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Entrepreneurship performance in the EU: To what extent do economic, social, and government conditions matter?

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Abstract

Entrepreneurship is widely recognized as a key driver of economic development. At the same time, entrepreneurship is also affected by the economic conditions of the regions where it evolves. In the literature, negative impacts on entrepreneurial performance have been linked to the 2008 financial crisis in the European Union (EU). However, not enough evidence has been provided to support this assertion. To fill this gap, we tested the relationship between economic, social, and government conditions and entrepreneurial performance. We did this for opportunity entrepreneurship (OPP), necessity entrepreneurship (NEC), and total entrepreneurial activity (TEA), for the period 2003–2018, which covers before, during, and after the financial crisis. We considered 21 EU countries and applied descriptive, correlation, and multiple linear regression analyses. Our results demonstrate that (a) there is a positive and significant correlation between NEC and OPP, GDP per capita and OPP, unemployment and TEA, gender ratio and age, gender ratio and education, education and TEA, population and NEC, government indicators and GDP per capita, and government expenditure and NEC, and a negative and significant correlation between GDP per capita and TEA and (b) economic and government conditions had a negative impact on TEA, in contrast to a positive and negative impact on NEC. Social conditions are mixed for TEA and NEC and positive for OPP. The effects on economic conditions were mixed for OPP. Therefore, our study impacts practitioners by demonstrating the factors that do or do not impact entrepreneurial activity in the EU. Additionally, our study expands upon previously analyzed factors that influence entrepreneurial performance, promoting value and originality in the area.

Keywords Entrepreneurial performance · Opportunity entrepreneurship · Necessity entrepreneurship · Economic development · Social development · Government policies · European Union · Desempeño del emprendimiento · Emprendimiento por oportunidad · Emprendimiento por necesidad · Desarrollo económico · Desarrollo social · Políticas gubernamentales · Unión Europea

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Resumen
El emprendimiento es ampliamente reconocido como un motor clave del desarrollo económico. Al mismo tiempo, el emprendimiento también se ve afectado por las condiciones económicas de las regiones en las que se manifiesta. En la literatura, se ha asociado el impacto negativo del desempeño del emprendimiento a la crisis financiera de 2008 en la Unión Europea (UE). Sin embargo, no se ha aportado suficiente evidencia para respaldar esta afirmación. Para abordar esta laguna, examinamos la relación entre las condiciones económicas, sociales y gubernamentales y el desempeño en el emprendimiento. Lo hicimos en el emprendimiento por oportunidad (OP), en el emprendimiento por necesidad (NEC) y en el emprendimiento total (AET), para el período 2003–2018, es decir, antes, durante y después de la crisis financiera. Consideramos 21 países de la UE y aplicamos análisis descriptivos, correlacionales y de regresión lineal múltiple. Nuestros resultados demuestran que: a) hay una correlación positiva y significativa entre NEC y OP; PIB per cápita y OP; desempleo y AET; proporción entre géneros y edad; proporción entre géneros y educación; educación y AET; población y NEC; indicadores gubernamentales y PIB per cápita; y gasto gubernamental y NEC; y una correlación negativa y significativa entre el PIB per cápita y AET; y b) las condiciones económicas y gubernamentales tuvieron un impacto negativo en AET, en contraposición a un impacto tanto positivo como negativo en NEC. Las condiciones sociales son mixtas para AET y NEC y positivas para OP. Las condiciones económicas presentan efectos variados para OP. Por lo tanto, nuestro estudio tiene repercusiones para los profesionales al mostrar los factores que influyen o no en el emprendimiento en la UE. Además, nuestro estudio amplía los factores previamente analizados que afectan al resultado del emprendimiento, aportando valor y originalidad en el campo.

Palabras clave Desempeño del emprendimiento · Emprendimiento por oportunidad · Emprendimiento por necesidad · Desarrollo económico · Desarrollo social · Políticas gubernamentales · Unión Europea

Summary highlights

Brief summary: The study discerns the intricate interplay between socioeconomic and governmental conditions and their effects on entrepreneurial activity in the EU. Through an analysis spanning 2003–2018, we dissect the influences on OPP, NEC, and TEA in 21 EU member states.

Research questions/purpose: To what extent do economic, social, and government conditions influence entrepreneurship performance in EU countries?

Contributions: We deepen our understanding of entrepreneurship's nuanced facets across the EU, particularly during the financial crisis, offering both academic revelations and policy-oriented insights.

Basic methods and information/data: Using a panel dataset (2003–2018), our analytical approach hinges on descriptive statistics, correlation analyses, and linear regressions, focusing on 21 EU countries.

Results/findings: The findings reveal distinct impacts, while economic elements deter TEA and increase NEC, social conditions exhibit mixed outcomes. Additionally, OPP experiences varied results due to the interplay of economic conditions and the positive influences of social factors. Governmental initiatives primarily stifle TEA and NEC, leaving OPP unaltered.

Limitations: Our study encountered challenges related to data missing from the entrepreneurship indicators of some countries, and we did not use instrumental variables in the regression models. Defining appropriate indicators to represent the study's dimensions also posed difficulties.

Theoretical implications: Our research broadens the scope of influential factors on entrepreneurship performance within the EU. We emphasize the pivotal role of government actions and policies, adding depth to the theoretical framework around entrepreneurship.

Practical and policy implications: Policymakers should consider context-sensitive strategies or policies, realizing the diverse entrepreneurial reactions to each country's specification. Recognizing that contexts can yield varied outcomes for necessity, opportunity, or overall entrepreneurial activity is crucial.

Suggestions for future research avenues: We recommend that subsequent studies validate our findings in contexts characterized by low to middle-income, different cultural and geographical attributes, and with diverse economic backgrounds. Incorporating expert interviews could also strengthen the depth and robustness of the discourse.

