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The investment activity of companies in Poland by industry

1. Introduction

Companies cannot prosper in the conditions of global competition, especially in the long-term perspective, without incurring investment outlays. Investments are the basic factor and main determinant of the development of business entities (Sipa 2017), playing an important role in the process of adapting companies to the conditions and challenges of modern economy. Investing activities are therefore a must, as well as a prerequisite for improving competitiveness on the market.

It is common knowledge these days that the low level of investment activity remains one of the key problems of the Polish economy. This is evidenced, among others, by gross private sector investment expenditure as a percentage of GDP. In 2010, these outlays were 14.7%, for Poland against the average of 16.6% for the EU-15 countries. This situation got worse in 2016, when the share of gross private sector investments in Poland was 14.7%, while the average for the EU-15 increased to 17% (Ministry of Economic Development, 2017). The question then arises as to which companies are responsible for the low level of investment

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activity in Poland? Are these micro or small enterprises, or perhaps medium-sized or large companies, private or public, etc.? Thus, an important research problem seems to be the assessment of investment activity of companies, and in particular its comparative analysis in relation to various groups of enterprises. This study focuses on the investment activity of companies in Poland according to the industry they belong to. Thus, this article attempts to answer the following questions:

- how has the investment activity of companies in Poland shaped in recent years in relation to specific sectors of the economy?
- which industries show a high level of investment activity, and which low?

The literature reveals that not much attention has been paid so far to analysing the investment activity of companies in Poland. In studies on the assessment of investment activity of companies, authors (including Starzyńska 2017; Ziętek-Kwaśniewska 2018; Zawadzka et al., 2016) tend to evaluate a few key indicators such as: the dynamics of investment outlays, the level of investment outlays per entity, the level of investment outlays per employee, the relation of investment outlays to revenues, the relation of investment outlays to the gross value of fixed assets. It should be noted, however, that individual indicators may point to an either high or low investment activity of other groups of companies, e.g. in 2016, the ratio of investment outlays per company was the highest in the industrial sector, while the ratio of investment outlays per employee was the highest in the real estate service sector. Therefore, the question arises as to which of these two sectors actually showed a higher investment activity in 2016? To that end, and to avoid confusion, this study uses methods of multidimensional statistics, which allow to determine a synthetic measure that replaces a set of different indicators with one aggregated variable.

The purpose of this article is to assess the investment activity (investing activities) of companies in Poland depending on the industry they belong to. The first part of the study presents theoretical issues concerning business investments. The second part presents a comparative study of the investment activity of Polish companies operating in various industries. This study was based on a synthetic indicator of investment activity constructed using linear ordering methods that fall within the scope of a multidimensional comparative analysis. A detailed description of the methods and variables adopted for this study is discussed further down. The time horizon for the analysis covers the period from 2010 to 2016¹.

1 This period is due to the availability of statistical data.

2. Investments and business development – literature review

In business theory and in business practice, the concept of investment is not interpreted unambiguously. Normally, the literature distinguishes two basic approaches to investment: monetary (cash flow) and material (movement of capital goods)(Kamerschen et al., 1989). In monetary terms, investing means spending money in order to generate income in the future. In material terms, investing means the purchase of tangible property (fixed assets, intangible assets) used to produce specific goods and services. The material approach emphasizes the need to obtain a tangible effect as a result of the investment:

1. Investments are purchases of capital goods - production plants, equipment, residential buildings and changes in inventories that can be used in the production of other goods and services (Kamerschen et al., 1989).
2. Investments rely on the use of share capital to create additional buildings, equipment and resources during the year; investments prompt dedication of current consumption to the growth of future consumption (Samuelson & Nordhaus, 1985).
3. Investments are purchases of new capital goods by enterprises (Begg et al., 1994).
4. Investments mean taking possession of assembly or production equipment (Kotler, 1997).

