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DYNAMICS AND DIRECTIONS OF CHANGES OF BUSINESS ENTITIES

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Summary. The economic development of Poland and its individual Voivodeships largely depends on the business entities operating in the area. Analyzing them enables a definition of the current situation of the economy and contributes to the ability to forecast future trends. Based on GUS (Statistics Poland) data concerning national economy entities divided by sectors and Voivodeships, an analysis of their structure and dynamics in the years 2008–2016 was conducted. A study of their structure over the years was made possible thanks to the use of indicators of structure and indexes of similarity of structure. The dynamics were analyzed using single-base indexes, chain indexes and the average pace of change. In order to determine the direction of changes, trend functions were estimated. These functions also helped to make forecasts of the number of national economy entities. The objectives of the article are to describe the current condition of the population of economic entities, define the directions of their changes and forecast their future trends.

Key words: economic entities, analysis of structure and dynamics, trends.

INTRODUCTION

Entities of the national economy are some of the most important elements contributing to the country's economic growth and development. According to GUS (Statistics Poland), a national economy entity is "a legal person, an organizational entity without legal personality or a natural person conducting economic activity" [1]. The Polish Classification of Activities [2] (PKD) has systematized the multitude of socio-economic activities pursued by businesses. The first grouping method singles out 21 sections that encompass activities related to each other by the traditionally developed division of labor. This classification encompasses all administrative units in the country. The taking into account of the national economy entities' spatial activity allows for an analysis of the degree of the socio-economic development and diversification of the regions to be analyzed.

The literature offers analyses of the functioning of national economy entities in an average--sized city (Raczyk 2009) or those located along the main commercial streets in Warsaw (Celińska-Janowicz 2016). Grysa (2009) characterizes the economic entities of Świętokrzyskie Voivodeship according to the PKD sections divided into municipalities and counties, whereas Jegorow (2014) presents a quantitative structure of Poland's economic entities according to ownership sectors. As for Zachodniopomorskie Voivodeship, the division of its economic entities according to their number of employees is discussed by Terelak and Kołodziejczak (2012).

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[1] Source of definition: the Council of Minister's order of 30 November 2015 (Official Journal of 2009).
[2] Polish Classification of Activities (PKD 2007) was introduced by way of the Council of Ministers' order of 24 December 2007 (O.J. no. 251, item 1885, as amended).

The objectives of this paper are to describe the directions of changes in the quantities of national economy entities according to the areas of activity (by PKD sections) and according to their spatial distribution (by Voivodeships), and to forecast their future trends. The study includes newly-registered and deregistered business, as well.

The interest in these aspects is largely owed to the significant role that enterprises play in a healthy economy.

RESEARCH MATERIAL AND METHODS

The paper makes use of GUS (Statistics Poland) (GUS, 2008–2018) data on national economy entities according to the Polish Classification of Activities (PKD) sections and the Voivodeships between 2008 and 2018. In 2007, a new classification of activities was introduced (PKD 2007). The temporal scope of this study also accounts for the current changes in the numbers of economic entities.

Information on the numbers of economic entities, with account taken of newly-registered and deregistered ones, is shown in Table 1.

Table 1. The numbers of national economy entities in the studied years

Year	National economy entities in Poland		
	total*	newly-registered**	deregistered**
2008	3,757,093	317,954	244,965
2009	3,742,673	349,656	357,530
2010	3,909,802	402,005	237,693
2011	3,869,897	346,087	383,617
2012	3,975,334	358,367	252,313
2013	4,070,259	365,487	269,904
2014	4,119,671	357,351	304,687
2015	4,184,409	359,973	292,358
2016	4,237,691	349,298	293,997
2017	4,309,800	361,143	286,833
2018	4,365,375	392,659	331,648

Source: developed by the author based on the GUS data. Legend: * status as at 31 Dec., ** from Jan to Dec.

The total number of national economy entities during the analyzed period kept increasing, except for 2009 and 2011. The largest number of new entities were registered in 2018. In turn, particularly many entities were deregistered in 2009 [3] and 2011 [4].

Similar data were obtained for all of Poland's Voivodeships. The most national economy entities were found to be registered in Mazowieckie and Wielkopolskie Voivodeships, and the least in Podlaskie Voivodeship.

Additionally, multiannual data (1993–2018) on economic entities were gathered in order to determine the directions of trends and make forecasts.

