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Female and male entrepreneurship during the economic crisis: an institutional tale of European countries

Emprendimiento femenino y masculino durante la crisis económica: una historia institucional de los países europeos

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Abstract

This study evaluates the influence of institutions on the probability to become a woman and man entrepreneur during the recent European economic crisis. We approach institutional factors affecting entrepreneurial decisions through a post-materialist value, educational level and unemployment rate. Using data from the World Values Survey (WVS) and World Development Indicators (WDI) in the period 2011-2013, we show through Logit models that institutions (educational level and unemployment rate) exert an effect on the probability of women and men becoming entrepreneurs. Similar regressions were performed for those individuals in Central versus Eastern European countries. This distinction might suggest that the latter might not be pushed by unemployment, while the former do. Different supportive policies are discussed.

Keywords: Entrepreneurship; Gender Analysis; Institutional Economics; Economic Crisis.

Resumen

Este estudio evalúa la influencia de las instituciones en la probabilidad que tienen mujeres y hombres de ser emprendedores durante la reciente crisis económica europea. Nos aproximamos a aquellas instituciones que afectan las decisiones emprendedoras a través del valor post-materialista, el nivel educativo y la tasa de desempleo. Usando datos del World Values Survey (WVS) y World Development Indicators (WDI) en el período 2011-2013, mostramos a través de modelos Logit que las instituciones (nivel educativo y la tasa de desempleo) ejercen un efecto en la probabilidad de que mujeres y hombres se conviertan en emprendedores. Regresiones similares se realizaron para aquellos individuos en países de Europa Central y Oriental. Esta distinción podría sugerir que estos últimos pueden que no sean empujados por el desempleo, mientras que los primero sí. Diferentes políticas de apoyo son discutidas.

Palabras clave: Emprendimiento; Análisis de Género; Economía Institucional; Crisis Económica.

JEL classification: L26, J16, O43, G01.

1. Introduction

The latest economic recession in Europe has opened the debate on what types of public policies should be implemented (Whelan et al., 2017). It is suggested that the transition towards a better development stage requires the design and application of policies in which all society should be actively involved (Delgado, 2013), meaning for instance entrepreneurial and productive activities (Acs and Szerb, 2007). Acs et al. (2013) discuss that entrepreneurs, by definition, enhance the social outcome by providing goods and services useful for and involving society. According to Bruton et al. (2013) and Nega and Schneider (2014), entrepreneurship may be a key to alleviating poverty issues, overcome economic crisis and achieving development. In that sense, entrepreneurs are increasingly playing a role in generating initiatives to address economic and social challenges in local communities, regions and countries (Manetti, 2014; Urbano et al., 2018a).

It is argued that entrepreneurs tend to generate welfare for the entire society, as well as productivity and economic growth (Aparicio et al., 2018; Manetti, 2014). On the one hand, entrepreneurial activity is considered as a driver of economic value, and on the other, the social value generation of entrepreneurship could represent the social capacity to create welfare for each individual in society as well as for all (Acs et al., 2013). This might imply not only entrepreneurs, workers and their families increase their income level, but also it generates a social mobility and income distribution (Acs et al., 2013; Manetti, 2014). Here, economic value can be seen under the frame of social value, which depends on the context in which it is produced and irrigated to all society. There is an increasing amount of literature supporting the idea that entrepreneurship does serve to achieve economic development (Aparicio et al., 2016; Audretsch and Keilbach, 2008; Bjørnskov and Foss, 2016; Liñán and Fernandez-Serrano, 2014; among others). However, as Bishop and Shilcof (2017) and González-Pernía et al. (2018) state, there still exists a scarcity of literature analysing empirically how entrepreneurship emerges in economic crises.

Aparicio et al. (2016), Bosma et al. (2018) and Liñán et al. (2013) suggest that the social value creation of entrepreneurship would depend on different institutional settings. Despite the efforts to understand this phenomenon, there is no solid evidence about one of the most interesting aspects of entrepreneurship, which refers to how institutional factors affect (promote or inhibit) the emergence of entrepreneurial activities during economic

resilience (Williams and Vorley, 2014). Extant literature on institutions and entrepreneurship is placing special emphasis on those values that characterise a society. For instance, Uhlaner and Thurik (2007) and Urbano et al. (2016) point out post-materialism as a factor that explains the quality and quantity of entrepreneurial activity across countries. Accordingly, these sorts of values are the result of long-term socialization processes that take place in different scenarios such as family, work, universities, etc. Precisely, scholars have suggested that those individuals with certain educational level have been exposed to formal education that in some cases has entrepreneurship components (Guerrero et al., 2016; Westhead and Solesvik, 2016). While the identification of the main institutional factors that affect new ventures, applying the institutional economics perspective (North, 1990), represents a topic of growing interest in the entrepreneurship field, until now little attention has been devoted to these relationships in the entrepreneurship area (Bruton et al., 2010) when external shocks such as an economic crisis take place.

