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SUSTAINABLE SOCIAL DEVELOPMENT MANUFACTURING ENTERPRISES IN SELECTED COUNTRIES CENTRAL AND EASTERN EUROPE

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Purpose: The main aim of this paper is to assess the impact of macroeconomic conditions on the social development of manufacturing enterprises in selected countries of Central and Eastern Europe.
Design/methodology/approach: Due to the implemented goal, the following research hypothesis was formulated as follows: Macroeconomic factors are statistically significant for the social development of manufacturing enterprises in Czechia, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia, Slovenia. Due to the implemented research issues, the paper was divided into two main parts. The first part presents selected theoretical problems related to social development. The second part contains the methodology and the results of the study and a summary. In the analysis, we used synthetic indicators of social development of enterprises and synthetic macroeconomic indicators. The relationship between variables was measured using the Pearson's linear correlation index and the method of least squares.
Findings: The results of the study indicate that in all analyses countries there is a statistically significant relationship between the indicator of social development and the indicator of macroeconomic development. The highest level of impact of macroeconomic factors on the social development of manufacturing enterprises in the countries of Central and Eastern Europe is recorded in Estonia, while the lowest in Lithuania.
Research limitations/implications: Research limitations result from the analysis of a deliberately selected case, which does not allow for formulating general conclusions. Nevertheless, the article refers to sustainable development of manufacturing enterprises.
Practical implications: The information contained in the publication may be of interest to business representatives, students and doctoral students of technical, economic and social faculties; analysing the impact of sustainable social development on the operations of manufacturing enterprises in the national and international dimension.
Originality/value: The publication covers the topic of sustainable social development of manufacturing enterprises in the macroeconomic aspect. Interdisciplinary research combining the areas of management and quality science with economics and finance.

Keywords: Central and Eastern Europe, manufacturing enterprises, sustainable social development.

Category of the paper: Case study.

1. Introduction

Development is a complex and multidimensional category. It is a process of long-term and targeted quantitative and qualitative changes. Development is extremely important for enterprises because it enables them to survive and operate in a competitive market. It leads to changes in the level and structure of company components.

Business development has many faces. Over the years, the approach to doing business has undergone significant transformations. Nowadays, it is believed that in addition to making a profit, enterprises should also pursue economic and social goals. Processes such as globalization, computerization and increasing public awareness of the negative aspects of doing business require changes in the management of the development of modern enterprises. An increase in the level of competitiveness requires adaptation to changing market conditions. Contemporary enterprises are obliged to support the development of employees, improve the quality of life of local communities or protect the environment (Vare, Scott, 2007; Ciegis, Zeleniute, 2008; Duran et al., 2015; Misztal, 2018).

The concept of sustainable development is gaining importance. It involves the implementation of economic, social and environmental goals. This approach leads to the emergence of a number of benefits for the company and its environment. The goal of enterprises is not only to maximize profit, but also to environmental protection and to improve the conditions and quality of employees' work, care for their health and intellectual development (Dernbach, 2003; Prugh, Assadourian, 2003; Blewitt, 2008; Stoddart, 2011; Slimane, 2012; Barbosa et al., 2014; Emas, 2015).

The main aim of this paper is to assess the impact of macroeconomic conditions on the social development of industrial enterprises in selected countries of Central and Eastern Europe. The following research hypothesis was formulated as follows: Macroeconomic factors are statistically significant for the social development of manufacturing enterprises in Czechia, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia, Slovenia in the period from 2012 to 2022.

The first part of the paper is devoted to theoretical considerations regarding the social development of enterprises and its determinants. The second, main part presents the results of the study on a group of industrial enterprises in the period from 2012 to 2022. The analysis was based on data from Eurostat. Statistical dependence was examined using Pearson's linear correlation index and the method of least squares.

2. Motivation and purpose

The conducted analysis showed that the most important parameters of the project implementation The development of modern enterprises depends on a number of factors, including globalization, the development of modern information and communication technologies, changes in approach to management processes (Vare, Scott, 2007; Ciegis, Zeleniute, 2008; Duran et al., 2015; Misztal, 2018). Enterprises always operate in a specific external environment. The environment gives them opportunities and possibilities, but at the same time sets requirements and limitations (Mitek, Miciula, 2012).

Currently, one of the most popular approaches to business management is the idea of sustainable development. The term has several meanings, it is flexible and open to interpretation (Prugh, Assadourian, 2003; Blewitt, 2008; Barbosa et al., 2014). Most definitions underline the need for a compromise between the needs of the present and future generations (Dernbach, 2003; Stoddart, 2011; Slimane, 2012; Emas, 2015).

