

## Entrepreneurship response to the crisis as exemplified by selected European countries

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**Abstract.** The main aim of this article is to present deliberations on the importance of necessity-derived and opportunity-based entrepreneurship for the economy and to try to answer the question which of those types of entrepreneurship makes the economic system resilient at the time of crises and which one has an adverse impact. The GEM research on the motivation of entrepreneurs is the starting point for the research carried out in this paper. It has been resolved that any further econometric analysis (by means of the dynamic models) would cover European countries for which the complete GEM test results are available for a period of minimum 10 years, therefore the period covered by the study includes the years between 2009 and 2021. Based on the calculated correlation index between the entrepreneurship index and the GEM index (percentage of the population aged 18-64 who see good opportunities to start a business in their place of residence), two groups of countries were identified entrepreneurship results from necessity - derived and opportunity - based. In the light of the push theory and the conducted econometric studies, the crisis caused by COVID-19 will probably result in the development of some sectors of the economy or completely new ones will arise in those economies.

**Keywords:** entrepreneurship, crisis, economy, economies of European countries, finance. environment, Pearson correlation, dynamic model.

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## 1. INTRODUCTION

Entrepreneurship is a very important economic category, especially from the point of view of the regional development. The assumption that development is a function of competitiveness and, therefore, of entrepreneurship is the axiom of contemporary concepts of the regional development (Kielesińska, 2021). The research on the regional entrepreneurship is based largely on the analysis of the sector of small- and medium-sized enterprises which play a major role in the regional and global economy. A characteristic feature of the SMEs sector is that it focuses on the human skills and predispositions in the field of entrepreneurship, innovation, and employment resulting, in the scale of regions, in new jobs, in the fight against unemployment, rationalisation of the allocation of resources and the implementation of innovation and modernisation of the industrial structure. The role of SMEs cannot be ignored during the research on the regional entrepreneurship mainly due to their dominant power on a national scale. Small- and medium-sized enterprises represent approximately 99.8% of all enterprises operating in the European Community (Eurostat, 2020).

The importance of entrepreneurship as a significant phenomenon both from the economic and sociological point of view is emphasised more and more often since companies play a key role both in helping society to overcome the economic crisis as well as in generating new solutions that are increasingly being implemented in the economy. Currently, more and more often the question arises how will the ongoing COVID-19 crisis (Trif, 2021) affect the future society and economy?

The current economic reality, largely affected by the pandemic, clearly unveils how entrepreneurs are trying to deal with the crisis. The owners of restaurants, travel agencies, cinemas, and fitness clubs are in the most difficult situation as their business operations have been completely suspended. Others, such as manufacturers of consumer goods, have seen the demand drop sharply. Many companies initially reacted to the crisis not only by reducing costs (mainly in terms of wages), but also by engaging in completely new business operations. The examples of entrepreneurship triggered by the pandemic are multiplying all around the world, for example, distilleries in the United States, Canada and Australia have started to produce hand sanitisers. Fashion companies such as Zara, H&M, H&B, and Trigema make protective clothing, medical aprons, and other items delivered to hospitals. Airline crews, including those employed by SAS, are being re-qualified to assist in hospitals. The medical equipment shortage in hospitals has motivated car brands such as Ford to produce life-saving medical devices. Those activities show that companies in a crisis can react quickly to changing conditions, and thus to respond to the demand, operating in the conditions of limited resources. On the other hand, many companies, due to the lack of prospects, have been forced to suspend their business operations or completely close.

The main purpose of this article is to present deliberations on the importance of necessity-derived and opportunity-based entrepreneurship for the economy and to try to answer the question which of the above-mentioned types of entrepreneurship makes the economic system resilient at the time of crises, and which one has an adverse effect. The analysis of the research problem resulted in the formulation of the research hypotheses that will be verified in the course of the further study.

H1: Socio-cultural and economic factors, the support and effective government policy for entrepreneurs, facilitating the R&D relay from science to the economy, and supporting the development of the regional infrastructure have a greater impact on the development of entrepreneurship at the time of economic crisis in the countries with varied levels of socio-economic development than in those with a corresponding level of socio-economic development.