Therefore, we attempt to fill the previous lacuna by empirically evaluating the influence of institutions on the probability to become a woman and man entrepreneur during the recent European economic crisis. For comparison purposes, we analyse the relationship between total self-employment, which is our proxy of entrepreneurial activity, in Central versus Eastern European countries. We support our hypotheses on the conceptual framework of institutional economics, which explains those factors (post-materialism, educational level and unemployment rate) that promote this type of entrepreneurship in individuals (women and men). Using a unique dataset of World Values Survey with information over the sensitive period 2011–2013, we find that the educational level and unemployment rate push the decision of individuals to become entrepreneurs, for both gender groups, though the impact is higher in male entrepreneurship than female. However, different results were found when comparing Central and Eastern European countries, since the latter are not pushed by unemployment; quite contrary, it discourages entrepreneurship.

In the next part (Section 2), extant literature on institutional factors and entrepreneurship is examined. In section 3, we present the data and methodology used, that is Logit models, which generates regressions to empirically examine the influence of institutions on entrepreneurship. Section 4 describes the results, whereas section 5 discusses policy implications and concludes.

2. Theoretical Framework: Institutions And Entrepreneurship

As we noted previously, this article focuses on institutional economics (North, 1990, 2005). Following North (1990: 3), institutions are defined as "rules of the game in a society, or more formally, [...] the constraints that shape human interaction". North (1990) distinguishes between formal institutions, such as regulations, contracts, procedures, etc., and informal ones, such as the culture, values or social norms of a particular society. As North (1990)

suggests, formal institutions intend to reduce the transaction costs based on regulations, whereas informal institutions reduce the uncertainty caused by the individual decision-making (North, 2005). One additional conclusion of this framework is related to the interactions between formal and informal institutions, whereby some regulations could be efficient depending on the cultural values and intentionality of a society. Thus, informal institutions constrain the nature of formal institutions, and vice versa. Also, formal institutions can change in a short period of time; whilst informal institutions change more slowly than formal institutions (Williamson, 2000). North (1990) explains how institutions serve to understand the development differences across countries. Accordingly, developed countries tend to be characterised by open societies where markets are properly regulated by strong norms and socialization processes. Instead, developing countries tend to have limited societies. Here, weak institutions create voids that are weakly replaced by informal institutions.

According to Bruton et al. (2010) and Urbano et al. (2018a), the application of institutional economics to entrepreneurship research is growing considerably because of its capacity to explain the context surrounding entrepreneurial decisions, which differs across countries. In that sense, it is suggested that the desire towards entrepreneurial decisions could depend on the context in which individuals are involved and it can lead to different patterns of growth (Bruton et al., 2010: 426). Thus, according to Thornton et al. (2011), the economic and social value generated through entrepreneurial decisions might be influenced by institutional factors in terms of individual (cognitive and knowledge characteristics) and common values (normative and regulative settings). Both individual and common values are reinforced recursively encouraging or discouraging economic activity (North, 2005). This idea has expanded into the field of entrepreneurship research, in the sense that both formal and informal institutions could either constrain or foster the decision to create a new business based on opportunity perceptions (Veciana and Urbano, 2008). Thus, some scholars propose the application of institutional economics to the analysis of entrepreneurship (Aidis et al., 2008; Salimath and Cullen, 2010; Thornton et al., 2011; Welter, 2005, 2011, among others), and gender differences in entrepreneurial activity (BarNir, 2012; Marlow and Patton, 2005; Noguera et al., 2015).