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[3] The increased number of deregistered entities in 2009 includes deletions made on the basis of an update survey related to the introduction of the PKD 2007 classification.

[4] The increase in the number of deletions in 2011 was influenced by the REGON register update based on information about deceased persons obtained from the PESEL register and the update based on information from the National Court Register on entities removed from the National Court Register.

The indicator of structure, expressed in the following formula (Sobczyk 2010), was used to identify the share of individual PKD sections in the total number of economic entities over the temporal scope of the study:

$$w_{it} = y_{it}/\sum_{i=1}^{k} y_{it} \quad \text{lub} \quad w_{it} = y_{it}/\sum_{i=1}^{k} y_{it} \cdot 100\%$$

where:

y_{it} – value i – of this structure component in the period t,

i =1, 2,…, k.

Comparisons of structures between 2008 and 2018 were made possible thanks to the use of (Kukuła 1986):

− the absolute index of similarity of structures in the form of

$$P_b = \sum_{i=1}^{k} \min(w_{i1}, w_{i2}, …, w_{it})$$

− the relevant index of similarity of structures in the form of

$$P_w = \sum_{i=1}^{k} \min(w_{i1}, w_{i2}, …, w_{it}) / \sum_{i=1}^{k} \max(w_{i1}, w_{i2}, …, w_{it})$$

These indexes assume values within the range of $\langle 0 , 1 \rangle$ (but can also be expressed in percentages). An index value close to 1 suggests a large similarity between the numbers of national economy entities in the analyzed period.

The direction, pace and intensity of changes in the number of economic entities over time were determined using dynamics indexes, and more specifically (Jóźwiak and Podgórski 2006):

− the single-base index (informing of the changes in the number of entities in subsequent periods in relation to the period treated as the base one)

$$i_{t,0} = \frac{y_t}{y_0}$$

where:

y_t – the value in the studied period,

y_0 – the value in the base period;

− the chain index (informing of the changes in the number of entities in the subsequent period in relation to the preceding period)

$$i_{t,t-1} = \frac{y_t}{y_{t-1}}$$

where:

y_{t-1} – the value for the preceding year,

− the average pace of change (describing the average increase or decrease in the number of entities in the analyzed period)

$$G = \bar{y}_g - 1$$

where:

$$\bar{y}_g = \sqrt[T]{\frac{y_T}{y_0}} = \sqrt[T]{i_{T,0}},$$

T – the length of the studied period (excluding the base year).

The indexes of structure and dynamics are characterized by simple construction and easy results interpretation. They allow for quantitative determinations of changes and their directions. They also allow for dynamic depictions of the intensity with which such changes occur (Wasilewska 2007).

In order to examine the development trends among national economy entities over time, trend functions assuming the following general form were applied (Zeliaś et al. 2003):

$$y_t = f(t) + \varepsilon_t$$

where:

f(t) – specific trend function,

t – time variable *(t = 1, 2,…, n)*,

ε_t – random component.

The following stochastic structure parameters provide information on the degree with which the values estimated on the basis of trend functions fit the actual data:

- the residual standard deviation (*Se*) – informs by how much the empirical data on the number of economic entities deviate on average from the theoretical values estimated on the basis of trend functions;
- the coefficient of determination (*R²*) – determines what part of the variability of the dependent variable has been explained by the trend function. It assumes values ranging from 0 to 1. The closer it is to 1, the better the function fits the actual data;
- coefficient of residual variation (*Vs*) – determines what part of the arithmetic average of the studied variable is accounted for by the residual standard deviation.

The development trend models not only allow for determining the directions of the changes in the number of national economy entities in the studied period, but also for estimating their forecasts for the country as a whole and for the individual Voivodeships.