The article is divided into three parts. The first part presents a theoretical approach to entrepreneurship in the context of economic crises. Great attention has been paid to the purpose of explaining the phenomenon of entrepreneurship, in particular the one based on opportunity and resulting from necessity.

The second part presents the econometric analysis of the studied aspects of entrepreneurship in the countries at issue, along with a description of the research methodology, and the last part summarises the results obtained from the analyses, and the discussion.

## **2. LITERATURE REVIEW**

In economic sciences the term “entrepreneurship” was first used in the 18th century. In sociology it was a century later when Max Weber defined social conditions of entrepreneurship linking it with religion and capitalism (2002). Currently, there are numerous definitions of entrepreneurship, that emphasise its various aspects. Gibbons (2003, 753) argues that since the 1980s economics has been much more interested in “convergence and interplay between new economic models and long-standing non-economic insights about organisations”. In contemporary studies entrepreneurship is based on a multidisciplinary approach that takes into consideration economic, political, and sociological insights.

The influence of the stability / instability of the economy on the development of “necessity-derived entrepreneurship”, also based on an opportunity, is a relatively new approach to entrepreneurship. This line of research is particularly relevant in the light of the economic crisis caused by COVID-19, which will probably be the biggest crisis the European Union will face. According to analysts in Brussels, the decline in the GDP in the EU in 2020 will reach a record low of 7.4%, and in the euro area itself it will reach 7.7%, while at the peak of the financial crisis in 2009, the eurozone economy shrank by 4.5%. In addition, the simulations, that have been carried out, indicate that no EU country can defend itself against the economic collapse caused by COVID -19, although the differences in the collapse course may be significant.

The related literature on the impact of the crisis on entrepreneurship (entrepreneurship resilience to economic crises) is still insufficient. It should be noted that modern economics has been increasingly interested in those issues since the 1990s. Several important highlights of that issue have emerged in recent years. Based on the conducted analysis of the literature, several main trends have been distinguished to fit into the issues elaborated upon in this article.

According to Cantillon (1938), entrepreneurship is equated with the ability to predict and the propensity to take risks by an entrepreneur. Runyan (2006) emphasises the challenges faced by small- and medium-sized companies that need to handle the suddenly emerging economic crisis, and has tried to explain how the crisis will affect the business operations of companies in the market in the future - that is, the behaviour of business owners in an economic crisis.

Williams et al. (2017) define resilience as a trait of an entrepreneur, that requires certain preparatory actions that may include the activity in the field of preventing the adverse effects and mitigating the risk arising from the crisis - i.e., the business operations of the company in a crisis period depend on the individual characteristics of entrepreneurs. Lavoie (1994) links entrepreneurial attitude with culture that influences activity, diligence. However, Lavoie argues for perceiving culture in a manner other than Weberian religion, namely as an “independent variable”. He locates the role of culture in a broader context as a complex phenomenon not framing it to a stimuli-reaction scheme.

Bullough et al. (2014) indicate that more resilient economic operators (individuals) retain greater entrepreneurial intentions, which suggests that preparation for crises may result from various entrepreneurial activities, such as business training, networking, mentoring - that is, entrepreneurs should constantly develop themselves because only development can guarantee their survival in the market. Ziolo (2013, see also CBOS 2020) argues that entrepreneurship is highly dependent both on political and legal stability and educational background, too. Political elites are responsible for social education that facilitates entrepreneurial attitude and the failure has an adverse impact on economic immunity at the time of crisis.

Igbokwe et al. (2017) using the least squares regression examined the impact of an economic recession on the likelihood that individuals would engage in necessary or occasional entrepreneurial activities both before and during the recession. The results of the study showed that before the recession, entrepreneurs more often took up entrepreneurial activity based on opportunities. Positive employment growth rates before the recession also increased the likelihood that entrepreneurship would develop. The recession meant a change in the motivation of entrepreneurs to self-employment and a marked decline in entrepreneurship related to opportunities and an increase in necessity-derived entrepreneurship.

Israel Kirzner (1973) believed that entrepreneurship was linked to the use of market opportunities. He assumed that the entrepreneur implemented the arbitrage function leading to the emergence of market equilibrium.