Cultural and individual values tend to influence entrepreneurial women and men decisions across regions and countries (Hechavarría et al., 2017; Jaēn et al., 2013; Urbano et al., 2018b). For example, Liñán and Fernández-Serrano (2014) have shown evidence about different groups of European countries. These authors suggest that those countries with higher income level (i.e Central Europe) tend to present more autonomy and harmony, stimulating entrepreneurial activity and economic growth, compared to less developed countries. Dileo and Garcīa Pereiro (2018) show that the level of economic development explains entrepreneurship across its stages (nascent, young and established) and gender. This particular comparison between female and male is also documented in the extant literature. Smallbone and Welter (2001) and Welter and

Smallbone (2008) have suggested that entrepreneurship may be an alternative for women to increase the autonomy and empowerment, especially in those years of crisis and difficulties (Al-Dajani et al., 2015). Likewise, a growing number of scholars in entrepreneurship research is recognising the importance of the family context (Aldrich and Cliff, 2003; Bruni et al., 2004; Brush et al., 2009). Al-Dajani and Marlow (2010) have found that there is an interplay between women entrepreneurs and family as both learn from each other. Family becomes a primary space where socialization processes emerge to encourage or discourage entrepreneurial activity. Indeed, various studies have suggested that the quality of family life constitutes an important characteristic for female entrepreneurship (Aldrich and Cliff, 2003; Brush et al., 2009). These values that go beyond materialism may be positively correlated to activities that bring solutions such as entrepreneurship (Urbano et al., 2016). However, the relationship between post-materialism and entrepreneurial activity is not always positive. For instance, Uhlaner and Thurik (2007) have found that materialistic values may be necessary while making commercial transactions, since they gives an objective perspective on what is happening in the market. Morales and Holtschlag (2013) also present evidence that post-materialism decreases a person's likelihood of becoming an entrepreneur. These authors suggest that the effect is highly negative in countries where entrepreneurship rate is higher. From this perspective, post-materialism is expected to have a larger impact on female entrepreneurs than on their male counterparts. Thus, we propose the following hypotheses:

Hypothesis 1a: Post-materialism has a positive effect on the probability of becoming an entrepreneur during the crisis period.

Hypothesis 1b: Post-materialism has positive and higher effect on the probability of females becoming entrepreneurs than their male counterparts during the crisis period.

In addition to the socialization process that takes place in the family context, other authors suggest that education also predicts entrepreneurial activity, as well as the differences between women and men (Arenius and Minniti, 2005; Urbano et al., 2018b). These differences are also generated by the country's development level (Dileo and García Pereiro, 2018). Guerrero et al. (2016) find that higher developed countries have more universities behaving in an entrepreneurial way, whilst less developed countries might be applying traditional teaching methods yet. This may imply that universities in developed countries create an appropriate environment for students that might become in the next generation of entrepreneurs. In this regard, Davidsson and Honig (2003) find evidence that the level of human capital increases the probability of becoming entrepreneurs. Though some scholars use education as a control variable, others instead, insist in including knowledge, training, and skills as intangible resources to carry out an entrepreneurial process. This is the case of, for instance, Estrin and Mickiewicz (2012) who demonstrate that education is an important element that explains entrepreneurial decisions. In a similar line of thought, Estrin et al. (2013) show that education and experience are not

only important to create a new venture, but also to increase growth aspirations. For a European sample, Bosma et al. (2018) find that entrepreneurial skills are suitable instruments to overcome the endogeneity between entrepreneurship and entrepreneurial growth aspirations, which are linked to economic growth. Aparicio et al. (2016) reach similar conclusions for an international sample. These authors suggest, therefore, that education creates vehicles leading to entrepreneurial activity (at the individual level) and economic development (at the regional or national level). Harper (2003) finds evidence on the capacity that individual skills, among other factors, have to conditioning entrepreneurial decisions. This author emphasises the importance of early education to enhance entrepreneurial mindset and attitudes towards entrepreneurship. One may think that education in entrepreneurship creates capabilities among young population for opportunity recognition and resolutive behaviour. In this sense, authors such as Aragon-Mendoza et al. (2016) show important results on how elementary and secondary schools influence entrepreneurial decisions by women and men. Albeit there is evidence on the distinction between female and male entrepreneurship affected by human capital (cf. Centindamer et al. 2012; Noguera et al., 2015; Westhead and Solesvik, 2016), there is a body of research working on entrepreneurial universities, in which different programmes and strategies have been relevant for entrepreneurship regardless the gender of the student. For example, Guerrero et al. (2016) provide evidence on how educational environments improve the opportunity identification. These authors suggest that the realization of socialization activities such as work teams, fairs, seminars, etc., help to gain managerial skills, partnerships and social networks. Likewise, it is shown that there is a correlation between entrepreneurial skills and training learned by students during the school life and entrepreneurial decisions (Moog et al., 2015). Regardless of gender, Kolstad and Wiig (2015) show that entrepreneurial skills affect intentions and success alike. This could mean that those individuals gaining higher levels of education have more tools to become entrepreneurs and bring benefits to them and society (Guerrero et al., 2016). Thereby, we propose the following hypotheses:

