

# The Impact of Economic Security on Sustainable Entrepreneurship in Central and Eastern Europe – from the Financial Crisis to the COVID–19 Pandemic

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## Abstract

The article's main aim is to assess the impact of economic security on sustainable entrepreneurship in Central and Eastern European Countries (CEECs), including Bulgaria, Croatia, Czechia, Estonia, Hungary, Lithuania, Latvia, Poland, Romania, Slovakia and Slovenia from 2008 to 2020. The paper's novelty is the development of indicators of sustainable entrepreneurship and its three pillars: economic, social and environmental. Moreover, we assessed the impact of economic security on sustainable entrepreneurship and conducted a comparative analysis of its consequences on the economic, social and environmental components of entrepreneurship. We use the Pearson correlation coefficient, the Ordinary Least Square Method, and the SUR estimations for structural equations. The results of the analysis indicate that sustainable entrepreneurship and economic security in the analysed countries are growing. However, their dynamics are varied, and what is more, economic security has a statistically significant impact on sustainable entrepreneurship. The impact of economic security on sustainable entrepreneurship from 2008 to 2020 is highest in Slovakia, Bulgaria and Poland. The lowest is in Latvia, Romania and Czechia. We notice that pursuing a stable and responsible macroeconomic policy



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affects the implementation of sustainable development goals. It is important to create the best conditions for growth in the long term, which is a challenge because of the problem of finding optimal relationships between factors that determine economic security.

**Keywords:** sustainable entrepreneurship, economic security, Central and Eastern Europe

**JEL:** F43, O47, Q01, Q56

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## Introduction

Entrepreneurship is a multidimensional term defined as a group of personality features and behaviours of people undertaking new economic endeavours. In other words, it is starting a business with the expectancy of making a financial and non-financial profit, solving complex business problems and searching for new business solutions and development paths. Entrepreneurship is improving one's ideas and aspiring to find the best way out of a situation. Entrepreneurship plays an essential function as a driving force in the development of modern economies. It leads to improved living standards, generates capital, and increases employment, prosperity and national income.

Sustainable entrepreneurship ( $Sus_{Ent}$ ), a part of the strategy for implementing sustainable development goals, is gaining importance. Aside from multiplying profits,  $Sus_{Ent}$  is based on supporting and developing employees and local communities and protecting the natural environment. It means the entrepreneur's ability, with his skills, to carry out economic tasks that are both socially and ecologically responsible.

$Sus_{Ent}$  is a relatively new research problem. Therefore, it is poorly recognised, complex and challenging, which results from the fact that it is defined in various ways, and there is no single universally accepted measure to assess it (Urbaniec 2018; Bajdor 2021; Bertello et al. 2022; Di Vaio et al. 2022). In the literature on the subject, most analyses are devoted to discussing theoretical issues related to conceptualising the term (Pacheco, Dean, and Payne 2010; Rosário, Raimundo, and Cruz 2022), development strategies and models (Schaltegger, Lüdeke-Freund, and Hansen 2016; Gregori and Holzmann 2020), and factors that influence the shaping of social and ecological attitudes among entrepreneurs (Raudeliūnienė, Tvaronavičienė, and Dzemyda 2014; Bajdor, Pawełoszek, and Fidlerova 2021).

A novelty in our study is the determination of proprietary indicators for  $Sus_{Ent}$  and the separation of its three pillars, economic (E), social (S), and environmental (Env), in Central and Eastern European Countries (CEECs). In addition, we determined

the economic security indicator ( $E_{\text{sec}}$ ) and assessed its impact on  $\text{Sus}_{\text{Ent}}$  in the studied countries. Our aim is also to indicate the theoretical and empirical implications of the research.

In the analysis, we use Pearson's correlation coefficient and estimation of the OLS and SUR for interdependent equations. We operated on the Eurostat database and used Gretl and Statistica.

The paper includes an introduction, theoretical background, research methodology, results, discussion and conclusions.

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## Theoretical background

Sustainable entrepreneurship is one of the “catalysts” of social development and environmental protection (Hummels and Argyrou 2021; Wach and Głodowska 2022; Mondal and Gupta 2023). It is part of implementing sustainable development goals, which can be understood as a process based on maintaining favourable operating conditions for the current and future generations (Hockerts and Wüstenhagen 2010; Bajdor 2021). In other words, socio-economic development takes place following the protection of the natural environment (Urbaniec 2018; Bertello et al. 2022).

$\text{Sus}_{\text{Ent}}$  means business activities that respect the natural environment and uphold corporate social responsibility (Weidinger, Fischler, and Schmidpeter 2014; Lotfi, Yousefi, and Jafari 2018). Entrepreneurs should implement sustainable tasks concerning large projects, everyday activities, and individual meetings with clients. The assumption of sustainable entrepreneurship is the belief that sustainable development and corporate social responsibility are the basis for building the economy of the future – based on values and respect for mutual relations and the environment (Firlej 2005; Davies and Chambers 2018).

$\text{Sus}_{\text{Ent}}$  is variously defined in the literature on the subject; researchers indicate that it is of pivotal importance to take responsibility for the activities of companies (Dean and McMullen 2007; Johnson and Hörisch 2021), keep up with innovations (Fussler and James 1996; Fichter and Tiemann 2020), use resources effectively, reduce the emission of harmful substances, improve the working conditions, and care for the external environment (Ziarko 2020; Bajdor 2021; Bertello et al. 2022). It brings a competitive advantage to business ventures (Konys 2021; Sadiq et al. 2022). An overview of selected definitions of  $\text{Sus}_{\text{En}}$  is presented in Table 1.

Table 1. Selected definitions of *sustainable entrepreneurship*

Author(s)	Definitions of <i>sustainable entrepreneurship (SE)</i>
C. Fussler, P. James (1996)	SE has been proposed as a „breakthrough discipline for innovation”.
J.A. Timmons (1999)	SE encompasses activities that consider identifying, assessing and exploiting opportunities to introduce new products and services to the market, often based on natural resources, which are an essential element of the entrepreneurial process.
K. Firlej (2005)	Entrepreneurship, which determines the sustainable economic development of regions, dynamises their development and, consequently, creates opportunities to generate additional income.
T.J. Dean, J.S. McMullen (2007)	SE is the process of discovering, evaluating, and exploiting economic opportunities that are present in market failures which detract from sustainability, including those that are environmentally relevant.
B. Cohen, M.I. Winn (2007)	SE research examines „how opportunities to bring into existence future goods and services are discovered, created, and exploited, by whom, and with what economic, psychological, social, and environmental consequences
D.F. Pacheco, T.J. Dean, D.S. Payne (2010)	We transcend the game theory literature to introduce a more complete understanding of SE, which lies in expanding the concept of the sustainable entrepreneur from discoverer of opportunity in extant economic structures to structural agent who develops institutions to change the „rules of the game” and thereby drives sustainable behaviours.
K. Hockerts, R. Wüstenhagen (2010)	SE is about a combination of economic, social and environmental value creation.
D.A. Shepherd, H. Patzelt (2011)	The objective of SE is to preserve nature, life support, and community in the pursuit of perceived opportunities to bring into existence future products, processes, and services for gain, where gain is broadly construed to include economic and non-economic gains to individuals, the economy, and society.
S. Schaltegger, M. Wagner (2011)	SE is an innovative, market-oriented and personality-driven form of creating economic and societal value by means of breaking through environmentally or socially beneficial markets or institutional innovations.
M. Urbaniec (2018)	Sustainable entrepreneurship means activities supporting the company’s development following pro-ecological principles, considering economic and social benefits.
I.A. Davies, L. Chambers (2018)	SE can make a significant contribution to improving environmental sustainability while running a profitable business.
C. Vallaster et al. (2019)	Sustainable entrepreneurs eliminate traditional business practices, systems and processes and replace them with superior social and environmental products and services.
K. Fichter, I. Tiemann (2020)	SE is the discovery, creation, evaluation and exploitation of opportunities to create innovative goods and services that are consistent with regional, national and SD goals.

