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## Methodology for Analyzing the Level of International Entrepreneurship Development

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**Abstract:**

**Purpose:** The purpose of this article is the development of a methodology for analyzing the level of international entrepreneurship development and how to introduce and test this methodology in the non-financial enterprises in Poland.

**Design/Methodology/Approach:** The proposed methodology consists of three stages. At the first stage, the indicators are analyzed, allowing revealing the level of participation of business structures in the national economy system. At the second stage, indicators characterizing the degree of investment activity and the efficiency of business structures functioning, as well as their activity in international markets, are examined. The third stage is devoted to the calculation of the final index of enterprises' participation in international entrepreneurship. The research methodology is based on the use of the following methods: a descriptive statistics method; the method of grouping statistical data; the method of correlation analysis, as well as the regression analysis method.

**Findings:** The proposed methodology makes it possible to comprehensively assess the level of entrepreneurial structures development and the degree of their involvement in international business processes.

**Practical Implications:** The authors' methodology can be the scientific rationale for the process of development of international entrepreneurship.

**Originality/Value:** The methodology proposed the total index of participation of enterprises in international entrepreneurship as a comprehensive indicator of entrepreneurial activity in international markets, based on volumes and efficiency of export operations of business structures.

**Keywords:** Total index, participation, international entrepreneurship.

**JEL codes:** F15, F41, O11.

**Paper type:** Research article.

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## **1. Introduction**

International entrepreneurship is defined as a set of innovative actions aimed at creating and increasing the value of a company in a risk environment based on the use of economic, financial and production capabilities of foreign markets (Yeung, 2002; Mtigwe, 2006), as a creative process of discovering and utilizing business opportunities existing in foreign markets, with the goal of achieving competitive advantages (Zahra, 2002; Hitt, 2002). The concept of international entrepreneurship includes two components. The first component is the entrepreneurship itself, i.e. innovative, creative process of creating added value, coupled with high financial and economic risks. The second component is international economic activity, which can be defined as combination of organizational, managerial, economic, and commercial activities of a business entity focused on the international market.

Consequently, the term "international entrepreneurship" should be understood as an innovative and risky economic activity in foreign markets, which is carried out by business entities for the purpose of generating income. In a broad sense, "international entrepreneurship" means:

- combination of all types of economic activity of an enterprise, carried out abroad of a particular state (Rymarczyk, 2004; Pierścioneck, 2003);
- a consistent business process which is ran in foreign markets, based on the use of the concept of international marketing (Paunovic, 2010);
- the process of adapting the enterprise's activities to the international business environment (Calof, 1995);
- multilevel process of development of business structure, where the engagement into international business processes gradually increases on certain international markets through certain products and services (Luostarinen, 1994; Welch, 1998; Johanson, 1977);
- geographic expansion of the scope of the company, which ultimately leads to the globalization of all entrepreneurial processes (Strzyżewska, 2005: 149).

The subjects of international entrepreneurship are individual entrepreneurs, small and medium enterprises. The level of the national economy transparency and its competitiveness in world markets determines the degree of country integration into the world economy system. The rate and quality of the national socio-economic system development, and therefore the prospects for business structures entry into international markets, depend on the degree of the national economy integration into world economic processes (Williams, Vorley and Williams, 2017; Huggins and Thompson, 2016). Thus, external macroeconomic prerequisites for the international entrepreneurship development are being formed.

The purpose of this article is the development of the authors' methodology for analyzing the level of international entrepreneurship development and how to

introduce and test this methodology in the non-financial enterprises in Poland. The research methodology is based on the use of the following methods: a descriptive statistics method; the method of grouping statistical data; the method of correlation analysis, as well as the regression analysis method. The work used statistical data characterizing the level of participation of non-financial enterprises in the system of international relations, as well as the dynamics of their development, taken from official information resources – Central Statistical Office of Poland and Narodowy Bank Polski.

## 2. Literature Review

The process of entry of an entrepreneurial structure into international markets (internationalization of business) has been widely studied by scientists since the beginning of the last century. Having analysed the scientific literature we can say that all the theories of internationalization of business can be tentatively divided into theories of market imperfections and theories of international management. Within the framework of theories of market imperfection, the most outstanding are the works of American economist Raymond Vernon (1913-1999) (Vernon 1966; 1979), British economist J. Dunning (1927-2009) (Dunning 1988; 2008), Canadian scientist S. Hymer (1934-1974) and the American economist Michael Porter (Hymer 1976; Porter 1993).

In theories of market imperfection, attention is focused on the search for market niches and the availability of competitive advantages for the company that made the decision on internationalization. Within the framework of international management theories the works of Swedish scientists F. Wiedersheim-Paul, J. Vahlne, J. Johanson and L. Mattsson should be highlighted (Johanson 1975; 1988; Vahlne 1990; 2013). The internationalization theories listed above are oriented to large international business. Together with the theories of entrepreneurship, they became the basis for the formation and development of theories of international entrepreneurship.

The first scientific works on international entrepreneurship were the works by Malekzadeh and Nahavandi (1985); Mamis (1989); McDougall (1989); McDougall and Oviatt (1991); McDougall and Oviatt (1992); Brush, (1992); Casson (1985); Gupta (1989); Hennart (1982); Ohe *et al.* (1991); Ray (1989); Vozikis and Mescon (1985). Within the framework of these theories, the entrepreneur's activity and innovativeness are studied as a key figure in the development and internationalization of small businesses.

The authors of theories of international entrepreneurship emphasize the special attention on the fact that the entry of entrepreneurial structures into the international market is always accompanied with a high risk due to instability of foreign markets, as well as the need for rapid adaptation to new geographically and psychologically remote business environment. In such conditions, one of the main factors for the

successful entering of an entrepreneurial structure into the international market is the combination of an innovative, proactive and risk-prone entrepreneurial behavior that transcends national boundaries and is aimed at creating economic entities that produce added value (McDougall, 2000). Among recent studies on the development of entrepreneurial structures and factors contributing to their internationalization, several groups of works can be distinguished.

The first group of works is devoted to the study of the impact of modern entrepreneurship on the pace, quality and development paths of national economies. In their works, scientists argue that due to the interdependencies between entrepreneurship and sustainable development, a fundamentally new approach to the concept of welfare and the process of sustainable development of national socio-economic system can be developed. Scientists are also exploring how the problems of the development of the national economy affect the direction of entrepreneurial activity (Kyrö, 2009; Kuckertz and Wagner, 2010; Schaltegger and Wagner, 2011; Baumgartner *et al.*, 2013; Dewick and Hernandez, 2014; Audretsch *et al.*, 2017; Huggins *et al.*, 2018; Huggins and Thompson 2019).

The second group of works is devoted to the analysis of the structure of entrepreneurship taking into account the specifics of regional development (Huggins and Thompson, 2014; Ács *et al.*, 2015; Nguyenatal *et al.*, 2015; Peluchaatal *et al.*, 2017; Adhikariatal *et al.*, 2018; Lee and Kelly, 2019).