In the context of Igbokwe's research (2017), it is worth referring to the issue of automatic stabilisers of the economic situation, without which production and employment, and therefore entrepreneurship, would probably fluctuate more intensely. Automatic stabilisers are triggered when there is the need to offset economic fluctuations without any administrative decision-making process and regardless of whether the need for intervention has been noticed. In instrumental terms, automatic stabilisers of the economic situation are all measures that serve the purpose of not only maintaining the equilibrium in the economy at the level of full employment, but also controlling the balance between inflation and unemployment, so that they offset destabilising tendencies in the economy, bringing it to a state of equilibrium (Barczyk, 1994).

Kuckers et al. (2020) conducted a qualitative study of German startups in order to examine the extent of the adversities faced by companies during the COVID-19 crisis. The authors analysed political measures implemented in Germany, undertaken to eliminate the adverse impact of the pandemic on the development of entrepreneurship.

The related literature broadly describes the factors that influence the development of new companies in various regions of the world (Engle et al., 2011, Simon-Moya et al., 2014). However, the literature does not provide any unanimous view on how the surrounding environment influences the dynamics of necessity-derived and opportunity-based entrepreneurship. This article aims to fill this gap in the literature.

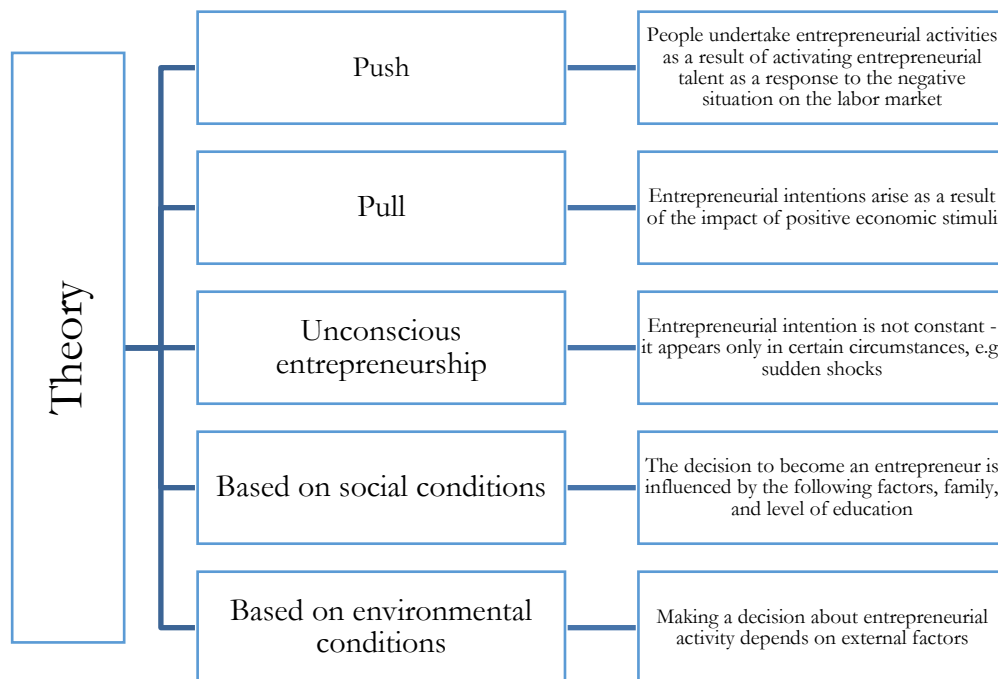
In reference to the research carried out so far, the question arises what the relationship between entrepreneurship and the socio-economic conditions in the European economies is, in particular, what the impact significance and trend of the selected group of factors on the development of necessity-derived and opportunity-based entrepreneurship is. The research problem of this work is contained in this question.

### 3. METHODOLOGICAL APPROACH

The decision to start your own business depends on your motivation. It is difficult to find a single definition of the entrepreneurial process in the related literature. In most studies, authors indicate that the idea of starting your own business is found at the beginning of the entrepreneurship process. The own business kick-off idea is identified with an entrepreneurial intention.

