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MACROECONOMIC AND INSTITUTIONAL DRIVERS OF ENTREPRENEURIAL ACTIVITY. A CROSS-COUNTRY EMPIRICAL ASSESSMENT

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Abstract. Our paper aims to investigate how the changes in macroeconomic conditions and the quality of institutions affect the level of entrepreneurial activity in 18 European Union countries, over the period 2002–2016. Using panel-data estimation techniques, we alternatively analyzed the effects of some macroeconomic and institutional framework related factors (in particular, the quality of institutions) on entrepreneurial activity level, proxied by the total early-stage entrepreneurial activity rate, nascent entrepreneurship rate, and new business ownership rate. The results of our empirical analysis show that the economic situation of EU countries and the quality of institutions (reflected in our study through competitiveness, economic freedom, and governance quality) have a significant effect on early-stage entrepreneurs and for some variables the sign of the relationship depends on the age of the business. Our findings may be of interest to policy makers in developing effective policies contributing to enhancing the entrepreneurial capacity in different countries.

Keywords: entrepreneurship, early-stage entrepreneurs, institutional quality, economic freedom, governance quality, EU countries.

JEL Classification: L26, M13, E02.

1. Introduction

The crucial role of entrepreneurship and of the formation of new businesses for the development of national economies has increased the interest of researchers and decision-makers in identifying factors that drive entrepreneurial activity. An increasing number of research (Gril & Thurik, 2004; Bowen & De Clercq, 2008; Hall & Sobel, 2008; Sobel, 2008; Wennekers, van Stel, Thurik, & Reynolds, 2005; Bjørnskov & Foss, 2008; Amorós, 2009; Aidis, Estrin, & Mickiewicz, 2010; Klapper, Amit, & Guillén, 2010; Vidal-Suñé & Lopez-Panisello, 2013, Simón-Moya, Revuelto-Taboada, & Guerrero, 2014; Crnogaj & Bradač Hojnik, 2016) point out that the level of entrepreneurial activity and the dynamics of new business formation are sensitive to the changes in the macroeconomic and institutional environment.

The purpose of our paper is to examine how early-stage entrepreneurial activity is affected by macroeconomic conditions and the quality of institutions (reflected through competitiveness, economic freedom, and governance quality) from 18 European Union countries over the period 2002–2016. Our research contributes to the development of literature in the field of entrepreneurship by providing empirical evidence on the correlation between some macroeconomic factors and institutional quality on the one hand and early-stage entrepreneurial activity on the other.

This study is structured as follows: section 2 presents the data, the variables, the hypotheses, and the models used for the empirical analysis; section 3 presents the results and discusses the main findings of our empirical study. The study ends with conclusions.

2. Literature review

The relationship between the institutional environment and entrepreneurial activity has been examined by a large number of researchers, because a productive entrepreneurial activity, can generate higher income per capita and a higher rate of economic growth and is vitally important for economic growth of countries. Several empirical studies indicate that the macroeconomic environ-

ment and the quality of institutions could be considered as important drivers of entrepreneurial activity and could explain both the intensity and motivations of entrepreneurship, and the differences between countries (Audretsch, Thurik, Verheul, & Wennekers, 2002; Hall & Sobel, 2008; Sobel, 2008; Abdesselam, Bonnet, Renou-Maissant, & Aubry, 2017).

Therefore, the study of Kreft and Sobel (2005) argue that in the countries that register an increase in the index of economic freedom, individuals are more interested to engage in entrepreneurial activities. The authors also stressed the need to increase economic freedom in order to encourage entrepreneurial activity, which is vitally important for economic growth. Also, Hall and Sobel (2008) show that increasing economic freedom would lead to higher levels of productive entrepreneurial activity, which would generate higher income per capita and a higher rate of economic growth.

In the study of Bjørnskov and Foss (2008) are analyzed the effects of economic freedom on the level of entrepreneurial activity for a sample of 29 countries. Their results indicate that the size of government is negatively correlated with entrepreneurial activity, while sound money is positively correlated. Similarly, Nyström (2008) investigates the influence of institutions of economic freedom on entrepreneurship and finds that it is positively correlated with a smaller government sector, better legal structure and security of property rights, but also with less strict regulation of credit, labor and business.

