A PANEL DATA ANALYSIS OF MACROECONOMIC DETERMINANTS OF CORPORATE BIRTHS IN THE EU MEMBER STATES DURING 2004-2012

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Abstract

This article's goal is to analyze the relationship between macroeconomic determinants and the new business entries for 24 EU member states through a Panel Data Analysis during 2004-2012 in order to establish the impact of the tax and monetary policy adopted by the EU member states governments on the business births. The new business density is the dependent variable in a model with five independent macroeconomic variables such as the tax revenue, inflation, the GDP per capita growth, long-term unemployment and the intern credit to private sector by banks.

Keywords: start-ups, econometrics, tax policy, monetary policy, EU

JEL Classification: E24, E52, E62, H25, O23

1. Introduction

The main purpose of this article is to give more empirical evidence to the measurement of business entries determinants, with special reference to the EU countries.

The creation of new enterprises is quite important to a healthy economy because they are involved in innovations, they provide new jobs and they bring economic growth. New companies originate a competitive environment where production costs are diminished.

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New firms play an important role in generating jobs, new ideas and encouraging entrepreneurial activity, and they make an important contribution to the well-being of nations. (Salman et al., 2013)

Braunerhjelm (2007) has shown that promoting new firms can create long-run benefits for the economy and society. (Braunerhjelm 2007).

In EU countries, the positive effects of the birth of new firms received beneficial assessment in the recent economic crisis 2009. A policy of promoting new firms had been in effect in EU countries since the 1980s. The change in the law characterized the forming of new firms positively as a spring of economic vigor and employment and stated that it was governments' responsibility to offer the necessary support to promote the start-ups.

The aim of this paper is to establish the relationship between macroeconomic variables such as the tax revenue (% of GDP), inflation, long-term unemployment (% of total unemployment), intern credit to private sector given by banks (% of GDP) and the GDP per capita growth (annual %) on one side and the new business density on the other side in the European Union through panel data analysis.

The paper is organized as follows: the second part presents the prior literature review concerning business entries at macroeconomic level, the third part the methodology and data used, the research design, the fourth part presents the data panel model; the fifth section analyzes the main results and the last one presents the main conclusions.

2. A review of prior literature

The variables and the model were selected according to the literature review.

An important element of the relation between unemployment and self-employment is captured by the recession-push hypothesis which states that in times of increased unemployment people are pushed into self-employment for shortage of alternative sources of revenue such as paid employment. The authors employ a vector error correction model (VECM) (Congregado et al. 2012).

Unemployment was considered to be the main engine of start-ups creation in the 80s, but nowadays it is the new technology that is the engine. Variations in the firm birth rates are explained by regional differences in industry intensity, income growth and population

growth. The authors find a little support for a positive impact of unemployment on new firm formation rates.(Armington and Acs, 2002).

According to Salman 2013, the corporate births are positively related to the growth of GDP, inflation, and openness and are negatively related to unemployment. The authors employ the random-effects negative binomial regression model (RENBM) to test the relationship between macroeconomic factors and the birth of new firms (Salman et al., 2013).

Mathur (2009) employs spatial econometrics techniques to estimate the impact of bankruptcy regulation on small firm formation. The author discovered that the predicted probability of starting a business is 25% higher in countries with higher bankruptcy exonerations than their neighbors relative to countries with lower exemptions than their neighbors.

According to Atawodi and Ojeka (2012) firms should be levied lower amounts of taxes in order to have enough money for other activities that will lead to business growth and the government should raise tax incentives and exemptions as this will attract investors who are potential tax payers.

Djankov et. al. (2010) demonstrate that high tax rates determine lower business activity. The highest marginal tax rates are usually relevant to the largest firms that could create an opportunity for small companies operating at lower tax rates, which would give them a reduced after-tax cost of capital. The authors employ a data panel approach.

Aghion, Fally and Scarpetta (2007) discover that private credit (proxy for the degree of financial development) is important for promoting entry of new firms. They employ a difference-in-difference approach.

Friedman and Hall (2014) consider that the availability of capital, favorable interest rates, and attraction of foreign investments enhance the private sector activity.

Vliamos and Tzeremes (2012) establish three different factors that appear to have a dominant influence on the entrepreneurial process. By using nonparametric techniques, their article establishes three diverse factors that appear to have a dominant impact on the entrepreneurial process. The first determinant is related to entrepreneurial skills, education, and prior experience because the second factor relates to issues regarded desire of independence and

locus of control. The third determinant, which influences the entrepreneurial activity, is related to social aspects, access to capital and regions' institutional environment.

