, the purpose of this research was to analyze the influence of the cultural-cognitive dimension on entrepreneurial activity, when controlling for the education level and level of development. From data of the World Values Survey, we used a new measure of entrepreneurship and also of independence, risk taking, and creativity at the country level.

With the use of regression models, this study shows that favorable attitudes toward risk taking and creativity are linked to entrepreneurship at the country level. Risk taking and creativity are important for the birth of new ideas, processes, products, and services, thereby increasing entrepreneurial activity.

This research contributes to a greater understanding of the influence of the cultural-cognitive dimension on entrepreneurship. Also, this study helps advances in the application of the institutional economics theory (North 1990 and 2005) in the analysis of conditioning factors for entrepreneurial activity, specifically using the cultural-cognitive dimension (Scott 1995, 2001). In the current context of economic crisis, characterized by high unemployment rates, it is especially important to conduct research on the determinants of entrepreneurial activity. The results of this paper contribute to the definition of educational policies that increase the number of potential entrepreneurs through the training of individuals with favorable attitudes to risk taking and creativity.

One important direction for future research is to use a bigger sample from the WVS by augmenting the period of time being analyzed. However, this sample would also be conditioned by the availability of the variables used in this study: independence, risk taking, and creativity. ♡

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**Annex 1.** List of countries and percentage of entrepreneurship

	Country	Entrepreneurship (%)			Country	Entrepreneurship (%)
1.	Andorra	11.37		23.	Morocco	25.60
2.	Argentina	12.48		24.	Netherlands	3.01
3.	Australia	10.32		25.	Norway	7.24
4.	Brazil	18.78		26.	Poland	3.60
5.	Bulgaria	1.20		27.	Romania	2.27
6.	Burkina Faso	23.31		28.	Russia	0.74
7.	Canada	6.22		29.	Serbia	5.21
8.	Cyprus	11.09		30.	Slovenia	2.71
9.	Chile	9.00		31.	South Africa	4.99
10.	China	3.68		32.	South Korea	5.42
11.	Ethiopia	19.67		33.	Spain	7.77
12.	Finland	4.04		34.	Sweden	4.79
13.	France	5.79		35.	Switzerland	7.02
14.	Georgia	13.80		36.	Trinidad and Tobago	11.08
15.	Germany	4.12		37.	Turkey	13.45
16.	India	15.17		38.	Ukraine	3.74
17.	Indonesia	16.83		39.	United Kingdom	7.11
18.	Iran	16.03		40.	United States	9.05
19.	Malaysia	12.07		41.	Uruguay	12.50
20.	Mali	22.12		42.	Vietnam	19.07
21.	Mexico	17.65		43.	Zambia	9.67
22.	Moldova	8.32				

Source: WVS – World Values Survey. <http://www.worldvaluessurvey.org/>