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DEVELOPMENT OF LISTED COMPANIES IN SELECTED VOIVODESHIPS OF EASTERN POLAND IN 2013–2017

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ABSTRACT

Public companies are a subject of the public interest. Voivodships adjacent directly to the eastern border of Poland are industrialized less than the mean for Poland. This article to analyse changes of the financial conditions of the companies quoted at the Warsaw Stock Exchange (Giełda Papierów Wartościowych w Warszawie) from these voivodships in 2013–2017. Findings prove that these companies are not endangered by bankruptcy. Their situation is average, stable in investigated period.

Key words: stock exchange, financial condition, bankruptcy
JEL codes: C10, G10, G30, G33, M40

INTRODUCTION

Polish listed companies have been a subject of public interest for years, and many analysts and experts consider the stock exchange to be a gauge of the condition of the economy. Such a view is justified by the fact that listed companies are the largest investors in Poland and play a decisive role in terms of growth and economic development. These companies exchange are characterized by a high market share, large capital and labour force [Sudol 1999].

The matters related to stock exchange and listed companies are extensive and require in-depth analysis, taking many internal and external conditions into account, both on the micro- and macro-economic scale. This paper focuses on the analysis of selected companies located in the area along the eastern border of Poland.

The objective of the article is to recognize the financial condition of listed companies having their registered seat or main production plant in one of the three voivodeships: Podkarpackie, Lubelskie and Podlaskie in 2013–2017. In addition, we examined whether those businesses were at risk of bankruptcy.

CONDITIONS FOR ECONOMIC DEVELOPMENT

Eastern Poland is characterized by a lower degree of industrialization than other regions of the country, as well as a lower level of economic development. These areas are characterized by a low level of expenditure on research and development, which results in a lower innovation index. Insufficient funding for R&D has led to the reduction of technology transfer in the region [Surówka 2015].

In 2016, industrial production sold per capita in Poland amounted to PLN 33.9 thousand, whereas in Podkarpackie Voivodeship it was PLN 20.5 thousand, in Lubelskie Voivodeship PLN 17.2 thousand, and in Podlaskie Voivodeship PLN 22.7 thousand. For comparison, in Wielkopolskie Voivodeship, sold production per capita reached PLN 45.7 thousand,

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in Mazowieckie Voivodeship PLN 46 thousand, in Śląskie Voivodeship PLN 47.3 thousand, and in Pomorskie Voivodeship PLN 37.5 thousand[1]. The analysis of economic development conducted by Jabłoński [2014] shows that the surveyed voivodeships are at the end of the ranking compared to the rest of the country. Jabłoński also found that the lower economic development of the "Eastern Wall" was mainly due to differences in GDP per capita, per capita expenditure, gross wages, participation rate, and the share of employees in non-agricultural activities. Similar conclusions can also be found in other comparative analyses of regional development: Adamczyk-Łojewska [2014], Karmowska and Marciniak [2014], and Łyszczarz and Wyszkowska [2015].

Economic diversification between respective regions is not specifically a Polish problem. According to Benini and Czyżewski [2007], economic diversification between Russian regions is steadily increasing. The fastest economic growth is reported in the Moscow region, and possibly in capitals of other regions, or in locations rich in natural resources. Other regions are lagging in terms of growth and economic development. Large regional differences also occur in Croatia [Zmuk 2015], where the most economically developed region is the north-western region, while the most difficult situation is in the central and Eastern regions. The GDP per capita of the region where it is lowest slightly exceeds half of the GDP per capita of the region where it is highest. Regional differences in GDP per capita are also notable in Spain [Alfaro Navarro and López Ruiz 2008].

MATERIAL AND METHODS

The analysis of changes in the financial condition of Eastern Polish companies was carried out using a synthetic business condition index (synthetic business condition index – *MSKF*), which based on Tarczyński's financial condition index [2002]. Its structure was based on a number of financial indicators assigned to four groups of ratios (Table 1): liquidity (I), debt (II), management efficiency (III) and profitability (IV).

Similar method is offered by Tarczyńska-Łuniewska [2013] to assess fundamental strengths.