ECONOMIC ENTITY STRUCTURE ANALYSIS

The largest number of national economy entities in the years 2008–2018 were covered by 8 PKD sections (industrial processing, construction, trade in and repair of vehicles, transport and warehousing, financial and insurance activities, real estate activities, health care and welfare, other service activities). The rest of the entities scattered across the remaining 13 PKD sections were summed up and depicted as „other" in the chart (Fig. 1).
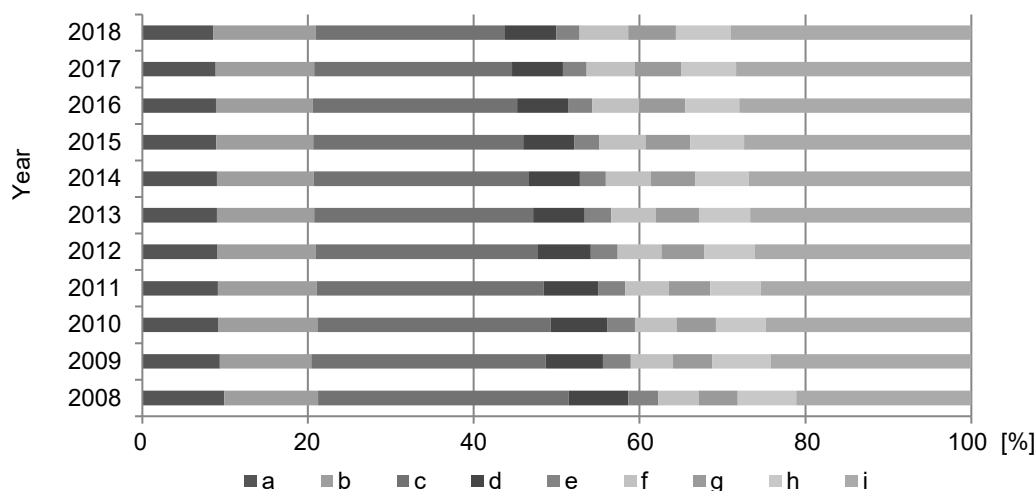
a – industrial processing, b – construction, c – trade in and repair of vehicles, d – transport and warehousing, e – financial and insurance activities, f – real estate activities, g – health care and welfare, h – ther service activities, i – other
Fig. 1. Share of economic entities under individual PKD section headings in their total number
Source: developed by the author.

The highest share in the total number of economic entities was enjoyed by the first three of the PKD sections listed. The structure of national economy entities in the analyzed period saw a decreasing share of businesses gathered under the construction sector, and a clear increase in the number of the businesses under the remaining thirteen PKD section headings (other). The numbers of entities grouped under the "Health care and welfare" and "Other service activities" headings remained at similar levels.

The high values of the absolute and relevant indicators of similarity of structure amounting to 0.8832 and 0.7939, respectively, indicated a large similarity of the structure of the economic entities gathered within the PKD sections between 2008 and 2018. The proportions between these components were not subject to substantial change over the studied period. Similar conclusions were drawn from the analysis of the share of micro (an indicator of similarity of structure of 0.877), small (0.863) and medium-sized (0.876) enterprises divided according to PKD sections in the total number of enterprises studied by Czuba, Szczepaniec and Jurkiewicz (2014).

The structure of newly registered national economy entities by PKD sections is presented in Fig. 2. Due to the low share of the entities grouped under the "Real estate activities" section heading, it was replaced by the "Professional, scientific and technical activities" section (which enjoyed a significant number of newly registered businesses). The small number of newly registered real estate agents suggested that this area of the market had become saturated.
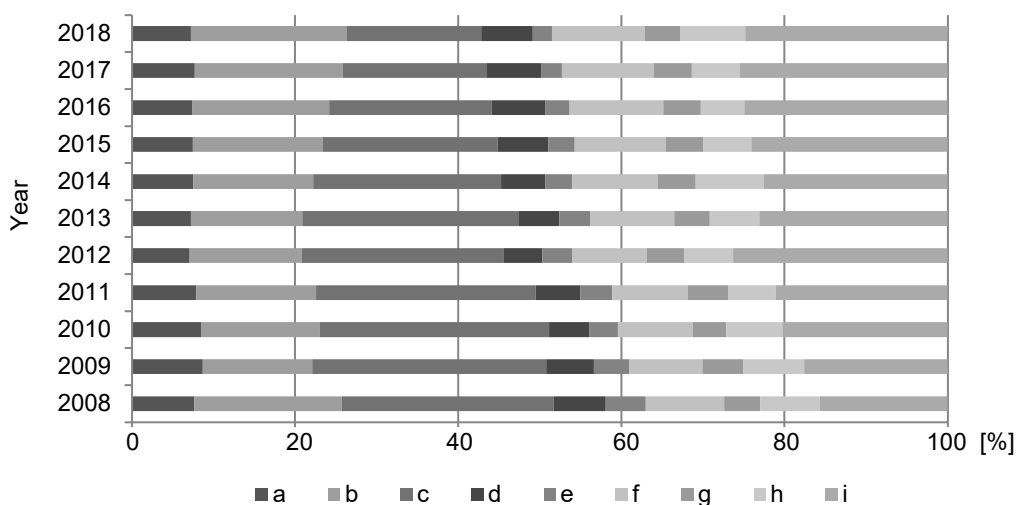
a – industrial processing, b – construction, c – trade in and repair of vehicles, d – transport and warehousing, e – financial and insurance activities, f – professional, scientific and technical activities, g – health care and welfare, h – other service activities, i – other
Fig. 2. Structure of newly registered economic entities according to PKD sections between 2008 and 2018
Source: developed by the author.