3. Methodology and data

3.1. Data collection

For our analysis, we have used the annual time series of 24 EU member states, except for Estonia, Slovakia, Cyprus and Malta and the dependent variable was the new business density (new registrations per 1,000 people ages 15-64) during 2004-2012. The database was created with the help of the data from the World DataBank site (The World Bank, 2015) and Eurostat official site (Eurostat, 2015). The macroeconomic variables were selected based on the literature review and taking into consideration the global economic environment.

We have identified transformations to perform on the raw data on the basis of model specification such as transforming the countries names into numbers from 1 to 24 in the alphabetical order.

The fiscal policy was quantified by the tax rate, the monetary policy was assessed through the intern credit to private sector by banks (% of GDP) and the inflation, GDP deflator (annual %) and we also employed a sociometric variable such as long-term unemployment (% of total unemployment).

The dependent variable selected for the analysis is the new business density that is expressed as new registrations per 1,000 people ages 15-64 (World DataBank) during 2004-2012 for 24 EU member states.

The explanatory variables employed in our analysis are the following: tax revenue (% of GDP), inflation, the GDP per capita growth (annual %), long-term unemployment (% of total unemployment) and the intern credit to private sector by banks (% of GDP).

3.2. Methodology

This article's goal is to analyze the relationship between macroeconomic determinants and the observed new business entries for 24 European Union member states through a Panel Data Analysis. We performed a Fixed Effects model and a Random Effects model that use annual data during 2004-2012 in order to establish the impact of the tax and monetary policy adopted by the EU member

states governments after and before the financial crisis on the business births. Estonia and Slovakia were dropped from our study because of lack of data and Cyprus and Malta were also discarded because they were considered outliers.

The data was collected from the World DataBank site, and Eurostat official site and the econometric model was performed in the Gretl software. The new business density (new registrations per 1,000 people ages 15-64) is the dependent variable in a panel data model with five independent macroeconomic variables such as the tax revenue (% of GDP), inflation, the GDP per capita growth (annual %), long-term unemployment (% of total unemployment) and the intern credit to private sector by banks (% of GDP).

4. Descriptive statistics and exploratory data analysis

From the summary statistics of the raw data we observe that the mean for the variable new business density for all the 24 countries during 2004-2012 is 3.93, for the tax rate is 19.68%, for the inflation rate 2.86%, for the credit rate 106.34%, unemployment rate 39.10% and for the GDP per capita growth 1.5%.

Regarding the Within Standard Deviation, it is greater than the Between Standard Deviation for the variables Inflation rate and GDP per capita growth, i.e. the variation between the countries is greater than the variation across time for these variables.

For the variables new business density, tax rate, credit rate and the unemployment rate the variation is higher across time than across countries.

Summary Statistics, using the observations 1:1 - 24:9.

Table 1

Summary statistics of the raw data

Variable	Newbs	Tax	Infl	Credit	Unempl	GDP
Mean	3.93	19.68	2.86	106.34	39.10	1.50
Median	3.52	20.09	2.26	95.62	42.40	1.76
Minimum	0.33	7.08	-3.92	15.61	9.50	-16.59
Maximum	12.22	34.88	20.30	224.05	64.60	13.27
Std. Dev.	2.45	4.96	3.02	52.81	13.32	4.23
C.V.	0.62	0.25	1.06	0.50	0.34	2.83
Skewness	0.86	0.21	2.25	0.49	-0.27	-0.57

Variable	Newbs	Tax	Infl	Credit	Unempl	GDP
Ex. kurtosis	0.62	0.68	8.04	-0.85	-1.05	2.01
5% Perc.	0.57	11.16	-0.23	34.72	16.53	-6.06
95% Perc.	8.93	26.59	9.60	201.01	58.65	9.13
IQ range	2.81	5.04	2.32	83.44	22.80	4.08
Within s.d.	1.02	1.32	2.36	16.91	6.86	4.10
Between s.d.	2.29	4.89	2.08	51.30	11.86	1.74

Source: Own calculations in Gretl

From the correlation matrix for the raw data we notice that the new business density variable is positively correlated with the tax rate, inflation rate, credit rate and GDP per capita growth and negatively correlated with the unemployment rate.

The correlation coefficient between the new business density and the tax rate is 32%, between the dependent variable and the inflation rate 30%, between the unemployment rate and the new business density -16%.