Hypothesis 2a: The higher the educational level the higher the probability of becoming an entrepreneur during the crisis period.

Hypothesis 2b: The educational level positively affects the probability of becoming a male and female entrepreneur alike during the crisis period.

The labour market acts under certain rules mainly stemmed from the interaction between demand and supply. Under this perspective, unemployment and labour force can be considered institutions that affect entrepreneurship, as they are the net result of an additional environment where governments, firms, entrepreneurs and households interact with each other. Despite Malach Pines et al. (2010) and Noguera et al. (2013) suggest that female entrepreneurs are more affected by the economic crisis than their male counterparts, scarce evidence exists regarding a differentiated impact of unemployment on entrepreneurial activity by women and men. Yet,

Giotopoulos et al. (2017) show that for both women and men, entrepreneurship suffers changes during the economic crisis. Williams and Vorley (2014) explore how external economic shocks affect the labour market by increasing the unemployment level. According to these authors, negative dynamics derived from unemployment alter labour decisions that push households to find alternative solutions. For instance, Arin et al. (2015) underline the positive association between unemployment and entrepreneurship, who explain that necessity motives and uncertainty emerge as paid labour is reduced. González-Pernía et al. (2018) show evidence of the relationship between the economic crisis and entrepreneurial action in Spain. According to these results, even though changes in the unemployment rate affect negatively entrepreneurial activity (i.e. the flow), the level of unemployment and entrepreneurial activity are procyclical. Santos et al. (2017) find evidence in Europe that explains this paradox on the negative and positive effect of unemployment on new ventures creation. Similar to Vegetti and Adăscăliţei (2017), these authors show that before crisis lower-income European countries had a higher entrepreneurship rate than Nordic regions. Right after the negative shock, the latter increased their entrepreneurial activity, whilst the former suffered a stagnation not only in productivity but also in entrepreneurship. One of the reasons why unemployment affects negatively the formation of new businesses in lower-income countries is because scarce financial availability is reduced (Vegetti and Adăscăliţei, 2017). Another reason for this phenomenon is due to the low capacity of individuals to perceive opportunities (González-Pernía et al., 2018). However, this opportunity perception issue forces individuals to solve their necessities by performing activities such as entrepreneurship (Arin et al., 2015). Hence, the following hypotheses are proposed:

Hypothesis 3a: Regardless of gender, an economic recession period (i.e. where a higher unemployment rate persists) is positively associated with entrepreneurship.

Hypothesis 3b: Eastern European countries have a countercyclical association between the economic crisis (i.e. a higher unemployment rate) and entrepreneurship; whilst this association is procyclical for Central European countries.

3. Methods

The assessment of the previous hypotheses is based on discrete choice models of binary response (i.e. Logit). Thus, the probability of changing from the initial status to the final is affected by institutional factors, as well as by individual and country control variables. Thus, a woman or man who is considered a non-entrepreneur has an utility originated by becoming an entrepreneur. This decision exceeds any utility gained from being a non-entrepreneur. Thereby, the probability of changing from one decision to another may be written as

$$\begin{aligned}\Pr(Y_i = 1) &= \Pr(SE_i = 1 | IF_i, X_i = 0) \\ &= \Pr\left(U_i^{SE} > U_i^{Other} \middle| U_i^{SE} \leq U_i^{Other}\right) \\ &= F(\delta' IF_i + \beta' X_i + \varepsilon_i)\ (1)\end{aligned} \tag{1}$$

where $Y_i = 1$ if she/he (i.e. individual *i*) becomes self-employed (*SE*), and $Y_i = 0$ if the individual continues as a non-entrepreneur. In this case, δ and β are the coefficients related to institutional factors (IF_i), and control variables (X_i), respectively; ε_i is the error term that includes time-invariant unobserved heterogeneity, and $F(\cdot)$ is specified as the logistic distribution function.