The definitions of investments presented above, also known as the traditional approach, are considered to be investments in the macroeconomic scale, as they serve to directly increase the physical capital of society.

Today, however, the monetary approach is predominant. Various definitions of investments under this approach can be found in the literature:

1. Investments rely on the company's involvement of cash resources in order to obtain future benefits (Gorczyńska, Znaniecka, 2011).
2. „Investment involves the commitment of a capital sum for benefits to be received in the future in the form of an income flow or capital gain or a combination of both. In economic terms, investment utilizes capital for maximum possible return” (Adair et al., 1994).
3. Investments take the form of expenditure on physical and financial equipment, expenditure on research and development, implementation, education and advertising (Blohm&Lüder, 2012).
4. Investments are expenditures of financial resources in tangible and intangible objects, which are adapted to the investor's goals in the long-term perspective (Betge, 2000).

5. An investment is the intentional allocation of funds for the acquisition of structural assets (Perridon & Steiner, 2006).

Summarizing, there are both narrow and broad definitions of business investments. There are both narrow and broad definitions of an enterprise's investment. The narrow approach emphasizes the need to obtain a material effect as a result of the investment. On the other hand, definitions in a broad perspective indicate primarily the purpose for which the accumulated capital is spent, while the effect of the investment may be both tangible (e.g. increasing the fixed assets of the enterprise) and intangible (e.g. acquisition of new knowledge and skills by the employees of the enterprise). In general, investments can be defined as deliberate spending of the investor's (as well the company's) resources, which is aimed at increasing their income (Dziworska, 1993).

However, it should be noted that not every spending of funds can be called an investment. Investment means spending money in which (Rózański, 1997):

- there is a long-term involvement of financial resources,
- the scale of expenditure is much larger than in everyday business operations,
- the impact of investments on future activities, their effectiveness and competitiveness of the enterprise is usually substantial.

The most important features of investments are (Jajuga & Jajuga, 2006):

- psychological element - investing means renouncing, which consists in resignation from current consumption,
- time element - investing is associated with the passage of time. The investor renounces current benefits in favor of those that are likely to occur in the future,
- risk element - the element of risk is inherently linked with investing, meaning that future benefits either may or may not occur. The investor may also suffer losses.

The term "investments" should also be distinguished from the term "investing" because investing is an economic process initiated by making a decision on investment (Rózański, 2006).

Investments, like other categories, can be classified according to different criteria. From the point of view of the functional areas of a company, P. Betge distinguishes the following types of investments (Betge, 2000):

- construction, extension and modernization of the production apparatus (new investments, investments expanding the company's production capacity, replacement investments, modernization investments),
- financial (stocks, bonds, etc.),
- personal and social (expenses related to the education of employees, the construction of sports squares, holiday homes, etc.),

- research and development (expenses related to the studying of new techniques and technologies),
- organizational (introduction of modern data processing techniques, etc.),
- market (long-term advertising activities, etc.).

Most often, however, the division according to the scope of investment is used. In line with this criterion, the following investments can be distinguished (Białasiewicz et al., 1995):

- tangible investments - consist in increment or exchange of physical property (land, buildings, plots, buildings, machinery and equipment, etc.),
- financial investments - related to financial assets (shares, stocks, etc.),
- intangible investments - constituting the size and structure of tangible and intangible assets (expenditure on research and development, staff training, etc.).

On the other hand, tangible investments are often divided into: net investments and gross investments. Gross investments include the total value of the company's financial outlays for investments in a given period, while net investments include expenditure for increasing the company's production potential (founding and development investments). Reinvestments, meanwhile, imply the replacement of used investment facilities (Peters, 1991).