Among newly registered economic entities by PKD sections between 2008 and 2018, the number of the trading section businesses kept dropping in favor of the businesses grouped under the "Other" heading. The share of newly registered entities under the "Construction" heading in the total number of entities entered in the REGON registry fell in the initial period, but grew significantly in the last four years. Also, a small increase was observed in the share of newly registered businesses under the "Professional, scientific and technical activities" heading. A drop in the share represented by businesses grouped in the "Trade in and repair of vehicles" section has also been found by Czyżycki and Klóska (2011). Their paper

identifies the dynamic development of the so-called business service sector and the emergence of enterprises that are more modern, profitable and that use advanced technologies as the cause of the growing interest in professional services. The similarity of the studied structures was moderate in the studied period (Pb = 0.7812, Pw = 0.6619).

From the point of view of the dynamics of the changes, the structure of deregistered economic entities according to PKD sections (Fig. 3) was characterized by relative stability (Pb = 0.8739, Pw = 0.7643). This indicated that there were only slight changes in the structure of deregistered economic entities by PKD sections between 2008 and 2018. Any noticeable differences only applied to the national economy entities deregistered from the "Construction" section (with their number growing, except for 2018) and the "Trade in and repair of vehicles" section (whose number kept dropping).
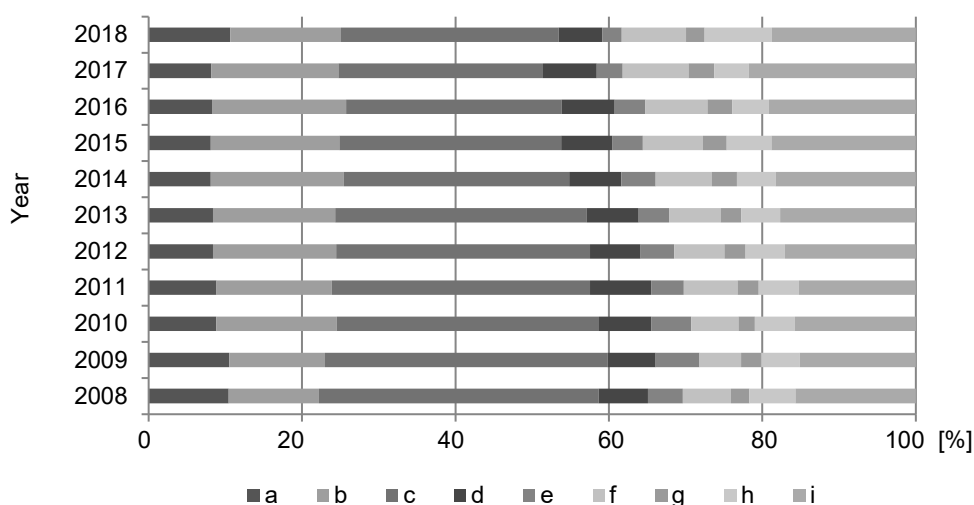

Fig. 3. Structure of deregistered economic entities by PKD sections between 2008 and 2018
Explanations see Fig. 2.
Source: developed by the author.

ECONOMIC ENTITY DYNAMICS ANALYSIS

The dynamics analysis was carried out based on single-base and chain indexes and the average pace of change (Tables 2–4).