Sustainable development of enterprise can be understood as a:

- "meeting the needs of a firm's direct and indirect stakeholders (...) without compromising its ability to meet the needs of future stakeholders as well" (Dyllick, Hockerts, 2002),
- "achieving success today without compromising the needs of the future" (Boudreau, Ramstad, 2005),
- "keep the business going", "future-proofing" (Colbert, Kurucz, 2007),
- "take decisions considering the common value" (Porter, Kramer, 2007),
- "a holistic approach of thinking of business which seeks to integrate consideration of the three aspects of sustainability – social, environmental and economic (Oželienė, 2017)".

Sustainable development can be considered from three perspectives: economic, social and ecological. From an economic point of view, companies are focused on maximizing profit, increasing productivity and profitability. From an ecological perspective, companies take action for reduction of emissions and pollution, smart use of resources, biodiversity, security ecosystems, protection of natural resources, recycling, the use of environmentally friendly production. Social activities focus on respect of the human rights, health protection, social security, employee satisfaction, investments in employee coaching and development (Grudzewski et al., 2010; Grabara et al., 2015; Misztal, 2018; Kowalska, Misztal, 2019).

The social development of an enterprise can be understood as taking actions for the development of employees and local communities. It has two dimensions, identified with the impact of enterprise management on the external environment and the interior of the organization. The impact on the company's environment depends on its size, scale and type of business. It should be emphasized that the external environment has a key impact on the

development of the enterprise. It creates opportunities and prospects for development, on the other hand, it can generate restrictions and barriers. The impact of enterprises on local communities is associated with the creation of new jobs and financial support for local social initiatives. In the internal context, development should be equated with improving the conditions and quality of employees' work (Mitek, Miciuła, 2012; Misztal, 2019).

Undoubtedly, the implementation of the concept of sustainable development of enterprises has many features in common with corporate social responsibility (Taylor, 2003; Sheridan, Milgate, 2005; Goel, Ramanathan, 2014). The role of corporate social responsibility in the enterprise management process is to fully accept economic, social and environmental factors. These aspects go beyond typical business activities. They make it possible to meet the expectations of the company and its environment (Biadacz, Wysłocka, 2016; Musiał, Kubacki, 2017). Corporate Social Responsibility values focus on responsibility towards employees, towards the client, towards the natural environment, towards the local population (Kożusznik, 2005). Enterprises that implement the triad of economic, social and environmental goals act responsibly and consciously (Ferrell et al., 2016). It seems right to say that Corporate Social Responsibility is focused on providing the best conditions for the development of society. The goal is to improve the quality of life (Turban, Greening, 1996; Papke, Wooldridge, 2008; Phillips et al., 2018).

Social development has quantitative and qualitative features. Due to the implemented issues and the purpose of the study, as well as the availability of statistical data, the authors assumed that social development should be equated with such categories as: wages and salaries, social security costs, total number of employees in a country, turnover per person employed, apparent labor productivity, gross value added per employee, growth rate of employment, number of persons employed per enterprise, investment per person employed.

Social development of an enterprise depends on several factors that can be divided into two groups (Lorenc, Sorokina, 2015; Trojanowski, 2015):

- macroeconomic conditions such as: level of the country's economic development, macroeconomic stability, stability of legal regulations, support for pro-ecological activities, ecological awareness of people,
- microeconomic conditions such as: financial situation of enterprises, profitability, productivity, product quality, environmental awareness of the management staff, type of business activity, opportunities and prospects for further operations, accumulated human capital, innovation, information technologies.

Development is determined by internal factors on which the enterprise has an impact and external factors determined by the level of socio-economic development of the country. The basic indicators for the assessment of macroenvironment can be included: gross domestic product (GDP), trade balance, research and development expenditure, unemployment rate, harmonized index of consumer process (HICP).

3. Methodology

The main aim of the study is to assess the impact of macroeconomic factors on the social development of manufacturing enterprises in selected countries of Central and Eastern Europe. Countries, base on which the study is conduct: Czechia, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia and Slovenia, their common feature is accession to the European Union on the 1th of May, 2004. Due to the desire for a comprehensive approach to the analyse issues, the research covered all economic entities of the section C (manufacturing, conducting their activities in selected countries of Central and Eastern Europe in the period from 2012 to 2022). The survey is based on statistical data from Eurostat.

The research hypothesis is formulated as follows: Macroeconomic factors has a statistically significant impact on the manufacturing enterprises in selected countries of Central and Eastern Europe in the period from 2012 to 2022.

The assessment of the impact of macroeconomic factors on the social development of manufacturing enterprises in selected countries of Central and Eastern Europe in the period from 2012 to 2022 is carried out in four stages.

Preparation, analysis and assessment of a synthetic indicator of social development of manufacturing enterprises and a synthetic macroeconomic indicator of selected countries of Central and Eastern Europe (2012-2022).

Based on the partial indicators (selected for availability and comparability in terms of time), a synthetic indicator of social development of manufacturing enterprises (SI soc) and a synthetic macroeconomic indicator (SI macro) of selected countries of Central and Eastern Europe (2012-2022) are determined. The components of synthetic indicators are divided into stimulants and destimulants.