Author(s)	Definitions of <i>sustainable entrepreneurship (SE)</i>
J. Ziarko (2020)	Sustainable entrepreneurship is about initiating activities and processes that lead to the identification, assessment and exploitation of profitable business opportunities – that is, to be entrepreneurial – while simultaneously contributing to sustainable development.
M.P. Johnson, J. Hörisch (2021)	SE carries great potential to contribute to SD, especially in its potential to replace unsustainable products and services with sustainable ones, to create additional environmental and social value, and to transform markets and societies toward sustainability.
P. Bajdor (2021)	Sustainable entrepreneurship is a comprehensive concept that assumes the existence of mutual relations between the enterprise and the market, society and the environment.
A. Di Vaio et al. (2022)	Sustainable entrepreneurship creates social value through a wide range of economic actors, including individuals, microbusinesses, and large corporations.
A. Bertello et al. (2022)	Sustainable entrepreneurship in the light of new ventures' increasing need to consider the social and environmental impact of their knowledge-intensive activities.

Source: based on the subject literature.

Sus<sub>Ent</sub> is starting and running a business to achieve economic and social goals and protect the natural environment (Urbaniec 2018; Di Vaio et al. 2022). It means conducting business in various sectors and industries of the economy, where, apart from generating profit, increasing the wealth of owners or increasing the company's value, activities are carried out to support the development of human capital, local communities and the implementation of eco-innovations.

Sus<sub>Ent</sub> depends on several factors, including the ecological attitude of entrepreneurs, programs that support social development and environmental protection (Middermann, Kratzer, and Perner 2020; Bajdor, Pawełszek, and Fidlerova 2021; Bakry et al. 2022). One of the factors that socially and ecologically supports responsible initiatives is economic security (Raudeliūnienė, Tvaronavičienė, and Dzemyda 2014; Sulphrey and Alkahtani 2017; Khalatur et al. 2021). Maintaining an appropriate level has a positive impact on the development of entrepreneurship while improving the expectations and economic moods of entrepreneurs.

E<sub>Sec</sub> is the economic basis for the functioning of the state and a key element of the broader concept of national security (Balcerowicz 2004; Leszczyńska and Puchalska 2022; Mahmood 2022). This idea is extremely heterogeneous, multi-threaded, and prefers the meaning of the material, shaping factor standards of quality of life and existence of an individual and entire social group, individually, locally and internationally (Table 2).

Table 2. Selected definitions of *economic security*

Author(s)	Definitions of <i>economic security</i>
E. Frejtag-Mika, Z. Kołodziejak, W. Putkiewicz (1996)	Economic security is the ability of the economic system of a state (group of states) to use internal factors of development and international economic interdependence in such a way that will guarantee its unthreatened development.
B. Balcerowicz (2004)	Economic security refers to threats to prosperity, free access to the markets, finances and natural resources they provide, and maintaining the state's position and development.
M. Kahler (2004)	The economic security of a state defines the stability and progressive development of the economy of this territory.
R. Kuźniar (2005)	The issues of economic security primarily covered issues from the sphere of macroeconomics, starting with the structure of the economy, its technological modernity, the condition of state finances (over-indebtedness), the extent of interdependence and degree of reliance on exchange with specific partners or in specific commodity groups (especially energy resources), and therefore susceptibility to external pressures or sudden interruptions in deliveries.
K. Żukrowska, M. Gącik (2006)	Economic security refers to threats to prosperity, free access to markets, financial resources and natural resources that guarantee the continued development of the state and the maintenance of its position. Economic security is also related to maintaining independent production capacities for military purposes.
G. Standing (2007)	Basic economic security is defined as a threefold set of circumstances. First, it requires limited exposure to idiosyncratic, co-variant and systemic risks, uncertainty, hazards and shocks. Second, it requires an ability to cope with them if they materialise. And third, it requires an ability to recover from those outcomes.
R. Zięba (2008)	Economic security refers to threats to prosperity, free access to markets, financial resources and natural resources that ensure the maintenance of the state's position and its development.
O. Kuzmenko et al. (2020)	Economic security is searching for a balanced state of the financial system, which increases the state's resilience to external and internal shocks.
B. Kosowski, A. Kułakowska (2022)	Economic security means a state of existence devoid of risk and uncertainty, and the state's economic security status is assessed through the prism of the state of the economy, stability of the economic system and factors determining development.
M. Leszczyńska, K. Puchalska (2022)	Economic security is not only related to the socio-economic progress and development opportunities of individual countries but also to the impact of the international environment, including the functioning of transnational corporations with significant economic power.
D.R. Mahmood (2022)	Economic security is one of the most critical elements of human security. It refers to the economic capacity of an individual or community.

Source: based on the subject literature.

The concept of economic security ( $E_{\text{sec}}$ ) covers the decision-making process in the economic area, and it aims to ensure the freedom to shape economic processes following the nation's interests (Standing 2007; Kuzmenko et al. 2020). Micro-scale  $E_{\text{Sec}}$  refers

to market conditions that enable harmonious development, undisturbed functioning of economies, building sustainable welfare of citizens, and solvency of households or enterprises (Żukrowska 2016; Leszczyńska and Puchalska 2022).  $E_{\text{Sec}}$  is the state's ability to use internal factors of development and international economic interdependence that will guarantee risk-free development (Kuzmenko et al. 2020; Kosowski and Kułakowska 2022).

$E_{\text{Sec}}$  and  $\text{Sus}_{\text{Ent}}$  are closely related, and the existence of one is a condition for the presence of the other.  $E_{\text{Sec}}$  is a key factor that motivates entrepreneurs to undertake socially and ecologically responsible initiatives. It can be increased by various policy measures to stimulate people's initiative to run existing or start new business ventures more securely and sustainably and to consider the long-term perspective of development and its effects (Cohen and Winn 2007; Wysokińska-Senkus and Raczkowski 2013; Haldar 2019; Rosário, Raimundo, and Cruz 2022). Moreover, economic security activates economic activity and makes entrepreneurs willing to invest and innovate.

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## Methodology of the research

The main aim of the research is to assess the impact of economic security on sustainable entrepreneurship in Central and Eastern European Countries (CEECs) from 2008 to The research sample covers the following countries: Bulgaria, Croatia, Czechia, Estonia, Hungary, Lithuania, Latvia, Poland, Romania, Slovakia and Slovenia.

We examined countries that experienced a political transformation and became members of the EU at a similar time. The observed economies' size, structure and capabilities are diverse. Moreover, these economies have development prospects and diversified tangible and intangible resources. In addition, their energy sector is largely based on hard coal, they are characterised by a low level of innovation, and the policy is dominated by an approach that focuses primarily on economic growth, with social and environmental protection issues receding into the background. The accession of these countries to the EU meant they had to implement programs to support social and ecological development.

We focused on the time from the financial crisis (the first period after joining the EU) to the beginning of the COVID-19 pandemic. We wanted to assess how sustainable entrepreneurship is developing in those countries, and thus how the approach to development and thinking about the modern world is changing, and to what extent sustainable development depends on economic security. In connection with this goal, we formulated the following main research hypothesis (H): *The country's economic security statistically significantly impacts sustainable entrepreneurship in the CEECs from 2008 to* In addition, we formulated the following sub-hypotheses:

- H1: The economic component of the  $Sus_{Ent}$  is developing more dynamically than the social and environmental components of sustainable entrepreneurship in the CEECs;
- H2: The dynamics of sustainable entrepreneurship are positive and higher in countries with a more educated population in the CEECs;
- H3: The pillars of sustainable entrepreneurship – economic, social and environmental – are statistically significantly interconnected in the CEECS.

We conducted our research in the following stages:

1. We created an indicator of sustainable entrepreneurship and separated its three economic, social and environmental components. We assumed that sustainable entrepreneurship is the average value of its pillars in a given year. To integrate the explanatory variables, we used the following formulas:

$$E_{ij} = \frac{\sum_{i=1}^n \frac{Ed_{ij}}{\max Ed_{ij}}}{\sum_{i=1}^n \frac{P_{ij}}{\max P_{ij}}}; E_{ij} \in [0;1], \quad (1)$$

$$S_{ij} = \frac{\sum_{i=1}^n \frac{Sds_{ij}}{\max Sds_{ij}}}{\sum_{i=1}^n \frac{P_{ij}}{\max P_{ij}}} + \frac{\sum_{i=1}^n \frac{\min Sdd_{ij}}{Sdd_{ij}}}{\sum_{i=1}^n \frac{P_{ij}}{\max P_{ij}}}; S_{ij} \in [0;1], \quad (2)$$

$$Env_{ij} = \frac{\sum_{i=1}^n \frac{\min Env_{ij}}{Env_{ij}}}{\sum_{i=1}^n \frac{P_{ij}}{\max P_{ij}}}; S_{ij} \in [0;1], \quad (3)$$

where:  $E_{ij}$ ;  $S_{ij}$ ;  $Env_{ij}$  stands for the normalised value of the  $j$ -th variable in the  $i$ -th year;  $x_{ij}$  is the diagnostic variable in the  $i$ -th year;  $SD_i$  indicates the integrated variable in the  $i$ -th year.