3. The investment activity of companies in Poland in the light of current research

Many authors are keen on studying the investment activity of companies in Poland. A number of analyses have been carried out based on statistical data (including Zawadzka et al., 2016; Starzyńska 2017; Ziętek-Kwaśniewska 2018) or surveys (including Sosińska-Wit 2012; Janik, Gałązka 2014). In most cases, these papers analyze selected economic entities operating in the area of a selected province or region. Several studies concern the investment activity of SMEs. However, there are very few studies which analyze and assess the investment activity of companies according to the type of business. In addition, the research carried out so far consisted in the assessment of partial indicators, most often including: the dynamics of investment outlays, the level of investment outlays per entity, the level of investment outlays per employee, the relation of investment outlays to revenues. When considered in isolation, partial indicators may nevertheless give contradictory signals, i.e. some indicators may show a high investment activity for a given group of companies, while other indicators may highlight the opposite trend. Therefore, in researching investment activity, it is

helpful to use multidimensional statistical methods, which allow to determine a synthetic measure that replaces a set of different indicators with one aggregated variable.

4. Methods

The research was based on two methods of linear ordering, which were the method of sums (Panek, 2009) and Hellwig's method (1968). Both methods constitute a tool for constructing the ranking of items - they allow to arrange the items from best to worst in terms of the adopted criterion of assessment. In linear ordering, items can be countries (e.g. by economic development), regions (e.g. by innovation of companies) (including Jędrzejczak-Gas, 2016), companies (e.g. by financial condition) (including Jędrzejczak-Gas, Kuźdowicz, 2016), products (e.g. by functional value), etc. In this study, the subject of ordering are industries (sectors), based on the level of investment activity demonstrated by the companies that constitute them.

The group of entities presented in this article comprises legal persons, entities without legal personality, and natural persons, which conducted economic activity in Poland in 2010-2016.

The set of enterprises under analysis are non-financial enterprises, which according to the methodology of the Central Statistical Office (GUS) include legal entities classified in the following sections² of the Polish Classification of Activities (PKD 2007)³: Section B, Section C, Section D, Section E, Section F, Section G, Section H, Section I, Section J, Section L, Section M, Section N, Section P, Section Q, Section R, Section S⁴. For the purposes of the present research, an

2 In this article, the sections are defined as industries.

3 Polish Classification of Activities (PKD 2007) is methodologically, conceptually, scope-wise and code-wise coherent and comparable with the NACE Rev.2 (see Regulation (EC) No 1893/2006 of the European Parliament and of the Council of 20 December 2006 establishing the statistical classification of economic activities NACE Revision 2 and amending Council Regulation (EEC) No 3037/90 as well as certain EC Regulations on specific statistical domains (OJ L 393, 30.12.2006).

4 Mining and quarrying (Section B), Manufacturing (Section C), Electricity, gas, steam, and air conditioning supply (Section D), Water supply, sewerage, waste management and remediation activities (Section E), Construction (Section F), Wholesale and retail trade, repair of motor vehicles, including motorcycles (Section G), Transport and storage (Section H), Activities related to accommodation and catering (Section I), Information and communication (Section J), Activities related to real estate activities (Section L), Professional, scientific and technical activities (Section M), Activities related to administrative and support service activities (Section N), Education (Section P without higher education), Human health and social work activities (Section Q), Arts, entertainment and recreation (Section R), Other service activities (Section S).

additional grouping was made in relation to the existing classification sections and the „Industry”⁵ sector was determined.

Regardless of the method, the first stage in developing a synthetic measure is to determine the underlying diagnostic variables and possibly to narrow down the large number of these variables to a few, which can be then considered a subject of further analysis. In this study, substantive and formal as well as statistical criteria were applied in the process of selecting diagnostic variables. The basic substantive and formal criterion was primarily the significance of variables from the point of view of the level of investment activity of companies and the range of available statistical data. Five diagnostic variables characterizing the investment activity of companies were adopted to construct a synthetic measure:

- X1 - the dynamics of investments (previous year=100),
- X2 - the size of investments per 1 enterprise (in thousand zł),
- X3 - the size of investments per 1 working person (in thousand zł),
- X4 - the relationship of investments to the total revenue (%),
- X5 - the relationship of investments to gross value of fixed assets (%).