Introduction

The entrepreneurial ecosystem is geographically shaped by complex interconnections which enhance economic growth (Grilo and Thurik 2004; Hechavarría and Ingram 2019; Seguí-Mas et al. 2019; Wennekers and Thurik 1999). The Global Entrepreneurship Monitor (GEM) defines entrepreneurship as the launching of a new business or venture, as well as the development of an existing business or self-employment activity (Reynolds et al. 1999). According to the WEF (2014), entrepreneurs are strategic boosters of economic and social development. Therefore, policymakers seeking to increase development levels should enforce strategies that encourage entrepreneurship (Acs et al. 2016).

The literature distinguishes two drivers of entrepreneurship: opportunity and necessity. The first relates to individuals who voluntarily start a business to exploit market advantages, and the second is usually a reaction to scarce or unacceptable employment options (Amoros et al. 2019; Angulo-Guerrero et al. 2017; Content et al. 2019). These approaches have different effects on society, employment conditions, and the economy (Amoros et al. 2019; Crescente-Romero et al. 2019; Zwan et al. 2016). If the development of any economy influences both types of entrepreneurship (Amoros et al. 2019), the opportunity-to-necessity ratio should be used as an indicator of economic and policy development (Acs 2006; Content et al. 2019).

To recover from the 2008 economic and financial crisis, the EU has had to invest in innovative skills to be able to compete worldwide and to improve its citizens' quality of life (European Commission 2019a, b). Furthermore, the EU highlighted the need to apply public policies that enhance its entrepreneurial capacity (Amoros et al. 2019; Rodríguez-Pose and Cataldo 2015). According to the WEF (2018), the TEA level of EU Members in 2018 was 8.3%, compared to a global average of 12.3%.

Many studies focus on the influence that entrepreneurship has on economics, as well as on the impact that environmental conditions have on entrepreneurship (Acs et al. 2016; Seguí-Mas et al. 2019). Similarly, the way in which entrepreneurial behavior is affected by society has been receiving growing attention from independent actors, such as governments, academics, investors, media, and large companies (Crescente-Romero et al. 2019; Hechavarría and Ingram 2019; Seguí-Mas et al. 2019).

Despite this, there is still a gap in the literature since there have been no significant recent studies to advance understanding of the effect that institutions and economic policies have on entrepreneurship (Amoros et al. 2019; Bjørnskov and Foss 2008). Thus, this gap leads us to our research problem: to what extent do economic, social, and government conditions explain entrepreneurship performance in the EU? To address our question, the general objective of our research is to analyze the effects of the economic, social, and government conditions on opportunity entrepreneurship (OPP), necessity entrepreneurship (NEC), and total entrepreneurial activity (TEA) in 21 EU countries between 2003 and 2018. Additionally, as secondary objectives, we want to contribute to the discussion on the factors that influence entrepreneurial performance and to present the impact of its development before, during, and after the financial crisis. To achieve these objectives, we describe the relationship between economic, social, and government dimensions, with TEA, OPP, and NEC, through descriptive statistics, correlation analysis, and regression analysis.

Our paper is original in that it connects economic, social, and government factors to explain opportunity entrepreneurship (OPP), necessity entrepreneurship (NEC), and total entrepreneurial activity (TEA), combining different databases to create a unique dataset that covers before, during, and after the EU financial crisis (2003–2018). Our contributions can be categorized into academic and practical realms. Academically, we advance the theoretical discourse by examining diverse factors that explain entrepreneurship performance across EU countries during the financial crisis, utilizing a unique dataset. Practically, we furnish insights that support decision-makers in the EU and its member countries by drawing on lessons regarding entrepreneurship performance from a past crisis. The expected results follow the hypotheses of our study: (i) H1: economic, social, and government policies have a positive impact on entrepreneurial performance in the EU countries; (ii) H2: economic, social, and government policies have a negative impact on necessity entrepreneurship in the EU countries; and (iii) H3: economic, social, and government policies have a positive impact on opportunity entrepreneurship in the EU countries.

Literature review

Entrepreneurship and economic development

The entrepreneurial ecosystem is a concept under development; it is a phenomenon that has a high level of variation, with multiple actors interacting on different scales which, in some cases, require public policies (Ali et al. 2020; Brown and Mason 2017). In this sense, the entrepreneurial dynamics vary in different economies and generate different needs for new government policies (Farinha et al. 2020; Mack and Mayer 2016), which can be classified as heterogenous events (Audretsch et al. 2022). From a regional perspective, the entrepreneurial ecosystem must provide a specific framework and strategy to lead to socioeconomic development (Godley et al. 2021; Spigel and Harrison 2017).

Scholars and policymakers have been endorsing entrepreneurship as an economic grounding (Angulo-Guerrero et al. 2017; Grilo and Thurik 2004; Urbano et al. 2019; Wennekers et al. 2010). The different interactions between internal and external factors create a complex ecosystem that favors market opportunities being filled with innovative ideas (Ali et al. 2020; Hechavarría and Ingram 2019; Seguí-Mas et al. 2019). Also, the literature has numbered the factors that have had a significant influence on entrepreneurial activity and the motivations among countries or groups of countries, as indicated by gross domestic product (GDP), government policies, education, unemployment, and others (Acs and Audretsch 2010; Alvarez et al. 2011; Chowdhury et al. 2019; Gabor 2018; Roman et al. 2018).

As far as EU countries are concerned, several authors have considered entrepreneurship to be essential in generating economic growth and increasing employment rates (Content et al. 2020; Gabor 2018; Radulescu et al. 2018; Teixeira et al. 2018; Urbano et al. 2019; Varga et al. 2020). Before 2008, the EU economy had already been facing structural challenges in terms of its competitiveness, growth, and entrepreneurship (Crescente-Romero et al. 2019; Popovici and Cãlin 2012). Furthermore, starting in 2008, the EU experienced one of the most grievous crises in recent history, there were over 25 million people unemployed and, after 10 years, a significant number of small and medium enterprises had not been able to reattain their pre-crisis levels (European Commission 2019a, b). Additionally, the stock market suffered a global breakdown between the 16th of December 2008 and the 13th of January 2013 (Alexandridis and Hasan 2020). The crisis thus became a catalyst for reforms.