The third group of studies is devoted to the study of the specifics of international entrepreneurship and the identification of factors contributing to the internationalization of entrepreneurial structures in modern economic conditions (Belso-Martínez, 2006; Fletcher, 2007; Terjesen *et al.*, 2008; Boehe, 2009; Varma, 2011; Smallbone and Welter, 2012; Chandra *et al.*, 2012; Janjuha-Jivraj *et al.*, 2012; Lough and McBride, 2013; Perchard, 2017).

With regards to the subject of the study, a separate group should be devoted to scientific works studying of the specifics of the process of internationalization of entrepreneurial structures in Poland (Nowiński and Bakinowska, 2012; Danik and Kowalik, 2015; Kowalik *et al.*, 2017; Baranowska-Prokop and Sikora, 2014; Baranowska-Prokop and Sikora, 2017; Baranowska-Prokop and Sikora, 2018, Matuszczak, 2019; Cieślík, 2019; Godlewska and Morawska, 2019). All the works named under various aspects relate to the problem of the development of international entrepreneurship and study the factors affecting this process.

However, they do not clearly distinguish macroeconomic indicators that make it possible to assess the degree of involvement of national entrepreneurial structures into world economic processes. Consequently, the work devoted to comprehensive assessment of the participation of business entities in international activities is relevant and may find practical application.

### 3. Research Methodology

In order to analyze the level of international entrepreneurship development, a methodology was developed, based on the methods of economic and mathematical statistics and correlation and regression analysis (Figure 1). The proposed methodology consists of three stages. At the first stage, the indicators are analyzed, allowing revealing the level of participation of business structures in the national economy system. At the second stage, indicators characterizing the degree of investment activity and the efficiency of business structures functioning, as well as their activity in international markets, are examined. The third stage is devoted to the calculation of the final index of enterprises participation in international entrepreneurship. The proposed methodology makes it possible to comprehensively assess the level of entrepreneurial structures development and the degree of their involvement in international business processes.

#### 3.1 The Structure of Non-Financial Enterprises in Poland by Size and Legal Form and their Role in the National Economy System

In order to identify the importance of business structures in the national economy system of Poland, the authors consider the structure of non-financial enterprises. The classification of Polish enterprises by size and legal form is presented in Table 1.

**Table 1.** Classification of Polish enterprises

Indication	Enterprise Classification Criteria
<b>The enterprise size class</b>	
A	micro enterprises - number of employees from 0 to 9 people
B	small enterprises - the number of employees from 10 to 49 people
C	medium-sized enterprises - the number of employees from 50 to 249 people
D	large enterprises - the number of employees from 250 people or more
A,B,C,D	total number of enterprises
<b>The enterprise legal form</b>	
E	natural persons
F	legal persons
E,F	total number of enterprises

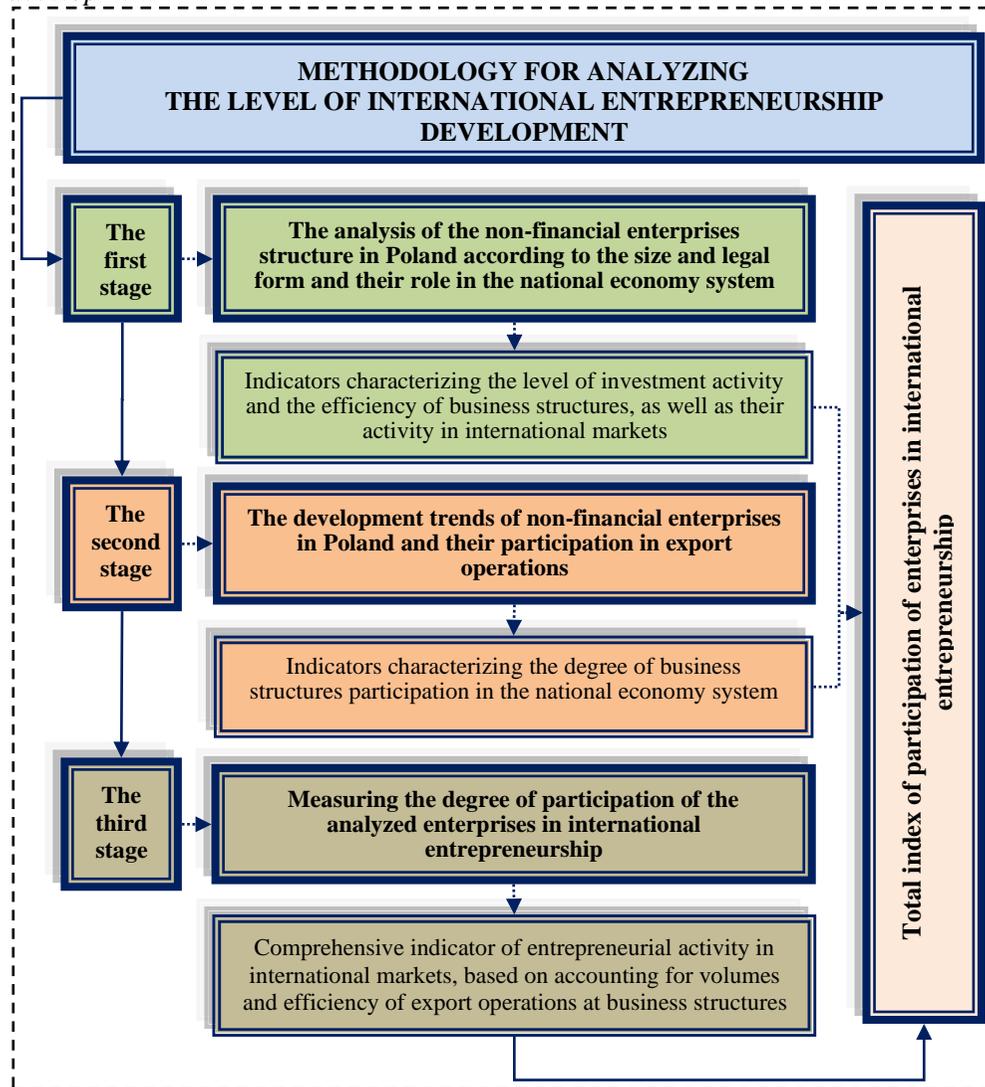
**Source:** Central Statistical Office of Poland (Activity of non-financial enterprises in 2015).

The analysis of the non-financial enterprises structure in Poland according to the size class depicts that 96% of the total number of enterprises are micro enterprises, the second place is occupied by small enterprises (3% of the total number), then - medium (0.8%) and large ones (0,2%).