Next, the diagnostic variables were statistically verified, i.e. their discriminative capacity and volume, which is the degree of correlation with other variables, were examined. When selecting variables, it is required that they show the right dispersion (variability), as poorly differentiated variables have limited analytical value. For the analyzed variables, the coefficient of dispersion was calculated and those variables for which the coefficient was below 10% were eliminated.

In addition to dispersion, the correlation was also an important criterion for the selection of variables. It is assumed that two highly correlated variables convey similar information (in this case, correlating is equivalent to transferring the same information about the examined items), therefore, it is recommended to eliminate one of them. In order to investigate the degree of correlation between the variables, an analysis of the Pearson correlation coefficient matrix was performed, assuming that if the correlation coefficient exceeds the threshold value $r^*=0.7$, then one of the variables should be removed from the set of diagnostic variables.

5 „Industry” includes the following sections of the PKD: Mining and quarrying (Section B), Manufacturing (Section C), Electricity, gas, steam, and air conditioning supply (Section D), Water supply, sewerage, waste management and remediation activities (Section E).

The subsequent step in constructing the synthetic indicator was to determine the nature of the variables due to the way they affect the described phenomenon, i.e. the division of variables into stimulants, destimulants and nominants. In this study, all variables were stimulants.

The final stage was the aggregation of diagnostic variables and the determination of the synthetic indicator.

In the field of taxonomic research, many linear ordering processes have been developed. They differ, among others, in the methods of normalization of variables and of estimating the values of synthetic measures. Among the methods of determining synthetic measures, model (reference) and non-model(non-reference) methods are distinguished (Walesiak, 2004, Panek & Zwierzchowski, 2013). Both were used in this study, thus providing a broader basis for the formulation of conclusions. The method of sums was selected from among the group of non-model methods, whereas Hellwig's method was selected from among the group of model methods.

According to the non-model method, the value of the synthetic measure was calculated as follows:

$$s_i = \frac{1}{m} \sum_{j=1}^m z_{ij} \quad (1)$$

where:
$$z_{ij} = \frac{x_{ij} - \min x_{ij}}{\max x_{ij} - \min x_{ij}} \quad (2)$$

The normalized z_{ij} values are within the range [0, 1]. The above transformation is characterized by the fact that features retain varied dispersions and proportions between normalized and primary values, which is an undeniable advantage of this method of transforming features.

According to the model method, i.e. Hellwig's method, the data matrix was transformed according to the following formula (namely, standardization was carried out):

$$z_{ij} = \frac{x_{ij} - \bar{x}_j}{S_j} \quad (3)$$

In the conducted research, all variables were stimulants, therefore the coordinates of the standard were determined as follows:

$$z_{0j} = \max_i \{z_{ij}\} \quad (4)$$

Subsequently, the distance between the items and the pattern was determined:

$$d_{i0} = \sqrt{\frac{1}{n} \sum_{i=1}^m (z_{ij} - z_{0j})^2} \quad (5)$$

and so were the values of the synthetic variable:

$$s_i = 1 - \frac{d_{i0}}{d_0} \quad (6)$$

$$d_0 = \bar{d}_0 + 2S_d, \bar{d} = \frac{1}{n} \sum_{i=1}^n d_{i0}, S_d = \sqrt{\frac{1}{n} \sum_{i=1}^n (d_{i0} - \bar{d}_0)^2} \quad (7)$$

where: usually $s_i \in [0; 1]$, $\max_i \{s_i\}$ – the best object, $\min_i \{s_i\}$ – the worst object, Finally, on the basis of the values of synthetic measures, industries (items) were classified.

5. Results and discussion

In selected years of the analyzed period, investment activity of the examined industries changed, which is reflected in the synthetic measures calculated using both model and non-model methods (table 1) and the positions of the industries in the rankings (table 2). In the majority of the industries, the investment activity showed high fluctuations, which are not explained by the fluctuations in the economic situation. This is probably due to the uncertainty faced by Polish companies.