Above-mentioned ratios were also used by Bayar et al. [2018] and Brennan and Kraft [2018]. Ratios: W_1, W_2, W_7, W_9, W_{10}, W_{11}, W_{12} were adopted as stimulants, while: $W_3 - W_6$ and W_8, respectively, as destimulants. The indices were standardized using the zero unitization method [Kukuła 2000]:

$$z_{ij}^t = \begin{cases} \dfrac{w_{ij}^t - \min\limits_{i,t} w_{ij}^t}{\max\limits_{i,\,t} w_{ij}^t - \min\limits_{i,\,t} w_{ij}^t}, & W_j - \text{stimulant} \\[4ex] \dfrac{\max\limits_{i,t} w_{ij}^t - w_{ij}^t}{\max\limits_{i,\,t} w_{ij}^t - \min\limits_{i,\,t} w_{ij}^t}, & W_j - \text{destimulant} \end{cases} \qquad (1)$$

where:
z_{ij}^t – standardized value of *j* for company *i* in year *t*;
w_{ij}^t – value of *j* for company *i* in year *t*;
W_j – *j* value (Table 1);
$j = 1, 2, \ldots, m; i = 1, 2, \ldots, n; t = 1, 2, \ldots, s$;
m, *n*, *s* – number of diagnostic indices, companies and
           years, respectively.

According to Nermend [2013], the chosen method of normalization is not very sensitive to complacent values. The synthetic business condition index (*MSKF*) is the arithmetic mean of standardized index values:

$$MSKF_i^t = \frac{1}{m} \sum_{j=1}^{m} z_{ij}^t \qquad (2)$$

where:
$MSKF_i^t$ – value of the taxonomic investment attractiveness index for company *i* in year *t*;
z_{ij}^t – standardized value of *j* for company *i* in year *t*;
$j = 1, 2, \ldots, m; i = 1, 2, \ldots, n; t = 1, 2, \ldots, s$.

The index is in the range of [0, 1]. The closer it is to one, the better the company's condition.

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[1] Own calculations based on the 2015 Statistical Yearbook of the Regions – Poland and 2015 Statistical Yearbook of Industry – Poland [GUS 2015a, b].

Table 1. Financial ratios selected for the construction of *MSKF*

Group	Ratio	Definition
I	current ratio	$W_1 = A_c / D_c$
	quick ratio	$W_2 = (A_c - Z)/ D_c$
II	debt ratio	$W_3 = D / A$
	equity debt	$W_4 = D / E$
III	inventory turnover ratio	$W_5 = (I \cdot p) / C_{sp}$
	average collection period	$W_6 = (N \cdot p) / S$
	asset turnover ratio	$W_7 = S / A$
	accounts payable turnover ratio	$W_8 = (L \cdot p) / C_{sp}$
IV	net profit margin	$W_9 = N_p / P$
	return on assets (ROA)	$W_{10} = N_p / A$
	return on equity (ROE)	$W_{11} = N_p / E$
	earnings per share	$W_{12} = N_p / K$

A_c – current assets; D_c – current liabilities; Z – inventory; D – total liabilities; A – total assets; E – equity; I – average inventory; p – period; C_{sp} – cost of production sold; N – average receivables; S – net sales; L – average liabilities; N_p – net profit; P – sales revenue; K– number of shares.

Source: Own elaboration.

The analysis of changes in the financial situation of companies from the Eastern region, using the above mentioned index, was verified using the Altman *Z-score* model. The model is used primarily to estimate the risk of bankruptcy of a business. It is also used to assess the creditworthiness of issuers of bills of exchange for rediscount purposes [Rogowski 2001]. The model was first used in 1968 [Hołda and Pociecha 2009]. Altman's approach inspired other researchers to construct further bankruptcy models, including the Beerman model and the Holda model [Jerzmanowska 2004]. It was also subject to criticism. Such authors as Mączyńska and Zawadzki [2006] or Rogowski [1999], pointed out that as companies in Poland operate under different conditions than in Western countries, a simple translation of the Altman *Z-score* (and other Western models) is not justified. However, since then, the conditions of doing business in Poland have significantly converged with the Western ones.

The Altman *Z-score* model was subject to modifications. For the purposes of this paper, the Altman model of 2006 [Altman and Branch 2015] was used:

$$Z_{it}\text{-}score = 3.25 + 6.56X_{1it} + 3.26X_{2it} + 6.72X_{3it} + 1.05X_{4it} \quad (3)$$

where:

Z_{it}-*score* – discriminant function for company i in year t;
$X_1 = (A_c - D_c)/A$; $X_2 = (E_R / A)$; $X_3 = EBIT/A$; $X_4 = E/D$;
A_c – current assets;
D_c – current liabilities;
D_R – remained earnings;
A – total assets;
EBIT – earnings before deducting interest and taxes;
E – equity;
D – total liabilities.