According to the official statistics, the number of all non-financial enterprises registered in Poland in 2015 was 19,114,141 enterprises, which is 6.6% (119,198 enterprises) more than in 2012. That increase was achieved due to the growth in the number of large enterprises (D) by 7.2% (231 enterprises), micro enterprises (A) by

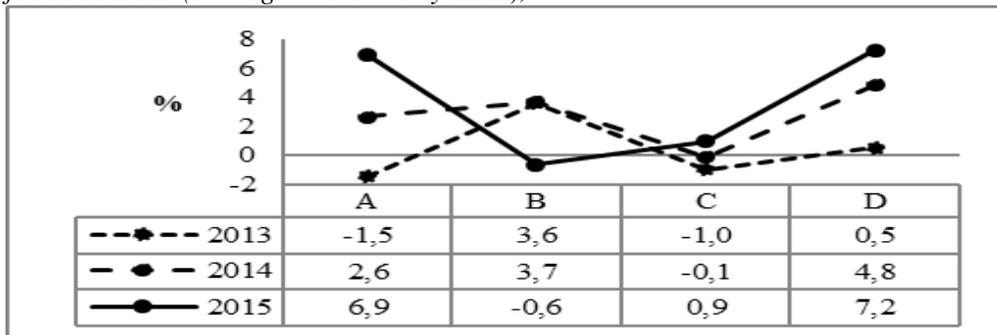
6.9% (119172 enterprises) and medium-sized enterprises (C) by 0.9% (147 enterprises). The number of small enterprises in the non-financial sector (B) decreased in 2015 compared to 2012 by 0.6% (358 enterprises) (Figure 2).

**Figure 1.** Methodology for analyzing the level of international entrepreneurship development



Source: Developed by the authors.

**Figure 2.** Dynamics of changes in the number of non-financial enterprises in Poland for 2012-2015 (basic growth rates by 2012), %

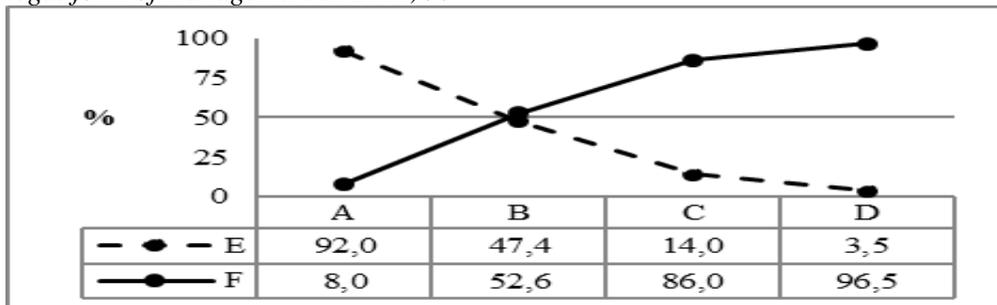


**Source:** Calculated and compiled by the authors based on data provided by Central Statistical Office of Poland (Activity of non-financial enterprises in 2015).

Summarizing the results of the analysis of the data presented in Figure 2, it can be outlined that the overwhelming majority of all non-financial enterprises in Poland (99.82%) are the so-called business structures that are developing quite dynamically (the average growth rate of their number in 2015 in relation to 2012 was 2.4 %).

Of the total number of non-financial enterprises in Poland, about 90% are legal entities and only 10% are individuals. It has to be noted that there is a direct relationship between the choice of the legal form of business and the size of the enterprise: 92% of all non-financial micro enterprises in Poland operate without registering a legal entity (as individuals), in small enterprises approximately 50/50 (52.6% legal entity and 47.4% - natural persons), and among medium-sized and large enterprises the vast majority operate on the basis of a legal entity registration (86.0% and 96.5%, respectively) (Figure 3). Such a structure of enterprises is due to the peculiarities of the legal field of doing business in Poland (first and foremost, taxation peculiarities).

**Figure 3.** Structure of non-financial enterprises by the enterprise size class and the legal form of management in 2015, %



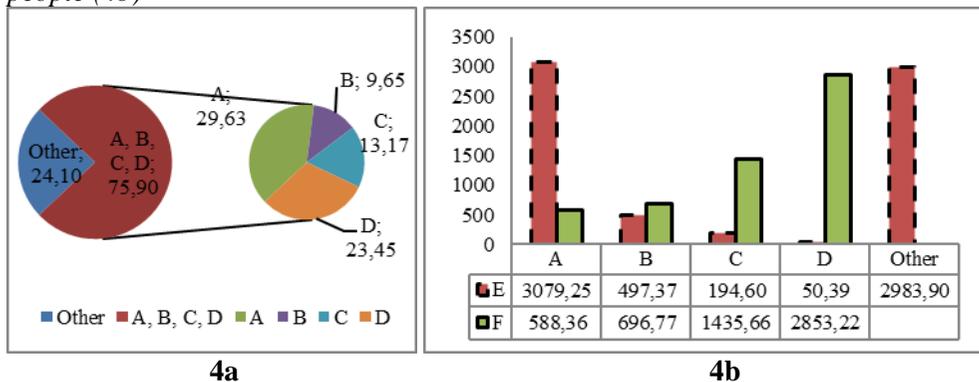
**Source:** Calculated and compiled by the authors based on data provided by Central Statistical Office of Poland (Activity of non-financial enterprises in 2015).

For a more comprehensive identification of the entrepreneurship role in the national socio-economic system, it is necessary to analyze the number of employed people by the groups of non-financial enterprises identified above.

According to the official statistics, at the end of 2015, 12379.6 thousand people were employed in Poland, which accounted for 32.2% of the total population of the country (38,437 thousand). Non-financial enterprises altogether employed 75.90% of the working population of the country. In enterprises belonging to entrepreneurial structures (enterprises of groups A, B and C) collectively of 52.45% of the total working population were employed (29.63, 9.65 and 13.17%, respectively). While at large non-financial enterprises only 23.45% of the working population of Poland is employed (Figure 4a). Thus, the presented data indicate a significant contribution of business structures in the process of the socio-economic system development in Poland. At the same time, the number of those employed in business structures with the registration of a legal entity (enterprises of group F) is 1.4 times higher than the number of employees in business structures without registration of a legal entity (enterprises of group E) (Figure 4b).

When considering the employment dynamics in non-financial enterprises in Poland for 2012-2015 the following trends have to be distinguished. Thus, the total number of people working in non-financial enterprises in Poland increased from 8937.35 thousand people up to 9395.61 thousand people (an increase of 458.25 thousand people or 5.13%).

**Figure 4.** The structure of employment in Poland by non-financial and other enterprises in 2015, % of the total number of the working population (4a), thousand people (4b)



**Source:** Calculated and compiled by the authors based on data provided by Central Statistical Office of Poland (Activity of non-financial enterprises in 2015).