Comparatively, McMullen, Bagby, and Palich (2008) point out that the components of economic freedom affect entrepreneurial activity differently according to governmental restrictions imposed on economic freedom. Considering another form of measuring entrepreneurial activity, the results obtained by Aidis et al. (2010) indicate that the choice of an individual to start a business depends significantly on the size of the state sector and on freedom from corruption. Stenholm, Acs, and Wuebker (2013) discuss the relationship between institutions and entrepreneurship and shows that institutional arrangements have varying influence on both the rate and type of entrepreneurial activity.

Using data for 51 countries and for a period of nine years, Amorós, Ciravegna, Mandakovic, and Stenholm (2017) examine the influence of state fragility and of the level of economic development on the likelihood of a person to start a business. Their results show that state fragility reduces incentives for opportunity-based entrepreneurship and increase incentives to engage in entrepreneurial activities based on necessity.

The review of empirical studies that examined the influence of quality of institutions on the level of early-stage entrepreneurial activity shows the existence of a small number of researches focused on EU countries. Therefore, our study complements the literature in the field of entrepreneurship by providing empirical evidence on the different impact of institutional quality on entrepreneurship motivations in EU countries.

3. Data, variables, and methodology

The main purpose of this empirical research is to analyze how the changes that appear in macroeconomic conditions and the quality of institutions of a country affect the level of entrepreneurial activity. In order to realize the empirical assesement we have used the data for a sample of 18 European Union member countries (Belgium, Croatia, Denmark, Finland, France, Germany, the Netherlands, Portugal, Romania, Slovenia, Spain, Sweden and the United Kingdom), over the period 2002–2016. We have considered only a part of the EU member countries because the data for the indicators included in the analysis weren't available for the other countries EU.

Using panel-data estimation techniques, we alternatively analyze the effects of some macroeconomic factors and also the effects of institutional quality on the level of entrepreneurial activity, proxied by the *total early-stage entrepreneurial activity rate, nascent entrepreneurship rate, and new business ownership rate*. As dependent variables of our models, we have used three key indicators calculated by Global Entrepreneurship Monitor (GEM) for measuring entrepreneurial activity. These indicators are defined below, according to GEM methodology. Thus, *total early-stage entrepreneurial activity* (TEA) *rate* represents the most important indicator of entrepreneurship calculated by GEM and expressing the percentage of the active population (18 to 64 years) that are in the process of starting or who have just started a business which has been on the market for less than 42 months. TEA rate comprises two groups of entrepreneurs, namely: nascent entrepreneurs and new business owners. *Nascent entrepreneurship rate* (NER) represents the percentage of the active population who are actively involved in setting up a business they will own or co-own (this business has not paid salaries,

wages, or any other payments to the owners for more than three months). On the other hand, *new business owners* (NBO) or new entrepreneurs include those individuals who have moved beyond the nascent stage and have paid salaries and wages for more than 3 months but less than 42 months. All the considered variables, their measurment units and data sources are presented in Table 1, below.

Table 1. Variables, their measurements and data sources (source: authors)

Variable	Measurement units	Data sources
Total early-stage entrepreneurial activity rate (TEA)	% of the adult population (18 to 64 years) that are in the process of starting or who have just started a business.	GEM Key indicators
Nascent entrepreneurship rate (NER)	% of the adult population (18 to 64 years) who are actively involved in setting up a business, this business has not maid payments for more than three months.	GEM Key indicators
New business owners (NBO)	% of the adult population (18 to 64 years) who have moved beyond the nascent stage and have paid salaries and wages for more than 3 months but less than 42 months.	GEM Key indicators
GDP per capita (GDPC)	Annual percentage growth rate of GDP per capita.	Data WoldBank
Unemployment (UNEMP)	The share of the labour force that is without work but available for seeking employment (% of total labour force).	Data Wold-Bank
Inflation (INFL)	Annual % change in the cost to the average consumer of acquiring a basket of goods and services that may be fixed or change at specific intervals (yearly).	Data Wold-Bank
Total tax rate (TAX)	% of commercial profits	Data Wold-Bank
Foreign direct investment, net inflows (FDI)	The net inflows of investments as % of GDP.	Data Wold-Bank
Domestic credit (DCP)	Financial resources provided to the private sector by financial corporations as % of GDP	Data Wold-Bank
Global Competitiveness Index	Measured by scores from 1 to 7 (a higher average score means a higher degree of competitiveness)	World Economic Forum
Index of Economic Freedom	The value of IEF varies from 0 (indicating the smallest freedom) to 100.	Heritage Foundation
Governance Index (GOV)	Expressed by the mean of 6 governance indicators: voice and accountability, political stability and absence of violence, government effectiveness, regulatory quality, rule of law and and control of corruption). Each indicator has values ranging from –2.5 to 2.5, with higher positive values indicating superior performance	Data Wold-Bank, Worldwide Governance Indicators