From 2002 to 2007, while firms had generally grown, the less productive ones had retracted or left the market (Bosma et al. 2018). Once the crisis had become entrenched, productivity intensified, resulting in the older, often less productive, firms losing most jobs (OECD 2015). The financial and economic crisis intensified the vital role that entrepreneurship played in development and economic recovery (Velilla 2018).

Since 2004, the number of individuals preferring self-employment to being an employee has decreased in 23 of the 27 EU countries (European Commission 2019a, b). Aspiring EU entrepreneurs lack the necessary business acumen to develop an entrepreneurial career (Chowdhury et al. 2019; Grilo and Thurik 2004). Entrepreneurs find

access to credit difficult, fear penal sanctions in case of failure, and come under increased pressure from financial institutions (Radulescu et al. 2018).

On the other hand, entrepreneurship activity, in the beginning, could be related to an individual nation's economic development (Content et al. 2020; Gautam and Lal 2021; Urbano et al. 2019), the government structures it has available to promote policies and incentives (Brown and Mason 2017; Wennekers et al. 2005), and to the skills higher education students will have developed over the period of their education (Lopes et al. 2021). Therefore, the government policies proposed should consider the importance of context in the entrepreneurship environment (Audretsch et al. 2022; Content et al. 2020; Huang et al. 2023).

Factors that influence entrepreneurship

Entrepreneurship performance is a global movement with multiple and complex variables that both influence and are influenced (Brown and Mason 2017; Godley et al. 2021; Spigel and Harrison 2017; Von Bloh 2021). Factors that influence entrepreneurship include education, gender, macroeconomic environment, and the labor market (Abdesselam et al. 2018; Alvarez et al. 2011; Arbolino et al. 2019; Grilo and Thurik 2004; Lopes et al. 2021; Seguí-Mas et al. 2019; Silva et al. 2022). The macroeconomic entrepreneurial performance involves elements such as the inflation rate, foreign direct investment (FDI), access to finance, and the total tax rate (Farinha et al. 2020). And variables from individual businesses have had a significant effect on the TEA (Huang et al. 2023; Rusu and Roman 2017). Government programs have been shown to have an essential impact on entrepreneurial performance, by minimizing transaction costs for organizations and improving human capital (Chowdhury et al. 2019; Gabor 2018; Hechavarría and Ingram 2019; Radulescu et al. 2018; Roman et al. 2018; Teixeira et al. 2018; Varga et al. 2020).

We thus hypothesize (Abdesselam et al. 2018; Acs 2006; Angulo-Guerrero et al. 2017; Chowdhury et al. 2019; Gautam and Lal 2021; Wennekers et al. 2005):

> **Hypothesis 1**: Economic, social, and government policies have a positive impact on entrepreneurial performance in the EU countries.

On the one hand, there is NEC which is when individuals set up a business due to a lack of employment opportunities (Angulo-Guerrero et al. 2017; Content et al. 2019). This type of business is frequently small and less productive, creating fewer new jobs (Content et al. 2019; Reynolds et al. 2001). Economies dominated by NEC should adopt policies that can possibly enhance the economic potential they have to develop their regions (Bashir and Akhtar 2016; Urbano et al. 2019). For necessity entrepreneurs, both the country's economic development and total tax rate influence their entrepreneurial motivation (Afi et al. 2022; Khurana et al. 2023; Rusu and Roman 2018). Meanwhile, specific policies linked to the area of social welfare could empower society to invest in entrepreneurial skills (Huang et al. 2023; Silva et al. 2022).

We thus hypothesize (Acs and Audretsch 2010; Amoros et al. 2019; Rusu and Roman 2018; Silva et al. 2022):

Hypothesis 2: Economic, social, and government policies have a negative impact on necessity entrepreneurship in the EU countries.

On the other hand, OPP occurs whenever an individual sets up a new business to exploit opportunities (Amoros et al. 2019; Bashir and Akhtar 2016; Zwan et al. 2016). This is the most common type of entrepreneurship in developed economies as there is a higher probability of creating employment growth since it exploits market opportunities created by spillovers (Bosma and Kelley 2019; Content et al. 2019; Reynolds et al. 1999; Urbano et al. 2019). Entrepreneurship is influenced by factors such as unemployment rates, inflation rates, and access to financial resources (Abdesselam et al. 2018; Afi et al. 2022; Rusu and Roman 2018). Moreover, Bjørnskov and Foss (2008) found that the primary features of the welfare state (namely robust relocation of public goods, government consumption, regressive transfer, and high marginal taxes) are significantly negative when associated with OPP. Additionally, the size of the government can be negatively associated with OPP and its growth (Bosma et al. 2018). OPP also permits an understanding of the influence that external conditions have on market-driven entrepreneurship, which comprises opportunities and innovation (Ali et al. 2020; Crescente-Romero et al. 2019).

We thus hypothesize (Angulo-Guerrero et al. 2017; Farinha et al. 2020; Rusu and Roman 2018; Urbano et al. 2019):

Hypothesis 3: Economic, social, and government policies have a positive impact on opportunity entrepreneurship in the EU countries.

Subsequently, measures to improve NEC do not unavoidably benefit OPP entrepreneurs (Zwan et al. 2016). While the effects of FDI inflows on the overall entrepreneurship rate are both positive and negative, NEC economies impact FDI negatively, and OPP increases with a greater inward flow of FDI as new investors flow in (Afi et al. 2022; Rusu and Roman 2017). Furthermore, in supporting the empirical foundations of entrepreneurship policies, importance should be paid to the rates of entrepreneurial efforts and to factors from different types of entrepreneurial performance (Amoros et al. 2019; Reynolds et al. 2001; Silva et al. 2022; Wennekers et al. 2010). Evidence from GEM suggests that both purposes are foundations of entrepreneurship (Acs et al. 2013; Arenius and Minniti 2005; Reynolds et al. 1999, 2001). To this end, both approaches provided by GEM (2019a, b, c, d) were used on OPP and NEC as indicators of the TEA among EU countries. Figure 1 summarizes the relation between the influencing factors (TEA, NEC, and OPP) and the hypotheses.