In this model, the value of *Z-score* function distinguishing a safe business from a business at risk is 0. The higher the value of *Z-score* function, the better the condition of a company.

The estimated value of *Z-score* function for the analyzed companies allowed for the assessment whether the businesses with the best *MSKF* ratings were not at risk of bankruptcy.

RESULTS

In 2017, 424 listed companies operated in Poland[2], of which 5.9% in the three surveyed voivodeships, i.e. 11 in Podkarpackie Voivodeship, 10 in Lubelskie Voivodeship, and 4 in Podlaskie Voivodeship. There is a noticeable disproportion in the distribution of listed companies in voivodeships. In particular, Mazowieckie Voivodeship, where the largest number of listed companies has their registered seats, stands out compared to other voivodeships.

Debt ratios (W_3 and W_4) indicate that the debt of the companies increased in the analyzed period (Table 2). Negative values (W_4) result from the fact that certain companies have negative equity. Liquidity (W_1 and W_2) decreased until 2016. Asset turnover slightly improved. In terms of profitability, the companies are highly diversified. The coefficients of variation for each ratio, in each year, exceed 0.3.

The values of *MSKF* calculated for companies located in the analyzed area are in the range of <0.355, 0.706> (Table 3), which means that listed companies

Table 2. Selected characteristic of financial ratios of the analyzed companies in 2013–2017

Value	W_1	W_2	W_3	W_4	W_5	W_6	W_7	W_8	W_9	W_{10}	W_{11}	W_{12}
						2013						
min	0.71	0.23	0.09	0.10	0.69	15.97	0.03	6.98	–0.24	–0.12	–0.40	–0.86
max	40.3	40.2	0.78	3.49	1 066	4 595	1.85	5 534	3.89	0.22	0.38	20.4
V	2.22	2.85	0.46	0.93	1.75	3.66	0.51	2.87	4.13	1.53	2.46	1.81
						2014						
min	0.95	0.23	0.08	0.09	0.39	14.09	0.03	5.18	–0.42	–0.17	–1.20	–3.39
max	108	108	0.86	5.87	948	1 174	2.08	1512	0.81	0.20	0.34	13.7
V	3.43	3.91	0.51	1.27	1.59	1.96	0.59	1.35	3.26	1.85	21.30	1.74
						2015						
min	0.41	0.10	0.08	0.09	0.02	10.37	0.08	47.15	–16.82	–1.41	–2.71	–8.22
max	4.59	4.08	0.88	7.31	653	1 052	2.07	2 742	0.22	0.21	0.31	23.4
V	0.55	0.69	0.49	1.32	1.33	1.86	0.57	1.90	5.11	19.14	6.67	2.66
						2016						
min	0.37	0.06	0.09	–14.98	0.04	11.78	0.04	61.60	–6.64	–0.31	–0.60	–4.07
max	4.10	4.10	1.03	3.49	7262	3 007	2.24	13 692	4.45	0.36	4.58	14.1
V	0.49	0.73	0.53	8.83	3.73	3.05	0.63	3.24	34.77	2.16	3.19	1.61
						2017						
min	0.41	0.05	0.04	–43.21	0.05	10.77	0.02	68.76	–1.60	–0.19	–0.23	–0.75
max	19.3	19.27	1.06	3.28	232 688	1 841	2.25	661 251	0.38	0.20	1.56	19.6
V	1.61	2.14	0.55	10.78	4.95	2.42	0.64	4.95	6.66	2.35	2.66	1.78

Source: Own elaboration based on Warsaw Stock Exchange database retrieved from www.gpw.pl [accessed 16.08.2018].