In the analyzed period, the largest changes in the value of the synthetic measure, which also mean the largest changes in the level of investment activity in the following years, were observed in sectors such as education, culture and recreation, other service activities, construction, transportation and warehousing, real estate services. On the other hand, the synthetic measure reached a relatively stable value in the industrial sector (table 1).

Tabela 1. Synthetic measures of the level of investment activity of companies by industry

	2010	2011	2012	2013	2014	2015	2016	2010-2016
the method of sums								
Industry	0,5014	0,4095	0,6008	0,3911	0,5673	0,6435	0,5673	0,5258
Manufacturing	0,5693	0,4296	0,2136	0,2785	0,4232	0,2822	0,3191	0,3594
Construction	0,2387	0,1262	0,3726	0,1672	0,2477	0,1675	0,2473	0,2239
Trade and repair of motor vehicles	0,4203	0,5101	0,5684	0,4043	0,6287	0,6019	0,1972	0,4758
Accommodation and food service activities	0,4355	0,3560	0,5848	0,1724	0,2520	0,2986	0,3713	0,3529
Information and communication	0,3485	0,2576	0,3709	0,1512	0,2118	0,3841	0,3199	0,2920
Real estate activities	0,5074	0,3773	0,2852	0,6528	0,5807	0,3359	0,5586	0,4711
Professional, scientific and technical activities	0,3196	0,2088	0,4228	0,2144	0,4327	0,2610	0,2446	0,3006
Administrative and support service activities	0,4323	0,4420	0,5042	0,3913	0,6011	0,6769	0,7016	0,5356
Education	0,0823	0,4511	0,2476	0,2421	0,0535	0,2572	0,1873	0,2173
Human health and social work activities	0,4556	0,3602	0,5503	0,1639	0,3589	0,3231	0,2618	0,3534
Arts and recreation	0,1516	0,2459	0,6218	0,3015	0,1821	0,2710	0,2357	0,2871
Other service activities	0,5078	0,5980	0,3112	0,1257	0,3379	0,3884	0,2559	0,3607
Hellwig's method								
Industry	0,3317	0,2440	0,4719	0,2662	0,4159	0,5178	0,4329	0,3829
Manufacturing	0,3722	0,2318	0,0615	0,2136	0,2821	0,2132	0,2418	0,2309

Construction	0,1085	-0,0145	0,1954	0,1136	0,1601	0,1034	0,1461	0,1161
Trade and repair of motor vehicles	0,3122	0,4006	0,4418	0,3670	0,5314	0,5063	0,1177	0,3824
Accommodation and food service activities	0,3126	0,1968	0,3850	0,1417	0,2125	0,2048	0,2541	0,2439
Information and communication	0,2489	0,1550	0,2600	0,1281	0,1727	0,2720	0,2370	0,2105
Real estate activities	0,3272	0,1871	0,1105	0,4807	0,4679	0,1537	0,3516	0,2970
Professional, scientific and technical activities	0,1785	0,0876	0,2599	0,1653	0,2795	0,1959	0,1733	0,1914
Administrative and support service activities	0,3414	0,3073	0,3217	0,2693	0,3933	0,4866	0,5304	0,3786
Education	-0,0284	0,2335	0,1087	0,2042	0,0271	0,1629	0,1070	0,1164
Human health and social work activities	0,3313	0,2182	0,3490	0,1261	0,2433	0,2347	0,1857	0,2412
Arts and recreation	0,0498	0,1397	0,4351	0,2799	0,1675	0,1954	0,1793	0,2067
Other service activities	0,3109	0,3628	0,1306	0,0817	0,2045	0,2620	0,1848	0,2196

Source: own study based on Central Statistical Office, 2011, 2012, 2013, 2014, 2015, 2016, 2017

Based on the data shown (table 1 and table 2), the highest average value of the synthetic investment activity indicator and the highest position in the ranking were achieved by the the industrial sector (2nd in non-model, 1st in model), administration and supporting activity (1st in non-model, 3rd in model), transportation and warehousing (3rd in non-model, 2nd in model), real estate services (4th in non-model, 4th in model). The lowest values were achieved in the sectors of education (13th in non-model, 12th in model), and trade and repair of motor vehicles (12th in non-model, 13th in model).