As explanatory variables of our empirical models, we have chosen two categories of factors that are considered in the literature to be relevant for the examination of entrepreneurship, namely factors related to the macroeconomic environment and the institutional environment. For the first category of factors, we included *GDP per capita, unemployment rate, inflation rate, tax rate, net inflows of foreign direct investments and domestic credit to private sector*. Annual data on these indicators come from World Bank's World Development Indicators (WDI) database (World Bank, 2017a).

The *GDP per capita* has an important effect on entrepreneurship because an increase in income can lead to the increase of demand for the goods and services existent on the market which will have the effect of stimulating entrepreneurial activity (Grilo & Thurik, 2004; Klapper et al., 2010; Vidal-Suñé & Lopez-Panisello, 2013; Sayed & Slimane, 2014). Therefore, we expect GDP per capita to be positivelly related with early-stage entrepreneurs.

Unemployment rate is an important determinat of entrepreneurial activity because not having a job or not being able to find a job can influence the decision of a person to become entrepreneur. Several studies (Wennekers et al.,

2005; Lasch, Gundolf, & Kraus, 2007; Fairlie, 2013; Vivarelli, 2013; Vidal-Suñé & Lopez-Panisello, 2013; Simón-Moya et al., 2014) have found that in an economy that has higher rates of unemployment will increase the probability that individuals will decide to become entrepreneurs.

The inflation rate (INFL) can be positively or negatively related with entrepreneurship. On one hand, some studies (Vidal-Suñé & Lopez-Panisello, 2013; Sayed & Slimane, 2014) have shown that if the inflation increases it can determine more businesss opportunities because the increase of prices for goods and services might have the effect of increased earnings of entrepreneurs. On the other hand, increased inflation rates can rise the costs for starting a new business (Salman, 2014) and so discouraging the creation of new business. Thus, we expect either a negative or positive relation between inflation and entrepreneurial activity.

Total tax rate is another macroeconomic indicator which might generate important effects on entrepreneurship. High tax rates have a negative impact on entrepreneurial activity and business creation because they are seen as an obstacle for starting new business and therefore lead to a decrease in business activity, as shown by several empirical studies in the field (Bruce & Mohsin, 2006; Aidis et al., 2010; Djankov, Ganser, McLiesh, Ramalho, & Shleifer, 2010; Vidal-Suñé & Lopez-Panisello, 2013; Salman, 2014). Therefore, we expect to obtain a negative relation between the level of tax rates and the early-stage entrepreneurial activity.

Foreign direct investments can have both positive and negative effects on entrepreneurship. The FDI determine an increase of trade flows, are sustaining export competitiveness, and can provide managerial skills for entrepreneurs. As shown by several studies (Meyer & Sinani, 2009; Doytch & Epperson, 2012; Kim & Li, 2014), the positive effect of FDI on entrepreneurship depends on the level of development of the country. In the same time, other empirical studies (Konings, 2001; De Backer & Sleuwaegen, 2003; Sabirianova, Svejnar, & Terrell, 2005; Ayyagari & Kosová, 2010) show the existence of a negative effect or no effect of FDI on the creation of new business, making also the differentiation between countries by their degree of development. The existence of foreign owned firms in a country can have a negative impact on the creation of domestic firms because are raising the technological barriers to entry (Ayyagari & Kosová, 2010).