Methods

Research design

Our study can be defined as descriptive and quantitative, since it pursues the systematic description of a determined phenomenon, examines it as an integral system, and

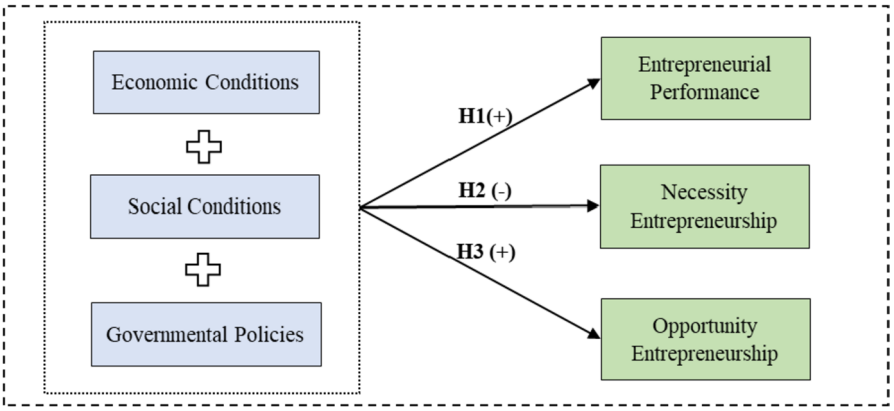

Fig. 1 Hypotheses structure

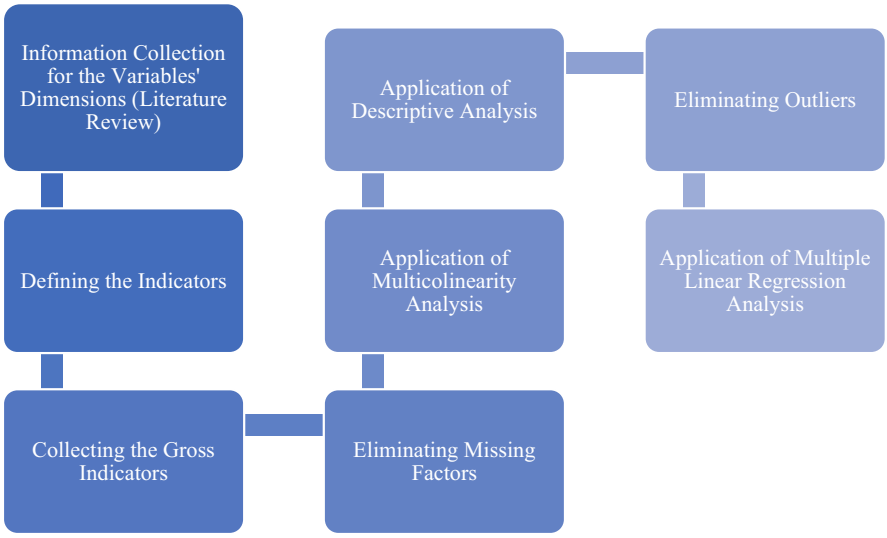

Fig. 2 Methodological synthesis

then differentiates it from another by examining the pivotal variables that describe entrepreneurship performance through statistical analysis.

Figure 2 presents the steps of our study.

First, information was collected to define the dimensions that comprise the variables, as shown by the literature review. Following this, the indicators were defined based on the influencing factors in entrepreneurial performance. In the third step, the indicators were catalogued and set from the databases in 2019. In sequence, after eliminating the missing factors, an accurate analysis was reached.

To satisfy the assumption of no multicollinearity from multiple linear regression, it was proved that both the independent and dependent variables, respectively, are

not highly correlated with each other. Subsequently, a descriptive analysis of the filtered data was produced. Thereafter, in the collection of the variables and to ensure the assumption of multivariate normality from the multiple regression, data analysis was carried out to search for outliers, and to assure that residual values were normally distributed. Finally, this led to the multiple linear regressions.

We used multiple linear regression (i) to quantify the relationship between the economic, social, and government dimensions, and entrepreneurial performance, (ii) for its being well-accepted and highly used between the managerial and economics journals, and (iii) based on the previous studies (Rocha and Sternberg 2005; Valdez and Richardson 2013).

Data

Reports on the GDP growth and the stock trading prices state that the financial and economic crisis in the EU took place in the period 2008–2013 (World Bank 2019a, b, c, d, e, f, g, h, i, j). Therefore, we define that as being the period of our study to allow for examination of the data before, during, and after the crisis. The analysis covered the economic, social, and government dimensions of 21 EU countries. The group of gross factors included 448 observations for the period of 2003 to 2018. Bulgaria, Cyprus, Czechia, Estonia, Lithuania, Luxembourg, and Malta were excluded, due to missing data on TEA. For the countries where less than half of the years were covered, the TEA mean was calculated.

Variables

The dependent variables in our study are TEA, OPP, and NEC. The choice of these indicators is based on the literature review, as summarized in Table 1.

The independent variables are GDPpc, unemployment, macroeconomic environment, financial development, FDI, age, gender ratio, education, population, government programs, and government expenditure.

Table 1 presents the dependent variables, and the independent variables are divided into three sets (economic, social, and political). Columns three and four present, respectively, the definitions and the sources of the variables. The last column provides examples in the literature that support the use of each variable,

Statistical analysis

First, we used descriptive statistics to comprehend the disposition and distribution of the variables (Hair Júnior et al. 2009); see the "Descriptive analysis" section.

Following this, we ran the correlation analysis through the Pearson coefficient to ascertain the independence of the variables and their possible association (Hair Júnior et al. 2009; Si and Qiao 2017), taking 0.7 as the reference point (Anderson et al. 1990); see the "Correlation analysis" section.