The related literature points towards the groups of factors that may influence the emergence of the entrepreneurial intention, although they are often difficult to identify and measure in order to make a relevant comparison. The classification, that divides determinants into two categories, is of great explanatory value: external factors related to social conditions (age, gender or model of social roles), political and economic (e.g., automatic stabilisers) and internal factors related to the character traits and personality of a given person (e.g., GEM research) (Khan, 2013). External factors will be the subject matter of the analysis in this paper. There is a belief among researchers that the occurrence of this group of determinants causes the occurrence (a catalog of definable/observable) events, because of which people decide to establish and

run their own business. The theories of entrepreneurial motivation are widely described in the related literature.



**Diagram 1. Theories of Entrepreneurial Motivation**

*Source:* The Author's own compilation based on: Gilad & Levine (1986), Shaver & Scott (1991), Tubbs & Ekeberg (1991), Ismail et al. (2012), Uddin & Bose (2012).

Taking into account the theories discussed here, it is worth paying attention to the theory of push and pull. The desk research proves that economic crises have powerful push factors (Amit & Muller, 1995) that refer to external conditions that force people to engage in business entrepreneurship due to a lack of viable alternatives. Push factors include the search for autonomy at work. They push individuals towards self-employment but companies operating in the market also take advantage of the market opportunities that appear in the market. Push motivation drives necessity-derived entrepreneurship, while pull motivation is the basis for the development of opportunity-based entrepreneurship (Devece et al., 2016).

Going further, it is worth considering the views of D. Deakins and G. Whittam. According to them, the incentives to motivate new entrepreneurs are associated with positive or negative factors (Dealins et al., 2000), therefore, considering the motives to start a business, we distinguish entrepreneurship taking advantage of opportunities and necessity-derived entrepreneurship. The most important positive motives include: the need for independence and personal development, the willingness to take advantage of a market opportunity or the desire to earn more money. The negative factors that determine the decision to set up one's own business most often include the lack of funds to make up a living, the lack of satisfaction with the work performed so far, the loss of a job, unemployment, the need to change the place of residence. As a result of opportunity-based entrepreneurship, the companies that look for solutions to overcome unforeseen difficulties are rapidly developing. Their mode of operation creates a greater chance for the success of the enterprise in the event of a sudden economic crisis, while in the case of necessity-derived entrepreneurship, the owners focus only on meeting the current needs. Companies emerging out of necessity are less resilient to the influence of the external environment. Entrepreneurship, apart from the

motivation to develop, needs favourable external conditions that may shape positive operational framework that will be conducive to the development of entrepreneurship.

The study of entrepreneurs' motivation to start their own business has been conducted on an international scale by the Global Entrepreneurship Monitor since 1999. The research confirms that people who take up this challenge due to the lack of better opportunities (negative motivation) cope in business worse than those who have decided to use the perceived opportunities (positive motivation) (e.g. Yang & Li, 2021). According to the GEM, entrepreneurship is any attempt to create a new enterprise or create a new venture, such as self-employment, a new business legal form or profile, or the expansion of an existing business by an individual, team of individuals or a specific company (GEM, 2023). The GEM model (Levie & Autio, 2008) of economic development is based on several important input assumptions. Firstly, the state of the economy is heavily dependent on a dynamic business sector. That dependence occurs at all stages of economic development but it can take on different intensity and trend. Necessity-derived entrepreneurship, especially in less economically developed regions or those suffering from a temporary increase in unemployment, can support the economy when employment options are limited. More developed economies create more entrepreneurial opportunities because of their wealth and innovation potential, but on the other hand they offer more jobs for people who could become entrepreneurs. Secondly, the entrepreneurial potential of an economy is based on individuals endowed with the ability and motivation to start a business and can be reinforced by the positive social perception of entrepreneurship. Entrepreneurship with high growth potential is also the main factor as far as creating new jobs is concerned, and competitiveness is stimulated by innovative companies and companies that internationalise by means of undertaking business operations abroad.

The GEM research on the motivation of entrepreneurs is the starting point for the research carried out in this paper<sup>1</sup>. The research sample selected for the empirical research results from the analysis of the correlation between the GEM research results<sup>2</sup> and the entrepreneurship rate calculated for each country, in terms of the number of economic operators registered in the REGON system per 10,000 working-age population (Dunajko & Klepacka – Dunajko, 2015). It has been resolved that the further econometric analysis would cover the European countries for which the complete GEM test results are available for a period of minimum 10 years, therefore the period covered by the study includes the years between 2009 and 2021. The economies for which data has been obtained from the GEM database<sup>3</sup> include Belgium, Bulgaria, Germany, Ireland, Greece, Spain, France, Croatia, Italy, Latvia, Hungary, the Netherlands, Poland, Portugal, Romania, Slovenia, Slovakia, Finland, Sweden, Great Britain, Norway, and Switzerland.

