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To cite this article: I A Slabinskaya and O B Benderskaya 2019 *IOP Conf. Ser.: Earth Environ. Sci.* **272** 032146

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Comparative Integrated Assessment and Rating of Stability of Functioning of Belgorod Region Food Industry Enterprises throughout 2016

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Abstract. The paper features the comparative analysis of the stability of functioning of a sample of five Belgorod Region food industry enterprises selected randomly. Sustainability of functioning of an enterprise is understood as its functional performance within an indeterminate amount of time and ability to achieve its objectives under the influence of negative factors. An integrated comparative assessment of enterprises' sustainability in 2016 using a modified method of the sum of points alongside with their ranking was carried out according to twelve performance indicators (financial stability index, stable working capital-to-production ratio, current liquidity ratio, total assets turnover ratio, growth rate ratio in respect of revenue, sales profit, net profit and equity capital, as well as return on sales profit, net profit, total and equity assets). Conclusions are drawn that all the enterprises surveyed functioned steadily, and most of them had an adequate financial status. Also in the article there is a thesis about the usefulness of continuous monitoring of the sustainability of the functioning of enterprises and sectoral generalizations at the regional level, as well as outlines the obstacles preventing this.

1. Introduction

The subject of research in this article is the stability of functioning of enterprises. Sustainability of functioning of an enterprise is understood as its functional performance within an indeterminate amount of time and ability to achieve its objectives under the influence of negative factors [1]. We are engaged in applied researches of stability of functioning of the Belgorod Region enterprises: we estimate its level; compare the level of sustainability of enterprises within one industry and compare the level of enterprises' sustainability of functioning in different sectors; we monitor the sustainability of enterprises in the dynamics; identify the impact on the level of sustainability of the sanctions crisis [2–6].

In the Belgorod region, one of the leading industries is the construction materials and construction industry [7–10]. We began studying the stability of the functioning of economic entities on the data of enterprises of this industry. In this article, the food industry has been chosen as an object of research, which is also widely represented in the Belgorod Region.

2. Methodology and results

The evaluation is based on a sample of five Belgorod Region food industry enterprises selected randomly:



- ZAO Bakery Plant Starooskolskiy;
- AO Cold-Store Belgorodskiy;
- OAO Confectionary Belogor'ye;
- AO BZLK Citrobel (citric acid plant);
- OAO Valuyskiy LVZ (distillery).

The study is based on annual financial statements of the aforesaid enterprises. Form of entity is specified as of 2016.

Similar to [11, 12] four financial performance indicators, four growth rate indicators defining tendencies of revenue differentials, financial results and equity capital of enterprises over time, as well as four profitability ratios were used as sustainability performance indicators of enterprises:

- 1) financial stability index (share of long-term sources of financing in total capital) (annual average);
- 2) stable working capital-to-production ratio (stable working capital – SWC [3]) (annual average);
- 3) current liquidity ratio (annual average);
- 4) total assets turnover ratio;
- 5) revenue growth rate, %;
- 6) sales profit growth rate, %;
- 7) net profit growth rate, %;
- 8) equity assets growth rate, %;
- 9) return on sales profit, %;
- 10) return on net profit, %;
- 11) return on total assets, %;
- 12) return on equity assets, %.

The following indicator values characterize sustainability of enterprises:

- financial stability index – above 0.5;
- SWC-to-production ratio – at least 0.6;
- current liquidity ratio – at least 2;
- growth rates – at least 100%;
- profitability ratio – above 0.

The aforesaid values shall be designated as sustainability standards. It should be noted that a specific standard cannot be defined for total assets turnover ratio.

Calculation of the specified indicators over 2016 is shown in Table 1, where the best values on each indicator are marked.

An integrated assessment (IA) calculated with the modified method of the sum of points was used to compare sustainability of enterprises [4; 13, p. 103]. The value of IA may vary from 0 (worst value) to 10 (best value).

Calculation of indicator points and the IA of enterprises are given in Table 2. The value of points may vary from 0 to 10 too. Rating of enterprises sustainability based on IA values is presented in the baseline of Table 2.