Table 2

Correlation matrix for the raw data

Newbs	Tax	Infl	Credit	Unempl	GDP	
1	0.32	0.30	0.29	-0.16	0.10	**Newbs**
	1	-0.10	0.41	-0.30	-0.13	**Tax**
		1	-0.37	0.13	0.53	**Infl**
			1	-0.47	-0.38	**Credit**
				1	0.26	**Unempl**
					1	**GDP**

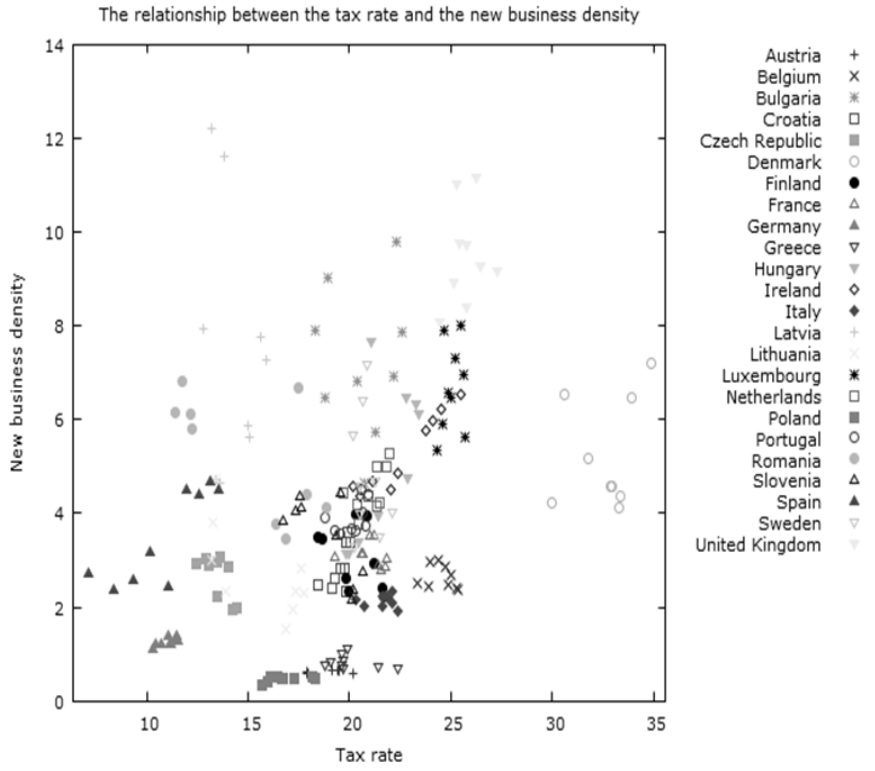
Source: Own calculations in Gretl

Correlation coefficients, using the observations 1:1 - 24:9
5% critical value (two-tailed) = 0.1335 for n = 216

The scatterplot below illustrates the relationship between the tax rate and the new business density of the 24 EU member states. The connection is significant taking into consideration that the correlation coefficient is 32%.

Figure 1

The relationship between the tax rate and the new business density factorized by countries



Source: Own calculation in Gretl

From the factorized boxplot of the new business density in function of country code during 2004-2012 we notice that we encounter the highest mean of new business density in the United Kingdom and the highest variation in Latvia. The lowest mean of the new business density is found in Poland and the lowest variation in Austria.

The factorized boxplot of the tax rate in function of country code during 2004-2012 illustrates that the highest mean of tax rate we encounter in Denmark and the highest variation in Romania. The lowest mean of the tax rate is found in Spain and the lowest variation in Germany.

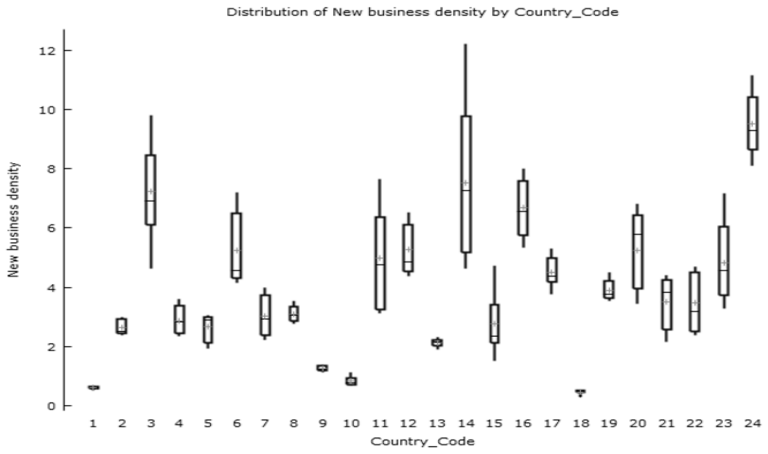
From the factorized boxplot of the credit rate in function of country code during 2004-2012, we notice that the highest mean of credit rate we encounter in Denmark and the highest variation in Luxembourg. The lowest mean of the credit rate is found in Romania and the lowest variation in Germany.