Components of the synthetic indicator of social development of manufacturing enterprises in selected countries of Central and Eastern Europe: stimulants: wages and salaries [million euro], social security costs [million euro], total number of employees in a country, turnover per person employed [thousand euro], apparent labor productivity [thousand euro], gross value added per employee [thousand euro], growth rate of employment [%], number of persons employed per enterprise, investment per person employed [thousands euro]; destimulants: personnel costs [million euro].

Components of the synthetic macroeconomic indicator of selected countries of Central and Eastern Europe: stimulants: gross domestic product (GDP) [million euro], trade balance [million euro], research and development expenditure [million euro]; destimulants: unemployment rate [percentage], harmonized index of consumer process (HICP) [percentage].

Indicators are normalized based on the following formulas (Dziekański, 2014):

Stimulants:

$$S = (x_{ij} - \min x_i)/(\max\{x_i\} - \min\{x_i\}) \quad (1)$$

Destimulants:

$$D = (\max\{x_i\} - x_{ij})/(\max\{x_i\} - \min\{x_i\}) \quad (2)$$

where:

S, D: normalized value of a characteristic for the examined unit,

x_{ij}: value of the j-th feature for the examined unit,

max: the maximum value of the j-th feature,

min: the minimum value of the j-th feature.

The synthetic indicator of the social development of manufacturing enterprises and a synthetic macroeconomic indicator of selected countries of Central and Eastern Europe (2012-2022) are created assuming the same impact of the indicators on the value of the aggregate measure based on the formula (Nowak 1995):

$$S_j = 1/n \sum_{i=1}^{n} S_{ij} \quad (3)$$

where:

S_j: aggregate metric for j-th year,

N: number of indicators used in the model.

Analysis of the impact of the time variable (t) on the synthetic indicator of social development of manufacturing enterprises and the synthetic macroeconomic indicator of selected countries of Central and Eastern Europe (2012-2022) - the use of the Ordinary Least Squares Method.

Research on the relationship between the synthetic indicator of the social development of manufacturing enterprises and the synthetic macroeconomic indicator of selected countries of Central and Eastern Europe (2012-2022) using the Pearson's linear correlation analysis and Ordinary Least Squares Method, assuming that, the explained variable is the synthetic indicators of the social development of manufacturing enterprises of selected countries of Central and Eastern Europe, the explanatory variable is the synthetic macroeconomic indicator of selected countries of Central and Eastern Europe.

4. Results

The risk analysis of the construction project was carried out using the capabilities of the Risky Project The research is based on manufacturing enterprises operating in selected countries of Central and Eastern Europe in the period from 2012 to 2022 (Czechia, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia, Slovenia). In 2012, 318604 manufacturing enterprises are operating in selected countries of Central and Eastern Europe, while in 2018 415803 - an increase of 971799 enterprises (Table 1).

Table 1.
Research sample

Country	Number of manufacturing enterprises										
	2012	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**
Czechia	151753	156209	167344	173519	173889	167688	170041	172054	175425	175894	179059
Estonia	5478	5441	5468	5563	5927	6381	6613	7053	7259	7507	7686
Hungary	56346	52710	52163	51521	49798	47475	47614	49310	49951	50809	51086
Latvia	7488	7521	7872	7737	8981	9537	9806	10523	11090	10921	11011
Lithuania	15768	12849	12485	13729	15133	16120	17975	19398	19969	20268	20855
Poland	56346	52710	52163	51521	49798	47475	47614	49310	49951	50809	51086
Slovakia	8081	8044	70271	70294	66683	63208	64297	63969	68413	72563	75506
Slovenia	17344	17172	17113	17012	17182	18148	18561	18853	19074	19376	19514
∑	318604	312656	384879	390896	387391	376032	382521	390470	401132	408147	415803

Source: retrieved from http://www.ec.europa.eu/eurostat, 12.01.2023.

On the basis of selected partial indicators illustrating the social development of manufacturing enterprises, a synthetic indicator of the social development of manufacturing enterprises of selected countries of Central and Eastern Europe (2012-2022) is determined. Integrated indicators can take values from 0 to 1, the higher the indicator level, the higher the degree of development. The average value of the synthetic indicator of the social development of manufacturing enterprises in selected countries of Central and Eastern Europe in the period from 2012 to 2022 is in the range 0,52-0,59 (standard deviation 0,13-0,21), while the middle value (median) of this indicator is in range 0,52-0,64. The highest value of the synthetic indicator of the social development of manufacturing enterprises in selected countries of Central and Eastern Europe in the period from 2012 to 2022 is observed in Hungary (2022) - 0,88, while the lowest in Hungary (2013) - 0,10 (Table 2).