Domestic credit to private sector (DCP) can reflect the access of firms to financial resources. An increase of the domestic credit to private sector can reflect easier access to necessary founds, and has a positive impact on entrepreneurial activity, by stimulating the creation of new businesses and stimulationg the development of the existing firms, as shown by some studies (Aghion, Fally, & Scarpetta, 2007; Vidal-Suñé & Lopez-Panisello, 2013; Sayed & Slimane, 2014). Therefore, we expect to obtain a positive sign of the relationship.

Regarding the institutional environment, we have included in the analyzis *institutional quality*, which is reflected in our study through *competitiveness*, *economic freedom*, and *governance quality.*

As proxy for the competitiveness of an economy we have considered the *global competitiveness index* (GCI). This index aims to measure the "set of institutions, policies and factors that determine the level of productivity of an economy" and is determined for each country as a weighted average of different aspects of competitiveness, that are grouped grouped into 12 pillars of competitiveness, namely: "institutions, infrastructure, macroeconomic environment, health and primary education, higher education and training, goods market efficiency, labour market efficiency, financial market development, technological readiness, market size, business sophistication, and innovation" (Schwab, 2016). GCI is measured by the scores from 1 to 7 (a higher average score means a higher degree of competitiveness). The data on the Global Competitiveness Index were taken from the Global Competitiveness Reports of the World Economic Forum. Several authors have shown that as the competitiveness and economic growth of a country increase, entrepreneurial dynamics is decreasing (Acs & Amoros, 2008) and that more competitive economies register lower early-stage entrepreneurial activity, while less competitive economies have higher rates of entrepreneurial activity (World Economic Forum, 2015). Thus, we expect to find a negative relationship between national competitiveness and our three dependent variables, because more competitive economies can offer better jobs and will reduce the option for self-employment. For the economic freedom, we use as proxy *the index of economic freedom* (IEF), which measures the economic freedom of a country starting from a set of twelve quantitative and qualitative factors that are grouped into four pillars of economic freedom

(Heritage Foundation, 2017): rule of law (includes: property rights, government integrity, judicial effectiveness), government size (including: government spending, tax burden, fiscal health), regulatory efficiency (business freedom, labor freedom, monetary freedom), and open markets (trade freedom, investment freedom, financial freedom).

Some empirical studies (Nyström, 2008; McMullen et al., 2008; Bjørnskov & Foss, 2008; Aidis et al., 2010; Simón-Moya et al., 2014; Goel, Nelson, & Payne, 2015; Crnogaj & Bradač Hojnik, 2016) have tested the relationship between economic freedom and entrepreneurship and found that economic freedom index is strongly related with entrepreneurial activity. A higher level of economic freedom is positively related to entrepreneurial activity because the individuals feel free to start new ventures. Thus, we expect to obtain a positive significant relation between IEF and entrepreneurship.

The governance quality is proxyed by the *governance index* (GOV), which we have calculated as the simple average of the six dimensions of governance quality determined by Kaufmann, Kraay, and Mastruzzi (2010), namely voice and accountability, political stability, government effectiveness, regulatory quality, rule of law and control of corruption. The annual data for calculating the governance index are obtained from the World Bank's Worldwide Governance Indicators database (World Bank, 2017b). Several studies in the field (Baumol, 1990; Bowen & De Clercq, 2008; Sobel, 2008; Amorós, 2009; Dau & Cuervo-Cazurra, 2014; Rodríguez-Gulías, de Sousa Gabriel, & Rodeiro-Pazos, 2018) found that the quality of governance is an important determinant of entrepreneurial activities dynamics. Sobel (2008) showed that the areas with better institutions have both more productive entrepreneurship, and also less unproductive entrepreneurship. Also, some authors (Friedman, 2011; Dau & Cuervo-Cazurra, 2014) found that governance is negatively associated with total entrepreneurship. Thus, we expect to obtain a negative significant relationship between the quality of governance and our three dependent variables.