The factorized boxplot of the inflation rate in function of country code during 2004-2012 shows that the highest mean of the inflation rate we encounter in Romania and the highest variation in Latvia. The lowest mean of the inflation rate is found in Ireland and the lowest variation in Belgium.

From the factorized boxplot of the unemployment rate in function of country code during 2004-2012, we notice that the highest mean of the unemployment rate we encounter in the Croatia and the highest variation in Ireland. The lowest mean of the unemployment rate is found in Sweden and the lowest variation in Austria.

Figure 2

Distribution of new business density by Country code



Source: Own calculations in Gretl

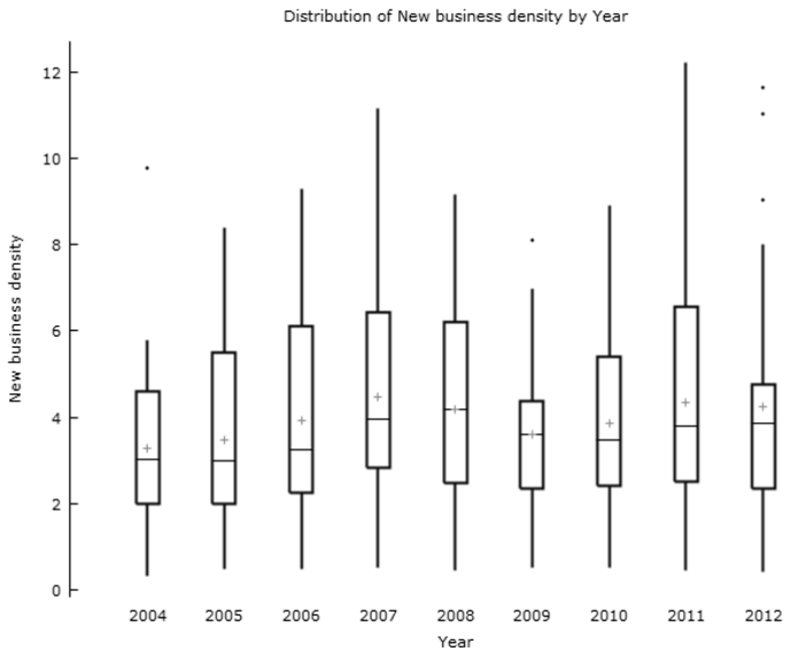
The factorized boxplot of the GDP per capita growth in function of country code during 2004-2012 illustrates that we encounter the highest mean of GDP per capita growth in Lithuania

and the highest variation in Latvia. The lowest mean is found in Greece and the lowest variation in France.

From the factorized boxplot of the new business density in function of year during 2004-2012 for all the 24 EU member states we notice that the highest mean of new business density we encounter in 2007 and the highest variation in 2012. The lowest mean of the new business density was found in 2004 and the lowest variation in 2009.

Figure 3

Distribution of new business density by years



Source: Own calculations in Gretl

The factorized boxplot of the tax rate in function of year during 2004-2012 for all the 24 EU member states we notice that the highest mean of tax rate we encounter in 2007 and the highest variation in 2012. The lowest mean of the tax rate was found in 2010 and the lowest variation in 2004.

From the factorized boxplot of the inflation rate in function of year during 2004-2012 for all the 24 EU member states we notice that

the highest mean of inflation rate and the highest variation we encounter in 2007. The lowest mean of the inflation rate is found in 2010 and the lowest variation in 2012.

The factorized boxplot of the credit rate in function of year during 2004-2012 for all the 24 EU member states shows that the highest mean of credit rate we encounter in 2009 and the highest variation in 2009. The lowest mean of the credit rate was found in 2004 and the lowest variation in 2004.