The number of employed at the enterprises of groups A and C in 2013 after the 2012 crisis decreased by 2.54% and 0.63%, which led to a decrease in the total number of employed at non-financial enterprises by 0.43%. It ought to be noted that the decrease in the employment level at the end of 2015 is observed only at enterprises

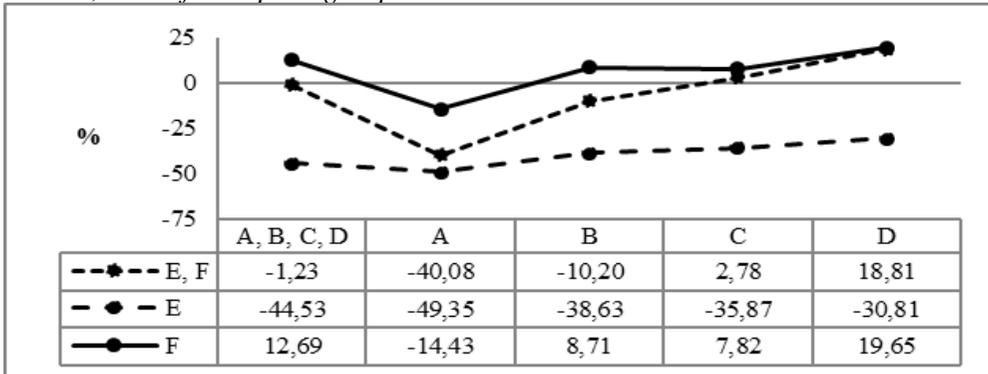
of category B, where, compared to the base year 2012, the number of employed decreased by 0.82%, and compared to the previous 2014, the decrease was 2.36%. Positive dynamics is observed at enterprises of categories A and D. During the reviewed period, the number of employed at enterprises of category A increased by 208.13 thousand people or 6.02%, while at the enterprises of category D the increase was 232.14 thousand people or 8.69%. In general, non-financial business structures (enterprises of groups A, B and C) have a positive trend: in 2015 compared to 2012, there was an increase in the number of employees by 3.61% or by 226.12 thousand people, which is comparable to the increase in the number of employed in large Polish enterprises. The next important indicator characterizing the role of business structures in the national economy system is the size of the average monthly employees' remuneration of these enterprises. According to statistics, in 2015 in Poland the average monthly remuneration was 4066.95 PLN. The percentage deviation of the received remuneration from the average value at the enterprises of the selected groups is as follows:

- for enterprises operating on the basis of a legal entity registration (group F), the remuneration of employees is higher than the national average by 12.7%. Thus, the average monthly remuneration is higher than the national average by 8.7% for employees of small enterprises (Group B), by 7.8% for workers of medium-sized enterprises (Group C) and by 19.6% for employees of large enterprises (Group D);
- in all enterprises operating as an individual (group E), the remuneration of employees is 44.5% lower than the average for Poland. Thus, in micro enterprises (group A) the average monthly remuneration is lower by 49.3%, in small enterprises (group B) - by 38.6%, medium (group C) - by 35.9%, large (group D) - by 30.8%;
- regardless of the legal form of organization in large and medium-sized enterprises, remuneration of workers is higher than the national average by 18.8 and 2.8%, respectively, and in micro and small enterprises is lower than the national average by 40.1 and 10.2%, respectively;
- on average, employees of non-financial enterprises belonging to entrepreneurial structures (enterprises of groups A, B, C) have less remuneration than employees of large enterprises (Figure 5).

Notwithstanding the enterprise size and the legal form of organization at all non-financial enterprises in Poland in 2012-2015 there was an increase in average monthly remuneration. So, the increase in the average monthly remuneration of employees of non-financial enterprises in 2015 compared to 2012 was 10.21%, which is 0.52 percentage points above the national average. The analysis of the situation by groups of non-financial enterprises depicts that the growth rate of employees' remuneration of enterprises belonging to business structures (enterprises A, B and C) is higher than that of large enterprises (D). The leader is medium-sized enterprises - in 2015 compared to 2012, the increase in remuneration was 12.79%, which is by 2.58 percentage points higher than the national average, followed by

micro enterprises - an increase in remuneration of 12.20%, then the average - 10.37% (Table 2).

**Figure 5.** Deviation of the average monthly remuneration at non-financial enterprises of Poland from the average monthly remuneration in the whole country in 2015, in % of enterprise groups



**Source:** Calculated and compiled by the authors based on data provided by Central Statistical Office of Poland (Activity of non-financial enterprises in 2015)

**Table 2.** Growth dynamics of the average monthly remuneration in Poland in 2013-2015

Year	The growth rate of the average monthly remuneration by 2012, %						Deviation from the national average, p.p.				
	By groups of non-financial enterprises					National average	p.p.				
	A,B,C, D	A	B	C	D		A,B,C,D	A	B	C	D
2013	3.67	1.75	3.99	3.89	3.00	3.60	0.06	-1.85	0.39	0.28	-0.60
2014	7.47	6.58	6.01	8.34	6.79	6.84	0.63	-0.25	-0.82	1.50	-0.04
2015	10.72	12.20	10.37	12.79	9.07	10.21	0.52	1.99	0.16	2.58	-1.13

**Source:** Calculated and compiled by the authors based on data provided by Central Statistical Office of Poland (Activity of non-financial enterprises in 2015).

Therefore, the analysis of the structure of non-financial enterprises, the number of employed, as well as the size and dynamics of employees’ remuneration of these enterprises, allows to conclude that business structure is a significant component of Polish socio-economic system (more than 50% of jobs created by enterprises of groups A, B, C) and have a positive dynamics of development (there is a permanent increase in the number of employed in business structures and an increase in their employees’ remuneration).

### 3.2 Trends in Polish Non-Financial Enterprises Development

The main indicator denoting the business structure development is the dynamics of its investment activity. As an indicator characterizing the enterprise investment

activity, the authors use the sum of all investment expenditures of enterprises, consisting of Investment outlays, spent on the so-called "new investments", and the cost of acquiring investment outlays on purchasing the second-hand fixed assets. The dynamics of this indicator by groups of enterprises depending on their size for 2012-2015 is presented in Table 3.

**Table 3.** Dynamics of investment activity of non-financial enterprises in Poland in 2012-2015

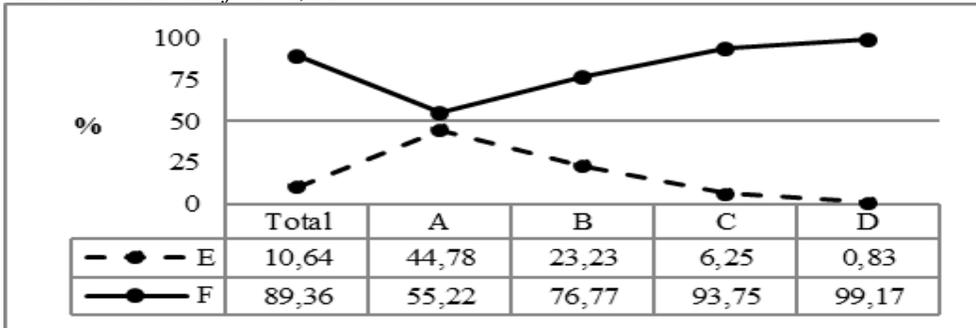
Year	Enterprises by size class					Unit of measure	
	Total	A	B	C	D		
<b>Total investment costs of non-financial enterprises in Poland</b>							
2012	154,853	24,370	17,332	32,787	80,365	million PLN	
2013	162,212	26,461	18,223	34,230	83,298		
2014	183,261	30,012	19,485	35,877	97,886		
2015	200,618	29,727	19,796	40,365	110,730		
<b>The chain growth rate of investment spending</b>							
2013	4.75	8.58	5.14	4.40	3.65	%	
2014	12.98	13.42	6.93	4.81	17.51		
2015	9.47	-0.95	1.60	12.51	13.12		
<b>The basic growth rate of investment spending</b>							
2013	4.75	8.58	5.14	4.40	3.65		
2014	18.35	23.15	12.42	9.42	21.80		
2015	29.55	21.98	14.22	23.11	37.78		
<b>The share of investment costs by groups of enterprises</b>							
2012	100	15.74	11.19	21.17	51.90		
2013	100	16.31	11.23	21.10	51.35		
2014	100	16.38	10.63	19.58	53.41		
2015	100	14.82	9.87	20.12	55.19		

**Source:** Calculated and compiled by the authors based on data provided by Central Statistical Office of Poland (Activity of non-financial enterprises in 2015).