In order to achieve the main purpose of our paper, we have formulated the following hypothesis:

H1: the macroeconomic factors have a significant relation with the early-stage entrepreneurial activity

H2: the quality of governance of EU countries is negatively related with the early-stage entrepreneurial activity

H3: the economic freedom of EU countries has a positive relation with the early-stage entrepreneurial activity

H4: the competitiveness of EU countries is negatively related with the early-stage entrepreneurial activity

We started our empirical analysis with testing the variables considered in the study for the existence of a unit root, and so guaranteeing the accuracy of the panel data regression results. We applied the Augmented Dickey-Fuller (ADF) Test for each individual variable, and we assumed as the null hypothesis the existence of a unit root. Four variables (tax, inflation, index of economic freedom and governance index) resulted to have a unit root and we calculated for them the first difference. The next step, was the analyzis of the descriptive statistics. But also, testing the correlations between variables.

Finally we have generated the results of the panel data regression models (three different models for each category of explanatory variables considered). We considered the panel data fixed effect model, because this is usually preferred for identifying the determinat factors of entrepreneurship because fixed effects help eliminate the disparities between countries.

To test the existence of significant effects between macroeconomic and institutional factors on entrepreneurship, we have considered the following fixed effects model equation:

$$Y_{it} = \beta_0 + \beta_1 X_{it} + \beta_2 Z_{it} + \alpha_i + \varepsilon_{it}, \quad (1)$$

where: i represents the countries, t represents the years, Y_{it} represent the dependent variables, β_0 is the intercept, X_{it} represents the vector of macroeconomic independent variables, Z_{it} represents the vector of institutional independent variables, β_1 are the coefficients, α_i represents all the stable characteristics of the countries and ε_{it} is the error term.

In order to test our hypotheses we apply three different panel data models. The equations for this models are presented below:

$$TEA_{it}\ (NER_{it}, NBO_{it}) = \beta_0 + \beta_1 gdpc_{it} + \beta_2 unemp_{it} + \beta_3 infl_{it} + \beta_4 tax_{it} + \beta_5 fdi_{it} + \beta_6 dcp_{it} + \beta_7 gci_{it} + \beta_8 ief_{it} + \beta_9 gov_{it} + \alpha_i + \varepsilon_{it}. \quad (2)$$

4. Results and discussion

Table 2 is summarizing the descriptive statistics for the full panel dataset with 18 countries and 219 country-time observations. We find that cross-country variation in entrepreneurial activity is very persistent over the period considered in the

analysis, 2007–2016. The standard deviation of TEA is 2.21, indicating the diversity of our sample. The highest levels of total entrepreneurial activity and also of nascent entrepreneurial rate are found in Latvia (14,2% in 2016) and the minimum level of entrepreneurial activity is registered in France in 2003 (1.6%). The higher levels of entrepreneurial activity registered in CEE countries can be explained by the existence of poor labor market in this countries. For the new business owners we found the lowest level to be registred in Finland (2003) and the highest in Netherlands (2012).

Table 2. Descriptive statistics (source: own calculations)

	Min.	Max.	Mean	Std. dev.
TEA	1.629	14.190	6.153	2.213
NER	0.891	9.700	3.672	1.425
NBO	0.328	6.262	2.615	1.115
GDPC	–12.976	23.956	1.415	3.679
UNEMP	3.400	27.500	9.207	4.366
INFL	–4.479	22.537	2.299	2.618
TAX	18.400	76.700	44.434	13.406
FDI	–15.989	87.442	6.108	11.119
DCP	10.066	201.258	94.937	41.622
GCI	3.670	5.950	4.817	0.555
IEF	48.700	82.600	67.742	7.122
GOV	–0.043	1.969	1.116	0.522

Regarding the variables describing the institutional environment, we notice significant inter-country and over time differences. Economic freedom index recorded the highest values in Nordic countries, whereas the lowest values were registered in Romania, Croatia and Greece. Additionally, between 2015 and 2016 IEF recorded increased values in a big part o f the countries considered in the study.