The correlation (interdependence of features), that defines the interrelationships between the selected empirical variables, has made it possible to capture the relationship that has served the basis for the division of economies into two research groups. The numerical expression of the correlation is the correlation coefficient that is kept within the range of [-1; 1] (Table 1).

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<sup>1</sup> <https://www.gemconsortium.org>

<sup>2</sup>The percentage share of people of working age, who think that in their country there are favourable conditions for the development of entrepreneurship.

<sup>3</sup>Single study gaps have been replaced with arithmetic mean.

Table 1

The correlation coefficient for the selected European economies (2009-2021)

Country	R	Direction and strength of correlation
Belgium	0,16	positive weak
Bulgaria	0,04	positive weak
Germany	-0,34	negative weak
Ireland	0,07	positive weak
Greece	0,17	positive weak
Spain	-0,57	negative strong
France	0,65	positive strong
Croatia	0,51	positive strong
Italy	0,61	positive strong
Latvia	0,72	positive strong
Hungary	0,31	positive weak
The Netherlands	0,48	positive weak
Poland	0,23	positive weak
Portugal	-0,12	negative weak
Romania	0,78	positive strong
Slovenia	0,01	positive weak
Slovakia	0,32	positive weak
Finland	0,47	positive weak
Sweden	0,02	positive weak
Great Britain	0,04	positive weak
Norway	0,10	positive weak
Switzerland	-0,54	negative strong

*Source:* Author's own compilation based on Global Report 2009-2022.

The table shows the R-values for the European economies covered by the study. Positive correlation (correlation coefficient value from 0 to 0.5 represents weak positive correlation, the value from 0.5 to 1.0 accounts for strong positive correlation) proves that an increase in the value of one feature is accompanied by an increase in the average values of the other feature, while negative correlation (value correlation coefficient from -0.5 to 0 represents weak negative correlation, the value from -0.5 to 1 accounts for strong negative correlation) (Rai et al., 2023). The calculations carried out (Table 1) have allowed for the identification of two assumptions adopted for further verification in this work. Firstly, countries characterised by the negative correlation (with the growth of the entrepreneurship rate, the examined variables show decreasing tendencies) display the relationship in which the growth of entrepreneurship is accompanied by the negative impact of economic factors. It has been decided to classify those economies as necessary entrepreneurship. Secondly, countries characterised by a positive correlation show the relationship in which the growth of entrepreneurship is accompanied by a positive impact of economic factors. It has been resolved to qualify those economies into the group of entrepreneurial opportunities. On the basis of the above assumption, the surveyed economies have been divided into two groups. The economies that have been included in the group of the "necessity-derived entrepreneurship" for the further research purposes, are: Germany, Spain and Switzerland, while the group of the countries that are characterised by the "opportunity-based entrepreneurship" includes: Hungary, Greece, Belgium, Bulgaria, The Netherlands, Poland, Portugal, Slovenia, Slovakia, Finland, Sweden, Great Britain, Ireland, Finland, France, Croatia, Italy, Latvia and Romania.

In the next stage of the study, the attempt has been made to construct an econometric model for the purpose of assessing the possible impact of variables on the entrepreneurship rate. In order to ensure the relevant comparison, the study has been conducted in two variants. The impact significance and trend of the explanatory variables on the endogenous variable in the group of countries characterised by the presence of necessity-derived and opportunity-based entrepreneurship has been assessed. A dynamic, log-linear (power) form of the model has been adopted and estimated based on the panel data. In dynamic terms, the value of the endogenous variable depends on its lagged (by one period) value and on the values of the explanatory variables included in the model. Such an approach seems to be justified due to the long time it takes an entrepreneur to decide to start a business. Entrepreneurship is not an event that occurs at a single moment in time. It is seen as a process. Such decisions are often influenced by the conditionalities occurring in the past. The process of estimating a dynamic panel model is most often carried out using the generalised method of moments (GMM), after the model has been priorly adjusted to the form of first differences. The model, having been adjusted to the model of first differences, takes the following equation formula:

$$\Delta y_{it} = \gamma \Delta y_{it-1} + (\Delta x_{it}^T) \beta + \Delta v_{it} \quad (1)$$