According to the results of the study in 2015, the total investment costs of non-financial enterprises in Poland amounted to 200,618 million PLN. At the same time, almost 45% of the total investment accounted for the business structures (enterprises of Group A, B and C), namely: PLN 29,727 million spent by micro enterprises (14.82%), 19796 million PLN - small enterprises (9.87%) and 40365 million PLN. - medium-sized enterprises (20.12%). It has to be specified that from 2012 to 2015 the annual growth of that indicator was observed at enterprises of all groups (except for small enterprises in 2015). In general, the volume of investment expenses in 2015 increased compared to 2012 by 29.55%. On average, at the end of 2015, for all analyzed enterprises, 89.36% of all investment expenditures fell on legal entities (group F) and only 10.64% on enterprises that function as individuals (group E). However, this figure varies greatly depending on the enterprise size. So, at large enterprises, 99.17% of all investment expenditures are accounted for by individuals, at middle ones there is a similar situation - 93.75%, and for small and global

enterprises the difference in investment expenditures between enterprises by individuals and legal entities is as follows: 76.77% by 23.23% and 55.22% by 44.78% respectively (Figure 6).

**Figure 6.** Structure of investment activity by groups of non-financial enterprises in Poland at the end of 2015, %



**Source:** Calculated and compiled by the authors based on data provided by Central Statistical Office of Poland (Activity of non-financial enterprises in 2015).

Summing up the results of the analysis of the data presented in Table 3 and in Figure 6, one can say that the investment activity of enterprises depends largely on an enterprise size and its legal form. The largest investment activity is observed at large enterprises operating on the basis of a legal entity registration. At the same time, enterprises belonging to entrepreneurial structures also have a fairly high level of investment activity, which is a factor positively influencing the prospects for their development. At the next step the authors analyze the structure of investment expenditures of enterprises, namely, the share of investment costs (new investments) and the share of costs for the purchase of non-current assets used in the total amount of funds invested by enterprises (Table 4).

**Table 4.** Structure of investment expenses of non-financial enterprises of Poland in 2015, % of the total volume of all investment expenses

Indicator	Enterprises					
	by legal form	by size class				
		Total	A	B	C	D
Investment outlays (I)	Total	90.64	12.44	7.67	17.73	52.80
	E	8.50	5.58	1.53	0.99	0.40
	F	82.14	6.86	6.15	16.73	52.40
Investment outlays on purchasing of second-hand fixed assets (Z)	Total	9.36	2.38	2.19	2.39	2.40
	E	2.14	1.05	0.77	0.26	0.05
	F	7.22	1.33	1.43	2.13	2.34
$\Delta (I - Z), p.p.$	Total	81.28	10.06	5.48	15.34	50.40
	E	6.37	4.53	0.76	0.73	0.35
	F	74.91	5.53	4.72	14.61	50.06

**Source:** Calculated and compiled by the authors based on data provided by Central Statistical Office of Poland (Activity of non-financial enterprises in 2015).

According to the calculations presented in Table 4, the main part of the funds is spent on new investments. The calculations show that the total difference between investment costs (new investment) and the cost of the acquisition of used non-current assets are 81.28 per cent. Only 9.36% of all spent investment funds in 2015 was used to purchase non-current assets that were in use (2.14% by enterprises of group E and 7.22% by enterprises of group F), and so-called new investments accounted for 90.64 % of all investments (for enterprises of the E group was 8.50%, for enterprises of the F group - 82.14%). The following tendency is observed:

- for enterprises of individuals (group E), the gap between new investments and the cost of acquiring used non-current assets decreases with the rise in the number of employees. Therefore, for micro enterprises (A) the gap is 4.53 %, small (B) - 0.76 %, middle (C) - 0.73 % and large (D) - 0.35 %;
- for enterprises of legal entities (group F) the amount of spending on new investments increases with the rise in the number of employees at enterprises. So, for micro enterprises, this gap is 5.53 %, for small enterprises - 4.72 %, for medium-sized enterprises 14.61 % and for large 50.06 %.

It ought to be emphasized that 47.20% of the total investment expenditures of non-financial enterprises in Poland are new investments made by micro, small and medium enterprises regardless of their legal form, which testifies to the innovative orientation of the investment activities of business structures.

Any enterprise, regardless of its size class and form of organization, from an economic point of view, functions in order to increase its market value. The financial basis for achieving this goal is a high level of income and profitability of the enterprise. In turn, the profitability of the enterprise depends on the ratio of its income and costs. It is these indicators that determine the current position of the enterprise in the market and its investment potential, and hence the development prospects, both in the national and international markets.

The next important indicator of the business structures development is the gross turnover profitability rate, illustrating the profitability level or business loss:

$$\text{Gross turnover profitability rate} = \frac{(\text{Total revenues} - \text{Total costs})}{\text{Total costs}} \quad (1)$$

The profitability value of turnover calculated by the presented formula for non-financial enterprises in Poland for 2012-2015 is given in Table 5.

**Table 5.** Gross turnover profitability of non-financial enterprises in Poland in 2012-2015, %

Year	Enterprises by size class				
	A,B,C,D	A	B	C	D
2012	6.26	13.03	5.99	4.16	4.47
2013	6.86	14.55	5.88	4.82	4.85
2014	6.99	14.62	6.83	5.77	4.35
2015	6.77	15.47	7.46	5.90	3.08
The basic increase, p.p.	0.51	2.44	1.47	1.74	-1.39

*Source:* Calculated and compiled by the authors based on data provided by Central Statistical Office of Poland (Activity of non-financial enterprises in 2015).

The data presented in Table 5 allow drawing the following conclusions:

- throughout 2012-2015 the average level of turnover profitability in all non-financial enterprises in Poland was about 7%;
- in this period there was an increase in the profitability of turnover of business structures and a decrease in profitability in large enterprises. So, in 2015 compared to 2012, the profitability at micro enterprises increased by 2.44 pp, at small enterprises - by 1.47%, at medium ones - by 1.74%, while at large enterprises it decreased by 1.39%;
- the level of profitability of business structures is higher than the level of profitability in large enterprises. So, the highest level of profitability of turnover at the end of 2015 was recorded at micro enterprises (A) - 15.47%, followed by small ones - 7.46% and medium ones - 5.9%. The profitability of turnover at large enterprises was only 3.08%.

Such statistics show that business structures have a financial situation, which allows them to accumulate own investment resources intensively and direct them to business development. It has to be noted that due to the specifics of the legal field of an enterprise, individuals (E) of any size have a higher profitability level of turnovers compared to legal entities (F) (Table 6). The average profitability of turnover for enterprises registered in the form of an individual is 16.4%, while for enterprises registered as a legal entity it is only 3.9%.