The other variables capturing the quality of institutional environment (GOV) and the level of economic competitiveness (GCI) presented small differences from one country to another in the sample. The governance indicator registered the smallest values in Romania (in 2003 and 2004) and its highest values in Finland (between 2002–2004). The Global competitiveness index registered the highest values in Finland (in 2004–2005) and the smallest values in Romania (in 2004–2005). Starting from these results, we can concluded that the countries with better quality of institutional environment, higher competitiveness and economic freedom are the Nordic countries. On the other hand, CEE countries registered the lowest values for the indexes measuring institutional determinats of entrepreneurship. These results did not surprise us because the northern countries are among the first in the ranks in terms of the healt of the society, the degree of economic development, innovation, productivity, but also the role of government in helping the economies. On the other hand, CEE countries are, for the most part, former socialist countries and their institutional reforms, especially in areas such as governance, competition policy, labor markets, privatization and enterprise restructuring have faced many difficulties over the years, and they still did not reach the level of development of other European countries.

As regards the macroeconomic variables we have obtained high and very high levels of standard deviation, fact that indicates again the diversity of our sample. These results are also showing the existence of very important cross-country variations of the economic situation of EU-18 member countries over the period considered. Somehow we expect to obtain these results because the period considered for the empirical analysis (2007–2016) also includes the years dominated by the recent global financial crisis, which has changed the economic landscape of the EU countries, but also the post-crisis period, marked by an important economic rebound for many of the countries analyzed.

The correlation matrix of dependent and independent variables (Appendix 1, Table 1A) shows that the correlation between GOV, IEF and GCI is very high, thus we will use alternatively these three variables in our estimations. Also, because the correlation among the rest of independent variables is moderate, we consider that multicollinearity in not a problem for our considered models. In the same time, we notice a very high coefficient of correlation between the dependent variables (TEA, NER and NBO) which we will use alternatively in the models.

The results of the regression analysis are summarized in Table 3. Our empirical findings confirm the hypotheses formulated above. Those, according to our results, the economic situation of a country and the institutional environment have a significant effect on total entrepreneurial activity, but also on its subgroups: nascent entrepreneurship rate and new business owners. As regards the

macroeconomic variables our results are consistent with the predictions of theoretical studies and with the findings of the empirical studies. Therefore, GDP per capita has a positive relationship and significant (at 5% level) only with nascent entrepreneurs. Increased income will stimulatethe formation of new businesses by an increase of demand for the goods and services. This result is in agreement with the findings of other empirical studies (Grilo & Thurik, 2004; Vidal-Suñé & Lopez-Panisello, 2013).

Table 3. Determinants of entrepreneurial activity (source: own calculations; *, ** and *** denotes significantly coefficients at 10%, 5% and 1% level)

	TEA	NER	NBO
GDPC	0.048 (0.261)	0.054** (0.046)	–0.001 (0.914)
UNEMP	0.093** (0.013)	0.062*** (0.001)	0.035** (0.011)
INFL	–0.161** (0.034)	–0.102** (0.049)	–0.066** (0.034)
TAX	–0.063*** (0.000)	–0.039*** (0.000)	–0.023*** (0.000)
FDI	0.013 (0.272)	–0.005* (0.052)	0.012** (0.011)
DCP	–0.013*** (0.004)	–0.012*** (0.000)	0.004** (0.020)
GCI	–1.716*** (0.000)	–0.729*** (0.002)	–1.009*** (0.000)
IEF	0.121*** (0.002)	0.047** (0.030)	0.076*** (0.000)
GOV	–0.923** (0.025)	–0.399** (0.024)	–0.514*** (0.009)
Obs.	197	200	197
Adj-R2	0.228	0.264	0.172
F stat.	8.241***	9.799***	6.108***

Unemployment rate has also a positive relation with all forms of entrepreneurial activity considered in our study. These result is in accordance to the results obtained by several studies (Wennekers et al., 2005; Lasch et al., 2007; Fairlie, 2013; Vivarelli, 2013; Vidal-Suñé & Lopez-Panisello, 2013) and shows that higher rates of unemployment are increasing the probability that individuals will decide to become entrepreneurs.

Therefore, the inflation rate has a negative relation with the early-stage entrepreneurial activity (in all its analyzed forms). Higher rates of inflation are increasing the costs for creating a new business, but also reduce the access to financial resources and is increasing income inequality of individuals. These findings are in agreement with the results of other empirical studies (Singh & De Noble, 2003; Perotti & Volpin, 2004; Djankov et al., 2010; Arin, Huang, Minniti, Nandialath, & Reich, 2015).