Finally, to test the hypothesis, we applied regression analysis using the following equations (Hair Júnior et al. 2009; Si and Qiao 2017); see the "Regression

Table 1 Filtered dimensions and variables

Dimensions	Variables	Definition	Source	References
Entrepreneurship	A – TEA	Percentage of 18-64 year olds population that is either a nascent entrepreneur or owner of a business.	GEM (2019e)	(Reynolds et al., 1999); (Reynolds et al., 2001); (Bosma & Kelley, 2019)
	B - Necessity Entrepreneurship	Percentage of those 18-64 year olds involved in TEA who are involved in entrepreneurship because they had no better options for work.		
	C - Opportunity Entrepreneurship	Percentage of those 18-64 year olds involved in TEA who are involved in entrepreneurship because they see good opportunities to start a firm in the area where they live.		
Economic	D - GDPpc	GDP at current prices divided by midyear population (€000 per capita).	EUROSTAT (2019b)	(Bjørnskov and Foss, 2008); (Angulo-Guerrero et al., 2017); (Hechavarría and Ingram, 2019)
	E - Unemployment	Annual average of individuals without work, seeking work in a recent past period, and currently available for work (%).	EUROSTAT (2019d)	(Rodríguez-Pose and Cataldo, 2015); (Angulo-Guerrero et al., 2017); (Content et al., 2019); (Hechavarría and Ingram, 2019)
	F - Macroeconomic Environment	The branch of economics that is concerned with the major, general features of a country's economy, such as government current account balance, gross national savings, consumer price inflation, and government gross debt to GDP - competitiveness index.	IMF (2019a, b, c,); World Bank (2019f)	(Crescente-Romero et al., 2019)
	G - Financial Development	Part of an economy not financed by the Government (with the major players being firms, investors, financial instruments and financial markets). Data are in the cyclically adjusted total expenditure of general government. (%)	AMECO (2019)	(Grilo and Thurik, 2014); (Zwan et al., 2016); (Crescente-Romero et al., 2019); (Hechavarría and Ingram, 2019)
	H - FDI	Foreign direct investment (net inflows as a percentage of the GDP).	World Bank (2019b)	(Angulo-Guerrero et al., 2017)
Social	I - Age	Age that divides a group into two halves of equal size. It means that half the population is younger than the median age and the other half is older. (Numerical)	PORDATA (2019)	(Arenius and Minniti, 2005); (Grilo and Thurik, 2014); (Zwan et al., 2016); (Angulo-Guerrero et al., 2017)
	J - Gender Ratio	The ratio between the number of males and females that represent the active population in a society (%).	EUROSTAT (2019a)	(Arenius and Minniti, 2005); (Grilo and Thurik, 2014); (Zwan et al., 2016)
	K - Education	Annual averages of quarterly EU Labour Force Survey data from upper secondary to doctoral or equivalent level (%).	EUROSTAT (2019c)	(Arenius and Minniti, 2005); (Bjørnskov and Foss, 2008); (Valliere and Peterson, 2009); (Alvarez et al., 2011); (Grilo and Thurik, 2014); (Zwan et al., 2016); (Angulo-Guerrero et al., 2017); (Crescente-Romero et al., 2019)
	L - Population	Midyear estimates of the total population, based on the "de facto" definition of population (all residents regardless of legal status or citizenship).	AMECO (2019)	(Angulo-Guerrero et al., 2017); (Hechavarría and Ingram, 2019)
Governmental Policies	M - Government Programs	Programs directly assisting SME at all levels of government (national, regional, or municipal) (%).	GEM (2019e)	(Alvarez et al., 2011); (Hechavarría and Ingram, 2019)
	N - Government Expenditure	Government Budget (appropriations or outlays) on R&D (%)	EUROSTAT (2019e)	(WEF, 2014)

analysis—Hypothesis 1," "Regression analysis—Hypothesis 2," and "Regression analysis—Hypothesis 3" sections.

$$A = \beta_0 + \beta_D + \beta_E + \beta_F + \beta_G + \beta_H + \beta_I + \beta_J + \beta_K + \beta_L + \beta_M + \beta_N + \epsilon \quad (1)$$

This equation, representing H1, aims to understand the relationship between economic, social, and government policy variables in entrepreneurial performance by multiple regression analysis,

Table 2 Descriptive statistics

Variables	*Min.*	*Max.*	*Mean*	*SD*
Dependent variables				
TEA (%)	1.63	14.20	6.72	2.44
NEC (%)	0.06	0.25	0.13	0.05
OPP (%)	0.61	1.36	0.94	0.12
Independent variables				
GDPpc (€000)	11.7	221.1	100.38	50.50
Unemployment (%)	3.4	27.5	9.18	4.46
Macroeconomic environment (Nº, index)	13.63	191.53	90.65	31.63
Financial environment (%)	28.43	62.36	46.66	6.07
FDI (% of GDP)	-46.77	86.61	5.32	11.20
Age (Nº)	33.0	46.3	40.50	2.45
Gender Ratio (%)	65.44	102.23	85.16	7.00
Education (%)	24.3	86.5	70.69	11.79
Population (Nº, rounded)	1,233	55,596	15,115	16,000
Government programs (%)	1.72	3.75	2,76	0.48
Government expenditure (%)	0.35	2.10	1.21	0.42

$$B = \beta_0 + \beta_D + \beta_E + \beta_F + \beta_G + \beta_H + \beta_I + \beta_J + \beta_K + \beta_L + \beta_M + \beta_N + \epsilon \quad (2)$$

This equation, representing H2, concerns the impact of the variables of economic, social, and government policy dimensions on NEC.

$$C = \beta_0 + \beta_D + \beta_E + \beta_F + \beta_G + \beta_H + \beta_I + \beta_J + \beta_K + \beta_L + \beta_M + \beta_N + \epsilon \quad (3)$$

This equation, representing H3, explores how economic, social, and government policy variables influence opportunity entrepreneurship.

Results

Descriptive analysis

Table 2 presents the descriptive statistics values (minimum (Min.), maximum (Max.), mean (Mean), and standard deviation (SD)), grouped into each dimension from the variables analyzed. We highlight one variable per dimension.

TEA ranges from 1.63 to 14.20%, with a mean of 6.72%. Similar values, found by Rusu and Roman (2017), can be explained as differences in the macroeconomic circumstances that impact entrepreneurship, such as the regulatory aspects of registering a business and the ease in which this can be done. According to Crescente-Romero et al. (2019), economies in recovery enhance strategic opportunities and diminish the number of necessity entrepreneurs, which could also explain these values.