From the factorized boxplot of the unemployment rate in function of year during 2004-2012 for all the 24 EU member states we notice that the highest mean of unemployment rate we encounter in 2012 and the highest variation in 2007. The lowest mean of the unemployment rate is found in 2009 and the lowest variation in 2010.

The factorized boxplot of the GDP per capita growth in function of year during 2004-2012 shows that the highest mean of GDP per capita growth we encounter in 2006 and the highest variation in 2009. The lowest mean of the GDP per capita growth is found in 2009 and the lowest variation in 2010.

5. Econometric models and main results

There are three models for panel data – pooled OLS, fixed and random effects models. We want to explain new business density (Newbs) in terms of the inflation rate (Infl), credit rate (Credit) and the unemployment rate (Unempl) and thus to estimate the following equation:

Equation 1 The general panel data equation

$$Newbs_{it} = \alpha + \beta_1 Infl_{it} + \beta_2 Credit_{it} + \beta_3 Unempl_{it} + u_{it}$$

$$i=1,\ldots,24;\ t=2004,\ldots,2012$$

In the Fixed Effects (FE) model we decompose the error term u_{it} into a unit specific (and time invariant) component α_i and observation-specific error ε_{it}:

Equation 2 The Fixed-Effects equation

$$Newbs_{it} = \alpha + \alpha_i + \beta_1 \times Infl_{it} + \beta_2 \times Credit_{it} + \beta_3 \times Unempl_{it} + \varepsilon_{it}$$

$$i=1,\ldots,24;\ t=1,\ldots,9$$

The α_is are then treated as fixed parameters that must be estimated. The α_is may be treated as the mean of the error in the i^{th} unit. However, these individual intercepts are typically not of much inherent interest and also their estimated values are difficult to judge

because there is often little data being used to estimate them (the time series are usually short, only 9 instances). Instead, we are usually more interested in the slope coefficients (Lapinskas 2013).

Model 1: Fixed-effects, using 216 observations

Included 24 cross-sectional units
Time-series length = 9
Dependent variable: Newbs

Table 3

Fixed-effects model for the raw panel data

	coefficient	std. error	t-ratio	p-value	
Const	1.69	0.73	2.31	0.02	**
Infl	0.09	0.03	2.96	0.00	***
Credit	0.01	0.00	2.24	0.03	**
Unempl	0.02	0.01	2.12	0.04	**

Source: Own calculations in Gretl

Table 4

Output for the fixed-effects model

Mean dependent var	3.93	S.D. dependent var	2.45
Sum squared resid	186.24	S.E. of regression	0.99
LSDV R-squared	0.86	Within R-squared	0.07
LSDV F(26, 189)	42.91	P-value(F)	0.00
Log-likelihood	-290.48	Akaike criterion	634.96
Schwarz criterion	726.09	Hannan-Quinn	671.78
Rho	0.69	Durbin-Watson	0.57

Source: Own calculations in Gretl

Joint test on named regressors
Test statistic: F(3, 189) = 4.54473
with p-value = P(F(3, 189) > 4.54473) = 0.00422465
Test for differing group intercepts -
Null hypothesis: The groups have a common intercept
Test statistic: F(23, 189) = 32.5388
with p-value = P(F(23, 189) > 32.5388) = 1.57863e-053

The test for differing group intercepts tell us that the hypothesis of all equal α_{is} must be rejected, so each group has a different intercept.

For the **Random Effects (RE) model,** we write $\mathbf{u_{it} = u_i + \varepsilon_{it}}$, so the model becomes

Equation 3 The Random Effects equation

$$Newbs_{it} = \alpha + \vartheta_i + \beta_1 \times Infl_{it} + \beta_2 \times Credit_{it} + \beta_{3x} Unempl_{it} + \varepsilon_{it}$$

i=1,…,24; t=1,…,9

In contrast to the FE model, the $\mathbf{u_i}$s are now treated not as fixed parameters but as random drawings from a given probability distribution.