The tax rate appears to be an important obstacle to the early-stage entrepreneurial activity (in all its considered forms –TEA, NER, NBO). Higher tax rates can make entrepreneurial activity less attractive compared with the wages offered for their work. This result is in line with our exepectations and also with the findings of several studies (Bruce & Mohsin, 2006; Klapper, Laeven, & Rajan, 2006; Djankov et al., 2010; Vidal-Suñé & Lopez-Panisello, 2013; Sayed & Slimane, 2014; Salman, 2014).

Foreign direct investments inwards have different signs of coefficients for nascent entrepreneurship (NER) and new business owners (NBO). Thus, for NER, the negative coefficient shows that when new investors enter into the country (increasing the inward FDI), many persons can find good paid jobs and are not interested in obtaining alternative revenues, such from from entrepreneurial activity. This findings are in agreement with the results obtained by other the empirical studies in the field (namely, Djankov & Hoekman, 2000; Konings, 2001; Danakol et al., 2013; Chowdhury, Terjesen, & Audretsch, 2015). On the other hand, for NBO, we found a positive coefficient, fact that shows that as companies grow older, they react differently to inwards of FDI. The positive impact of FDI results from the increase of trade flows, stimulation of the import-competing production, but also from the development of managerial skills for entrepreneurs by the mobility of managers and workers into the foreign-owned firms. These result is in line with the findings from the literature (Görg & Strobl, 2002; Doytch & Epperson, 2012; Kim & Li, 2014).

Our empirical results regarding the relationship between access to finance and entrepreneurship indicate a negative relationship with TEA and NER similar with the findings of other empirical studies (Klapper et al., 2010; Sayed & Slimane, 2014). This result shows that a reduction in credit flows to private sector, especially at the beginning of te considered period (2007–2010), was not regarded as a deterrent to potential entrepreneurs because many people lost their jobs, under the effects of global financial crisis and the following economic downturn, or did not earn enough money to secure their livelihood so they decided to create new business. On the other hand,

the relation between access to finance and NBO is positive, similar with the findings of some empirical studies (Aghion et al., 2007; Klapper et al., 2010; Sayed & Slimane, 2014; Arin et al., 2015). The increase in credit flows to private sector shows an increased ease for firms to get the financial resources they need and it stimulates the development of the existing businesses.

In accordance with the findings from the literature (Bjørnskov & Foss, 2008; McMullen et al., 2008; Nyström, 2008; Goel et al., 2015; Crnogaj & Bradač Hojnik, 2016), we also found that greater economic freedom is positively related to the early-stage entrepreneurial activity. The coefficient of IEF is positive and statistically significant for TEA, NER and NBO. Thus, increased economic liberalization tends to be favorable for entrepreneurs, because it creates a better economic environment, with bigger opportunities for creating new business.

On the other hand, governance indicator and the index of competitiveness are negatively associated with the early-stage entrepreneurial activity, but also with its considered subgroups. Several empirical studies (Baumol, 1990; Audretsch et al., 2002; Hall & Sobel, 2008; Sobel, 2008; Friedman, 2011) have also highlited that institutional quality plays an important role for the decision of individuals to become entrepreneurs. As also shown by Dau and Cuervo-Cazurra (2014), when the governance indicator has higher values will determine a decrease of the firms created on the market and in the number of entrepreneurs because higher quality of institutions will determine the existence of better payd jobs.

Economic competitiveness is negatively correlated with the early stages of entrepreneurial activity. When the competitiveness of a country increase, entrepreneurial dynamics is decreasing and more competitive economies register lower early-stage entrepreneurial activity, while less competitive economies have higher rates of entrepreneurial activity. These results are in line with the literature in the field (Acs & Amoros, 2008; World Economic Forum, 2015).