Regarding the economic dimension, GDPpc presents relevant variations among the countries considered over the period of analysis, in line with Angulo-Guerrero et al. (2017) and Gautam and Lal (2021).

Considering the social dimension, there is greater variance among countries mainly regarding education and population size. The greater a country's population, the more individuals there are who are likely to be active in the labor force,

Table 3 Correlation matrix

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
A	1													
B	-0.35*	1												
C	0.12	0.28*	1											
D	-0.33*	0.10	0.21*	1										
E	0.11*	0.27*	-0.18	-0.40*	1									
F	-0.19*	0.36*	-0.26*	0.18*	0.33*	1								
G	-0.51*	0.16	-0.25*	0.31*	-0.05	0.35*	1							
H	0.02	0.08	0.13	0.18*	-0.09	-0.01	-0.17*	1						
I	-0.16*	0.23*	-0.14	0.00	0.00	0.50*	0.32*	-0.24*	1					
J	0.14*	-0.21*	-0.02	0.13*	-0.04	-0.14*	0.15*	-0.04	0.21*	1				
K	0.27*	-0.12	0.15	-0.01	-0.18*	-0.25*	-0.09	-0.02	0.00	-0.26*	1			
L	-0.27*	0.54*	0.08	0.11*	-0.03	0.19*	-0.01	-0.13*	0.20*	-0.22*	-0.11*	1		
M	-0.04	0.04	0.14	0.64*	-0.36*	-0.14*	-0.10	0.20*	-0.08	0.28*	0.05	0.23*	1	
N	-0.44*	0.18*	0.03	0.69*	-0.29*	0.03	0.37*	0.02	0.26*	0.15*	0.03	0.27*	0.49*	1

*$p < 0.05$

which then influences entrepreneurial performance along with education by offering the practical skills to set up businesses (Hechavarría and Ingram 2019; Silva et al. 2022).

With regard to government policies, these evidence some stability, mainly in the programs assisting SMEs.

Correlation analysis

Table 3 presents the correlation analysis used to ensure there is no multicollinearity. It shows levels of correlation below 0.7, thus avoiding multicollinearity and the need to exclude any variable from the regression analysis (Hair Júnior et al. 2009; Lattin et al. 2003).

Highlighting some correlations in the table, we start with the correlation between NEC and OPP, which is relatively low ($r = 0.28$*) and consistent with Content et al. (2019).

Additionally, the table shows a negative and significant association of GDPpc with TEA ($r = -0.33$*), together with a positive and significant link to OPP ($r = 0.21$*), in line with Bosma et al. (2018), Rusu and Roman (2017) and Gautam and Lal (2021). This is because as income rises, the employment opportunities that emerge tend to be more profitable than owning a business (Rusu and Roman 2018). Moreover, unemployment is positively and significantly associated with TEA ($r =$

0.11*), as found by Bosma et al. (2018), Content et al. (2019), and Rusu and Roman (2017).

The gender ratio is positively and significantly related to age ($r = 0.21$*) and education ($r = 0.26$*), in line with Arenius and Minniti (2005). Regarding education, there is a positive and significant relation with TEA ($r = 0.27$*), as found by Alvarez et al. (2011) and Lopes et al. (2021). The highest value from this dimension and NEC relates to the population ($r = 0.54$*).

A high positive and significant correlation was observed between government policy variables and GDPpc ($r = 0.64$*, 0.69*), and a positive correlation between government expenditure and NEC ($r = 0.18$*), supporting the results of Abdesselam et al. (2018) and Amoros et al. (2019).

Although a high correlation suggests multicollinearity, the variance inflation factor ranges between 1.374 and 3.875, indicating no significant multicollinearity.

Regression analysis—Hypothesis 1

Table 4 gives the unstandardized and standardized β-coefficients and their standard error for this analysis, testing hypothesis 1.

This regression model significantly predicted memory ability, F (11, 122) = 20.74, $p = 0.001$, and the model predicts 51% of the total variance ($R^2 = 0.51$). The beta coefficients demonstrate that with a 1% increase in the financial environment, TEA decreases by 0.186 in contrast to a decrease of 0.008, in line with Rusu and Roman (2018) and Gautam and Lal (2021). With a 1% increase in education, TEA increases by 0.045 and, for every additional 1,000 people, TEA decreases by 3.323E-5. With a 1% increase in government expenditure, TEA decreases by 1.620.

The financial environment is the independent and significant variable that has the strongest effect on TEA. The approach used in this research is similar to that used by Hechavarría and Ingram (2019), which shows that paucity of information, moral risks, and adverse selection costs lead to uncertainty and a decrease in financial incentives. Nevertheless, other studies have found a positive relationship, claiming that entrepreneurship needs simpler access to financial resources than this in order to enhance economic growth through the establishment of new businesses (Abdesselam et al. 2018; Arbolino et al. 2019; Bosma et al. 2018; Chowdhury et al. 2019; Teixeira et al. 2018; Zwan et al. 2016).

Higher educational levels are related to increased entrepreneurial competencies, especially within the EU, as entrepreneurs need to deal with competitive environments and pressures from customers, which can only be dealt with through the abilities provided by education (Alvarez et al. 2011; Lopes et al. 2021; Reynolds et al. 1999; Teixeira et al. 2018).

Furthermore, the significant negative impact of the working-age population on TEA has also been observed in other studies (Chowdhury et al. 2019; Reynolds et al. 1999), which contrasts with the positive impact found by Roman et al. (2018).