Table 2. Analysis of the dynamics of the number of economic entities

| Year | Indexes of the dynamics of the number of national economy entities | | |
	single-base index	chain index	average pace of change [%]
2008	1	–	
2009	0.9962	0.9962	
2010	1.0406	1.0447	
2011	1.0300	0.9898	
2012	1.0581	1.0272	
2013	1.0834	1.0239	1.51
2014	1.0965	1.0121	
2015	1.1137	1.0157	
2016	1.1279	1.0127	
2017	1.1471	1.0170	
2018	1.1619	1.0129	

Source: the author's own calculations based on GUS data.

The number of economic entities in the analyzed period kept growing (except for 2009) since 2008 (the base year). In 2018, there were 16.19% more businesses than in the base year. An analysis of the changes in the number of national economy entities in the given year as compared to the preceding year presented growth trends, except for 2009 and 2011. On an annual average, the number of businesses kept growing by 1.51% over the analyzed temporal scope.

Table 3. Analysis of the dynamics of the number of newly registered economic entities

Year	Indexes of the dynamics of the number of newly registered economic entities		
	single-base index	chain index	average pace of change [%]
2008	1	–	2.13
2009	1.0997	1.0997	
2010	1.2643	1.1497	
2011	1.0885	0.8609	
2012	1.1271	1.0355	
2013	1.1495	1.0199	
2014	1.1239	0.9777	
2015	1.1322	1.0073	
2016	1.0986	0.9703	
2017	1.1358	1.0339	
2018	1.2350	1.0873	

Source: the author's own calculations based on GUS data.

In the analyzed period, the number of newly registered national economy entities grew by 2.13% on an annual average. The most significant growth was observed for 2010, both in relation to the base year (by 26.43%) and the preceding year (by approx. 15%). However, the next year witnessed a decrease in the number of newly registered businesses by 14% as compared to 2010.

Table 4. Analysis of the dynamics of the number of deregistered economic entities

Year	Indexes of the dynamics of the number of deregistered economic entities		
	single-base index	chain index	average pace of change [%]
2008	1	–	3.08
2009	1.4595	1.4595	
2010	0.9703	0.6648	
2011	1.5660	1.6139	
2012	1.0299	0.6577	
2013	1.1018	1.0697	
2014	1.2438	1.1289	
2015	1.1935	0.9595	
2016	1.2002	1.0056	
2017	1.1709	0.9756	
2018	1.3539	1.1562	

Source: the author's own calculations based on GUS data.

The average pace of change in the number of deregistered economic entities between 2008 and 2018 was 3.08%. The lowest number of deregistered businesses was observed for 2010 – the value was 3% lower than in 2008, and 33.52% lower than in the preceding year. Particularly useful in assessing the dynamics of the number of deregistered enterprises are chain indexes. Their detailed analysis pointed to major changes in 2009 (a 45.59%

growth in deregistered businesses) and in 2011 (a 61.39% growth in deregistered businesses). These changes were caused by data updates and not by socio-economic transformations. Nevertheless, the number of deregistered businesses varied significantly between the years.

The analysis of the dynamics of the number of economic entities covered all of Poland's Voivodeships. Table 5 presents the average pace of change in the number of businesses in the analyzed period by Voivodeships.

Table 5. Average pace of change in the number of national economy entities by Voivodeships between 2008 and 2018

Voivodeship	Average pace of change [%]	Voivodeship	Average pace of change [%]
Małopolskie	2.64	Lubuskie	1.07
Mazowieckie	2.32	Śląskie	0.97
Pomorskie	2.12	Warmińsko-mazurskie	0.94
Podkarpackie	1.94	Zachodniopomorskie	0.49
Wielkopolskie	1.76	Opolskie	0.48
Dolnośląskie	1.71	Świętokrzyskie	0.48
Lubelskie	1.58	Kujawsko-pomorskie	0.28
Podlaskie	1.29	Łódzkie	0.21

Source: the author's own calculations based on GUS data.

Year by year, all the Voivodeships showed increasing numbers of businesses. Insignificant annual average growths were characteristic of Łódzkie (0.21%), Kujawsko-Pomorskie (0.28%), Świętokrzyskie (0.48%), Opolskie (0.48%) and Zachodniopomorskie (0.49%) Voivodeships. The highest average pace of change values were observed for Małopolskie, Mazowieckie and Pomorskie Voivodeships, with 2.64%, 2.32% and 2.12%, respectively. According to Kamińska (2006), the spatial diversity of distribution and the reasons for creating new businesses depend on their location (around large municipal and industrial centers), population density, tourism attractiveness, and well a well-developed technical and social infrastructure.