Model 2: Random-effects (GLS), using 216 observations

Included 24 cross-sectional units
Time-series length = 9
Dependent variable: Newbs

Table 5

Random-effects (GLS) model

	coefficient	std. error	t-ratio	p-value	
Const	1.46	0.78	1.87	0.06	*
Infl	0.11	0.03	3.55	0.00	***
Credit	0.01	0.00	3.23	0.00	***
Unempl	0.02	0.01	1.85	0.07	*

Source: Own calculations in Gretl

Table 6

Output for the random-effects model

Mean dependent var	3.93	S.D. dependent var	2.45
Sum squared resid	1081.12	S.E. of regression	2.25
Log-likelihood	-480.42	Akaike criterion	968.84
Schwarz criterion	982.35	Hannan-Quinn	974.30

Source: Own calculations in Gretl

'Within' variance = 0.985391
'Between' variance = 2.91188
theta used for quasi-demeaning = 0.806092

Breusch-Pagan test
Null hypothesis: Variance of the unit-specific error = 0
Asymptotic test statistic: Chi-square(1) = 379.359
with p-value = 1.71637e-084

Hausman test
Null hypothesis: GLS estimates are consistent
Asymptotic test statistic: Chi-square(3) = 15.4304
with p-value = 0.00148341

In the Breusch–Pagan test, the null hypothesis is that the variance of u_i in equation 3 equals zero. This hypothesis is rejected, so we conclude that the simple pooled model is inadequate.

If the theta value is 1, then the FE estimator is optimal; if it is 0, then the pooled model is optimal. Thus, in our case we choose FE model (theta=0.8).

The Hausman test probes the null hypothesis that the RE model is preferable to that of the fixed effects (we see that in our case we can discard the RE model).

The Akaike's criterion in RE case exceeds that of FE. Also, we plotted the graphs of the fitted values and residuals of the RE model, and they appear to be inferior to those of the FE model. Therefore, the Fixed-Effects model is better than the Random-Effects model and the final form of the econometric model will be:

Equation 4 The Econometric Model – Fixed Effects model

$$Newbs_{it} = \alpha + \alpha_i + 0.09 \times Infl_{it} + 0.01 \times Credit_{it} + 0.02 \times Unempl_{it} + \varepsilon_{it}$$

$$i=1,\ldots,24; \quad t=2004,\ldots,2012$$

From the Fixed-Effects model we notice that the variables inflation rate, credit rate, and unemployment rate have a statistically significant impact on the new business density for the 24 EU member states during 2004-2012 at a 1% and 5% significance level.

The econometric model tells us that when the inflation rate increases with one percent the new business density rises with 0.09 units; when the domestic credit to private sector by banks (% of GDP) goes up with 1% the dependent variable increases with 0.01 units and as the long-term unemployment (% of total unemployment) grows with 1% the new business density rises with 0.02 units.

Taking into consideration the fact that panel data do not fixes the issue of unobserved heterogeneity and endogeneity and that under endogeneity the FE-estimator will be biased, we can apply for

future research special regression models by using IV-estimation (2SLS, GMM) that employs at least one instrument and identifies assumptions to get the unbiased estimator.

6. Conclusions and Recommendation

Our analysis suggests that the Fixed-Effects model is the best to explain the dependent variable new business density among the three models for panel data – pooled OLS, fixed and random effects models. Although we have employed in our analysis five explanatory variables, the GDP growth rate and the tax revenue as a percentage of GDP were discarded from the model because of the statistically insignificant coefficients.

From the correlation matrix for the raw data we notice that the new business density variable is positively correlated with the tax rate, inflation rate, credit rate and GDP per capita growth and negatively correlated with the unemployment rate.

The Within Standard Deviation is greater than the Between Standard Deviation for the variables Inflation rate and GDP per capita growth, i.e. the variation between the countries is greater than the variation across time for these variables. For the variables new business density, tax rate, credit rate and the unemployment rate the variation is higher across time than across countries.

From the Fixed-Effects model we notice that the variables inflation rate, credit rate, and unemployment rate have a statistically significant impact on the new business density for the 24 EU member states during 2004-2012 at a 1% and 5% significance level.

Our analysis is consistent with the literature review on start-ups, i.e. a positive correlation between the business entries and inflation, credit rate and the unemployment rate (Congregado et al. 2012).

From the literature review on macroeconomic factors influencing entrepreneurship or the registration number of new companies emerge several policy recommendations. We believe that the increase in new registrations of SMEs EU member states governments should take some measures. In this regard we propose the following solutions:

- ✓ to stimulate investment in technology;
- ✓ to increase inflation rate (the number of new companies is positively correlated with inflation – Salman, 2013);

- ✓ to open up the economy;
- ✓ to levy lower taxes;
- ✓ to increase marginal tax rates;
- ✓ to increase tax incentives and tax exemptions in order to stimulate private lending practices;
- ✓ to promote favorable interest rates;
- ✓ to attract foreign investments;
- ✓ to create programs that drive the development of entrepreneurial skills;
- ✓ to Increase the share of R&D expenditure in total government spending;
- ✓ to increase the unemployment rate (explanation is given by Congregado et. Al., 2012 - during periods of high unemployment people are driven by self-employment due to the decrease of alternative sources of income such as paid employment).