Table 3. Values of *MSKF* of the analyzed companies in 2013–2017

Company	Sector	2013	2014	2015	2016	2017
Podkarpackie Voivodeship						
Asseco Poland S.A.	IT	0.561	0.555	0.552	0.550	0.550
Asseco South Eastern Europe	IT	0.548	0.544	0.545	0.544	0.545
Firma Oponiarska Dębica S.A.	car parts	0.584	0.577	0.574	0.568	0.579
Polwax S.A.	chemicals	0.558	0.590	0.593	0.596	0.575
OPTeam S.A.	IT	0.548	0.556	0.557	0.578	0.542
Resbud S.A.	construction	0.448	0.488	0.308	0.494	0.523
Makarony Polskie S.A.	food	0.534	0.533	0.539	0.537	0.539
PBS Finanse S.A.	food	0.596	0.706	0.537	0.534	0.515
Stomil Sanok S.A.	car parts	0.573	0.566	0.571	0.562	0.556
Śnieżka S.A.	construction	0.579	0.580	0.587	0.590	0.581
Zakłady Magnezytowe Ropczyce S.A.	construction	0.529	0.523	0.528	0.535	0.532
Lubelskie Voivodeship						
Asseco Business Solutions S.A.	IT	0.552	0.556	0.559	0.561	0.547
Grupa Azoty Zakłady Azotowe Puławy S.A.	chemicals	0.621	0.614	0.624	0.589	0.584
Biomed Lublin S.A.	pharmaceutics	0.513	0.503	0.419	0.457	0.498
Lubelski Węgiel Bogdanka S.A.	mining	0.553	0.540	0.491	0.535	0.587
Ursus S.A.	means of transport	0.492	0.506	0.509	0.505	0.487
Emperia Holding S.A	food	0.573	0.588	0.588	0.597	0.591
Interbud Lublin S.A.	construction	0.507	0.447	0.491	0.467	0.355
Protektor S.A.	clothing and footwear	0.567	0.569	0.569	0.561	0.555
Sanwil Holding S.A	clothing and footwear	0.544	0.535	0.523	0.532	0.547
Wikana S.A.	real property sale	0.466	0.450	0.480	0.479	0.479
Podlaskie Voivodeship						
Unibep S.A.	construction	0.540	0.539	0.536	0.515	0.533
Pfleiderer Group S.A.	wood	0.555	0.559	0.554	0.510	0.510
Przedsiębiorstwo Przemysłu Spożywczego PEPES S.A.	food	0.530	0.520	0.516	0.520	0.520
AC S.A.– ACAUTOGAZ	car parts	0.592	0.590	0.583	0.585	0.575

Source: Own elaboration based on Warsaw Stock Exchange database retrieved from www.gpw.pl [accessed 16.08.2018].

from the region are in a mediocre condition. Unfortunately, there is no observable upward trend for the financial condition of the analyzed businesses. The diversity of the synthetic index *MSKF* in subsequent years between 2013 and 2017 expressed by the coefficient of variation was low and did not exceed 0.120.

When assessing *MSKF* (the figure), one can note that the condition of the analyzed companies remains at a similar level over time, changing along the sine curve (with a slight increase in one year and a decrease the next year). As of the end of the analyzed period, businesses from Podkarpackie Voivodeship were in the best condition, while companies from Lubelskie Voivodeship were in the worst condition.

The rankings were not homogeneous in those years (the figure). The stability of the built order systems was verified by the Spearman rank correlation coefficient ($p < 0.01$). High values of this indicator indicate that the rankings are similar.

The analyzed businesses are generally not at risk of bankruptcy (Table 4). This risk occurs only in relation to Interbud Lublin S.A. (2016 and 2017) and Biomed Lublin S.A. (2015). In all analyzed years, Grupa Azoty Zakłady Azotowe Puławy S.A. had the best *Z-score*: over 10 in the whole analyzed period. Between 2013 and 2016, Asseco Business Solutions S.A. held the strongest position; however, its condition deteriorated significantly in 2017 – the *Z-score* dropped from 16.3 in 2016 to 7.3 in 2017. A similar situation occurred to Protektor S.A. and PBS Finanse S.A., although in their case the 2017 decrease was less significant. In the case

of ACAUTOGAZ and Asseco South Eastern Europe, the *Z-score* was around 10. Emperia Holding S.A., Śnieżka S.A., Firma Oponiarska Dębica S.A., Polwax S.A., Stomil Sanok S.A., Asseco Poland S.A., Sanwil Holding S.A., OPTeam S.A., Makarony Polskie S.A., Unibep S.A., Zakłady Magnezytowe Ropczyce S.A., Przedsiębiorstwo Przemysłu Spożywczego PEPES S.A., and Pfleiderer Group S.A. reported average *Z-score* values. Ursus S.A. and Wikana S.A. were in a poor condition, but not at a direct risk of bankruptcy.

Pearson's correlation coefficients between *MSKF* and *Z-score* are statistically significant at the significance level of 0.05 and in subsequent years between 2013 and 2017 they amounted to 0.409, 0.606, 0.695, 0.739 and 0.367, respectively.