The  $E_{ij}$  indicator is based on the following diagnostic variables ( $E_{Dij}$ ): enterprises – number; production value – € millions; total purchases of goods and services – € millions, and investment rate (investment/value added at factors cost) – percentage.

The  $S_{ij}$  indicator is based on the following diagnostic variables: stimulants ( $Sds_{ij}$ ): wages and Salaries – € millions; social security costs – € millions; employees – number; apparent labour productivity (Gross value added per person employed) – € thousands; gross



value added per employee – € thousands; and growth rate of employment – percentage; and destimulants ( $S_{ij}$ ): personnel costs – € millions.

$Env_{ij}$  is based on the following destimulants: carbon dioxide; methane; nitrous oxide; sulphur oxides (SO2 equivalent); nitrogen oxides (SO2 equivalent); ammonia (SO2 equivalent).

We use the following formula to create the  $Sus_{Ent}$ :

$$Sus_{Ent} = E + S + Env = \sum_{i=1}^n \frac{E_{ij}}{n} + \sum_{i=1}^n \frac{S_{ij}}{n} + \sum_{i=1}^n \frac{Env_{ij}}{n}; Sus_{Ent} \in [0;1]. \quad (4)$$

2. We create the economic security indicator based on the following formula:

$$E_{Sec} = \sum_{i=1}^n \frac{GDP_{ij}}{\max GDP_{ij}} + \sum_{i=1}^n \frac{Exp_{ij}}{\max Exp_{ij}} + \sum_{i=1}^n \frac{Exp_{ij}}{\max Exp_{ij}} + \sum_{i=1}^n \frac{\min Imp_{ij}}{Imp_{ij}} + \sum_{i=1}^n \frac{W \& S_{ij}}{\max W \& S_{ij}} + \sum_{i=1}^n \frac{\min U_{ij}}{U_{ij}} + \sum_{i=1}^n \frac{\min HICP_{ij}}{HICP_{ij}}; E_{Sec} \in [0;1] \quad (5)$$

where:  $GDP_{ij}$ ;  $Exp_{ij}$ ;  $Imp_{ij}$ ;  $W\&S_{ij}$ ;  $U_{ij}$ ;  $HICP_{ij}$  stands for the normalised value of the j-th variable in the i-th year; GDP – gross domestic product; Exp – export of goods and services, Im – import of goods and services; W&S – wages and salaries; U – unemployment rate; HICP – Harmonised Indices of Consumer Prices.

3. We assessed the relationship between sustainable entrepreneurship and economic security using the Pearson correlation coefficient ( $p < 0.05$ ). We adopt the following ranges of correlation strength:  $|r_{xy}| = 0$  – no correlation;  $0 < |r_{xy}| \leq 0.19$  – very weak;  $0.20 \leq |r_{xy}| \leq 0.39$  – weak;  $0.40 \leq |r_{xy}| \leq 0.59$  – moderate;  $0.60 \leq |r_{xy}| \leq 0.79$  – strong;  $0.80 \leq |r_{xy}| \leq 1.00$  – very strong.

4. We use the OLS method to estimate the model, which is given by the equation:

$$Sus_{Ent} = \hat{\beta}_0 + \hat{\beta}_1 \cdot E_{Sec} + \hat{\beta}_2 \cdot E_{Sec(t-1)} + \hat{\beta}_3 \cdot \epsilon_i, \quad (6)$$

where  $\beta_0$  is the intercept,  $\beta_1$ ;  $\beta_2$ ;  $\beta_3$ ; is the slope;  $\epsilon_i$  denotes the i-th residual; i is an observation index.

The regression was written with the following formula:

$$s(\hat{\beta}_0, \dots, \hat{\beta}_4) = \sum_{i=1}^n e_i^2 = \sum_{i=1}^n (I_i - \hat{I}_i)^2 \rightarrow \min, \quad (7)$$

$$s(\hat{\alpha}_0, \dots, \hat{\alpha}_4) = \sum_{i=1}^n \left( Sus_{Ent} - \hat{\beta}_0 - \hat{\beta}_1 \cdot E_{Sec} - \hat{\beta}_2 \cdot E_{Sec(t-1)} - \hat{\alpha}_1 \right)^2 \rightarrow \min.$$

5. We create a structural equation model and use the SUR method to estimate it:

$$\begin{cases} E = \hat{\beta}_0 + \hat{\beta}_1 E_{Seci} + \hat{\beta}_2 E_{Sec(t-1)i} + \hat{\beta}_3 S + \hat{\beta}_4 Env + e_i \\ S = \hat{\beta}_0 + \hat{\beta}_1 E_{Seci} + \hat{\beta}_2 E_{Sec(t-1)i} + \hat{\beta}_3 E + \hat{\beta}_4 Env + e_i \\ Env = \hat{\beta}_0 + \hat{\beta}_1 E_{Seci} + \hat{\beta}_2 E_{Sec(t-1)i} + \hat{\beta}_3 E + \hat{\beta}_4 S + e_i \end{cases} \quad (8)$$

SUR method estimator:

$$\sqrt{R} \cdot (\hat{\beta} - \beta) \xrightarrow{d} N(0, (\frac{1}{R} \cdot X^T \cdot (\Sigma^{-1} \otimes I_R) \cdot X)^{-1}), \quad (9)$$

where: R – observation number, X – equations, IR – dimensional identity matrix,  $\otimes$  denotes matrix Kronecker product,  $\Sigma$  – matrix,  $y$  – vector, N – normal distribution,  $\beta$  – model parameter.

## Research results

Table 3 shows indicators of sustainable entrepreneurship and its economic, social and environmental pillars. The values of these indicators vary in the analysed countries, which is noteworthy;  $Sus_{Ent}$  increased in the analysed period, which is a positive phenomenon, indicating a higher degree of involvement from entrepreneurs in implementing economically and socially responsible tasks.

Table 3. The indicator of sustainable entrepreneurship in CEECs from 2008 to 2020