This removes the fixed effects, specific to individual items, from the model. Since the lagged endogenous variable is included in the model, the phenomenon of the first-order autocorrelation often occurs because if the random component, i.e.,  $\varepsilon_{it}$  is independent, first differences are subject to the first-order autocorrelation scheme. The occurrence of the second-order autocorrelation in this model would consequently lead to the failure to meet the moment conditions and incompatibility of the estimator, which would mean the wrong selection of instruments used in the model estimation process (Dańska – Borsiak, 2011). For this reason, it is extremely important to check whether there is the autocorrelation of order II, i.e., AR (2) in the dynamic model.

The general form of such a model can therefore be represented as:

$$\begin{aligned} \log\_entrepreneurship\_index = & \alpha_0 + \beta_1 \cdot \log\_Income\_tax + \beta_2 \cdot \log\_Social\_benefits + \beta_3 \cdot \log\_VAT\_revenue \\ & + \beta_4 \cdot \log\_Benefits\_unemp + \beta_5 \cdot \log\_Government\_debt + \beta_6 \cdot \log\_Value\_import + \beta_7 \cdot \log\_Expenditure\_R\&D \\ & + \beta_8 \cdot \log\_Private\_sector\_debt + \beta_9 \cdot \log\_Econom\_active + \beta_{10} \cdot \log\_Unemployed\_econom\_active + \beta_{11} \cdot \log\_Social\_security \\ & + \beta_{12} \cdot \log\_Housing\_cost\_overload\_ind + uit \end{aligned}$$

where:

- parameters  $\beta_k$  mean the elasticity of the entrepreneurship rate relative to the k-th model explanatory variable, so they are interpreted as a relative change in the entrepreneurship rate as a result of a 1% increase in the k-th model explanatory variable,

The random component is decomposed into two sub-components:

-  $\alpha_i$  a component that reflects the group effect (fixed effect - FE or random effect -RE, depending on the Hausman test results) and the appropriate random component  $v_{it} \sim N(0, \sigma_v^2)$

#### 4. RESEARCH AND RESULTS

The purpose of the econometric model is to describe the relationship between the entrepreneurship rate, that determines the number of registered enterprises per 1 000 people of working age, and the explanatory variables. The set of explanatory variables considered here is not complete and in no case can



be considered to be closed. Due to the difficult access to data and the assumed time horizon, only selected factors have been analysed in the study. The simplification of reality in econometric models consists in considering only the most important factors (variables) influencing the shaping of the endogenous variable. The analysis addresses the economic factors described in the related literature as automatic stabilisers of the economic situation and socio-economic factors that affect the motivation of a potential entrepreneur (McKay, Reis 2016; McKay, Reis 2016; Silva, Moutinho, Moreira 2022). For the purpose of the explanatory variables in the model, the following set has been resolved to be applied (from Eurostat):

- a) Income\_tax - income taxes flowing into the state budget as % of the GDP in a given economy;
- b) Social\_benefits - value of social benefits per one person in terms of EUR;
- c) VAT\_revenue - VAT revenue as % of the GDP in a given economy;
- d) Benefits\_unemp - benefits for the unemployed paid by the government as % of the GDP in a given economy;
- e) Government\_debt- government debt as % of the GDP in a given economy;
- f) Value\_import - value of imports as % of the GDP in a given economy;
- g) Expenditure\_R&D- enterprises 'expenditure on R&D per one person in terms of Euro;
- h) Private\_sector\_debt - private sector debt as % of the GDP in a given economy;
- i) Econom\_active- the percentage share of economically active people in the total number of inhabitants of working age in terms of %;
- j) Unemployed\_econom\_active - % of the unemployed among the economically active;
- k) Housing\_cost\_overload\_ind - housing cost overload indicator that tells what percentage share of the country 's inhabitants do live in households that spend more than 40 percent of the disposable income on housing needs;
- l) Social\_security - social security contributions paid by employers as % of the GDP in a given economy.