Based on empirical results we can make the following policy recommendations for policy makers in the EU member states in order to increase in new registrations of SMEs:

- to increase inflation (according to Salman, 2013 - the number of new companies is positively correlated with inflation);
- to stimulate private lending practices - according to Aghion, Fally and Scarpetta (2007), Friedman and Hall (2014);
- to increase unemployment (explanation given by Congregado et. Al. (2012) - during periods of high unemployment people are driven by self-employment due to the decrease of alternative sources of income such as paid employment and Highfield & Smiley in 1987 – a rise in unemployment rate is followed by increases in new registrations).

For further research, the birth of new firms could also be explained by the number of insolvencies, other sources of financing, the government expenditures, interest rates and education variables. Time dummies could be introduced in the Fixed-Effects Model in order to improve it. We also think that the non-linear relationship between the variables analyzed should be taken into consideration for future research.

Our findings might be of interest to policy makers in the European Union in order to prepare a better economic, social and

monetary policy for the public sector, as well as to the private sector and to the banking sector.

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ANNEX 1

Data definition
Indicator Names, Long Definition and Source

Tax revenue (% of GDP) - Tax revenue refers to compulsory transfers to the central government for public purposes. Certain compulsory transfers such as fines, penalties, and most social security contributions are excluded. Refunds and corrections of erroneously collected tax revenue are treated as negative revenue. Source: International Monetary Fund, Government Finance Statistics Yearbook and data files, and World Bank and OECD GDP estimates.

Inflation, GDP deflator (annual %) - Inflation, as measured by the annual growth rate of the GDP implicit deflator, shows the rate of price change in the economy as a whole. The GDP implicit deflator is the ratio of GDP in current local currency to GDP in constant local currency. Source: World Bank national accounts data and OECD National Accounts data files.

Domestic credit to private sector by banks (% of GDP) - Domestic credit to private sector by banks refers to financial resources provided to the private sector by other depository corporations (deposit-taking corporations except central banks), such as through loans, purchases of non-equity securities, and trade credits and other accounts receivable, that establish a claim for repayment. For some countries, these claims include credit to public enterprises. Source: International Monetary Fund, International Financial Statistics and data files, and World Bank and OECD GDP estimates.

Long-term unemployment (% of total unemployment) - Long-term unemployment refers to the number of people with continuous periods of unemployment extending for a year or longer, expressed as a percentage of the total unemployed. Source: International Labour Organization, Key Indicators of the Labour-Market database.

GDP per capita growth (annual %) - Annual percentage growth rate of GDP per capita based on constant local currency. Aggregates are based on constant 2005 U.S. dollars. GDP per capita is gross domestic product divided by midyear population. 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. It is calculated

without making deductions for depreciation of fabricated assets or depletion and degradation of natural resources. Source: World Bank national accounts data and OECD National Accounts data files.

New business density (new registrations per 1,000 people ages 15-64) - New businesses registered are the number of new limited liability corporations registered in the calendar year. Source: World Bank's Entrepreneurship Survey and database (http://econ.worldbank.org/research/entrepreneurship).

Data codification

We have noted the variables as follows:

Table 7

The variables used in the econometric model

Tax revenue (% of GDP)	Tax
Inflation, GDP deflator (annual %)	Infl
Domestic credit to private sector by banks (% of GDP)	Credit
Long-term unemployment (% of total unemployment)	Unempl
GDP per capita growth (annual %)	GDP
New business density (new registrations per 1,000 people ages 15-64)	Newbs

Source: World DataBank

We have encoded the EU member states as follows:

Table 8

The countries used in the data panel model and their codes

Country	Code	Country	Code
Austria	1	Italy	13
Belgium	2	Latvia	14
Bulgaria	3	Lithuania	15
Croatia	4	Luxembourg	16
Czech Republic	5	Netherlands	17
Denmark	6	Poland	18
Finland	7	Portugal	19
France	8	Romania	20
Germany	9	Slovenia	21
Greece	10	Spain	22
Hungary	11	Sweden	23
Ireland	12	United Kingdom	24

Source: Own codification in Gretl