From among all of the analyzed industries, particular attention is paid to administration and support activities, which have been recording an increasingly higher value of the synthetic measure and an increasingly higher position in the

industry ranking since 2013. In 2016, this industry achieved the highest value of synthetic measure from among all industries as well as the highest position in the ranking (as it also did in 2015, according to the non-model method). In the last years of the analyzed period, an increase in the synthetic measure and an improvement of position in the industry ranking were also observed in the industrial sector, and in the field of information and communication.

In the last analyzed year, clearly negative changes were observed in the transportation and warehousing sector, which recorded the lowest value of the synthetic measure and the lowest position in the industry ranking for the entire analyzed period.

Tabela 2. Industries ranked by the level of investment activity of companies

	2010	2011	2012	2013	2014	2015	2016	2010-2016
the method of sums								
Industry	4	6	2	4	4	2	2	2
Manufacturing	1	5	13	6	6	9	6	6
Construction	11	13	8	10	10	13	9	12
Trade and repair of motor vehicles	8	2	4	2	1	3	12	3
Accommodation and food service activities	6	9	3	9	9	8	4	8
Information and communication	9	10	9	12	11	5	5	10
Real estate activities	3	7	11	1	3	6	3	4
Professional, scientific and technical activities	10	12	7	8	5	11	10	9
Administrative and support service activities	7	4	6	3	2	1	1	1
Education	13	3	12	7	13	12	13	13
Human health and social work activities	5	8	5	11	7	7	7	7
Arts and recreation	12	11	1	5	12	10	11	11
Other service activities	2	1	10	13	8	4	8	5

Hellwig's method

Industry	3	4	1	5	3	1	2	1
Manufacturing	1	6	13	6	5	7	5	7
Construction	11	13	9	12	12	13	11	13
Trade and repair of motor vehicles	7	1	2	2	1	2	12	2
Accommodation and food service activities	6	8	4	9	8	8	4	5
Information and communication	9	10	7	10	10	4	6	9
Real estate activities	5	9	11	1	2	12	3	4
Professional, scientific and technical activities	10	12	8	8	6	9	10	11
Administrative and support service activities	2	3	6	4	4	3	1	3
Education	13	5	12	7	13	11	13	12
Human health and social work activities	4	7	5	11	7	6	7	6
Arts and recreation	12	11	3	3	11	10	9	10
Other service activities	8	2	10	13	9	5	8	8

Source: own study based on
(Central Statistical Office, 2011, 2012, 2013, 2014, 2015, 2016, 2017)

6. Conclusions

The conducted analysis and assessment of the investment activity of companies in Poland for different industries allows to arrive at the following conclusions:

1. In the analyzed period, the majority of examined industries showed high fluctuations in their investment activity, which is likely due to the uncertainty faced by Polish companies.
2. Slight differences occur in the industry ranking depending on the classification method used (model vs. non-model). In most cases, however, the existing disproportions are insignificant - the difference is of 1 or 2 items.
3. Industries showing the largest diversification in terms of investment activity are: education, culture and recreation, other service activities, construction,

transportation and warehousing, real estate services. The investment activity of these industries is not related to the economic situation, but is the result of the uncertainty faced by companies operating in these sectors. The industrial sector is the most stable sector in terms of investment activity.