In order to assess the previous modelling approach, we have used information from the World Values Survey (WVS). This dataset has gained a lot of attention from scholars in entrepreneurship (cf. Hechavarría et al., 2017; Urbano et al., 2018b). So far, there exist six waves of the WVS, which capture different cultural aspects between the periods of 1981–1984, 1989–1993, 1994–1999, 1999–2004, 2005–2009, and 2010–2014. This information is devoted to examine individuals' basic values and attitudes across a broad range of issues, including the economic environment, different values at the family level, gender differences, and environmental awareness (Inglehart, 1997; Inglehart 2000a; Inglehart and Abramson, 1999; Inglehart and Baker, 2000). Particularly for our paper, we rely on the latest published wave (Inglehart et al., 2014), which uses information for the period 2011–2013. Our sample comprehends a total of 13,527 individuals from 12 European countries (seven from Central Europe; and five from Eastern Europe). This wave of the WVS collected data from 97 countries, representing about 90% of the world's population (Inglehart, 2000b, 2004). To complement this information at country level, we have included the unemployment rate (as a proxy of economic crisis), as well as gross domestic product (GDP) at constant terms and GDP per capita based on purchasing power parity (PPP) as control variables. These variables are taken from the World Development Indicators (WDI) of The World Bank. A summary of those dependent and independent variables, as well as the control ones used in this paper is presented in Table 1. Annex 1 contains the final sample by countries.

Table 1. Variables description

Variables	Description	Source[a]
Self-employment	Binary variable that is equal to 1 if respondent is self-employed; 0 otherwise	WVS
Female Self-employment	Binary variable that is equal to 1 if female respondent is self-employed; 0 otherwise	WVS
Male Self-employment	Binary variable that is equal to 1 if male respondent is self-employed; 0 otherwise	WVS
Post-materialist	Binary variable that is equal to 1 if respondent is characterised by post-materialism; 0 otherwise	WVS
Educational level	It is the highest educational level attained from 1 (No formal education) to 9 (University)	WVS
Unemployment	It is the rate of unemployment level as a percentage of total labour force	WDI

Age	The age of the respondent	WVS
Gender	Binary variable that is equal to 1 if respondent is male; 0 otherwise	WVS
Family savings	Binary variable that is equal to 1 if respondent manifests that the family has savings from the previous year; 0 otherwise	WVS
GDP	GDP at purchaser's prices is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. Data are in constant 2010 U.S. dollars.	WDI
GDP PPP pc	GDP PPP per capita is gross domestic product converted to international dollars using purchasing power parity rates divided by the total population. Data are in constant 2011 international dollars.	WDI

[a] WVS: http://www.worldvaluessurvey.org/wvs.jsp; WDI: https://data.worldbank.org/products/wdi

4. RESULTS

Table 2 presents the mean, standard deviation and correlation matrix for the variables of the econometric model presented previously. The table shows that in our sample the average of entrepreneurial activity is 4.5% across the European countries. As expected, the level of male entrepreneurial activity is higher than that of female entrepreneurial activity (3% and 1.4%, respectively). In terms of unemployment rate, on average European countries have 9.03%.

In order to test for the problem of multicollinearity, we calculated the VIF for each individual predictor and found that they were low (lower than 1.23). Additionally, to address the possibility of heteroskedasticity and autocorrelation among observations pertaining to the same country, robust standard errors were estimated. The Logit regression analysis is presented in Table 3, where we report the estimated coefficients (b columns), the marginal effects (dy/dx columns) and corrected standard errors in parentheses for all models. All the models are highly significant ($p \leq 0.000$). Model 1 presents the regression results for institutional factors and entrepreneurship using a linear probability estimation. Similar to Model 1, Model 2 contains Logit estimations of institutions and entrepreneurship, which is more accurate than Model 1 given the nature of the dependent variable. Model 3 shows the results for male entrepreneurship, whilst Model 4 presents the results for female entrepreneurship. Models 5 and 6, for the comparison purposes, show the results of institutions and entrepreneurship using a sample of individuals from Central and Eastern European countries, respectively. Finally, following Arenius and Minniti (2005), and Arin et al (2015), we include control variables related to socio-demographic factors in all models estimated (gender, age and family savings, at the individual level; and GDP and GDP per capita in PPP, at the country level) in order to analyse the probability of an individual becoming an entrepreneur. It is important to mention that gender variable was dropped in Models 3 and 4 avoiding collinearity problems in these models.