Table 2.
A synthetic indicator of the social development of manufacturing enterprises in selected countries of Central and Eastern Europe in the period from 2012 to 2022

Country	Indicator	Year											Descriptive statistics				
		2012	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**Mean**	**Median**	**Min**	**Max**	**SD**
Czechia	SI soc	0,58	0,13	0,35	0,51	0,50	0,51	0,64	0,73	0,72	0,76	0,81	0,57	0,58	0,13	0,81	0,19
Estonia	SI soc	0,48	0,16	0,32	0,60	0,64	0,67	0,66	0,62	0,66	0,77	0,82	0,58	0,64	0,16	0,82	0,18
Hungary	SI soc	0,49	0,10	0,41	0,57	0,49	0,55	0,69	0,79	0,70	0,82	0,88	0,59	0,57	0,10	0,88	0,21
Latvia	SI soc	0,55	0,14	0,44	0,53	0,64	0,56	0,55	0,54	0,54	0,62	0,65	0,52	0,55	0,14	0,65	0,13
Lithuania	SI soc	0,51	0,24	0,42	0,62	0,59	0,57	0,57	0,64	0,63	0,69	0,73	0,57	0,59	0,24	0,73	0,13
Poland	SI soc	0,55	0,27	0,36	0,55	0,48	0,54	0,62	0,69	0,70	0,73	0,77	0,57	0,55	0,27	0,77	0,15
Slovakia	SI soc	0,52	0,17	0,42	0,45	0,46	0,49	0,59	0,72	0,68	0,72	0,77	0,55	0,52	0,17	0,77	0,17
Slovenia	SI soc	0,65	0,18	0,42	0,55	0,49	0,48	0,59	0,63	0,70	0,67	0,70	0,55	0,59	0,18	0,70	0,15

Source: retrieved from http://www.ec.europa.eu/eurostat, 12.01.2023.

In the analysed period, in all selected countries of Central and Eastern Europe, the synthetic indicator of social development of manufacturing enterprises is characterized by an upward trend (parameters before the time variable (t) are positive). The highest development tendency of the synthetic indicator of the social development of manufacturing enterprises in selected countries of Central and Eastern Europe is recorded in Hungary - the coefficient before the time variable is 0,057,$R^2 = 0{,}740$, while the lowest in Latvia - the coefficient before the time variable is 0,024,$R^2 = 0{,}329$ (Table 3).

Table 3.
Parameters for equating the trend line for synthetic indicator of social development of manufacturing enterprises in selected countries of Central and Eastern Europe in the period from 2012 to 2023: $y = \propto_0 + \propto_1 t$

Dependent variable (SI soc)	OLS	Coefficient	SD	P- value	R^2
Czechia	Constant	0,276	0,082	0,008 ***	0,643
	Time	0,049	0,012	0,003 ***	
Estonia	Constant	0,296	0,076	0,003 ***	0,665
	Time	0,047	0,01	0,002 ***	
Hungary	Constant	0,245	0,077	0,011 **	0,740
	Time	0,057	0,011	0,001 ***	
Latvia	Constant	0,378	0,079	0,001 ***	0,329
	Time	0,024	0,012	0,065 *	
Lithuania	Constant	0,372	0,057	0,0001 ***	0,62
	Time	0,032	0,008	0,004 ***	
Poland	Constant	0,331	0,056	0,0002 ***	0,715
	Time	0,040	0,008	0,001 ***	
Slovakia	Constant	0,278	0,064	0,001 ***	0,713
	Time	0,045	0,009	0,001 ***	
Slovenia	Constant	0,365	0,08	0,001 ***	0,43
	Time	0,030	0,012	0,029 **	

Source: retrieved from http://www.ec.europa.eu/eurostat, 12.01.2023.

Based on selected partial indicators illustrating the macroeconomic situation, a synthetic macroeconomic indicator of selected countries of Central and Eastern Europe (2012-2022) is determined. The average value of the synthetic macroeconomic indicator of selected countries of Central and Eastern Europe in the period from 2012 to 2022 is in the range 0,46-0,60 (standard deviation 0,07-0,19), while the middle value of this indicator is in the range 0,39-0,58. The highest value of the synthetic macroeconomic indicator of selected countries of Central and Eastern Europe in the period from 2012 to 2022 is observed in Poland (2021) - 0,84, while the lowest in Czechia (2013) - 0,27 (Table 4).