STUDY OF THE DEVELOPMENT TRENDS IN THE NUMBER OF ECONOMIC ENTITIES

The directions of changes in the number of national economy entities and the forecasts for the years 2019–2021 were determined using linear and exponential trend functions. Data on the numbers of economic entities between 1993 and 2018 were used as the empirical basis for the study. For further analyses, a polynomial in the following general form was adopted:

$Y_t = \alpha_0 + \alpha_1 t + \alpha_2 t^2 + \alpha_3 t^3$

The values estimated on the basis of this model are best ($R^2 = 98.69\%$, $V_s = 2.36$) fitted to the actual data (Table 6, Fig. 4).

The number of national economy entities estimated based on this trend presents a growth tendency. Until 2003, this growth was sudden, and slowed down subsequently. The same trend was also used to determine forecasts for the years from 2019 to 2021. The growth in the number of economic entities in subsequent years is accompanied by an increasing forecast error.

Table 6. Third-degree linear trend model estimations

Specification	Structural parameters	T statistics	Stochastic structure parameters	Forecasts in 2019–2021	Standard forecasting error
Trend model	$\alpha_0 = 1,551.77$ $\alpha_1 = 289.45$ $\alpha_2 = -13.22$ $\alpha_3 = 0.24$	$t\alpha_0 = 20.89$ $t\alpha_1 = 12.38$ $t\alpha_2 = -6.64$ $t\alpha_3 = 4.97$	$R^2 = 0.9869$ $Se = 81.3629$ $V_s = 0.0236$	4,484,410 4,594,780 4,719,279	110,159 127,005 149,506

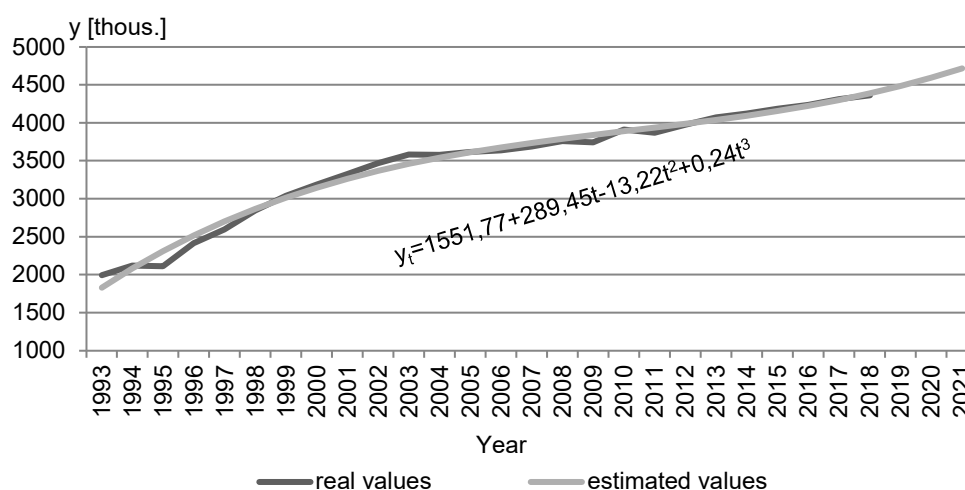Source: the author's own calculations based on GUS data.

Fig. 4. Third-degree linear trend
Source: developed by the author.

After Poland's accession to the EU, businesses faced the need to improve their operational efficiency. They had to adapt it to EU standards, sometimes even by changing their profiles to tailor them to their customers' expectations. This caused numerous changes with regard to the numbers of economic entities by PKD sections. These fluctuations were shown by the value of the average pace of change. As for the directions of such change, their values obtained using linear trend models for the most numerous sections are shown in Table 7.