Table 2. Descriptive statistics and correlation matrix

	Variables	Observations	Mean	Std. Dev.	1	2	3	4
1	Self-employment	13527	0.045	0.206	1			
2	Female Self-employment	13527	0.014	0.119	0.552*	1		
3	Male Self-employment	13527	0.030	0.171	0.821*	-0.021*	1	
4	Post-materialist	13527	0.126	0.331	0.004	0.007	-0.001	1
5	Educational level	13527	5.989	2.193	0.036*	0.034*	0.019*	0.123*
6	Unemployment	12934	9.033	4.185	0.054*	0.034*	0.040*	-0.094*
7	Age	13527	46.898	17.806	-0.042*	-0.023*	-0.035*	-0.027*
8	Gender	13527	0.449	0.497	0.099*	-0.111*	0.195*	0.035*
9	Family savings	13527	0.323	0.468	0.003	0.008	-0.002	0.113*
10	GDP	13527	735000000000	994000000000	-0.012	0.000	-0.014	0.142*
11	GDP PPP pc	13527	23442.980	9777.984	-0.042*	0.001	-0.051*	0.172*
	Variables	5	6	7	8	9	10	11
5	Educational level	1						
6	Unemployment	-0.088*	1					
7	Age	-0.244*	-0.067	1				
8	Gender	0.0025	0.0043	0.002	1			
9	Family savings	0.148*	-0.144	0.040*	0.067*	1		
10	GDP	-0.187*	-0.191	0.055*	0.054*	0.240*	1	
11	GDP PPP pc	-0.071*	-0.234	0.162*	0.072*	0.357*	0.549*	1

* $p < 0.1$.

Table 3. Estimation results for female and male entrepreneurship across European countries during the economic crisis

	(1)	(2)		(3)		(4)		(5)		(6)	
	Self-employment	Self-employment		Male Self-employment		Female Self-employment		Self-employment Central Europe		Self-employment East Europe	
	b	b	dy/dx	b	dy/dx	b	dy/dx	b	dy/dx	b	dy/dx
Post-materialist	0.003	0.057	0.002	0.005	0.000	0.154	0.004	0.150	0.005	-0.172	-0.006
	(0.006)	(0.127)	(0.000)	(0.158)	(0.000)	(0.211)	(0.000)	(0.154)	(0.000)	(0.229)	(0.000)
Educational level	0.003***	0.077***	0.003***	0.045*	0.003*	0.142***	0.003***	0.109***	0.004***	0.055	0.002
	(0.001)	(0.021)	(0.001)	(0.027)	(0.002)	(0.038)	(0.001)	(0.027)	(0.001)	(0.033)	(0.001)
Unemployment	0.002***	0.052***	0.002***	0.041***	0.002***	0.075***	0.002***	0.036***	0.001***	-0.424**	-0.015**
	(0.001)	(0.009)	(0.000)	(0.011)	(0.001)	(0.014)	(0.000)	(0.012)	(0.000)	(0.204)	(0.007)
Age	-0.000***	-0.007***	-0.000***	-0.006***	-0.000***	-0.007*	-0.000*	-0.007***	-0.000***	-0.002	-0.000
	(0.000)	(0.002)	(0.000)	(0.002)	(0.000)	(0.004)	(0.000)	(0.002)	(0.000)	(0.004)	(0.000)
Gender	0.042***	1.008***	0.040					0.674***	0.024	1.429***	0.060
	(0.004)	(0.093)	(0.000)					(0.114)	(0.000)	(0.157)	(0.000)
Family savings	0.005	0.121	0.005	0.127	0.007	0.152	0.004	0.079	0.003	0.310*	0.012
	(0.004)	(0.101)	(0.000)	(0.126)	(0.000)	(0.171)	(0.000)	(0.123)	(0.000)	(0.174)	(0.000)
GDP	0.000**	0.000**	0.000**	0.000**	0.000**	0.000	0.000	0.000**	0.000**	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)

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GDP pc PPP	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***	0.000	0.000	-0.000***	-0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Constant	0.019*										
	(0.011)										
Observations	12934	12934		5924		7010		8645		4289	
Probability		0.038		0.062		0.024		0.035		0.037	
(Psuedo) R^2	0.017	0.046		0.029		0.026		0.037		0.099	
Log		-2296.361		-1437.066		-840.112		-1414.123		-838.369	
Prob > X^2	0.000	0.000		0.000		0.000		0.000		0.000	

* p < 0.1, ** p < 0.05, *** p < 0.01. Robust standard errors in parentheses.