**Table 6.** Gross turnover profitability rate depending on the size class and shape of the organization in 2015, %

by legal form	Enterprises				
	by size class				
	A,B,C,D	A	B	C	D
E	16.4	18.5	11.3	11.0	8.1
F	3.9	4.3	5.5	5.1	2.9

*Source:* Calculated and compiled by the authors based on data provided by Central Statistical Office of Poland (Activity of non-financial enterprises in 2015).

Table 7 presents the structure of all revenues and costs of all non-financial enterprises in Poland by the criterion of an enterprise size. According to statistics for 2012-2015 entrepreneurial structures occupy a weighty position in the economic system of Poland: they generate about 56% of all incomes of non-financial enterprises in Poland. As of the end of 2015, microenterprises (A) made the largest contribution among business structures - 21.97%, then medium (C) - 19.67 and then small enterprises (B) - 14.17%. A similar structure is observed in the costs of enterprises.

The similar structure of income and costs of enterprises is due to the close correlation between these indicators. This fact is confirmed by the results of the correlation and regression analysis presented in Table 8. In the regression analysis performed, the sum of the costs is the independent variable (X), and the incomes are the dependent variable (Y).

**Table 7.** The structure of revenues (Total revenues) and costs (Total costs) of all non-financial enterprises in Poland according to the enterprise size class in 2012-2015, %

Indicator	Year	Enterprises by size class				
		A,B,C,D	A	B	C	D
Total revenues	2012	100	20.26	14.74	20.38	44.63
	2013	100	20.56	14.83	20.16	44.45
	2014	100	20.67	14.83	19.91	44.59
	2015	100	21.97	14.17	19.67	44.19
Total costs	2012	100	19.04	14.77	20.79	45.39
	2013	100	19.18	14.96	20.55	45.31
	2014	100	19.29	14.85	20.14	45.72
	2015	100	20.31	14.08	19.83	45.77

**Source:** Calculated and compiled by the authors based on data provided by Central Statistical Office of Poland (Activity of non-financial enterprises in 2015).

**Table 8.** Correlation and regression analysis of the correlation between the amount of income and costs of non-financial enterprises in Poland

Regression Statistics		<p>The tabular value of the Fisher F-test for a given number of factors and observations is 4.6. The number of the performed calculations - 3695.</p> <p>Statistical proof of the reliability of the model:  <math>F_{\text{tab}} &lt; F_{\text{fact}} ; t_{\text{tab}} &gt; t_{\text{fact}}</math></p>			
Multiple R	0.998				
R- square	<b>0.996</b>				
Normalized R- square	0.996				
Standard error	<b>0.755</b>				
Observations	16				
Variance analysis					
	df	SS	MS	F	Value F
Regression	1	2106	2106	<b>3695</b>	2.29E-18
Balance	14	7.98	0.57		
Total	15	2114			

	<i>Index</i>	<i>Standard error</i>	<i>t- statistic</i>	<i>P-value</i>	<i>Low 95%</i>	<i>Upper 95%</i>
Y-intersection	<b>1.220</b>	0.43	2.81	0.01	0.29	2.15
The sum of all enterprise costs	<b>0.951</b>	0.02	60.79	0.00	0.92	0.98

*Source:* Developed by the authors.

The calculations allow concluding about the close correlation between revenues and costs of all non-financial enterprises in Poland (micro, small, medium and large) and providing a linear regression equation describing this dependence:

$$\text{Share All Revenues} = 1.22 + 0.951 * \text{Share All Expenses} \quad (2)$$

Such results of the correlation-regression analysis indicate that the macroeconomic environment has been developed in Poland, which provides favourable conditions for the development of not only large, but also micro, small and medium-sized enterprises (business structures).

Another indicator characterizing the place of entrepreneurial structures in the national economy system and at the same time determining the development prospects of entrepreneurship is the value added generated by enterprises. Table 9 presents the share of value added by non-financial enterprises of Poland of various sizes in the country's GDP. The data presented in the table indicate that the value added of all non-financial enterprises of Poland in the country's GDP in 2015 was 55.67%, including: the share of enterprises of group A was 14.90%, group B - 6, 29, group C - 9.61% and group D - 24.86%. In other words, micro, small and medium non-financial enterprises in Poland generate value added in the amount of 30.81% of the country's GDP, while the share of big business is 24.86% of GDP. This once again confirms the hypothesis about the importance of business structures for the Polish economic system. The dynamics of changes in this indicator also allows concluding that the share of the value added of non-financial enterprises in Poland in the country's GDP increases every year (from 52.72% in 2012 to 55.67% in 2015). This positive dynamics was formed mainly due to the dynamic development of the enterprises of group A - micro enterprises (12.96% in 2012 and 14.90% in 2015).

**Table 9.** Value added share of non-financial enterprises in Poland in the country's GDP, %

Year	Enterprises by size class				
	A,B,C,D	A	B	C	D
2012	52.722	12.956	6.077	9.157	24.532
2013	53.655	13.476	6.451	9.393	24.336
2014	53.998	13.878	6.336	9.380	24.405
2015	55.667	14.900	6.294	9.613	24.860

*Source:* Calculated and compiled by the authors based on data provided by Central Statistical Office of Poland (Activity of non-financial enterprises in 2015).

Further, Table 10 presents data characterizing the degree of non-financial enterprises development of various sizes and legal forms, as well as showing their contribution to the national economy in Poland. A horizontal analysis of the basic indicators of non-financial enterprises in Poland for 2015 according to the size class and legal form presuppose the following:

- the amount of income of business structures (companies A, B, C) is 55.81% of the total income of non-financial enterprises in Poland;
- among enterprises operating on the basis of registration of a legal entity (F), micro, small and medium enterprises generate 45.52% of all revenues, and large ones 54.48%;
- among the enterprises of individuals, business structures generate 98.42%, while large ones - only 1.58%;
- similar proportions are observed in the sum of all the costs of the enterprise, value added and cost of production.

**Table 10.** Horizontal and vertical analysis of basic indicators of non-financial enterprises in Poland for 2015 by the size class and legal form, %

Enterprises									
by legal form		by size class				by size class			
		A	B	C	D	A	B	C	D
		Total revenues				Value added			
E, F	100%	21,97	14,17	19,67	44,19	26,77	11,31	17,27	44,66
E	100%	72,6	18,39	7,43	1,58	77,66	14,88	5,98	1,48
F	100%	9,74	13,16	22,63	54,48	12,41	10,3	20,45	56,84
		Total costs in %				Production value			
E, F	100%	20,31	14,08	19,83	45,77	28,82	10,91	17,6	42,67
E	100%	70,82	19,53	7,91	1,74	79,56	13,59	5,56	1,29
F	100%	9,7	12,94	22,34	55,03	13,23	10,08	21,3	55,39
		Total revenues				Value added			
E, F		100	100	100	100	100	100	100	100
E		64,31	25,25	7,35	0,70	63,83	28,96	7,61	0,73
F		35,69	74,75	92,65	99,30	36,17	71,04	92,39	99,27
		Total costs				Production value			
E, F		100	100	100	100	100	100	100	100
E		60,55	24,08	6,93	0,66	64,91	29,31	7,44	0,71
F		39,45	75,92	93,07	99,34	35,09	70,69	92,56	99,29