Table 7. Changes in the numbers of economic entities by PKD sections

PKD sections	Average pace of change [%]	Linear trend models		
		structural parameters	T statistics	stochastic structure parameters
Industrial processing	0.07	–	–	–
Construction	2.42	$\alpha_0 = 419,437.36$ $\alpha_1 = 9,587.45$	$t\alpha_0 = 62.72$ $t\alpha_1 = 9.72$	$R^2 = 0.9034$ $Se = 10,342.16$
Trade in and repair of vehicles	−1.32	$\alpha_0 = 1,128,993.04$ $\alpha_1 = -10,366.95$	$t\alpha_0 = 110.06$ $t\alpha_1 = -6.85$	$R^2 = 0.8214$ $Se = 15,862.99$
Transport and warehousing	0.06	–	–	–
Financial and insurance activities	−1.08	$\alpha_0 = 134,894.24$ $\alpha_1 = -1,074.51$	$t\alpha_0 = 100.51$ $t\alpha_1 = -5.43$	$R^2 = 0.7407$ $Se = 2,075.34$
Real estate activities	3.37	$\alpha_0 = 177,096.89$ $\alpha_1 = 7,031.79$	$t\alpha_0 = 93.07$ $t\alpha_1 = 25.06$	$R^2 = 0.9843$ $Se = 2,942.65$
Professional, scientific and technical activities	6.22	$\alpha_0 = 257,642.40$ $\alpha_1 = 18,374.64$	$t\alpha_0 = 33.69$ $t\alpha_1 = 16.30$	$R^2 = 0.9636$ $Se = 11,823.18$
Health care and welfare	3.68	$\alpha_0 = 165,607.60$ $\alpha_1 = 7,634.90$	$t\alpha_0 = 145.85$ $t\alpha_1 = 45.60$	$R^2 = 0.9952$ $Se = 1,755.86$

Source: the author's own calculations based on GUS data.

In the "Industrial processing" and "Transport and warehousing" sections, the number of economic entities did not change significantly over the studied period (the average pace of change was 0.07% and 0.06%, respectively), whereas the parameters of the estimated linear trend model turned out to be statistically insignificant. A negative pace of change was observed for the "Trade in and repair of vehicles" and "Financial and insurance activities" sections. Year by year, the number of entities kept dropping, by an average of 10,367 for the former and by 1,074 for the latter. The fastest growth in the number of national economy entities was observed for the "Professional, scientific and technical activities", with an average annual growth of 18,375 businesses.

Changes occurring in the structure of industry have been depicted by Macias (2006), Woźniak (2009) and Sala (2016), as well. According to their papers, the "Industrial processing" section saw a decrease in the number of businesses linked to mining, metallurgy, coke production and refining of crude oil, as well as those operating in the textile and clothing industries. In turn, a fast growth rate was observed for entities involved in manufacturing plastic products, TV and radio equipment, office machines and computers. The "Trade in and repair of vehicles" section witnessed a dropping number of businesses. On the other hand, interest in establishing businesses using modern technologies grew.

On the basis of the estimated trends, forecasts were made of the numbers of economic entities by PKD sections for the subsequent years (Table 8).

Table 8. Forecasts of the numbers of national economy entities by PKD sections

PKD section	Forecasts in 2019–2021	Standard forecasting error in 2019–2021
Construction	534,487 544,074 553,662	12,316 12,819 13,376
Trade in and repair of vehicles	1,004,590 994,225 983,858	18,891 19,663 20,517
Financial and insurance activities	122,000 120,926 119,851	2,472 2,572 2,684
Real estate activities	261,478 268,510 275,542	3,504 3,647 3,806
Professional, scientific and technical activities	478,138 496,513 514,887	14,080 14,655 15,291
Health care and welfare	269,627 276,172 282,716	3,582 3,711 3,937

Source: the author's own calculations based on GUS data.

The forecasts (decreasing for "Trade in and repair of vehicles" and "Financial and insurance activities" sections and increasing in the others) confirmed the directions of changes in the numbers of economic entities by PKD sections.

The study of development trends in respect of the numbers of businesses by Voivodeships based on multiannual data showed that the values estimated using the third-degree polynomial were the most accurate in describing their fluctuations. Using this model, forecasts for 2019–2021 were made with regard to the numbers of businesses in each Voivodeship (Table 9).