Country	Indicator	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Bulgaria	E	0.77	0.71	0.64	0.69	0.72	0.70	0.73	0.74	0.73	0.77	0.81	0.85	0.84
	S	0.63	0.61	0.61	0.63	0.63	0.64	0.66	0.70	0.72	0.77	0.81	0.87	0.89
	Env	0.66	0.71	0.69	0.64	0.68	0.79	0.74	0.72	0.76	0.76	0.79	0.83	0.87
	Sus <sub>Ent</sub>	0.68	0.68	0.65	0.65	0.68	0.71	0.71	0.72	0.74	0.77	0.81	0.85	0.87
Croatia	E	0.97	0.89	0.76	0.73	0.71	0.71	0.70	0.75	0.75	0.80	0.83	0.88	0.83
	S	0.87	0.84	0.84	0.82	0.80	0.81	0.83	0.84	0.86	0.89	0.92	0.95	0.93
	Env	0.59	0.67	0.67	0.68	0.73	0.83	0.87	0.82	0.85	0.82	0.86	0.90	0.95
	Sus <sub>Ent</sub>	0.81	0.80	0.76	0.74	0.75	0.78	0.80	0.80	0.82	0.83	0.87	0.91	0.90
Czechia	E	0.86	0.77	0.83	0.88	0.87	0.85	0.83	0.85	0.85	0.90	0.95	0.96	0.92
	S	0.82	0.77	0.79	0.81	0.80	0.79	0.79	0.81	0.83	0.87	0.91	0.93	0.91
	Env	0.66	0.72	0.74	0.72	0.74	0.77	0.78	0.76	0.79	0.81	0.85	0.91	1.00
	Sus <sub>Ent</sub>	0.78	0.76	0.78	0.80	0.80	0.81	0.80	0.81	0.82	0.86	0.90	0.94	0.94
Estonia	E	0.70	0.57	0.59	0.70	0.74	0.79	0.76	0.77	0.78	0.84	0.88	0.92	0.87
	S	0.69	0.65	0.66	0.70	0.72	0.74	0.76	0.77	0.79	0.83	0.87	0.90	0.90
	Env	0.65	0.70	0.65	0.66	0.66	0.65	0.65	0.71	0.71	0.69	0.72	0.83	0.96
	Sus <sub>Ent</sub>	0.68	0.64	0.63	0.68	0.71	0.72	0.72	0.75	0.76	0.79	0.82	0.88	0.91
Hungary	E	0.81	0.72	0.73	0.75	0.74	0.73	0.78	0.81	0.82	0.88	0.93	0.99	0.97
	S	0.80	0.75	0.76	0.77	0.76	0.78	0.79	0.82	0.83	0.86	0.90	0.91	0.88
	Env	0.78	0.85	0.85	0.84	0.90	0.89	0.88	0.88	0.89	0.84	0.84	0.90	0.93
	Sus <sub>Ent</sub>	0.80	0.77	0.78	0.79	0.80	0.80	0.82	0.84	0.85	0.86	0.89	0.94	0.92
Latvia	E	0.77	0.58	0.60	0.67	0.76	0.77	0.76	0.78	0.79	0.85	0.87	0.91	0.85
	S	0.69	0.62	0.63	0.65	0.68	0.70	0.71	0.73	0.75	0.78	0.85	0.90	0.90
	Env	0.84	0.87	0.87	0.89	0.87	0.87	0.86	0.86	0.87	0.84	0.83	0.82	0.88
	Sus <sub>Ent</sub>	0.77	0.69	0.70	0.73	0.77	0.78	0.78	0.79	0.80	0.83	0.85	0.88	0.87
Lithuania	E	0.69	0.51	0.52	0.60	0.66	0.70	0.72	0.74	0.75	0.81	0.89	0.94	0.90
	S	0.59	0.54	0.56	0.59	0.60	0.62	0.65	0.67	0.71	0.75	0.81	0.72	0.74
	Env	0.81	0.92	0.89	0.85	0.85	0.89	0.88	0.84	0.85	0.84	0.79	0.84	0.81
	Sus <sub>Ent</sub>	0.70	0.66	0.66	0.68	0.71	0.74	0.75	0.75	0.77	0.80	0.83	0.83	0.82
Poland	E	0.77	0.70	0.73	0.77	0.76	0.78	0.81	0.82	0.81	0.84	0.94	0.97	0.94
	S	0.70	0.69	0.72	0.73	0.73	0.73	0.74	0.75	0.76	0.80	0.87	0.91	0.91
	Env	0.77	0.83	0.83	0.84	0.86	0.87	0.89	0.90	0.92	0.89	0.90	0.96	0.97
	Sus <sub>Ent</sub>	0.75	0.74	0.76	0.78	0.78	0.79	0.82	0.83	0.83	0.85	0.90	0.95	0.94

Country	Indicator	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Romania	E	0.81	0.68	0.66	0.77	0.73	0.70	0.71	0.78	0.76	0.78	0.82	0.88	0.86
	S	0.71	0.66	0.67	0.68	0.68	0.71	0.72	0.71	0.75	0.80	0.72	0.77	0.77
	Env	0.68	0.76	0.80	0.77	0.80	0.84	0.86	0.86	0.92	0.94	0.93	0.92	0.99
	Sus <sub>Ent</sub>	0.73	0.70	0.71	0.74	0.74	0.75	0.76	0.79	0.81	0.84	0.82	0.85	0.87
Slovakia	E	0.60	0.50	0.71	0.73	0.73	0.79	0.79	0.81	0.82	0.86	0.93	0.91	0.86
	S	0.75	0.73	0.78	0.80	0.80	0.79	0.79	0.82	0.83	0.86	0.89	0.91	0.91
	Env	0.60	0.65	0.66	0.70	0.74	0.78	0.79	0.79	0.83	0.83	0.86	0.92	1.00
	Sus <sub>Ent</sub>	0.65	0.63	0.72	0.74	0.76	0.78	0.79	0.80	0.83	0.85	0.89	0.91	0.92
Slovenia	E	0.88	0.77	0.74	0.75	0.75	0.74	0.75	0.76	0.78	0.84	0.88	0.90	0.83
	S	0.84	0.80	0.82	0.83	0.81	0.81	0.83	0.84	0.87	0.89	0.92	0.94	0.94
	Env	0.69	0.73	0.73	0.74	0.77	0.79	0.84	0.87	0.89	0.90	0.89	0.91	0.98
	Sus <sub>Ent</sub>	0.80	0.76	0.77	0.77	0.78	0.78	0.81	0.82	0.85	0.88	0.90	0.92	0.92

Source: own study based on Eurostat (n.d.).

The values of selected descriptive statistics for E, S, Env and Sus<sub>Ent</sub> are presented in Table 4. They indicate different but comparable values in individual pillars of sustainable entrepreneurship. It cannot be unequivocally stated which of the Sus<sub>Ent</sub> dimensions has a higher level.

**Table 4.** The descriptive statistics of the sustainable entrepreneurship indicator in CEECs from 2008 to 2020

Country	Indicator	Descriptive statistics				
		Mean	SD	Median	Min	Max
Bulgaria	E	0.75	0.06	0.73	0.64	0.85
	S	0.71	0.10	0.66	0.61	0.89
	Env	0.74	0.07	0.74	0.64	0.87
	Sus <sub>Ent</sub>	0.73	0.07	0.71	0.65	0.87
Croatia	E	0.79	0.08	0.76	0.70	0.97
	S	0.86	0.05	0.84	0.80	0.95
	Env	0.79	0.10	0.82	0.59	0.95
	Sus <sub>Ent</sub>	0.81	0.05	0.80	0.74	0.91

Country	Indicator	Descriptive statistics				
		Mean	SD	Median	Min	Max
Czechia	E	0.87	0.05	0.86	0.77	0.96
	S	0.83	0.05	0.81	0.77	0.93
	Env	0.79	0.08	0.77	0.66	1.00
	Sus <sub>Ent</sub>	0.83	0.06	0.81	0.76	0.94
Estonia	E	0.76	0.10	0.77	0.57	0.92
	S	0.77	0.08	0.76	0.65	0.90
	Env	0.71	0.09	0.69	0.65	0.96
	Sus <sub>Ent</sub>	0.75	0.08	0.72	0.63	0.91
Hungary	E	0.82	0.09	0.81	0.72	0.99
	S	0.82	0.05	0.80	0.75	0.91
	Env	0.87	0.04	0.88	0.78	0.93
	Sus <sub>Ent</sub>	0.84	0.05	0.82	0.77	0.94
Latvia	E	0.77	0.10	0.77	0.58	0.91
	S	0.74	0.09	0.71	0.62	0.90
	Env	0.86	0.02	0.87	0.82	0.89
	Sus <sub>Ent</sub>	0.79	0.06	0.78	0.69	0.88
Lithuania	E	0.73	0.13	0.72	0.51	0.94
	S	0.66	0.08	0.65	0.54	0.81
	Env	0.85	0.03	0.85	0.79	0.92
	Sus <sub>Ent</sub>	0.74	0.06	0.75	0.66	0.83
Poland	E	0.82	0.08	0.81	0.70	0.97
	S	0.77	0.07	0.74	0.69	0.91
	Env	0.88	0.05	0.89	0.77	0.97
	Sus <sub>Ent</sub>	0.82	0.07	0.82	0.74	0.95
Romania	E	0.76	0.06	0.77	0.66	0.88
	S	0.72	0.04	0.71	0.66	0.80
	Env	0.85	0.08	0.86	0.68	0.99
	Sus <sub>Ent</sub>	0.78	0.05	0.76	0.70	0.87
Slovakia	E	0.77	0.12	0.79	0.50	0.93
	S	0.82	0.06	0.80	0.73	0.91
	Env	0.78	0.11	0.79	0.60	1.00
	Sus <sub>Ent</sub>	0.79	0.09	0.79	0.63	0.92

Country	Indicator	Descriptive statistics				
		Mean	SD	Median	Min	Max
Slovenia	E	0.80	0.06	0.77	0.74	0.90
	S	0.86	0.05	0.84	0.80	0.94
	Env	0.83	0.09	0.84	0.69	0.98
	Sus <sub>Ent</sub>	0.83	0.06	0.81	0.76	0.92

Source: own study based on Eurostat (n.d.).