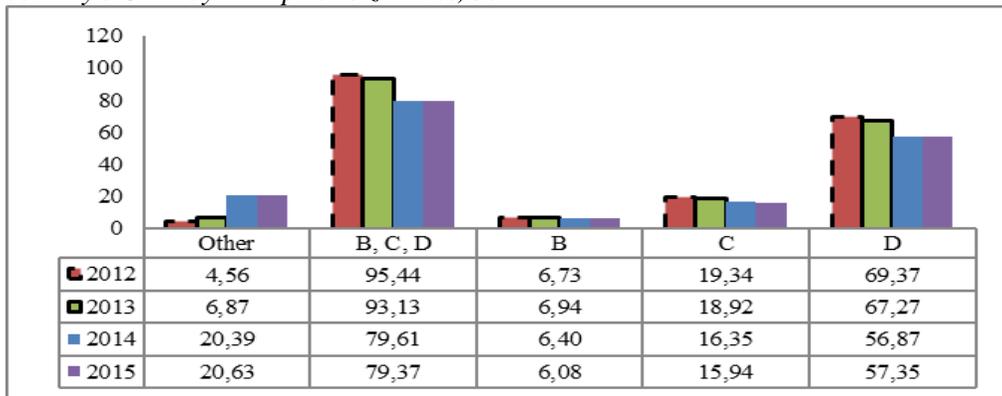
**Source:** Calculated and compiled by the authors based on data provided by Central Statistical Office of Poland (Activity of non-financial enterprises in 2015).

Thus, the horizontal and vertical analysis of the main indicators of non-financial enterprises in terms of size and legal form once again confirms the conclusions made above that business structures make a significant contribution to the system of the Polish national economy and that the main contribution comes from enterprises operating on the basis of a legal entity registration.

An indicator of the participation of non-financial enterprises in the foreign economic activity of the state may constitute their share in export operations (Figure 7). It has to be emphasized that the lack of statistical data on exports for enterprises of group A (micro enterprises) does not allow to fully assess the degree of international entrepreneurship development among non-financial enterprises in Poland.

The data presented in Figure 7 indicate a decline in the share of non-financial enterprises in the total volume of Poland's export operations from 95.44% in 2012 to 79.37% in 2015. Such dynamics is observed in all non-financial enterprises (small, medium and large) and as a result at the end of 2015, the share of large enterprises (D) accounted for 57.35% of the total exports of Poland, the share of medium (C) 15.94% and the share of small enterprises (B) 6.08%. The formed trend is largely due to the intensive development of international activities of other enterprise types (non-financial enterprises), rather than a decrease in the activity of non-financial enterprises in international markets.

**Figure 7.** The share of exports of non-financial enterprises of Poland in the country's GDP by enterprise size class, %



**Source:** Calculated and compiled by the authors based on data provided by Central Statistical Office of Poland (Activity of non-financial enterprises in 2015 and Financial results of economic entities in I–XII 2016) and Narodowy Bank Polski.

Summarizing the overall analysis of the level of non-financial enterprises development in Poland, one can state the following:

- business structures make a significant contribution to the development of the Polish socio-economic system, generating more than 30% of gross value added in the country's GDP and providing jobs for 52% of the total working population;
- business structures have a fairly high dynamism, the level and development prospects: the number of these enterprises in the period under review increased by 2.4%, and the volume of investments they used increased by almost 20%;

- Poland's small and medium-sized non-financial enterprises are actively operating in international markets, carrying out 22% of all Polish export operations.

### 3.3 Total Index of Enterprise Participation in International Entrepreneurship

In order to determine the degree of Polish business structures activity in international markets, it is necessary to develop and calculate the index of enterprise participation in international entrepreneurship. The total index of enterprise participation in international entrepreneurship (assuming equal influence of each of the analyzed factors) is proposed to be calculated using the formula:

$$\Delta Y = \frac{\Delta I_T + \Delta I_Q + \Delta I_L + \Delta I_R + \Delta I_K + \Delta I_D + \Delta I_V}{7}, \quad (3)$$

Where:

$\Delta I_T$  – Index of participation of non-financial enterprises in the total exports of the country, %;

$\Delta I_Q$  – Index of changes in the share of exports per enterprise, %;

$\Delta I_L$  – Index of changes in the share of non-financial exporting enterprises of different groups in the total number of enterprises of the respective groups, %;

$\Delta I_R$  – Index of change in the share of exports per employee, %;

$\Delta I_K$  – Index of investment policy efficiency of exporting enterprises, %;

$\Delta I_D$  – Index of changes in the ratio of enterprise profits to the volume of export transactions, %;

$\Delta I_V$  – Index of changes in the share of gross value added of non-financial enterprises in the total volume of gross domestic product of the country, %.

The calculation of the indices that comprise the final index is proposed to be carried out on the basis of basic growth rates. Subsequently, the index of enterprises participation in international entrepreneurship for non-financial enterprises in Poland for 2012-2015 will be calculated.

1. The first component of the proposed final index reflects the change in the share of participation by non-financial enterprises of different groups (small, medium and large) in the total exports of the country and is calculated by the formula:

$$\Delta I_T = \frac{T_{ij}}{T_{i0}} \times 100 - 100, \% \quad (4)$$

Where:

$T_{ij}$  – the share of enterprise exports of the i-th group in the total exports of the country in the j-th year;

$T_{i0}$  – the share of enterprise exports of the i-th group in the total exports of the country in the base year.

The share of exports of non-financial enterprises in the total exports of the country is calculated by the formula:

$$T_{ij} = \frac{E_{ij}}{E_j} \times 100, \% \quad (5)$$

Where:

$E_{ij}$  – export volume of enterprises of the i-th group in the j-th year;

$E_j$  – total export operations in the j-th year.

The results of the calculation of the above indicators for non-financial enterprises in Poland for 2012-2015 are presented in Tables 11 and 12.

**Table 11.** The share of exports of non-financial enterprises in the total exports of the country, %

Year	Enterprises by size class			
	Total	B	C	D
2012	95.44	6.73	19.34	69.37
2013	93.13	6.94	18.92	67.27
2014	79.61	6.40	16.35	56.87
2015	79.37	6.08	15.94	57.35

**Table 12.** Index of participation of non-financial enterprises in the total exports of the country, %

Year	Enterprises by size class			
	Total	B	C	D
2012	0.00	0.00	0.00	0.00
2013	-2.42	3.15	-2.17	-3.03
2014	-16.59	-4.94	-15.49	-18.03
2015	-16.84	-9.59	-17.60	-17.34

2. The second component which is the index of change in the share of export per one enterprise of the i-th group is proposed to be calculated using the following formula:

$$\Delta I_Q = \left( \frac{T_{ij}/Q_{ij}}{T_{i0}/Q_{i0}} \right) \times 100 - 100, \% \quad (6)$$

Where:

$Q_{ij}$  - the number of non-financial enterprises of the i-th group in the j-th year, units;

$Q_{i0}$  - the number of non-financial enterprises of the i-th group in the base year, units.