Analysing the values obtained for the Adjusted-R^2, we observe relatively small values. Thus, for the first model (with TEA as dependent variable) only 23% of the variation of entrepreneurial activity is explained by the changes in the macroeconomic and institutional environment. When using nascent entreprenenruship rate as dependent variable we obtain a slightly higher R-squared adjusted (26%). The value of R-squared adjusted for new business owners is even much smaller, only 17% of the variation in early stage entrepreneurship can be explained by the changes in the macroeconomic and institutional environment. It is possible that adding supplementary predictors will increase the true explanatory power of our models. But, we have to keep in mind that we analyse the decision of individuals to become entreprenenurs and sometimes this can not be measured only by numbers because people can be fairly unpredictable.

Based on the results of our empirical study, we can conclude that were confirmed all our hypotheses formulated, respectively the macroeconomic environment and the quality of institutions can be considered important drivers of entrepreneurial activity. Moreover, the quality of governance and the competitiveness of EU-18 member countries is negatively related with the early-stage entrepreneurial activity and the economic freedom is positive associated with early-stage entrepreneurs.

5. Conclusions

Through this empirical analysis we intended to investigate the impact some macroeconomic and institutional variables on on entrepreneurial activity considering different stages of entrepreneurship (total early-stage entrepreneurial activity, nascent entrepreneurship and new business owners). Our analysis was focused on 18 European Union member countries (Belgium, Croatia, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, the Netherlands, Portugal, the United Kingdom) and targeted a period of 15 years (2002–2016). Based on the gathered data, we have examined the relationship between several macroeconomic indicators, global competitiveness index, economic freedom index, and governance indicator with the three forms of entrepreneurial activity, mentioned above.

Our findings confirmed the hypotheses and showed that all the indicators considered (*GDP per capita, unemployment, inflation, tax rate, FDI, domestic credit, GCI, Index of economic freedom, Governance index*) resulted to be important determinants for the early-stage entrepreneurial activity as a whole but also for the nascent entrepreneurs and new business owners. Therefore, the economic situation of EU countries and the quality of institutions (reflected in our study through competitiveness, economic freedom, and governance quality) have a significant effect on early-stage entrepreneurs and for some variables the sign of the relationship depends on the age of

the business. Our findings are also in line with the results obtained by other empirical studies, as presented above.

Thus, we observe that the situation of economic environment has an important impact on the decision of individuals to become entrepreneurs. Also, greater economic freedom is positively related with all forms of entrepreneurship considered (TEA, NER, NBO). The quality of governance and the economic competitiveness of countries are negatively associated with TEA, NER and NBO.

Fundamentally, we show that the level of economic freedom, the quality of governance, the level of competitiveness and overall economic environment are strong predictor of entrepreneurship across the small sample of 18 countries for which there are comparable data. We consider that the results of our empirical investigation could be of interest to policymakers, who should be concerned about identifying the best policies to help the development of entrepreneurial activity because is seen as en important engine of economic growth.

A limitation of our research is that the countries considered for analysis have different degrees of development. To overcome this limit, in our future empirical research we will analyse the countries also by their level of economic development.

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Disclosure statement

We declare that we do not have any competing financial, professional, or personal interests from other parties.

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Appendix 1

Table 1A. The correlation matrix (source: authors own calculations)

	TEA	NER	NBO	GDPC	UNEMP	INFL	TAX	FDI	DCP	IEF	GCI	GOV
TEA	1.000											
NER	0.912	1.000										
NBO	0.839	0.546	1.000									
GDPC	0.146	0.219	0.023	1.000								
UNEMP	0.118	0.146	0.056	–0.159	1.000							
INFL	–0.063	–0.083	–0.032	0.074	–0.263	1.000						
TAX	–0.384	–0.351	–0.327	–0.135	–0.005	–0.045	1.000					
FDI	0.084	0.040	0.113	0.280	–0.184	0.063	–0.113	1.000				
DCP	–0.105	–0.253	0.116	–0.255	0.091	–0.082	–0.154	–0.076	1.000			
IEF	0.023	–0.103	0.183	0.049	–0.414	–0.038	–0.230	0.275	0.496	1.000		
GCI	–0.216	–0.268	–0.085	0.019	–0.478	–0.198	0.045	0.142	0.422	0.765	1.000	
GOV_	–0.184	–0.240	–0.058	0.010	–0.442	–0.182	–0.074	0.188	0.464	0.793	0.935	1.000