Table 5 presents indicators of countries' economic security; the level varied and fluctuated during the research period. There were lower  $E_{sec}$  levels at the beginning of the period, when the financial crisis occurred, and in many cases, the level of security fell in 2020, the first year of the COVID-19 pandemic.

Table 5. The indicator of economic security in CEECs from 2008 to 2020

Country	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Bulgaria	0.44	0.39	0.38	0.39	0.35	0.20	0.65	0.76	0.76	0.37	0.53	0.58	0.44
Croatia	0.62	0.64	0.63	0.60	0.58	0.57	0.65	0.63	0.63	0.64	0.69	0.76	0.84
Czechia	0.51	0.58	0.54	0.53	0.52	0.54	0.63	0.70	0.65	0.65	0.72	0.75	0.69
Estonia	0.42	0.51	0.41	0.43	0.45	0.48	0.54	0.69	0.56	0.58	0.62	0.68	0.63
Hungary	0.54	0.53	0.53	0.53	0.53	0.54	0.72	0.75	0.66	0.68	0.71	0.75	0.69
Latvia	0.49	0.47	0.44	0.44	0.47	0.52	0.52	0.56	0.73	0.60	0.65	0.69	0.67
Lithuania	0.45	0.45	0.43	0.42	0.45	0.49	0.64	0.55	0.58	0.58	0.62	0.68	0.66
Poland	0.48	0.47	0.47	0.47	0.48	0.50	0.66	0.54	0.62	0.60	0.65	0.70	0.70
Romania	0.48	0.49	0.47	0.47	0.48	0.50	0.54	0.67	0.60	0.65	0.68	0.72	0.69
Slovakia	0.52	0.55	0.54	0.53	0.54	0.55	0.72	0.63	0.63	0.64	0.69	0.73	0.70
Slovenia	0.60	0.64	0.58	0.57	0.56	0.55	0.63	0.60	0.75	0.64	0.69	0.74	0.80

Source: own study based on Eurostat (n.d.).

Descriptive statistics of  $E_{sec}$  are presented in Table Croatia has the highest average value of the  $E_{sec}$  indicators, while the lowest is in Bulgaria. The highest maximum value is also in Croatia, and again, the lowest minimum is in Bulgaria. The level of economic security in the surveyed countries is similar, which indicates that the development conditions are similar.

Table 6. The descriptive statistics of the economic security indicator in CEECs from 2008 to 2020

Country	Descriptive statistics				
	Mean	SD	Median	Min	Max
Bulgaria	0.48	0.16	0.44	0.20	0.76
Croatia	0.65	0.07	0.63	0.57	0.84
Czechia	0.62	0.08	0.63	0.51	0.75
Estonia	0.54	0.09	0.54	0.41	0.69
Hungary	0.63	0.09	0.66	0.53	0.75
Latvia	0.56	0.10	0.52	0.44	0.73
Lithuania	0.54	0.09	0.55	0.42	0.68
Poland	0.57	0.09	0.54	0.47	0.70
Romania	0.57	0.09	0.54	0.47	0.72
Slovakia	0.61	0.08	0.63	0.52	0.73
Slovenia	0.64	0.08	0.63	0.55	0.80

Source: own study based on Eurostat (n.d.).

Pearson’s linear correlation coefficients ( $p < 0.05$ ) are presented in Figure 1. Hungary has the highest statistically significant correlation between  $Sus_{Ent}$  and  $E_{Sec}$ , at 0.95; the lowest is in the Czech Republic (0.77). The results show a strong relationship between economic security and sustainable entrepreneurship.

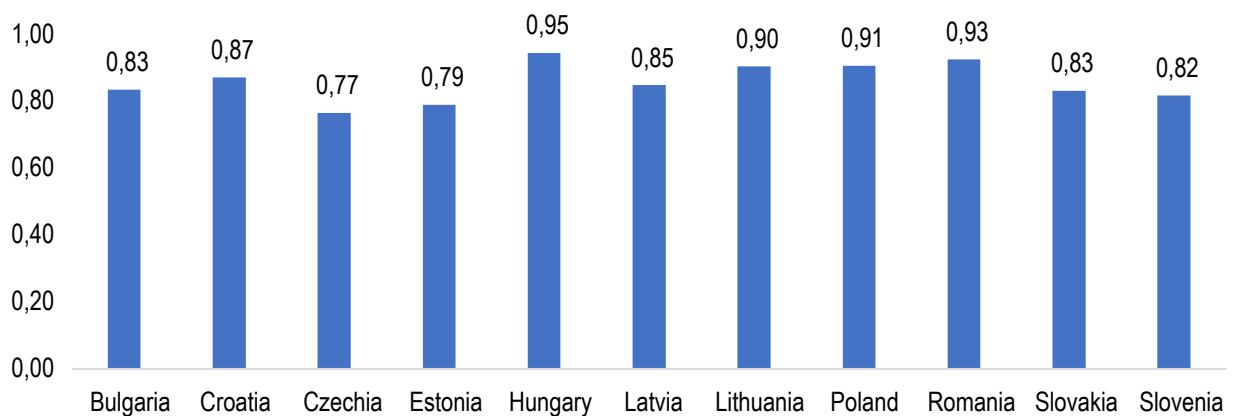


Figure 1. The Pearson’s R correlation coefficients of  $Sus_{Ent}$  and  $E_{Sec}$  in CEECs from 2008 to 2020,  $p < 0.05$  ( $n = 13$ )

Source: own study based on Eurostat (n.d.).

The OLS estimation results indicate that economic security statistically impacts sustainable entrepreneurship in the CEECs. The highest impact is in Slovakia (0.976), and the lowest is in Latvia (0.503) (Table 7).

Table 7. Results of OLS regressions in the period from 2008 to 2020:  $Sus_{Ent} = \alpha_0 + \alpha_1 E_{Sec} + \varepsilon_i$ 

Country	Independent variable	Coefficient	Std. error	p-value	R <sup>2</sup>
Bulgaria	Const	0.244	0.098	0.0293	0.697
	E <sub>Sec</sub>	0.756	0.151	0.0004	
Croatia	Const	0.395	0.071	0.0002	0.760
	E <sub>Sec</sub>	0.642	0.109	0.0001	
Czechia	Const	0.492	0.086	0.0001	0.588
	E <sub>Sec</sub>	0.551	0.139	0.0022	
Estonia	Const	0.368	0.090	0.0018	0.623
	E <sub>Sec</sub>	0.703	0.165	0.0013	
Hungary	Const	0.452	0.040	<0.0001	0.893
	E <sub>Sec</sub>	0.626	0.065	<0.0001	
Latvia	Const	0.507	0.054	<0.0001	0.720
	E <sub>Sec</sub>	0.503	0.095	0.0002	
Lithuania	Const	0.421	0.047	<0.0001	0.818
	E <sub>Sec</sub>	0.602	0.086	<0.0001	
Poland	Const	0.442	0.054	<0.0001	0.823
	E <sub>Sec</sub>	0.675	0.094	<0.0001	
Romania	Const	0.474	0.038	<0.0001	0.856
	E <sub>Sec</sub>	0.530	0.065	<0.0001	
Slovakia	Const	0.192	0.121	0.1411	0.692
	E <sub>Sec</sub>	0.976	0.196	0.0004	
Slovenia	Const	0.447	0.081	0.0002	0.670
	E <sub>Sec</sub>	0.592	0.125	0.0006	

Source: own study based on Eurostat (n.d.).

Table 8 shows the results of the SUR estimation. The pillars of sustainable entrepreneurship are statistically significantly interdependent. Very often, there is a connection between economic and social development. Economic security has a statistically significant impact only on the social pillar of  $Sus_{Ent}$  in the Czech Republic, the social and environmental components in Hungary, the economic, social and environmental pillars in Lithuania, the environmental pillar in Poland, and the economic and environmental pillars in Romania.