Finally, government expenditure has a negative significant impact on TEA. Instead of applying more rigorous but sustainable measures to stabilize expenditure,

Table 4 TEA as the dependent variable (H1)

Variables	*ß*	SE	Standardized *ß*	*p*
(constant)	8.010	2.973		0.008
GDPpc	−0.006	0.005	−0.111	0.233
Unemployment	0.001	0.037	0.002	0.976
Macroeconomic environment	0.001	0.007	0.011	0.898
Financial environment	−0.186	0.024	−0.433	0.000***
FDI	−0.016	0.013	−0.064	0.251
Age	0.044	0.086	0.043	0.614
Gender ratio	0.046	0.023	0.132	0.051
Education	0.045	0.012	0.202	0.000***
Population	−3.323E-5	0.000	−0.227	0.000***
Government programs	0.646	0.373	0.123	0.085
Government expenditure	−1.620	0.476	−0.269	0.001**

***$p < 0.001$; **$p < 0.01$; *$p < 0.05$

$F\ (11, 122) = 20.74$

$R^2 = 0.51$

governments regularly increase taxes to cover fiscal cracks, which decreases total entrepreneurship (Farinha et al. 2020; Teixeira et al. 2018; WEF 2014).

Regression analysis—Hypothesis 2

Table 5 gives the unstandardized and standardized ß-coefficients and their standard errors for this analysis, testing hypothesis 2.

This regression model significantly predicted memory ability, $F\ (11,90) = 16.16$, $p = 0.001$ and the model predicts 66% of the total variance ($R^2 = 0.66$). The beta coefficients demonstrate that with a €1,000 (one thousand euro) increase in GDPpc, NEC increases by 0.001. With a 1% increase in unemployment, NEC increases by 0.003; however, Rusu and Roman (2018) suggest an increase of 1.17. Additionally, with a 1% increase in the macroeconomic environment, NEC does not increase, meaning that the economy is stable. With a 1% increase in the financial environment, NEC increases by 0.002, compared to a value of 0.786 in Crescente-Romero et al. (2019). If the individual is 1 year older, NEC increases by 0.009, in comparison to 0.091 in the study of Amoros et al. (2019). With a 1% increase in the gender ratio, NEC decreases by 0.003. For every 1000 people, NEC increases by 1.195E-6. With a 1% increase in government expenditure, NEC decreases by 0.028.

Our findings highlight GDPpc, unemployment (Rusu and Roman 2018), macroeconomic (Khurana et al. 2023) and financial environments (Afi et al. 2022; Crescente-Romero et al. 2019), age, gender (Amoros et al. 2019), population (Roman et al. 2018), and government expenditure (Bjørnskov and Foss 2008) as influencers of NEC. Therefore, an increase in GDPpc has a positive effect on NEC, since the rise in income stimulates demand for goods and services, especially in economies lacking employment alternatives (Amoros et al. 2019; Rusu and Roman 2017). As

Table 5 NEC as the dependent variable (H2)

Variables	*ß*	SE	Standardized *ß*	*p*
(constant)	−0.143	0.107		0.184
GDPpc	0.001	0.000	0.563	0.000***
Unemployment	0.003	0.001	0.346	0.001**
Macroeconomic environment	0.000	0.000	−0.250	0.040**
Financial environment	0.002	0.001	0.317	0.000***
FDI	0.000	0.000	0.079	0.290
Age	0.009	0.002	0.438	0.000***
Gender ratio	−0.003	0.001	−0.358	0.000***
Education	0.000	0.000	0.029	0.766
Population	1.195E-6	0.000	0.443	0.000***
Government programs	0.000	0.009	0.004	0.969
Government expenditure	−0.028	0.011	−0.240	0.017*

***$p < 0.001$; **$p < 0.01$; *$p < 0.05$

$F\ (11, 90) = 16.16$

$R^2 = 0.66$

unemployment increases, necessity drives the tendency for more businesses to be set up (European Commission 2019a, b; Rusu and Roman 2018). This demonstrates that in EU countries, not only is there a decreasing number of available jobs, but they are harder to find, and more and more people are having to protect their income (Content et al. 2019; Rusu and Roman 2017; Silva et al. 2022).

Furthermore, as the number of female entrepreneurs increases, NEC decreases, since the incentives for women are government policies that support entrepreneurship (Hechavarría and Ingram 2019). According to Amoros et al. (2019), there is no significant effect on males with regard to NEC.

At the same time, the demographic variables that influence NEC as a supply channel are age, gender, and population. As these increase, there is an expansion of new business opportunities (Grilo and Thurik 2004; Roman et al. 2018).

Regression analysis—Hypothesis 3

Table 6 gives the unstandardized and standardized, ß-coefficients and their standard error for our analysis, testing hypothesis 3.

This regression model significantly predicted memory ability, $F\ (11,90) = 2.44$, $p = 0.01$ and the model predicts 23% of the total variance ($R^2 = 0.23$). The beta coefficients demonstrate that for a €1000 increase in GDPpc, OPP increases by 0.001, as found in NEC, compared to a value of 0.067 found in a similar study by Rusu and Roman (2018). Furthermore, with a 1% increase in the macroeconomic environment, OPP decreases by 0.002, since the number of opportunity entrepreneurs falls as the economy grows (Crescente-Romero et al. 2019). If the individual is just 1 year older, OPP increases by 0.016, giving a value 1.8 times higher than for NEC, which compares with the 0.089 of Amoros et al. (2019).

Table 6 OPP as the dependent variable (H3)

Variables	β	SE	Standardized β	p
(constant)	0.694	0.418		0.100
GDPpc	0.001	0.000	0.600	0.001**
Unemployment	0.007	0.003	0.304	0.054
Macroeconomic environment	−0.002	0.001	−0.528	0.005**
Financial environment	−0.003	0.002	−0.170	0.141
FDI	0.001	0.001	0.060	0.592
Age	0.016	0.008	0.314	0.039*
Gender ratio	−0.003	0.003	−0.138	0.305
Education	0.001	0.002	0.090	0.540
Population	1.001E-6	0.000	0.144	0.205
Government programs	−0.022	0.035	−0.094	0.534
Government expenditure	−0.08	0.045	−0.264	0.079

$^{***}p < 0.001$; $^{**}p < 0.01$; $^{*}p < 0.05$

$F\,(11, 90) = 2.44$

$R^2 = 0.23$

The negative interference of the financial environment cannot be ruled out because the insignificant statistical result is critical (Khurana et al. 2023), as there is no need for financial support for OPP (Afi et al. 2022; Alvarez et al. 2011; Grilo and Thurik 2004).