Among the top five companies (the figure), in terms of the last year's ranking, Lubelski Węgiel Bogdanka S.A. clearly stands out with the second position. In all analyzed years (excluding 2017), this company was in the middle of the ranking, and in 2015 it was even at the bottom. However, in 2017, it achieved a much better financial result than in previous years. Its profitability ratios in 2017 were over three times higher than in 2016. In addition, the already low debt had been reduced. These facts – despite the decrease in liquidity –
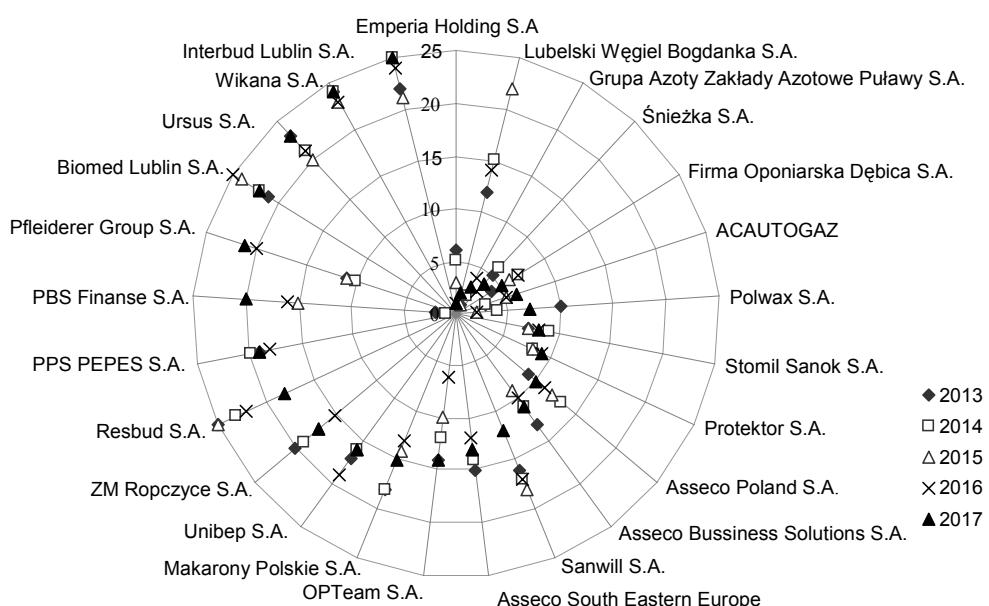

Fig. Ranking of companies based on *MSKF* in 2013–2017

Source: Own elaboration based on Table 3.

Table 4. Functional *Z-score* values for the analyzed companies in 2013–2017

Company	2013	2014	2015	2016	2017
Emperia Holding S.A	5.49	5.71	5.12	5.51	5.23
Lubelski Węgiel Bogdanka S.A.	6.03	5.66	4.59	5.91	7.78
Grupa Azoty Zakłady Azotowe Puławy S.A.	10.94	10.56	12.01	11.24	10.4
Śnieżka S.A.	7.5	7.85	8.53	8.42	8.18
Firma Oponiarska Dębica S.A.	7.34	7.74	8.16	8.19	8.3
AC S.A. – ACAUTOGAZ	11.63	11.62	11.54	9.98	9.25
Polwax S.A.	7.05	8.69	8.73	9.04	8.22
Stomil Sanok S.A.	8.83	8.52	8.54	8.35	7.18
Protektor S.A.	12.05	12.93	12.57	10.71	9.26
Asseco Poland S.A.	8.05	8.15	7.37	7.14	7.09
Asseco Business Solutions S.A.	13.42	16.71	16.85	16.3	7.3
Sanwil Holding S.A	7.81	6.8	4.65	6.45	11.03
Asseco South Eastern Europe	10.44	9.27	9.78	8.89	9.32
OPTeam S.A.	5.05	5.38	5.77	6.51	4.3
Makarony Polskie S.A.	4.71	5.1	5.6	5.44	5.35
Unibep S.A.	5.29	5.47	4.97	5.06	4.97
Zakłady Magnezytowe Ropczyce S.A.	6.12	5.75	5.9	6.87	6.68
Resbud S.A.	8.67	8.27	1.15	4.43	30.7
Przedsiębiorstwo Przemysłu Spożywczego PEPES S.A.	6.17	5.61	5.51	5.79	5.66
PBS Finanse S.A.	13.89	15.85	11.3	10.41	7.87
Pfleiderer Group S.A.	5.75	6.41	8.34	4.23	3.81
Biomed Lublin S.A.	7.37	6.66	−1.34	0.16	3.82
Ursus S.A.	2.58	4.95	4.97	3.89	3.23
Wikana S.A.	7.88	7.93	2.95	2.54	2.39
Interbud Lublin S.A.	6.73	2.63	3.93	−3.21	−2.04