Table 8. Results of SUR regressions in the period from 2008 to 2020

Country	Dependent variable	Independent variable	Coefficient	Std. error	p-value	R <sup>2</sup>
Bulgaria	E	const	0.335	0.046	1.62E-05	0.815
		S	0.583	0.065	2.03E-06	
	S	const	-0.538	0.079	4.47E-05	0.903
		E	1.012	0.086	3.38E-07	
		Env	0.659	0.068	2.19E-06	
	Env	const	0.305	0.065	0.0006	0.736
S		0.618	0.091	2.86E-05		
Croatia	E	const	-0.359	0.130	0.0199	0.828
		S	1.963	0.172	4.73E-07	
		Env	-0.687	0.077	4.51E-06	
	S	const	0.185	0.049	0.0035	0.868
		E	0.506	0.044	4.73E-07	
		Env	0.350	0.034	1.17E-06	
	Env	const	-0.517	0.190	0.0214	0.797
		E	-1.427	0.160	4.51E-06	
		S	2.824	0.273	1.17E-06	
Czechia	E	const	0.091	0.093	0.3473	0.826
		S	0.936	0.111	3.91E-06	
	S	const	0.055	0.052	0.3217	0.931
		E <sub>Sec</sub>	0.043	0.039	0.295	
		E	0.656	0.062	2.21E-06	
		Env	0.229	0.040	0.0003	
	Env	const	-0.407	0.208	0.076	0.694
S		1.436	0.249	0.0001		
Estonia	E	const	-0.017	0.055	0.7701	0.932
		S	1.465	0.090	1.67E-08	
		Env	-0.484	0.099	0.0006	
	S	const	0.006	0.035	0.8644	0.959
		E	0.668	0.041	1.67E-08	
		Env	0.353	0.052	4.44E-05	
	Env	const	0.004	0.099	0.9699	0.715
		E	-1.517	0.310	0.0006	
		S	2.432	0.355	4.44E-05	

Country	Dependent variable	Independent variable	Coefficient	Std. error	p-value	R <sup>2</sup>
Hungary	E	const	-0.578	0.084	2.50E-05	0.953
		S	1.712	0.102	3.46E-09	
	S	const	0.349	0.020	6.41E-09	0.972
		E <sub>Sec</sub>	0.141	0.052	2.14E-02	
		E	0.465	0.045	1.25E-06	
	Env	const	1.200	0.234	0.0004	0.300
		E <sub>Sec</sub>	0.868	0.359	0.0363	
		S	-1.058	0.531	7.45E-02	
	Latvia	E	const	1.123	0.265	1.70E-03
S			0.880	0.085	1.21E-06	
Env			-1.171	0.285	2.10E-03	
S		const	0.031	0.071	6.75E-01	0.807
		E	0.922	0.092	6.86E-07	
Env		const	0.977	0.031	3.93E-12	0.469
		E	-0.154	0.040	2.80E-03	
Lithuania		E	const	1.934	0.263	2.42E-05
	E <sub>Sec</sub>		0.926	0.127	2.58E-05	
	Env		-2.007	0.272	2.36E-05	
	S	const	1.286	0.279	1.00E-03	0.823
		E <sub>Sec</sub>	0.545	0.112	7.00E-04	
		Env	-1.084	0.292	4.00E-03	
	Env	const	0.962	0.032	3.57E-11	0.692
		E <sub>Sec</sub>	0.429	0.099	1.40E-03	
		E	-0.473	0.064	2.36E-05	
Poland	E	const	-0.041	0.063	5.26E-01	0.926
		S	1.113	0.081	2.98E-08	
	S	const	-0.361	0.173	6.14E-02	0.714
		Env	1.290	0.197	4.13E-05	
	Env	const	0.574	0.044	5.10E-08	0.756
		E <sub>Sec</sub>	0.539	0.077	2.26E-05	

Country	Dependent variable	Independent variable	Coefficient	Std. error	p-value	R <sup>2</sup>
Rumunia	E	const	0.467	0.071	3.77E-05	0.584
		E <sub>sec</sub>	0.519	0.122	1.30E-03	
	S	const	0.299	0.077	2.90E-03	0.711
		E	0.264	0.104	2.97E-02	
		Env	0.256	0.080	9.40E-03	
	Env	const	0.424	0.078	2.00E-04	0.702
E <sub>sec</sub>		0.744	0.134	2.00E-04		
Slovakia	E	const	-0.774	0.181	1.30E-03	0.797
		S	1.885	0.220	3.37E-06	
	S	const	0.393	0.029	7.76E-08	0.891
		E	0.215	0.031	3.97E-05	
		Env	0.330	0.036	3.77E-06	
	Env	const	-0.687	0.138	4.00E-04	0.844
S		1.790	0.167	3.77E-07		
Slovenia	E	const	-0.269	0.090	1.36E-02	0.843
		S	1.900	0.163	3.94E-07	
		Env	-0.683	0.098	3.87E-05	
	S	const	0.144	0.035	2.20E-03	0.945
		E	0.515	0.044	3.94E-07	
		Env	0.368	0.030	2.04E-07	
	Env	const	-0.394	0.118	0.0075	0.861
		E	-1.341	0.193	3.87E-05	
		S	2.667	0.214	2.04E-07	

Source: own study based on Eurostat (n.d.).

## Discussion

Our research shows that a country's economic security is pivotal for sustainable entrepreneurship in the CEECs. The selected research period, which begins with the financial crisis and ends with the beginning of the COVID-19 pandemic, is unique due to economic fluctuations and a diverse level of economic security in the countries. Thus, we confirm the results of previous research, which indicate the deterioration of economic results in periods of crisis and gradual fluctuations around the trend (Leszczyńska and Puchalska

2022; Mahmood 2022). At the same time, we find that economic security in the surveyed countries is at an average level, although the trend is slightly increasing.

A socio-economic phenomenon that should be unequivocally assessed positively is sustainable entrepreneurship, whose growth dynamics in the analysed period increased (Lotfi, Yousefi, and Jafari 2018; Ziarko 2020; Bajdor 2021). Like other researchers (Halдар 2019; Rosário, Raimundo, and Cruz 2022), we noted that businesses are gradually implementing the concept of sustainable development, but there is a need to take further actions to increase the level.

The results of Pearson's correlation coefficient and the OLS estimation indicate the validity of the main research hypothesis. Therefore, a country's economic security statistically significantly impacted sustainable entrepreneurship in the CEECs from 2008 to Maintaining appropriate macroeconomic relations is important for sustainable economic initiatives (Sulphrey and Alkahtani 2017; Khalatur et al. 2021). In our research, we examined the impact of only one variable; therefore, in further analyses, it will be necessary to examine a wider group of exogenous and endogenous determinants that affect  $Sus_{Ent}$ .

We cannot confirm the first sub-hypothesis because, in the analysed countries, it is only periodically true that the economic component of the  $Sus_{Ent}$  develops more dynamically than the social and environmental components. It means that entrepreneurs actively undertake social and ecological activities and do not focus only on maximising economic results.

We confirm the second sub-hypothesis because the dynamics of sustainable entrepreneurship are positive, and higher in countries with a more educated population. Thus, we confirm the importance of environmental awareness and knowledge about management processes and their impact on the natural environment in the CEECs.

The third sub-hypothesis is true because the economic, social and environmental pillars of sustainable entrepreneurship are statistically significantly interconnected in the CEECs. In most countries, there is a link between economic and social development, and these pillars are mutually reinforcing. Environmental development is influenced by both economic and social development, which is important. This positive relationship indicates that economic growth has been successfully separated from environmental protection.

Our study has limitations related to the selection of variables for models, the estimation methods, and the approach to normalising indicators. Despite this, it is important for both economic theory and practice. From the point of view of theory, it is important to discuss theoretical issues related to sustainable entrepreneurship and to formulate an original definition. The separation of three components of sustainable entrepreneurship and the development of our own research methodology to assess the impact of factors on sustainable entrepreneurship constitute a valuable contribution to the literature

on the subject. The study results are important for economic practice. We suggest a connection between the pillars of sustainable entrepreneurship, its positive growth dynamics and the connection with economic security; this is important for implementing macro-economic and environmental policies in the surveyed countries.

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## Conclusions

Sustainable entrepreneurship includes the activities of entrepreneurs whose goal is to develop enterprises in economic, social and environmental areas. However, it depends on several factors, including a country's economic security, as shown by the results of our research. The level of economic security fluctuates in the surveyed countries, which results from their gradual recovery from the financial crisis after 2008.