The table below presents the results of the estimation of the dynamic panel models in which the logarithm of the entrepreneurship rate is the endogenous variable (Table 2).

Table 2

Estimation using 33 observations. The study has been conducted for 13 units of cross-sectional data. Endogenous variable (Y): l\_ entrepreneurship\_index. Countries in the group of "necessity-derived entrepreneurship".

Variables	Model parameters	Statistical Significance
l_ entrepreneurship_index (-1)	0.598903	***
l_ Social_benefits	-0.878861	**
l_ VAT_revenue	8.13573	***
l_ Government_debt	-11.8426	**
l_ Value_import	-110,777	***
l_ Private_sector_debt	16.9086	**
l_ Econom_active	-484.234	***
l_ Unemployed_econom_active	496.856	***
l_ Housing_cost_overload_ind	-358.286	***
Residual sum of squares	1371.610	
Residual standard error	4.558724	
AR (2) test	z = -1.67443 [0.0940] No autocorrelation p > 0.05	

Note. \* p < 0.1, \*\* p 0.05, \*\*\* p 0.01. Values for t-Student statistics are given in round brackets.

Source: Author 's own compilation (EUROSTAT data)

Taking into consideration the results of the estimation carried out for the group of three countries classified as characterised by a “necessity-derived” approach to entrepreneurship, it can be concluded that not all the factors in the group of automatic stabilisers of the economic situation have turned out to have a significant impact on entrepreneurship. It has been proven that only social benefits per one person, the percentage share of VAT in the GDP, the government debt as % of the GDP in a given economy, the value of imports, the private sector debt as % of the GDP in a given economy, the percentage share of economically active people in the total number of inhabitants of working age in terms of %, % of the unemployed among the economically active, and housing cost overload indicator that tells what percentage share of the country’s inhabitants do live in households that spend more than 40 percent of the disposable income on housing needs, have an impact on the entrepreneurship rate, while the impact trend of those variables is diverse (e.g. entrepreneurship\_index (-1), VAT\_revenue, private\_sector\_debt, unemployed\_econom\_active - are positively correlated with the endogenous variable in the model). It should be noted that in the case of Germany, Spain and Switzerland, the important variables are: private sector indebtedness, the percentage share of economically active people in the total number of inhabitants of working age, housing cost overburden index and social security contributions have also turned out to be important. However, expenditure on R&D turned out to be insignificant. The calculations show that in the countries with a greater tendency to develop necessity-derived entrepreneurship, enterprises do not develop and do not want to invest in new technologies or R&D. They focus only on current business operations and survival in certain socio-economic conditions. Declining debt of the private sector also proves that enterprises located in those economies do not want to take the risk of financing with other than their own capital. This proves the short-term perspective of running a business to satisfy the necessities of life.

A different picture arises from the estimation of the model parameters for the countries characterised by opportunity-based entrepreneurship (Table 3).

Table 3

Estimation using 209 observations. The study has been conducted for 19 units of cross-sectional data.

Endogenous variable (Y): l\_ entrepreneurship\_index. Countries in the group of “opportunity-based entrepreneurship.”

Variables	Model parameters	Statistical Significance
l_ entrepreneurship_index (-1)	-0.0942467	
l_ Benefits_unemp	2214,24	***
l_ Government_debt	54,3634	***
l_ Value_import	62,1651	***
l_ Expenditure_R&D	-0,0343872	**
l_ Econom_active	322,485	***
l_ Unemployed_econom_active	323,370	***
l_ Social_security	775,337	***
l_ Income_tax	64,6082	*
Residual sum of squares	174958. 8	
Residual standard error	20.45878	
AR (2) test	-1,76568 [0,0775]	
	No autocorrelation	
	p> 0.05	

Note. \* p <0.1, \*\* p 0.05, \*\*\* p 0.01. Values for t-Student statistics are given in round brackets.

Source: Author’s own compilation (EUROSTAT data).