With regards to the first hypotheses, where we proposed that post-materialism has a positive effect on the probability of becoming an entrepreneur during the crisis period, we did not find support for Hypothesis 1a (despite the marginal effect of this variable met our expectations) as a non-significant effect was obtained in Models 1-5 ($p > 0.1$). Albeit the positive sign is in accordance with evidence showing that a higher level of post-materialism can be related to a higher level of this entrepreneurial activity (Hechavarría et al., 2017). Our results suggest that post-materialism might have a higher influence on female entrepreneurship than that of their male counterparts, though the estimated coefficient is not significant (see Models 3 and 4). Note that these findings, despite the non-significance, are in accordance with Hypothesis 1b, which suggests that post-materialism has positive and higher effect on the probability of females becoming entrepreneurs than their male counterparts during the crisis period. These results could be explained by the fact that both women and men are more impacted by the materialistic values of their markets, as they tend to be more driven by necessity and survival reasons (Uhlaner and Thurik, 2007).

Regarding the second set of hypotheses, Hypothesis 2a posited that the higher the educational level the higher the probability of becoming an entrepreneur during the crisis period. Our results support this hypothesis as Models 2 and 5 are statistically significant ($p < 0.01$). Our findings also provide support for Hypothesis 2b, which stated that the educational level positively affects the probability of becoming a male and female entrepreneur alike during the crisis period. In this case, the marginal effect obtained on Model 3 is equal to that obtained in Model 4 ($p < 0.1$ for Model 3; and $p < 0.01$ for Model 4). Based on our results, it is possible to suggest that if primary, secondary and tertiary schools include subjects related to entrepreneurship, business plan, etc., people may take advantage to perceive opportunities throughout socialization processes in an educational context (Davidsson and Honig, 2003). In addition, people can acquire the necessary knowledge and skills required to increase their chances of being entrepreneurs and contribute to society (Guerrero et al., 2016). Regardless of gender, entrepreneurs with certain skills and abilities may also achieve higher growth rates, which are beneficial for economic development during the crisis periods (Bosma et al., 2018). In this sense, entrepreneurs increase their alertness towards opportunity identification during crisis periods (Urbano et al., 2018b; Williams and Vorley, 2014).

Concerning Hypothesis 3a, we suggested that regardless of gender, an economic recession period (i.e. where a higher unemployment rate persists) is positively associated with entrepreneurship. Our results could indicate that effectively entrepreneurial activity is an alternative for those affected by the economic crisis. In our case, the marginal effect for the entire sample, as well as for women and men is highly significant ($p < 0.01$ for Models 2-4). Notice that the estimated effect is equal no matter the gender, albeit the probability is higher for men (6.2%) as well as for women (2.4%). This likelihood is also

found in other studies that compare entrepreneurial activity between women and men (cf. Hechavarría and Ingram, 2018; Urbano et al., 2018b). Based on our findings, one could say that both female and male entrepreneurs decide this career because of lack of market opportunities. Our idea is in line with Arin et al. (2015), who have also found that unemployment is positively associated with entrepreneurship. However, important differences were encountered when comparing different regions in Europe. Thus, we suggest in Hypothesis 3b that Eastern European countries have a countercyclical association between the economic crisis (i.e. a higher unemployment rate) and entrepreneurship; whilst this association is procyclical for Central European countries. Our results show that effectively unemployment and entrepreneurship are negatively related when analysing Eastern European countries only ($p < 0.05$ for Model 6). Instead, Model 5 ($p < 0.05$) indicates that these two variables are positively associated. In accordance with González-Pernía et al. (2018) and Vegetti and Adăscăliţei (2017), our findings may suggest that the economic crisis not only affects the labour market of those lower-income countries, but also their financial structure that supports entrepreneurial activity. In the case of high-income regions, these authors suggest that the higher the unemployment rate, the more the number of people interested in entrepreneurship. Table 4 summarises the main results, which are contrasted with suggested hypotheses.