Table 4.
A synthetic macroeconomic indicator of selected countries of Central and Eastern Europe in the period from 2012 to 2022

Country	Indicator	Year											Descriptive statistics				
		2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Mean	Median	Min	Max	SD
Czechia	SI macro	0,42	0,27	0,28	0,42	0,42	0,42	0,48	0,60	0,70	0,72	0,70	0,49	0,42	0,27	0,72	0,15
Estonia	SI macro	0,47	0,45	0,44	0,66	0,57	0,53	0,53	0,60	0,56	0,56	0,62	0,55	0,56	0,44	0,66	0,07
Hungary	SI macro	0,45	0,34	0,33	0,37	0,33	0,44	0,53	0,67	0,71	0,68	0,72	0,51	0,45	0,33	0,72	0,15
Latvia	SI macro	0,58	0,42	0,47	0,54	0,56	0,58	0,70	0,71	0,61	0,69	0,72	0,60	0,58	0,42	0,72	0,10
Lithuania	SI macro	0,51	0,36	0,29	0,42	0,47	0,59	0,70	0,71	0,61	0,58	0,76	0,55	0,58	0,29	0,76	0,14
Poland	SI macro	0,44	0,37	0,35	0,34	0,38	0,42	0,54	0,72	0,79	0,84	0,78	0,54	0,44	0,34	0,84	0,19
Slovakia	SI macro	0,32	0,32	0,31	0,35	0,44	0,44	0,49	0,61	0,65	0,79	0,70	0,49	0,44	0,31	0,79	0,16
Slovenia	SI macro	0,32	0,33	0,39	0,37	0,31	0,28	0,45	0,60	0,70	0,61	0,65	0,46	0,39	0,28	0,70	0,15

Source: retrieved from http://www.ec.europa.eu/eurostat, 12.01.2023.

In the analysed period, in all selected countries of Central and Eastern Europe, the synthetic macroeconomic indicators characterized by an upward trend (parameters before the time variable (*t*) are positive). The highest development tendency of the synthetic macroeconomic indicator of selected Central and Eastern European countries is recorded in Poland - the coefficient before time variable is 0,053, R^2 = 0,770, and the lowest in Estonia - the coefficient before time variable is 0,013, R^2 = 0,370 (Table 5).

Table 5.
Parameters for equating the trend line for synthetic macroeconomic indicator in selected countries of Central and Eastern Europe in the period from 2012 to 2022: $y = \propto_0 + \propto_1 t$

Dependent variable (SImacro)	OLS	Coefficient	SD	P- value	R^2
Czechia	Constant	0,231	0,047	0,001 ***	0,818
	Time	0,044	0,007	0,0001 ***	
Estonia	Constant	0,468	0,038	6,360 ***	0,370
	Time	0,013	0,006	0,047 **	
Hungary	Constant	0,254	0,055	0,001 ***	0,749
	Time	0,042	0,008	0,001 ***	
Latvia	Constant	0,450	0,039	1,120 ***	0,667
	Time	0,025	0,006	0,002 ***	
Lithuania	Constant	0,331	0,064	0,001 ***	0,618
	Time	0,036	0,009	0,004 ***	
Poland	Constant	0,227	0,065	0,007 ***	0,770
	Time	0,053	0,010	0,001 ***	

Cont. table 5.

Slovakia	Constant	0,200	0,036	0,001 ***	0,906
	Time	0,049	0,005	6,590 ***	
Slovenia	Constant	0,220	0,058	0,004 ***	0,704
	Time	0,039	0,009	0,001 ***	

Source: retrieved from http://www.ec.europa.eu/eurostat, 12.01.2023.

The relationship between the synthetic indicator of the social development of manufacturing enterprises and the synthetic macroeconomic indicator of selected countries of Central and Eastern Europe (2012-2022) was examined using Pearson's linear correlation analysis and Ordinary Least Squares Method.

The Pearson correlation coefficient between the synthetic indicator of social development of manufacturing enterprises and the synthetic macroeconomic indicator of selected countries of Central and Eastern Europe in the period from 2012 to 2022 is statistically significant in all the analysed countries ($p < 0.05$). The highest level of correlation was in Czechia 0,911, while the lowest in Slovenia 0,673 (Figure 1).