Discussion

Economic, social, and government dimensions can, likewise, have different effects on the TEA of both OPP and NEC in EU countries (Content et al. 2020). Additionally, while being an enhancing mechanism for entrepreneurial motivations, economic factors had a negative impact on TEA, a finding that is in line with Rusu and Roman (2017). These seem to perform positively on NEC. While OPP experienced mixed outcomes: a positive effect from GDPpc, and a negative one from the macroeconomic environment, ultimately yielding a net negative impact. Social conditions exhibit mixed outcomes for TEA and NEC having an overall positive result, appearing positive for OPP (Huang et al. 2023). While government policies are detrimental to TEA and NEC, they have no effect on OPP.

Four variables explain TEA, three of these—financial environment, population, and government expenditure—also influence NEC, as found by Rusu and Roman (2017), Farinha et al. (2020), and Abdesselam et al. (2018). The fourth variable is education, and its effect is positive on TEA. This means that a higher level of education enhances the business capabilities needed to create a business within the EU environment, which in turn leads to improved entrepreneurial performance (Alvarez et al. 2011; Reynolds et al. 1999; Teixeira et al. 2018).

Additionally, the variables that influence OPP, these being GDPpc, macroeconomic environment, and age, also impact NEC. Necessity entrepreneurship, besides being affected by the above, is also influenced by unemployment and gender. The divergent result in the variables affecting these types of entrepreneurship implies that the outcome of both entrepreneurial motivations is less effective when considering entrepreneurial performance (Afi et al. 2022; Crescente-Romero et al. 2019).

Also, whereas population density (Content et al. 2019), unemployment, financial environment, gender, and government expenditure do not provide a stimulus for OPP, they do for NEC. Thus, unemployment impacts necessity entrepreneurs, and these results concur with other studies that report the positive and significant impact of unemployment on NEC (Content et al. 2019; Khurana et al. 2023; Rusu and Roman 2017).

Moreover, contrary to what the literature suggests (Acs and Audretsch 2010; Angulo-Guerrero et al. 2017; Rusu and Roman 2018), the dimensions studied are not negatively related to NEC and are positively related to TEA and OPP. Therefore, further advances comprise trade-offs in OPP to establish NEC in the EU. Nevertheless, opportunity entrepreneurs are not substantial positive forecasters of growth (Afi et al. 2022; Valliere and Peterson 2009). The findings of our study provide empirical support for scientific research and the business field in the EU, as far as the entrepreneurial performance relationship is concerned. This is consistent with Rusu and Roman (2018), who reported that the crisis is a crucial determinator for studying the factors that influence entrepreneurship. Velilla (2018) and Content et al. (2020) contend that the significant and increasing effect of entrepreneurship provides a boost to economic recovery and expansion.

Conclusions

At the end of this study, using descriptive statistics, correlation analysis, and multiple linear regressions, we analyzed the effects of the economic, social, and government conditions on opportunity entrepreneurship (OPP), necessity entrepreneurship (NEC), and total entrepreneurial activity (TEA) in 21 EU countries during the period between 2003 and 2018. The main findings indicate that the EU crisis did have a significant impact on entrepreneurial performance.

Our study reveals several nuanced relationships between diverse factors and entrepreneurial activity. Economic conditions positively affect NEC but negatively influence TEA, with OPP experiencing mixed outcomes: ultimately yielding a net negative impact. While social conditions have a positive influence on OPP, they exhibit mixed effects on TEA and NEC: certain aspects of social conditions promote these activities, whereas others inhibit them. Overall, the net impact of social conditions on both TEA and NEC remains positive. Conversely, government policies negatively impact TEA and NEC but show no discernible effect on OPP. We also found that factors such as population density, unemployment, financial environment, gender, and government expenditure significantly influence NEC performance, yet they do not affect OPP. The macroeconomic environment emerges as a notable

predictor for both NEC and OPP: a 1% uptick in the macroeconomic environment results in no increase in NEC, signifying economic stability. Concurrently, the same 1% enhancement leads to a 0.002 decrease in OPP, indicating that the number of opportunity entrepreneurs diminishes as the economy expands. Furthermore, while education exerts a positive effect on TEA performance, it remains inconsequential for both NEC and OPP.

The theoretical implications involve comprehending the broadened set of factors influencing entrepreneurial activity in the EU, going beyond the socioeconomic factors. We highlight the significance of government actions and policies in shaping entrepreneurship. Furthermore, it is evident that TEA, NEC, and OPP are influenced differently by these factors, paving the way for new fields that delve into regional entrepreneurial perspectives. As practical and social implications, we provide a contribution to practitioners in government agencies by pointing out how policies can bolster or hinder economic and social progress via entrepreneurial activity. Moreover, our research underscores the pivotal role that environmental characteristics play in strengthening performance in the entrepreneurship domain.

Finally, our paper presents originality in two main points. First, we explored economic, social, and government factors to explain opportunity entrepreneurship (OPP), necessity entrepreneurship (NEC), and total entrepreneurial activity (TEA). Second, we combined different databases to create an original dataset for a specific period: before, during, and after the EU financial crisis (2003-2018).

Limitations and further research

One limitation arises from there being some lack of data, mainly the entrepreneurship indicators for some countries, and the non-rating factors which were not in the statistical databases. Another limitation is the non-existence of a systematic review that defines each dimension and the variables that influence entrepreneurship. Also, our study did not support a linear relationship between entrepreneurial performance and its influencing factors. Furthermore, we did not use instrumental variables to manage endogeneity in the regression models.

Future research should test the robustness of these results in other economies such as emerging economies, for instance. In the EU, as in other geographies, there is diversity regarding economic, social, and government realities. Therefore, as several studies have discussed the volatile impact that entrepreneurship has on economic growth depending on the development of the country, it would be valuable to extend our research to different circumstances. This would address the opposite analysis from the variables selected here. Also, adding primary data from experts and entrepreneurs to further research on the dimensions studied would be invaluable.

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Declarations

Conflict of interest The authors declare no competing interests.

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