The study has shown that l\_ entrepreneurship\_index (-1) variable has a significant adverse impact on the entrepreneurship rate. Only one variable showed negative relationships: enterprises’ expenditure on R&D per one person in terms of Euro. The remaining variables have a positive impact on the

entrepreneurship rate i.e: benefits for the unemployed paid by the government as % of the GDP in a given economy; government debt as % of the GDP in a given economy; value of imports as % of the GDP in a given economy; the percentage share of economically active people in the total number of inhabitants of working age in terms of %; % of the unemployed among the economically active; social security contributions paid by employers as % of the GDP in a given economy; income taxes flowing into the state budget as % of the GDP in a given economy. The study has confirmed the assumptions of the Global Entrepreneurship Monitor that the enterprises which have emerged as a result of opportunity-based entrepreneurship demonstrate a greater initiative and willingness to develop. In those countries, entrepreneurship is developed by constantly pursuing innovation.

## 5. CONCLUSION

Both the related literature and the econometric analysis have contributed to the establishment of several general conclusions that directly relate to the research hypotheses put forward at the beginning. In the group of countries that include Germany, Spain and Switzerland, necessity-derived entrepreneurship plays a dominant role. In the light of the push theory and the conducted econometric studies, the crisis caused by COVID-19 will probably result in the development of some sectors of the economy or completely new ones will arise in those economies. New technologies that will be implemented in the economy will offer many opportunities, which is justified by the theory described by Amit and Muller (1995). Service companies in particular will see many innovations in the way services are developed, packaged and sold (Gibbons 2003). However, all those changes will not apply to the research and development sector. Those economies are reluctant to spend money on innovation and therefore do not have a solid basis for avoiding or recovering from crises without negative socio-economic consequences. Social factors turned out to have a significant impact on entrepreneurship resulting from necessity, but this impact turned out to be strongly negative. Germany, Spain and Switzerland have one of the most developed European social financing systems - which does not contribute to the creation of new enterprises. The risk of business failure there is relatively higher than in other European countries due to the high saturation with enterprises.

The second group of countries where opportunity-based entrepreneurship dominates are: Belgium, Bulgaria, France, Italy, Portugal, Romania, Finland, Sweden, Norway, Ireland, Greece, Croatia, Latvia, Hungary, The Netherlands, Poland, Slovakia, Slovenia, and Great Britain. Referring to the pull theory and the results of the econometric research, innovations play a greater role in those economies. Businesses located in those economies are likely to be freer to use new technologies, especially videoconferencing, which can also reduce travel costs and carbon footprint. The COVID-19 crisis will contribute to the large-scale development of artificial intelligence.

It bears noting that the classification of economies is not related to the level of economic development measured, for example, by the GDP per capita. The “necessity -derived entrepreneurship” group of economies includes both Switzerland and Spain, while the “opportunity-based entrepreneurship” group includes both Norway and Romania. The aforementioned countries share the approach to entrepreneurship which, depending on the individual socio-cultural or economic factors (Lavoie 2004), means that the development of entrepreneurship at the time of crisis may be greater in the countries with varied profiles than in the countries with a corresponding level of the socio-economic development (Ziolo 2013). The research in this area was conducted by the previously quoted Igbokowe (2017) because the rate refer to the role of automatic stabilisers of the economic situation, that become variables in the econometric model presented hereabove.

This study is unique for it reviews the dependence of the level of entrepreneurship in some European countries during a period of difficult challenges (2009-2021) and assesses the impact of microeconomic

variables on entrepreneurial activity. The article uses statistical and econometric methods to study such impact, which is still another contribution to this article. According to the results, there is the general and overall need for the development of entrepreneurship in various European countries, and in particular the one that arises from opportunity. This should take place as a result of a better use of advanced innovative technologies and patent applications and an increase in FDI flows. It is also important to verify the effectiveness of public funds spent for social purposes. Therefore, the European governments and economies should carefully consider the costs of entrepreneurial activity and the benefits of increased economic growth and better social conditions. Overall, after the predecessor of the economic crisis, entrepreneurship has played a key role in economic recovery. There is a real chance that a more detailed analysis of the tools at the disposal of the European governments will contribute to the re-development of entrepreneurship after the current crisis resulting from covid-19. It does not matter whether it will be the development of entrepreneurship based on opportunity or resulting from necessity - the most important thing is efficiency.

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