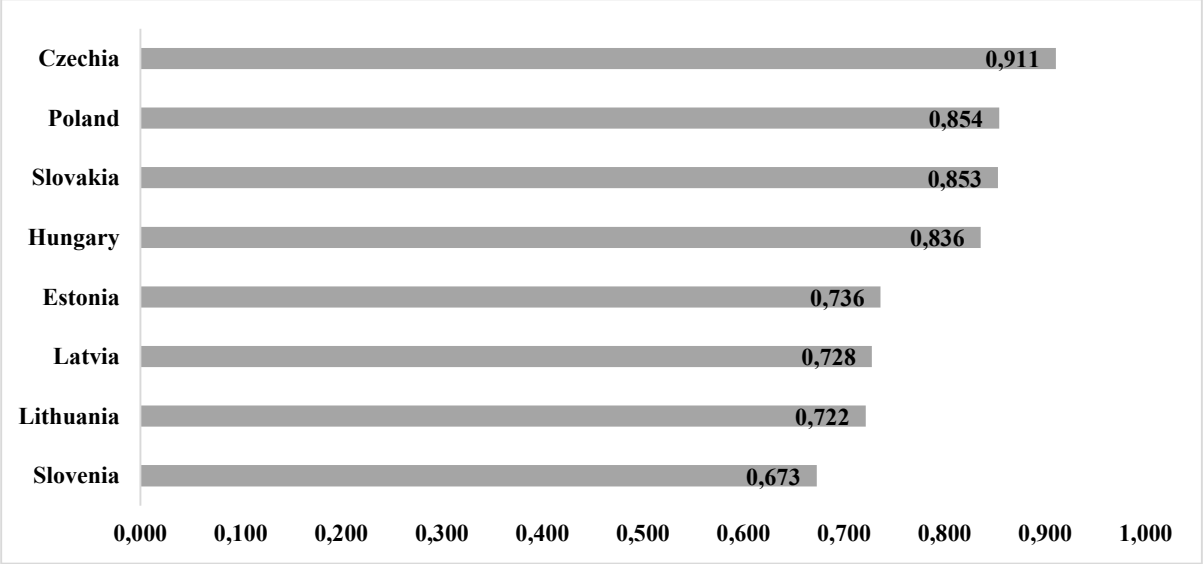

Figure 1. The Pearson's correlation coefficient (correlations between a synthetic indicator of social development of manufacturing enterprises and a synthetic macroeconomic indicator of selected countries of Central and Eastern Europe in the period from 2012 to 2022, p <, 05).

Source: retrieved from http://www.ec.europa.eu/eurostat, 12.01.2023.

Estimation by the Ordinary Least Squares Method in the period from 2012 to 2022, where the explained variable is the synthetic indicator of the social development of manufacturing enterprises of selected countries of Central and Eastern Europe, the explanatory variable is the synthetic macroeconomic indicator of selected countries of Central and Eastern Europe, indicates that in all the countries survey there is a statistically significant, positive relationship between the examined variables. In all the analysed countries, the coefficients before the variable x are positive, which means that the increase in the level of the synthetic

macroeconomic indicator will increase the synthetic indicator of the social development of manufacturing enterprises. The highest level of impact of macroeconomic factors on the social development of manufacturing enterprises in the countries of Central and Eastern Europe is recorded in Estonia - when the synthetic macroeconomic indicator increases by 1, the synthetic indicator of the social development of manufacturing enterprises increases by 2,017, $R^2 = 0{,}542$ - the variability of the explained variable is explained in 54%. The lowest level of impact of macroeconomic factors on the social development of manufacturing enterprises in the countries of Central and Eastern Europe is recorded in Lithuania - when the synthetic macroeconomic indicator increases by 1, the synthetic indicator of the social development of manufacturing enterprises increases by 0,649, $R^2 = 0{,}521$ - the variability of the explained variable is explained in 52% (Table 6).

Table 6.
Results of Ordinary Least Squares Method regressions in the period from 2012 to 2022 (explained variable: synthetic indicators of social development of manufacturing enterprises in selected countries of Central and Eastern Europe, explanatory variable: synthetic macroeconomic indicator of selected countries of Central and Eastern Europe)

Dependent variable (SI soc)	OLS	Coefficient	SD	P- value	R^2
Czechia	Constant	0,007	0,089	0,943	0,830
	SI macro	1,135	0,171	9,690 ***	
Estonia	Constant	0,518	0,339	0,161	0,542
	SI macro	2,017	0,618	0,010 ***	
Hungary	Constant	0,009	0,133	0,950	0,699
	SI macro	1,146	0,251	0,001 ***	
Latvia	Constant	0,093	0,196	0,647	0,530
	SI macro	1,034	0,325	0,011 **	
Lithuania	Constant	0,211	0,117	0,106	0,521
	SI macro	0,649	0,208	0,012 **	
Poland	Constant	0,207	0,078	0,026 **	0,730
	SI macro	0,665	0,135	0,001 ***	
Slovakia	Constant	0,113	0,093	0,253	0,728
	SI macro	0,876	0,178	0,001 ***	
Slovenia	Constant	0,242	0,119	0,072 *	0,453
	SI macro	0,676	0,248	0,023 **	

Source: retrieved from http://www.ec.europa.eu/eurostat, 12.01.2023.

The results of the Pearson's linear correlation and the Ordinary Least Squares Method allowed the adoption of the research hypothesis: macroeconomic factors has a statistically significant impact on the manufacturing enterprises in selected countries of Central and Eastern Europe in the period from 2012 to 2022.

5. Conclusions

Enterprise development is a complex and multi-dimensional category. Contemporary enterprises due to the increase of competitiveness and social and ecological awareness of citizens are obliged to implement the concept of sustainable development. One of the dimensions of sustainable development is social development. It can be understood as improving the conditions and quality of work as well as a positive impact on the local community. Social development depends on a number of internal and external factors.