Source: Own elaboration based on Table 3 data and Warsaw Stock Exchange database retrieved from www.gpw.pl [accessed 16.08.2018].

made it possible for the company to be ranked second. The leader of the ranking is Emperia Holding S.A. It is characterized by satisfactory profitability, satisfactory liquidity, adequate levels of debt and rapid turnover. The company ranked third, Grupa Azoty Zakłady Azotowe Puławy S.A., was in the lead throughout the analyzed period. It is characterized by very low debt, very high liquidity, good profitability, and rapid turnover. In 2013–2015, the company was the leader in the ranking, dropping to the fourth place in 2016 and

moving up to the third place in 2017. Śnieżka S.A., ranked fourth in 2017, in the analyzed years enjoyed a solid position in the top part of the ranking. The company had very high profitability. Its debt was negligible. However, its successful image has been tarnished by slightly lower-than-standard liquidity and slower turnover than in the case of companies from the top three positions in the ranking. The fifth company was Firma Oponiarska Dębica S.A. It had high profitability. Its debt was negligible. Nevertheless, its rating has been reduced by slightly too low liquidity and slightly too slow turnover. It is worth noting that the top three positions went to companies from Lubelskie Voivodeship, while the fourth and fifth positions were taken by Podkarpackie Voivodeship businesses.

The sixth company classified in 2017 was ACAU-TOGAZ. The company dropped out of the top five in the last analyzed year, having been there regularly before. It was characterized by low, albeit steadily growing, debt. Its liquidity was very good, but it was steadily decreasing. Profitability remained at a good, roughly constant level. So did the turnover ratios. Polwax S.A. is a company operating in the chemical industry. In 2013 it ranked tenth, then every year in the top five, and at the end of the period it was seventh. Its debt, initially quite high, has significantly decreased. Liquidity was sufficient and improved over time. The company was always profitable: profitability improved in 2014, 2015 and 2016 and slightly deteriorated in 2017. The next company, Stomil Sanok S.A., ranked seventh to ninth throughout the analyzed period. Its debt was low, but it was gradually growing. Liquidity was high, although it slightly decreased in the last year. The company's profitability remained at a satisfactory quasi constant level. Protektor S.A. ranked eighth in the ranking from 2013 until 2015, and in the following year it ranked ninth. Its debt was small but it was slightly growing. The initially high liquidity was steadily decreasing. While current liquidity remained at the required level, quick liquidity at the end of the period was slightly too low. Profitability increased in 2013–2015 and then decreased. The tenth position in 2017 was taken by Asseco Poland S.A., which in 2013 ranked ninth, in 2014 fell to the thirteenth position, and since then the position of this company has been steadily improving. Its debt was low, and its changes were

also insignificant. Liquidity was normal. The company's profitability was satisfactory, while the turnover was quite slow. In the last year of our analysis, Asseco Business Solutions S.A. ranked one place lower than Asseco Poland S.A. The debt of that company was negligible, the liquidity was high and the turnover was average. Return on assets and sales was satisfactory, while earnings per share were quite low. Next, Sanwill S.A., was characterized by low debt. Liquidity was high. However, the company generated losses and showed slow rotation, which resulted in a decrease in the synthetic index and thus in its position in the ranking. Asseco South Eastern Europe was characterized by sufficient liquidity and low debt. Its profitability and turnover were at an average level. OPTeam S.A., which ranked fourteenth in 2017, reported an average level of debt and average liquidity. In the last year, the company suffered losses, so its profitability turned negative. Turnover was average. The next company in the ranking, Makarony Polskie S.A., was characterized by average debt. It had sub-standard liquidity. Its profitability was average and its turnover was slow. The sixteenth company in the ranking, Unibep S.A., reported high debt and slightly sub-standard liquidity. Its profitability was average and the turnover was quite slow. In turn, Zakłady Magnetyzowe Ropczyce S.A. had low debt and sufficient liquidity. Profitability was average. Turnover was very slow. Resbud S.A. ranked eighteenth, with high liquidity and low debt. It was, however, an unprofitable company, with a very slow turnover. The next company, Przedsiębiorstwo Przemysłu Spożywczego PEPES S.A., was characterized by average debt and low liquidity. Its profitability was low and the turnover was slow. In the twentieth position was PBS Finanse S.A., a company characterized by high liquidity and low debt. However, the turnover was slow and in the last year the company became unprofitable.