Table 4. Overview on the Estimation Results

Hypothesis description	Empirical results	Hypothesis testing
H1a: Post-materialism has a positive effect on the probability of becoming an entrepreneur during the crisis period.	Positive but NOT statistically significant	Not supported
H1b: Post-materialism has positive and higher effect on the probability of females becoming entrepreneurs than their male counterparts during the crisis period.	Positive and higher but NOT statistically significant	Not supported
H2a: The higher the educational level the higher the probability of becoming an entrepreneur during the crisis period.	Positive and statistically significant	Supported
H2b: The educational level positively affects the probability of becoming a male and female entrepreneur alike during the crisis period.	Positive and statistically significant	Supported
H3a: Regardless of gender, an economic recession period (i.e. where a higher unemployment rate persists) is positively associated with entrepreneurship.	Positive and statistically significant	Supported
H3b: Eastern European countries have a countercyclical association between the economic crisis (i.e. a higher unemployment rate) and entrepreneurship; whilst this association is procyclical for Central European countries.	Positive and statistically significant for Central Europe; negative and statistically significant for East Europe	Supported

5. Discussion and conclusions

In this paper, cross-sectional data (for the period 2011–2013) were used to empirically evaluating the influence of institutions on the probability to become a woman and man entrepreneur during the recent European economic crisis. Using a conceptual framework of institutional economics, we analysed the influence of institutional factors (post-materialism, educational level and unemployment rate) on entrepreneurship. We also considered these explanatory variables in female and male entrepreneurial activity, as well as in Central versus Eastern European countries.

Regarding policy implications for women and men, we follow the statement of Arshed et al. (2014) and Shane (2009), who establish that the strategies to promote entrepreneurship should pursue social benefits, especially because entrepreneurs are highly affected by the economic crisis. According to these authors, entrepreneurial activity must be focused on generating opportunities for all individuals in each country, which lead towards middle- and long-term development. In this case, entrepreneurship should also be urged not only for development purposes, but also for inclusive goals. Here, it is important to recognise that entrepreneurship brings solutions during difficult times. Also, it is important to highlight that the roles of both female and male entrepreneurs provide benefits for all in the society. Thereby, inclusive entrepreneurship policies should consider strategies to close gender gaps, and promote a more dynamic participation of women into those activities that create social value.

In general, the societal needs of economic empowerment, redistribution of resources and development have created entrepreneurship as a mechanism to address these issues (Thiru et al., 2015). To solve the previous problems through entrepreneurial policies, it is necessary to create entrepreneurship education, in which individuals are constantly creating, innovating and exploiting ideas. The constant pursuit of social benefits from these activities should be a matter for all agents in the economy: government, incumbent firms and households. Entrepreneurship as a function of these agents creates social changes leading to development. Therefore, it is fundamental to understand its relative importance to entrepreneurs, which, on the one hand, could bridge gaps such as gender and social inequality; and on the other, bring social responsibility by enhancing the earnings of themselves and others (Thiru et al., 2015).

Our results may help advance the analysis of entrepreneurial activity from an institutional point of view, giving greater robustness to environmental factors as determinants of the creation of new ventures. The results suggest a series of implications at the academic level as well as the policy level with respect to the development of a field of study about the most relevant institutional factors. Moreover, we believe that a study on the influence of socio-cultural factors, not independently but in terms of their overall effects, would be a very worthwhile endeavour. In this sense, future research should focus on including more European countries in the analysis and investigating more explanatory factors, as well as to include other control variables at individual and country

level. Institutional factors, both formal and informal, should be included to rule out country differences in these areas, following the views of North (1990, 2005). Additionally, other variables to capture income level and distribution or social value should be analysed in further studies. Also, other economic impacts of entrepreneurship during economic crises such as job creation, community development and regional performance, among others, could extend the extant literature about entrepreneurship and income level. The study of these two variables could open up new avenues in terms of entrepreneurship, economics and their endogeneity feature.

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ANNEX 1. SAMPLE SIZE BY COUNTRY

Country	Observations	Central	East
Belarus	593		X
Cyprus	973	X	
Estonia	1,408	X	
Germany	1,877	X	
Netherlands	1,510	X	
Poland	850		X
Romania	1,344		X
Slovenia	850	X	
Spain	963	X	
Sweden	1,064	X	
Turkey	1,469		X
Ukraine	626		X