The main aim of the study is to assess the impact of macroeconomic factors on the social development of manufacturing enterprises in selected countries of Central and Eastern Europe. For the purposes of the study, a synthetic indicator of the social development of manufacturing enterprises and a synthetic macroeconomic indicator of selected countries of Central and Eastern Europe (2012-2022) are developed. The influence of the time variable (t) on the examined variables and the relationship between synthetic indicators (using Pearson's linear correlation analysis and Ordinary Least Squares Method) are also analysed.

In the period from 2012 to 2022, the average value of the synthetic indicator of social development of manufacturing enterprises and the synthetic macroeconomic indicators of selected countries of Central and Eastern Europe are in the ranges 0,52-0,59 and 0,46-0,60, respectively. In the analysed period, in all selected countries of Central and Eastern Europe, the synthetic indicator of social development of manufacturing enterprises and the synthetic macroeconomic indicator are characterized by an upward trend. Pearson's linear correlation analysis and estimation using the Ordinary Least Squares Method indicate, that in all selected countries of Central and Eastern Europe, there is a statistically significant and positive relationship between the studied variables. It can be concluded, that macroeconomic factors has a statistically significant impact on the manufacturing enterprises in selected countries of Central and Eastern Europe in the period from 2012 to 2022. The highest level of impact of macroeconomic factors on the social development of manufacturing enterprises in the countries of Central and Eastern Europe is recorded in Estonia, while the lowest in Lithuania.

References

1. Biadacz, R., Wysłocka, E. (2016). Terminowe regulowanie zobowiązań a społeczna odpowie-działalność biznesu. *Zeszyty Naukowe Politechniki Częstochowskiej. Zarządzanie, Vol. 2, No. 23*, pp. 27-40.
2. Blewitt, J. (2008). *Understanding sustainable development*. London: Earthscan.

3. Boudreau, J., Ramstad, P. (2005). Talentship, talent segmentation, and sustainability: A new HR decision science paradigm for a new strategy definition. *Human Resource Management, Vol. 44, Iss. 2,* pp. 129-136, doi: 10.1002/hrm.20054.
4. Ciegis, R., Zeleniute, R. (2008). *Ekonomikos plėtra darnaus vystymosi aspektu. Taikomoji Ekonomika: sisteminiai tyrimai, Vol. 2, No. 1,* pp. 37-54.
5. Colbert, B., Kurucz, E. (2007). Three conceptions of triple bottom line business sustainability and the role for HRM. *Human Resource Planning, Vol. 30, Iss. 1,* pp. 21-29.
6. Dernbach, J.C. (2003). Achieving sustainable development: The Centrality and multiple facets of integrated decisionmaking. *Indiana Journal of Global Legal Studies, Vol. 10, Iss. 1,* pp. 247-285, doi: 10.2979/GLS.2003.10.1.247.
7. Duran, C.D., Gogan, L.M., Artene, A., Duran, V. (2015). The components of sustainable development - a possible approach. *Procedia Economics and Finance, No. 26,* pp. 806-811, doi: 10.1016/S2212-5671(15)00849-7.
8. Dyllick, T., Hockerts, K. (2002). Beyond the case for corporate sustainability. *Business Strategy and the Environment, No. 11, Iss. 2,* pp. 130-141, doi: 10.1002/bse.323.
9. Dziekański, P. (2014). Koncepcja wskaźnika syntetycznego oceny poziomu rozwoju gmin wiejskich województwa świętokrzyskiego w warunkach globalizacji. *Problemy Rolnictwa Światowego. Zeszyty Naukowe Szkoły Głównej Gospodarstwa Wiejskiego w Warszawie, Vol. 14, No. 3,* pp. 61-70, doi: 10.22004/ag.econ.198846.
10. Emas, R. (2015). *The Concept of Sustainable Development: Definition and Defining Principles. Brief for GSDR 2015*. Retrieved from: http://sustainabledevelopment.un.org/content/documents/5839GSDR%202015_SD_concept_definiton_rev.pdf, 20.01.2023.
11. Ferrell, A., Liang, H., Renneboog, L. (2016). Socially responsible firms. *Journal of Financial Economics, Vol. 122, Iss. 3,* pp. 585-606, doi: 10.1016/j.jfineco.2015.12.003.
12. Goel, M., Ramanathan, P. E. (2014). Business ethics and Corporate Social Responsibility - Is there a dividing line? *Procedia Economics and Finance, Vol. 11,* pp. 49-59, doi: 10.1016/S2212-5671(14)00175-0.
13. Grabara, J., Bajdro, P., Mihaescu, L. (2015). Steps of sustainable development implementation into enterprise activities. *Management of Sustainable Development, Vol. 7, No. 1,* pp. 45-49, doi: 10.1515/msd-2015-0022.
14. Grudzewski, W.M., Hejduk, I.K., Sankowska, A., Wańtuchowicz, M. (2010). *Sustainability w biznesie czyli przedsiębiorstwo przyszłości, zmiany paradygmatów i koncepcji zarządzania*. Warszawa: Poltext.
15. Kowalska, M., Misztal, A. (2019). *Ekologiczny rozwój przedsiębiorstw*. Łódź: Wydawnictwo Uniwersytetu Łódzkiego.
16. Kożusznik, B. (2005). *Wpływ społeczny w organizacji*. Warszawa: PWE.
17. Lorenc, S., Sorokina, O. (2015). Sustainable development of mining enterprises as a strategic direction of growth of value for stakeholders. *Mining Science, Vol. 22*, pp. 67-78, doi: 10.5277/ms150219.