Table 9. Forecasts of the numbers of national economy entities by Voivodeships

Voivodeship	Forecasts in			Standard forecasting error in		
	2019	2020	2021	2019	2020	2021
Dolnośląskie	397,535	414,498	434,141	8,438.20	9,926.99	11,934.40
Kujawsko-pomorskie	207,820	216,060	226,183	5,235.88	6,159.67	7,405.27
Lubelskie	190,211	197,576	206,179	4,938.68	5,810.03	6,984.92
Lubuskie	116,666	119,157	122,083	2,464.56	2,899.40	3,485.71
Łódzkie	260,091	270,707	283,745	3,278.91	4,476.48	5,197.89
Małopolskie	408,734	423,928	440,787	8,616.27	10,136.50	12,186.30
Mazowieckie	865,278	900,634	939,946	14,882.50	17,508.40	21,048.80
Opolskie	103,069	104,620	106,558	1,453.48	1,709.93	2,055.71
Podkarpackie	187,017	197,017	208,120	4,802.40	5,649.71	6,792.18
Podlaskie	112,541	119,336	127,453	4,363.13	5,132.94	6,170.91
Pomorskie	313,377	325,409	339,099	6,967.70	7,569.32	8,368.60
Śląskie	489,352	500,804	514,327	9,946.98	11,702.00	14,068.30
Świętokrzyskie	116,592	119,705	132,558	2,764.08	3,251.76	3,909.30
Warmińsko-kujawskie	132,252	136,094	140,629	2,722.68	3,203.06	3,850.78
Wielkopolskie	446,416	460,059	475,453	7,263.86	8,545.46	10,273.50
Zachodniopomorskie	229,594	234,382	240,341	2,613.32	3,074.41	3,696.11

Source: the author's own calculations based on GUS data.

The forecasts made for the years 2019–2021 indicate an increase in the number of businesses both for the whole country and for all of the individual Voivodeships. The lowest error accompanied the forecasts for Opolskie and Lubuskie Voivodeships, for which the models described fluctuations of the numbers of national economy entities as being at the levels of 99.71% and 99.69%, respectively. For Lubelskie Voivodeship, however, the variability of the studied phenomenon was explained at a level of 72.97%, and thus the forecasts for this region were the least reliable.

CONCLUSIONS

Based on the analyses performed, the following conclusions can be drawn:
1. In the studied period there was a large similarity between the shares of businesses grouped within individual Polish Classification of Activities sections in the total number of economic entities. This was confirmed by the high values of the indexes of similarity of structure.
2. The average pace of change in the overall number of national economy entities, as well as newly registered and deregistered ones, did not exceed 3.08% between 2008 and 2018. This suggested that in terms of the dynamics, the numbers of economic entities did not change significantly.
3. Year by year, the number of businesses under the "Trade in and repair of vehicles" and the "Financial and insurance activities" headings kept dropping. However, the number of "Professional, scientific and technical activities" section entities of the national economy surged strongly.
4. An insignificant growth in the number of businesses was observed for Łódzkie and Kujawsko-Pomorskie Voivodeships. On an annual average, their increases only amounted to 0.21% and 0.28%, respectively. The highest average growth in the number of national economy entities was found in Małopolskie and Mazowieckie Voivodeships, with the values being 2.64% and 2.32%, respectively.

5. The estimated trend models, especially the third-degree polynomial, outlined a growth tendency with regard to the number of national economy entities.

6. The forecasts made on the basis of the trend models pointed to an increase in the numbers of businesses both in the country as a whole and in the individual Voivodeships for the next three years.

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DYNAMIKA I KIERUNKI ZMIAN PODMIOTÓW GOSPODARCZYCH

Streszczenie. Rozwój gospodarczy kraju i poszczególnych województw w znacznym stopniu zależy od podmiotów gospodarczych funkcjonujących na danym terenie. Ich analiza pozwala określić aktualną sytuację gospodarki i przyczynia się do wyznaczenia prognoz na przyszłość. Na podstawie danych GUS, dotyczących podmiotów gospodarki narodowej według sekcji i województw, przeprowadzono analizę ich struktury i dynamiki w latach 2008–2016. Badanie struktury na przestrzeni kilku lat umożliwiły wskaźniki struktury i podobieństwa struktur. Do analizy dynamiki wykorzystano indeksy jednopodstawowe i łańcuchowe oraz średnie tempo zmian. W celu ustalenia kierunków zmian oszacowano funkcje trendów. Funkcje te pozwoliły także wyznaczyć prognozy dotyczące liczby podmiotów gospodarki narodowej. Celem pracy jest przedstawienie aktualnego stanu populacji podmiotów gospodarczych, określenie kierunku ich zmian oraz wyznaczenie prognoz na przyszłość.

Słowa kluczowe: podmioty gospodarcze, analiza struktury i dynamiki, trendy.