Sustainable entrepreneurship in Central and Eastern Europe has a positive upward trend, which is optimistic because sustainable development is being implemented in business practice.

Table 9 shows which CEECs were leaders in sustainable entrepreneurship and economic security in 2020. It also shows where economic security has the strongest impact on sustainable entrepreneurship from 2008 to 2020.

The highest levels of sustainable entrepreneurship in 2020 are in countries with a relatively large population, high economic activity, easy business set-up procedures and growing customer demand for ecological products and services. The lowest levels are in smaller countries, with a lower level of socio-economic development.

The highest levels of economic security in 2020 are in countries with relatively high macroeconomic indicators. By contrast, the lowest levels are in smaller countries with trade balance problems.

The impact of economic security on sustainable entrepreneurship from 2008 to 2020 is highest in countries where the enterprise sector is dependent on macroeconomic conditions. The lowest impact is observed in countries where internal issues related to industry-specific factors and business operations are decisive.

Table 9. Countries ranked from highest to lowest value of the indicator

Sustainable entrepreneurship in CEECs (2020)		Economic security in CEECs (2020)		Strength of the impact of economic security on sustainable entrepreneurship in CEECs (2008–2020)	
Czechia	0.94	Croatia	0.84	Slovakia	0.976
Poland	0.94	Slovenia	0.80	Bulgaria	0.756
Hungary	0.92	Poland	0.70	Estonia	0.703
Slovakia	0.92	Slovakia	0.70	Poland	0.675
Slovenia	0.92	Czechia	0.69	Croatia	0.642
Estonia	0.91	Hungary	0.69	Hungary	0.626
Croatia	0.90	Romania	0.69	Lithuania	0.602
Bulgaria	0.87	Latvia	0.67	Slovenia	0.592
Latvia	0.87	Lithuania	0.66	Czechia	0.551
Romania	0.87	Estonia	0.63	Romania	0.530
Lithuania	0.82	Bulgaria	0.44	Latvia	0.503

Source: own study based on Eurostat (n.d.).

The research results clearly show that economic security is a key factor that influences entrepreneurs' behaviour in sustainable development. An appropriate level positively affects the social and ecological responsibility of business.

Future research will focus on isolating exogenous and endogenous factors that affect sustainable entrepreneurship. In addition, we will conduct comparative analyses of its level across all EU countries.

## References

- Bajdor, P. (2021), *Zrównoważona przedsiębiorczość. Analiza i model*, Politechnika Częstochowska, Częstochowa.
- Bajdor, P., Pawełoszek, I., Fidlerova, H. (2021), *Analysis and Assessment of Sustainable Entrepreneurship Practices in Polish Small and Medium Enterprises*, "Sustainability", 13 (7), 3595, <https://doi.org/10.3390/su13073595>
- Bakry, D.S., Daim, T., Dabic, M., Yesilada, B (2022), *An evaluation of the effectiveness of innovation ecosystems in facilitating the adoption of sustainable entrepreneurship*, "Journal of Small Business Management", <https://doi.org/10.1080/00472778.2022.2088775>
- Balcerowicz, B. (2004), *Bezpieczeństwo polityczne Rzeczypospolitej Polskiej*, Wydawnictwo Akademii Obrony Narodowej, Warszawa.

- Bertello, A., Battisti, E., De Bernardi, P., Bresciani, S. (2022), *An integrative framework of knowledge-intensive and sustainable entrepreneurship in entrepreneurial ecosystems*, "Journal of Business Research", 142, pp. 683–693, <https://doi.org/10.1016/j.jbusres.2021.12.054>
- Cohen, B., Winn, M. (2007), *Market imperfections, opportunity and sustainable entrepreneurship*, "Journal of Business Venturing", 22 (1), pp. 29–49, <https://doi.org/10.1016/j.jbusvent.2004.12.001>
- Davies, I.A., Chambers, L. (2018), *Integrating hybridity and business model theory in sustainable entrepreneurship*, "Journal of Cleaner Production", 177, pp. 378–386, <https://doi.org/10.1016/j.jclepro.2017.12.196>
- Dean, T.J., McMullen, J.S. (2007), *Toward a theory of sustainable entrepreneurship: Reducing environmental degradation through entrepreneurial action*, "Journal of Business Venturing", 22 (1), pp. 50–76, <https://doi.org/10.1016/j.jbusvent.2005.09.003>
- Di Vaio, A., Hassan, R., Chhabra, M., Arrigo, E., Palladino, R. (2022), *Sustainable entrepreneurship impact and entrepreneurial venture life cycle: A systematic literature review*, "Journal of Cleaner Production", 378, 134469, <https://doi.org/10.1016/j.jclepro.2022.134469>
- Eurostat (n.d.), *Database*, <https://ec.europa.eu/eurostat/data/database> (accessed: 10.03.2023).
- Fichter, K., Tiemann, I. (2020), *Impacts of promoting sustainable entrepreneurship in generic business plan competitions*, "Journal of Cleaner Production", 267, 122076, <https://doi.org/10.1016/j.jclepro.2020.122076>
- Firlej, K. (2005), *Ograniczenia prawne rozwoju działań przedsiębiorczych w kontekście integracji z Unią Europejską*, "Zeszyty Naukowe Akademii Ekonomicznej w Krakowie", 671, pp. 63–72.
- Frejtag-Mika, E., Kołodziejak, Z., Putkiewicz, W. (1996), *Bezpieczeństwo ekonomiczne we współczesnym świecie*, Politechnika Radomska, Radom.
- Fussler, C., James, P. (1996), *Driving eco-innovation: a breakthrough discipline for innovation and sustainability*, Financial Times/Prentice Hall, London.
- Gregori, P., Holzmann, P. (2020), *Digital sustainable entrepreneurship: A business model perspective on embedding digital technologies for social and environmental value creation*, "Journal of Cleaner Production", 272, 122817, <https://doi.org/10.1016/j.jclepro.2020.122817>
- Haldar, A. (2019), *Towards a conceptual understanding of sustainability-driven entrepreneurship*, "Corporate Social Responsibility and Environmental Management", 26 (6), pp. 1157–1170, <https://doi.org/10.1002/csr.1763>
- Hockerts, K., Wüstenhagen, R. (2010), *Greening Goliaths versus emerging Davids – Theorizing about the role of incumbents and new entrants in sustainable entrepreneurship*, "Journal of Business Venturing", 25 (5), pp. 481–492, <https://doi.org/10.1016/j.jbusvent.2009.07.005>
- Hummels, H., Argyrou, A. (2021), *Planetary demands: Redefining sustainable development and sustainable entrepreneurship*, "Journal of Cleaner Production", 278, 123804, <https://doi.org/10.1016/j.jclepro.2020.123804>
- Johnson, M.P., Hörisch, J. (2021), *Reinforcing or counterproductive behaviors for sustainable entrepreneurship? The influence of causation and effectuation on sustainability orientation*,