The last five companies in the 2017 ranking, except for Pfleiderer Group S.A., which was in the middle of the ranking between 2013 and 2015, had always been at the bottom. Pfleiderer Group S.A. showed good profitability, while its debt was strong, its liquidity low and its turnover slightly too slow. Biomed Lublin S.A. either generated losses or achieved at best negligible profitability. The turnover ratios were very

slow. Liquidity was slightly too low. Debt was at the standard level. In 2015, the company was at risk of bankruptcy, but managed to recover. Similarly, Ursus S.A. most often incurred losses, had insufficient liquidity and slow turnover. Based on the Altman *Z-score* model, it was not at risk of bankruptcy, but at the end of the analyzed period the results of this company were worse than those of Biomed Lublin S.A. Although Wikana S.A. always reported certain profitability, it was heavily indebted, had low liquidity and slow turnover, so it ranked next to last in the ranking. The ranking ended with Interbud Lublin S.A. It was an unprofitable company with negative equity, virtually no liquidity and a massive debt. Since 2016, it has been under constant threat of bankruptcy.

CONCLUSIONS

Podkarpackie, Lubelskie and Podlaskie Voivodeships are characterized by a low level of industrial production compared to other voivodeships of Poland. In the case of Podkarpackie and Lubelskie Voivodeships, industrial production sold is less than 2/3 of the national average, while in Podlaskie Voivodeship it barely reaches 2/3 of the national average. The number of listed companies in the analyzed voivodeships also differs significantly from the leading voivodeships.

The study showed that the financial condition of the analyzed listed companies was in general mediocre, as evidenced by the values of *MSKF*. The rankings of the analyzed companies in respective years were similar.

Dynamic view of the conducted analyses allows us to conclude that the financial condition of those companies does not present a stable trend. In the case of ten companies, their position in 2017 compared to the rank in 2013 improved, while in the case of four companies it remained unchanged. Lubelski Węgiel Bogdanka S.A. is worth noting, as it advanced by as many as ten positions, mainly due to a large increase in profitability. Extreme positions of PBS Finanse S.A. and Pfleiderer Group S.A. deteriorated by eighteen and ten positions respectively, in the case of Pfleiderer Group S.A. due to a decrease in profitability and an increase in debt, and in the case of PBS Finanse S.A., mainly due to a huge loss in 2017.

Among the companies, only two were at risk of bankruptcy in the analyzed years: Interbud Lublin S.A. and Biomed Lublin S.A. The reasons for this situation can be found, in the case of Biomed Lublin S.A., in significant debt and large losses in 2015 and 2016, but in 2017 the situation significantly improved, while in the case of Interbud Lublin S.A. every aspect of its condition was negative in the last three years and one can hardly see any positive signs of change for this business. In relation to other companies, it can be concluded from the estimated values that their operations are not at risk, as evidenced by the estimated values of the discriminant function. It can be concluded that the condition of these companies has been stable over time with slight deviations in respective years. For most of them, *Z-score* values in the last year were lower than in the first year of analysis.

REFERENCES

Adamczyk-Łojewska, G. (2014). Rozwój polskich rejonów w okresie poakcesyjnym [Development of Polish regions in the post-accession period]. Marketing i Rynek, 10, 11–21.

Alfaro Navarro, J. L., López Ruiz, V. R. (2008). El capital estructural tecnológico como medida de crecimiento económico regional [Technological structural capital as a measure of regional economic growth]. Estudios De Economía Aplicada, 26 (3), 57–72.

Altman, E. I., Branch, B. (2015). The Bankruptcy System's. Chapter 22. Recidivism Problem: How Serious is It? The Financial Review, 50 (1). DOI: 10.1111/fire.12058

Bayar, O., Huseynov, F., Sardarli, S. (2018). Corporate Governance, Tax Avoidance, and Financial Constraints. Financial Management, 47 (3), 651–677. DOI: 10.1111/fima.12208

Benini, R., Czyżewski, A. (2007). Regional disparities and economic growth in Russia; new growth patterns and catching up. Economic Change and Restructuring, 40 (1–2), 91–135. DOI: 10.1007/s10644-007-9026-0

Brennan, M. J., Kraft, H. (2018). Leaning Against the Wind: Debt Financing in the Face of Adversity. Financial Management, 47 (3), 485–518. DOI: 10.1111/fima.12227

Główny Urząd Statystyczny (2015a). Rocznik Statystyczny Województw 2015 [2015 Statistical Yearbook of the Regions – Poland]. Warszawa.