The results of the calculation of this indicator for non-financial enterprises in Poland for 2012-2015 are presented in Table 13.

**Table 13.** Index of changes in the share of exports per enterprise, %

Year	Enterprises by size class			
	Total	B	C	D
2012	0.00	0.00	0.00	0.00
2013	-4.83	-0.44	-1.18	-3.54
2014	-18.98	-8.31	-15.41	-21.81
2015	-16.86	-9.02	-18.37	-22.90

3. The third important indicator of the international entrepreneurship development can be the change in the share of non-financial exporting enterprises of different groups B, C, D in the total number of non-financial enterprises of the respective groups.

$$\Delta I_L = \left( \frac{L_{ij}/L_{i0}}{Q_{ij}/Q_{i0}} \right) \times 100 - 100, \% \quad (7)$$

Where:

$L_{ij}$  – the number of exporters of the i-th group in the j-th year, units;

$L_{i0}$  – the number of exporters of the i-th group in the base year, units.

The results of the calculation of this index are presented in Table 14.

**Table 14.** Index of changes in the share of non-financial enterprises-exporters of different groups in the total number of enterprises of the respective groups, %

Year	Enterprises by size class			
	Total	B	C	D
2012	0.00	0.00	0.00	0.00
2013	1.01	3.34	1.30	0.63
2014	3.83	9.22	1.00	-2.11
2015	7.72	13.74	1.37	-1.44

4. The next component of the final index is the index of the change in the share of exports per worker in enterprises of the i-th group in the j-th year:

$$\Delta I_R = \left( \frac{T_{ij}/T_{i0}}{R_{ij}/R_{i0}} \right) \times 100 - 100, \% \quad (8)$$

Where:

$R_{ij}$  – the number of employees in non-financial enterprises of the i-th group in the j-th year, people;

$R_{i0}$  – the number of employees in non-financial enterprises of the i-th group in the base year, people.

The results of the calculation of this index are presented in Table 15.

**Table 15.** Index of changes in the share of exports per worker, %

Year	Enterprises by size class			
	Total	B	C	D
2012	0.00	0.00	0.00	0.00
2013	-3.30	1.95	-1.55	-4.66
2014	-19.14	-6.42	-15.80	-22.32
2015	-20.47	-8.85	-19.00	-23.94

5. To identify the effectiveness of the ongoing investment policy of enterprises-exporters can serve as the ratio of the volume of exports to the volume of investments, which will determine the economic effect of investments. Calculating the dynamics of changes in this index is proposed by the formula:

$$\Delta I_K = \left( \frac{E_{ij} / K_{ij}}{E_{i0} / K_{i0}} \right) \times 100 - 100, \% \quad (9)$$

Where:

$K_{ij}$  - the volume of investments and costs for the purchase of non-current assets used in the enterprises of the i-th group in the j-th year;

$K_{i0}$  - the volume of investments and costs for the purchase of non-current assets that were used by enterprises of the i-th group in the reference year.

The results of the calculation of this indicator for non-financial enterprises in Poland for 2012-2015 are presented in Table 16.

**Table 16.** Enterprise Investment Policy Efficiency Index, %

Year	Enterprises by size class			
	Total	B	C	D
2012	0.00	0.00	0.00	0.00
2013	1.49	6.89	2.09	1.93
2014	-6.83	11.77	2.09	-11.03
2015	-12.11	8.39	-8.35	-17.85

6. The next significant indicator that was proposed to include in the final index of participation of non-financial enterprises in international entrepreneurship is the dynamics of changes in the ratio of enterprise profits to the volume of export operations. The formula for calculating this indicator is presented below:

$$\Delta I_D = \left( \frac{W_{ij} - Z_{ij} / E_{ij}}{W_{i0} - Z_{i0} / E_{i0}} \right) \times 100 - 100, \% \quad (10)$$

Where:

$W_{ij}$  – income of non-financial enterprises of the i-th group in the j-th year;

$W_{i0}$  – income of non-financial enterprises of the i-th group in the reference year;

$Z_{i0}$  – the sum of all costs of enterprises of the i-th group in the j-th year;

$Z_{i0}$  – the sum of all costs of enterprises of the i-th group in the reference year.

The results of the calculation of the indicator for non-financial enterprises in Poland for 2012-2015 are presented in Table 17.

**Table 17.** Index of changes in the ratio of enterprise profits to the volume of export operations, %

Year	Enterprises by size class			
	Total	B	C	D
2012	0.00	0.00	0.00	0.00
2013	1.47	-11.29	7.63	2.73
2014	3.13	-5.91	23.99	-6.65
2015	-9.05	3.41	29.26	-33.88

7. The last indicator proposed to be used in the final index is the change in the gross value added share of non-financial enterprises of the i-th group in the j-th year in the total gross domestic product of the country. The formula for calculating this index is as follows:

$$\Delta I_V = \left( \frac{V_{ij}/V_{i0}}{V_j/V_0} \right) \times 100 - 100, \% \quad (11)$$

Where:

$V_{ij}$  - gross value added of the enterprises of the i-th group in the j-th year;

$V_j$  – the volume of gross domestic product in the j-th year;

$V_{i0}$  - the volume of gross value added of enterprises of the i-th group in the base year;

$V_0$  – the volume of gross value added of enterprises of the i-th group in the base year.

The results of the calculation of this indicator are presented in Table 18.

**Table 18.** Index of changes in the share of gross value added of non-financial enterprises in the total volume of gross domestic product of the country, %

Year	Enterprises by size class			
	Total	B	C	D
2012	0.00	0.00	0.00	0.00
2013	1.04	6.15	2.58	-0.80
2014	0.89	4.26	2.44	-0.52
2015	2.52	3.57	4.99	1.34

8. Based on the obtained indicators, it is possible to calculate the final participation index of non-financial enterprises in Poland in international entrepreneurship for 2012-2015 (Table 19).

**Table 19.** Total participation index of Polish non-financial enterprises in international entrepreneurship, %

Year	Enterprises by size class			
	Total	B	C	D
2012	0.00	0.00	0.00	0.00
2013	-0.79	1.39	1.24	-0.96
2014	-7.67	-0.05	-2.45	-11.78
2015	-9.30	0.24	-3.96	-16.57

#### 4. Conclusions

The calculations have shown that the total final index of participation of Polish non-financial enterprises in international entrepreneurship at the end of 2015 was negative (-9.30%). This is the so-called strategic gap, namely the shortage gap which indicates that, in general, non-financial enterprises in Poland, despite continuous development, lag behind the general market trends. Of the three analyzed groups of enterprises, the strategic gap is observed in large non-financial enterprises in Poland (-16.57%) and medium-sized enterprises (-3.96%). Small non-financial enterprises in Poland have a positive total index of participation in international entrepreneurship (0.24), while its value is close to zero. This means that these enterprises are developing "in line with the market" (not ahead of it, but not too late).

There through, it is small and medium-sized enterprises that are the most flexible and mobile business structures that are able to promptly follow current trends in the domestic and foreign markets and adapt to the current market situation. In other words, the activity of business structures in international markets stands better chances for development.

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