18. Misztal, A. (2018). Zrównoważony rozwój polskich przedsiębiorstw - ewaluacja. *Handel wewnętrzny, Vol. 2, Iss. 373*, pp. 27-40.
19. Misztal, A. (2019). Stabilizacja makroekonomiczna a zrównoważony rozwój przedsiębiorstw - przypadek Bułgarii, Czech, Polski i Rumunii. *Studia Prawno-Ekonomiczne, Vol. 113,* pp. 189-205, doi: 10.26485/SPE/2019/113/11.
20. Mitek, A., Miciula, I. (2012). Współczesne determinanty rozwoju przedsiębiorstw prywatnych. *Zeszyty Naukowe Uniwersytetu Szczecińskiego. Studia i Prace Wydziału Nauk Ekonomicznych i Zarządzania, No. 28*, pp. 53-66.
21. Musiał, M., Kubacki, Ł. (2017). Społeczna Odpowiedzialność biznesu w procesie zarządzania przedsiębiorstwami. *Zeszyty Naukowe Politechniki Częstochowskiej, Vol. 2, No. 25,* pp. 84-93, doi: 10.17512/znpcz.2017.1.2.07.
22. Nowak, E. (1995). *Rachunkowość menedżerska*. Wrocław: Wydawnictwo Akademii Ekonomicznej im. Oskara Langego.
23. Oželienė, D. (2017). *A review of enterprise sustainable development models: critical appraisal, scientific proceedings.* International Scientific conference: High technologies. Business. Society. Retrived from: http://hightechsociety.eu/sbornik/2017/2/26.A%20REVIEW%20OF%20ENTERPRISE%20SUSTAINABLE%20DEVELOPMENT%20MODELS%20CRITICAL%20APPRAISAL.pdf, 20.01.2023.
24. Papke, L., Wooldridge, J. (2008). Panel data methods for fractional response variables with an application to test pass rates. *Journal of Econometrics, Vol. 145, Iss. 1-2,* pp. 121-133, doi: 10.1016/j.jeconom.2008.05.009.
25. Phillips, N., LeBaron, G., Wallin, S. (2018). Mapping and measuring the effectiveness of labour-related disclosure requirements for global supply chains. *Working Paper, No. 32*. International Labour Organizaiton, Research Department.
26. Porter, M.E., Kramer, M.R. (2007). Strategy and Society: The Link Between Competitive Advantage and Corporate Social Responsibility. *Harvard Business Review, Vol. 84, No. 12,* pp. 78-92.
27. Prugh, T., Assadourian, E. (2003). What is sustainability, anyway? *World Watch Magazine, No. 5, Vol. 16,* pp. 10-21.
28. Sheridan, A., Milgate, G. (2005). Accessing board positions: A comparison of female and male board members' views. *Corporate Governance An International Review, No. 6, Vol. 13,* pp. 847-855, doi: 10.1111/j.1467-8683.2005.00475.x.
29. Slimane, M. (2012). Role and relationship between leadership and sustainable development to release social, human, and cultural dimension. *Procedia Social and Behavioral Sciences, No. 41,* pp. 92-99, doi: 10.1016/j.sbspro.2012.04.013.
30. Stoddart, H. (2011). *A Pocket Guide to Sustainable Development Governance*. London: Commonwealth Secretariat.
31. Taylor, A. (2003). Top box: Rediscovering customer satisfaction. *Business Horizons, No. 5, Vol. 46,* pp. 3-14, doi: 10.1016/S0007-6813(03)00065-X.

32. Trojanowski, T. (2015). Przedsiębiorstwa wobec wyzwań zrównoważonego rozwoju. *Zeszyty Naukowe Politechniki Śląskiej. Organizacja i Zarządzanie, Iss. 77,* pp. 239-246, yadda: bwmeta1.element.ekon-element-000171340333.
33. Turban, D.B., Greening, D.W. (1997). Corporate Social Performance and Organizational Attractiveness to Prospective Employees. *The Academy of Management Journal, No. 3, Vol. 40,* pp. 658-672, doi: 10.2307/257057.
34. Vare, P. Scott, W. (2007). Learning for a Change: Exploring the Relationship Between Education and Sustainable Development. *Journal of Education for Sustainable Development, Vol. 1, Iss. 2,* pp. 191-198, doi: 10.1177/0973408207001002.