- “Business Strategy and the Environment”, 31 (3), pp. 908–920, <https://doi.org/10.1002/bse.2925>
- Kahler, M. (2004), *Economic security in an era of globalisation: Definition and provision*, “The Pacific Review”, 17, <https://doi.org/10.1080/0951274042000326032>
- Khalatur, S., Masiuk, Y., Kachula, S., Brovko, L., Karamushka, O., Shramko, I. (2021), *Entrepreneurship development management in the context of economic security*, “Entrepreneurship and Sustainability Issues”, 9 (1), pp. 558–573, [https://doi.org/10.9770/jesi.2021.9.1\(35\)](https://doi.org/10.9770/jesi.2021.9.1(35))
- Konys, A. (2019), *Towards Sustainable Entrepreneurship Holistic Construct*, “Sustainability”, 11, 6749, <https://doi.org/10.3390/su11236749>
- Kosowski, B., Kułakowska, A. (2022), *Percepcja bezpieczeństwa ekonomicznego gospodarstw domowych*, “Politeja”, 4 (79), pp. 327–342, <https://doi.org/10.12797/Politeja.19.2022.79.16>
- Kuzmenko, O., Šuleř, P., Lyeonov, S., Judrupa, I., Boiko, A. (2020), *Data mining and bifurcation analysis of the risk of money laundering with the involvement of financial institutions*, “Journal of International Studies”, 13 (3), <https://doi.org/10.14254/2071-8330.2020/13-3/22>
- Kuźniar, R. (2005), *Polityka i siła*, Wydawnictwo Scholar, Warszawa.
- Leszczyńska, M., Puchalska, K. (2022), *Implikacje dla bezpieczeństwa ekonomicznego krajowych gospodarek, wynikające z ekspansji przedsiębiorstw międzynarodowych*, “Polityka i Społeczeństwo”, 4 (20), pp. 172–192.
- Lotfi, M., Yousefi, A., Jafari, S. (2018), *The Effect of Emerging Green Market on Green Entrepreneurship and Sustainable Development in Knowledge-Based Companies*, “Sustainability”, 10 (7), 2308, <https://doi.org/10.3390/su10072308>
- Mahmood, D.R. (2022), *Afghan Refugees: A Threat to the Economic Security of Pakistan*, “Journal of Psychology and Political Science”, 3 (01), pp. 16–23, <https://doi.org/10.55529/jpps.31.16.23>
- Middermann, L.H., Kratzer, J., Perner, S. (2020), *The Impact of Environmental Risk Exposure on the Determinants of Sustainable Entrepreneurship*, “Sustainability”, 12 (4), 1534, <https://doi.org/10.3390/su12041534>
- Mondal, S.S., Gupta, H. (2023), *Assessing enablers of green entrepreneurship in circular economy: An integrated approach*, “Journal of Cleaner Production”, 388, 135999, <http://doi.org/10.1016/j.jclepro.2023.135999>
- Pacheco, D.F., Dean, T.J., Payne, D.S. (2010), *Escaping the green prison: Entrepreneurship and the creation of opportunities for sustainable development*, “Journal of Business Venturing”, 25 (5), pp. 464–480, <https://doi.org/10.1016/j.jbusvent.2009.07.006>
- Raudeliūnienė, J., Tvaronavičienė, M., Dzemyda, I. (2014), *Towards Economic Security and Sustainability: Key Success Factors of Sustainable Entrepreneurship in Conditions of Global Economy*, “Journal of Security and Sustainability Issues”, 3 (4), <https://journals.lka.lt/journal/jssi/article/1615/info>
- Rosário, A.T., Raimundo, R.J., Cruz, S.P. (2022), *Sustainable Entrepreneurship: A Literature Review*, “Sustainability”, 14 (9), 5556, <https://doi.org/10.3390/su14095556>
- Sadiq, M., Nonthapot, S., Mohamad, S., Chee Keong, O., Ehsanullah, S., Iqbal, N. (2022), *Does green finance matter for sustainable entrepreneurship and environmental corporate social*



- responsibility during COVID-19?*, “China Finance Review International”, 12 (2), pp. 317–333, <https://doi.org/10.1108/CFRI-02-2021-0038>
- Schaltegger, S., Wagner, M. (2011), *Sustainable entrepreneurship and sustainability innovation: categories and interactions*, “Business Strategy and the Environment”, 20 (4), pp. 222–237, <https://doi.org/10.1002/bse.682>
- Schaltegger, S., Lüdeke-Freund, F., Hansen, E.G. (2016), *Business Models for Sustainability: A Co-Evolutionary Analysis of Sustainable Entrepreneurship, Innovation, and Transformation*, “Organization & Environment”, 29 (3), <https://doi.org/10.1177/1086026616633272>
- Shepherd, D.A., Patzelt, H. (2011), *The New Field of Sustainable Entrepreneurship: Studying Entrepreneurial Action Linking “What is to be Sustained” with “What is to be Developed”*, “Entrepreneurship Theory and Practice”, 35 (1), <https://doi.org/10.1111/j.1540-6520.2010.00426.x>
- Standing, G. (2007), *How Cash Transfers Boost Work and Economic Security*, “DESA Working Paper”, 58, ST/ESA/2007/DWP/58.
- Sulphey, M.M., Alkahtani, N. (2017), *Economic Security and Sustainability Through Social Entrepreneurship: The Current Saudi Scenario*, “Journal of Security and Sustainability Issues”, 6 (3), <https://ssrn.com/abstract=3061091>
- Timmons, J.A. (1999), *New Venture Creation: Entrepreneurship for the 21 Century*, Irwin/McGraw-Hill, Boston.
- Urbaniec, M. (2018), *Rola przedsiębiorczości w kontekście zrównoważonego rozwoju*, “Przedsiębiorczość – Edukacja”, 14, pp. 26–39, <https://doi.org/10.24917/20833296.14.2>
- Vallaster, C., Kraus, S., Kailer, N., Baldwin, B. (2019), *Responsible entrepreneurship: outlining the contingencies*, “International Journal of Entrepreneurial Behavior & Research”, 25 (3), pp. 538–553, <https://doi.org/10.1108/IJEER-04-2018-0206>
- Wach, K., Głodowska, A. (2022), *Entrepreneurship research in economics and management: Understanding the term and the research trends*, “International Entrepreneurship Review”, 8 (4), pp. 7–24, <https://doi.org/10.15678/IER.2022.0804.01>
- Weidinger, Ch., Fischler, F., Schmidpeter, R. (2014), *Editors Sustainable Entrepreneurship Business Success through Sustainability*, Springer, Heidelberg–New York–Dordrecht–London.
- Wysokińska-Senkus, A., Raczkowski, K. (2013), *Economic Security in the Context of Sustainability*, “Rural Development”, 6 (1), pp. 454–462.
- Ziarko, J. (2020), *Kształcenie menedżerskich kompetencji zrównoważonej przedsiębiorczości wyzwaniem dla szkoły wyższej*, [w:] D. Fatuła (ed.), *Zarządzanie zrównoważonym rozwojem organizacji. Wybrane aspekty*, Oficyna Wydawnicza AFM, Kraków.
- Zięba, R. (2008), *Bezpieczeństwo międzynarodowe po zimnej wojnie*, Wydawnictwa Akademickie i Profesjonalne, Warszawa.
- Żukrowska, K., Gącik, M. (2006). *Bezpieczeństwo międzynarodowe – teoria i praktyka*, Oficyna Wydawnicza SGH, Warszawa.
- Żukrowska K. (red.) (2016), *Otwarcie. Konkurencyjność. Wzrost*, Wydawnictwo SGH, Warszawa.

## Wpływ bezpieczeństwa ekonomicznego na zrównoważoną przedsiębiorczość w Europie Środkowo-Wschodniej – od kryzysu finansowego do pandemii COVID-19

Głównym celem artykułu jest ocena wpływu bezpieczeństwa ekonomicznego na zrównoważoną przedsiębiorczość w krajach Europy Środkowej i Wschodniej (CEECs), w tym w Bułgarii, Chorwacji, Czechach, Estonii, na Węgrzech, Litwie, Łotwie, w Polsce, Rumunii, Słowacji i Słowenii w okresie od 2008 do 2020 r. Nowością artykułu jest opracowanie wskaźników zrównoważonej przedsiębiorczości i jej trzech filarów: ekonomicznego, społecznego i środowiskowego. W części empirycznej autorzy ocenili wpływ bezpieczeństwa ekonomicznego na zrównoważoną przedsiębiorczość i przeprowadzili analizę porównawczą jego wpływu na komponenty przedsiębiorczości: ekonomiczny, społeczny i środowiskowy. Do badań wykorzystano współczynniki korelacji Pearsona, klasyczną metodę najmniejszych kwadratów i metodę równań pozornie niepowiązanych (SUR). Wyniki analizy wskazują, że zrównoważona przedsiębiorczość i bezpieczeństwo ekonomiczne w analizowanych krajach rosną, choć ich dynamika jest zróżnicowana, ponadto bezpieczeństwo ekonomiczne ma statystycznie istotny wpływ na zrównoważoną przedsiębiorczość. Autorzy dostrzegają, że prowadzenie stabilnej i odpowiedzialnej polityki makroekonomicznej wpływa na realizację celów zrównoważonego rozwoju. Istotne jest stworzenie jak najlepszych warunków do wzrostu w długim okresie, co jest wyzwaniem ze względu na problem znalezienia optymalnych relacji pomiędzy czynnikami decydującymi o bezpieczeństwie ekonomicznym i zrównoważonym rozwoju.

**Słowa kluczowe:** zrównoważona przedsiębiorczość, bezpieczeństwo ekonomiczne, Europa Środkowo-Wschodnia