4. Industries showing the highest level of investment activity in 2010-2016 (the highest average values of synthetic measure) in both methods (model and non-model) are: industrial sector, administration and support activities, transportation and warehousing, real estate services.
5. Industries showing the lowest level of investment activity in 2010-2016 (the lowest average values of the synthetic measure) in both methods used (model and model-free) are: education, trade and repair of motor vehicles.
6. From among all analyzed industries, particular attention is paid to administration and support activities, which have been recording an increasingly higher value of the synthetic measure and an increasingly higher position in the industry ranking since 2013.
7. In the last analyzed year, clearly negative changes were observed in the transportation and warehousing sector, which recorded the lowest value of the synthetic measure and the lowest position in the industry ranking for the entire analyzed period.

The conducted research allowed us to assess the investment activity of the analysed industries on the basis of synthetic measurement. In this study two selected methods of constructing the synthetic measure were used, i.e. the Hellwig method (standard method) and the sum method (modelless method). On the basis of the conducted research, it can be concluded that for the adopted diagnostic variables, the choice of the method did not have a significant impact on the linear arrangement of the analysed industries. Rankings of industries obtained with the use of the standard and modelless methods do not differ significantly from each other. However it should be noted that in this study synthetic measurements were constructed on the basis of 4 diagnostic variables, which resulted from the availability of statistical data. However, the use of other or more variables may change the ranking of the analysed industries.

The research carried out within the article and the results obtained may constitute a material for further analysis with the use of other statistical methods and/or other diagnostic variables or encourage the implementation of similar research at the level of e.g. other countries or regions (e.g. voivodeships).

Summary

The investment activity of companies in Poland by industry

The purpose of this article is to assess the investment activity

(investing activities) of companies in Poland depending on the industry they belong to. The first part of the study presents theoretical issues concerning business investments. The second part presents a comparative study of the investment activity of Polish companies operating in various industries. In this study, in order to assess the investment activity of companies in Poland based on the industry they belong to, two selected methods of linear ordering (the method of sums and Hellwig's method) were used, both falling within the scope of a multidimensional comparative analysis. In the analyzed period, the majority of examined industries showed high fluctuations in their investment activity, which is likely due to the uncertainty faced by Polish companies. Industries showing the highest level of investment activity in 2010-2016 in both methods are: industrial sector, administration and support activities, transportation and warehousing, real estate services. Industries showing the lowest level of investment activity are: education, trade and repair of motor vehicles.

Keywords: *investment activity, synthetic measure, comparative analysis.*

Streszczenie

Aktywność inwestycyjna przedsiębiorstw w Polsce - ujęcie branżowe

Celem artykułu jest ocena aktywności inwestycyjnej przedsiębiorstw w Polsce w ujęciu branżowym. W pierwszej części opracowania przedstawiono zagadnienia teoretyczne dotyczące inwestycji przedsiębiorstw. W drugiej zaś przedstawiono badanie porównawcze aktywności inwestycyjnej przedsiębiorstw w Polsce działających w różnych branżach. W prezentowanym badaniu, w celu oceny aktywności inwestycyjnej przedsiębiorstw w Polsce w ujęciu branżowym zastosowano dwie wybrane metody porządkowania liniowego (metodę sum oraz metodę Hellwiga), które mieszczą się w obrębie wielowymiarowej analizy porównawczej. W analizowanym okresie w większości badanych branż aktywność inwestycyjna wykazywała się wysokimi fluktuacjami, co jest prawdopodobnie wynikiem niepewności, z jaką zmagają się polskie firmy. Branże charakteryzujące się najwyższym poziomem aktywności inwestycyjnej w latach 2010-2016 w obu zasto-

sowanych metodach to: przemysł, administrowanie i działalność wspierająca, transport i gospodarka magazynowa, obsługa rynku nieruchomości. Branże charakteryzujące się najniższym poziomem aktywności innowacyjnej to: edukacja, handel i naprawa pojazdów samochodowych.

Słowa

klucze: *investment activity, synthetic measure, comparative analysis.*

JEL

Classification: C 10, E22, M21

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