Główny Urząd Statystyczny (2015b). Rocznik Statystyczny Przemysłu 2015 [2015 Statistical Yearbook of Industry – Poland]. Warszawa.

Hołda, A., Pociecha, J. (2009). Probabilistyczne metody badania sprawozdań finansowych [Probabilistic methods of auditing financial statements]. Wydawnictwo UE w Krakowie, Kraków.

Jabłoński, Ł. (2014). Spójność rozwoju regionów w Polsce w latach 2002–2010 [Cohesion of regional development in Poland in 2002–2010]. Nierówności Społeczne a Wzrost Gospodarczy, 37, 204–205.

Jerzmanowska, M. (2004). Analiza ekonomiczna w przedsiębiorstwie [Economic analysis in the enterprise]. PWE, Warszawa.

Karmowska, G., Marciniak, M. (2014). Wielowymiarowa analiza porównawcza rozwoju regionalnego Polski Wschodniej i Zachodniej [Multidimensional comparative analysis of regional development of Eastern and Western Poland]. Prace Naukowe UE we Wrocławiu, 347, 215–227.

Kukuła, K. (2000). Metoda unitaryzacji zerowanej [The method of zero-standardization]. Wydawnictwo Naukowe PWN, Warszawa.

Łyszczarz, B., Wyszkowska, Z. (2015). Regionalne zróżnicowanie wzrostu gospodarczego i dochodów w Polsce [Regional diversification of economic growth and income in Poland]. Studia Ekonomiczne. Zeszyty Naukowe UE w Katowicach, 213, 157–168.

Mączyńska, E., Zawadzki, M. (2006). Dyskryminacyjne modele predykcji bankructwa przedsiębiorstw [Discriminatory prediction models of enterprise bankruptcy]. Ekonomista, 2, 205–235.

Nermend, K. (2013). Properties of normalization methods used in the construction of aggregate measures. Folia Oeconomica Stetinensia, 12 (2), 31–45.

Rogowski, G. (2001). Zastosowanie modelowania w bankowości [Application of banking modeling]. Wydawnictwo Forum Naukowe, Poznań.

Rogowski, W. K. (1999). Możliwość wczesnego rozpoznawania symptomów zagrożenia zdolności płatniczej przedsiębiorstwa [The possibility of early recognition of symptoms of the company's ability to pay]. Bank i Kredyt, 6, 56–72.

Sudol, S. (1999). Przedsiębiorstwo. Podstawy nauki o przedsiębiorstwie. Teorie i praktyka zarządzania [Enterprise. Basics of enterprise science. Theories and practice of management]. Towarzystwo Naukowe Organizacji i Kierownictwa, Toruń.

Surówka, A. (2015). Innowacyjność województw Polski Wschodniej na tle kraju [Innovation of voivodships of Eastern Poland against the background of the country]. Prace Naukowe UE we Wrocławiu, 380, 319–326.

Tarczyńska-Łuniewska, M. (2013). Metodologia oceny siły fundamentalnej spółek (giełdowych i pozagiełdowych) [Methodology for assessing the fundamental strength of companies (stock exchange and over-the-counter)]. Wydawnictwo Zapol, Szczecin.

Tarczyński, W. (2002). Fundamentalny portfel papierów wartościowych [Fundamental portfolio of securities]. PWE, Warszawa.

Zmuk, B. (2015). Adoption and benefits of statistical methods in enterprises: differences between Croatian regions. South East European Journal of Economics and Business, 10 (1), 55–65. DOI: 10.1515/jeb-2015-0004

ROZWÓJ SPÓŁEK GIEŁDOWYCH WYBRANYCH WOJEWÓDZTW POLSKI WSCHODNIEJ W LATACH 2013–2017

STRESZCZENIE

Giełda papierów wartościowych jest ważnym wyznacznikiem kondycji gospodarki, stąd spółki giełdowe są przedmiotem publicznego zainteresowania. Województwa leżące bezpośrednio przy wschodniej granicy Polski charakteryzują się niższym poziomem uprzemysłowienia od średniej krajowej. Przedmiotem artykułu jest analiza zmian kondycji finansowej spółek giełdowych z tego regionu w latach 2013–2017. Wyniki badań wskazują, iż spółki te nie są zagrożone bankructwem – charakteryzują się przeciętną sytuacją finansową, stałą w badanym okresie.

Słowa kluczowe: giełda, kondycja finansowa, bankructwo