Let us comment on the obtained results. The leader of the sample on the level of sustainability is ZAO Bakery Plant Starooskolskiy. It has the best in comparison with other enterprises, the values of five scores of scores of twelve (this can be seen from their points, which are equal to 10). Three of these indicators are profitability indicators. The plant meets the standards for nine indicators of stability from eleven. It can be said with certainty that it functions quite steadily. He has the highest assessment of the stability of the functioning (IA = 5.3) and the first place in the rating. However, this value of IA is far from the ideal value of 10, which is explained by the fact that the enterprise has the lowest proportion of share of long-term sources of financing, SWC-to-production ratio and current liquidity ratio. It is evident from the zero point scores of these indicators. So the financial status of the plant is worse than the rest of the enterprises studied. Because of insufficient solvency, the financial status of the plant can be considered only satisfactory.

Table 1. Indicators of enterprises' sustainability of functioning.

In- di- ca- tors	Individual Performance Indicators					
	ZAO Bakery Plant Sta- rooskolskiy	AO Cold- Store Belgo- rodskiy	AO Confectio- nary Belo- gor'ye	AO BZLK Citrobel	AO Va- luyskiy LVZ	
1)	0,32	0,82	0,74	0,99	0,63	
2)	0,91	3,15	3,90	446,86	2,95	
3)	1,24	3,07	2,77	90,56	2,30	
4)	2,83	1,53	2,64	0,26	1,06	
5)	140,33	113,60	102,98	113,69	111,94	
6)	162,35	71,30	152,84	302,02	92,03	
7)	171,24	37,28	268,65	318,52	36,13	
8)	103,43	103,76	118,68	100,04	102,32	
9)	6,49	7,31	5,86	7,57	7,94	
10)	4,14	2,09	2,72	0,44	1,28	
11)	14,72	5,36	9,43	0,49	2,34	
12)	37,34	4,15	17,08	0,11	2,15	

Table 2. Indicator scores, comparative integrated assessment and rating of enterprises' sustainability of functioning.

Indicators	Indicator scores					
	ZAO Bakery Plant Sta- rooskolskiy	AO Cold- Store Belgo- rodskiy	AO Confectionary Belogor'ye	AO BZLK Citrobel	AO Va- luyskiy LVZ	
1)	0	7,41	6,31	10	4,72	
2)	0	0,05	0,07	10	0,05	
3)	0	0,20	0,17	10	0,12	
4)	10	4,93	9,24	0	3,10	
5)	10	2,84	0	2,87	2,40	
6)	3,95	0	3,53	10	0,90	
7)	4,78	0,04	8,23	10	0	
8)	1,82	1,99	10	0	1,22	
9)	3,05	7,00	0	8,23	10	
10)	10	4,46	6,18	0	2,27	
11)	10	3,42	6,28	0	1,30	
12)	10	1,08	4,56	0	0,55	
IA	5,30	2,79	4,55	5,09	2,22	
Ranking position	1	4	3	2	5	

On the second place in the rating of sustainability of functioning with a slight lag from the leader was AO BZLK Citobel (IA = 5.09). He also has five indicators that are the best in comparison with other enterprises values, and standards are met for all indicators of sustainability. The factory did not get to the first place because its five indicators have the worst on sample values. In general, the level of sustainability of AO BZLK Citobel can be considered quite high.

OA Confectionary Belgor'ye is on the third place in the rating. All indicators of factory stability are within the limits of the norm. Therefore, the level of stability of its functioning is normal. The factory lagged behind the leaders and received a comprehensive assessment below the average level (IA = 4.55) due to the slow revenue growth rate and the lowest level of return on sales profit.

AO Cold-Store Belgorodskiy and OAO Valuyskiy LVZ, which ranked fourth and fifth in the rating, respectively, have only 2.79 and 2.22 out of 10 possible scores, but they both meet the requirements on nine indicators of sustainability (like the leader of the rating). These enterprises are profitable and have an adequate financial status. The main reason for the lag is the decline of profit indicators in both companies in 2016. So, it is quite possible to recognize the level of stability of functioning of AO Cold-Store Belgorodskiy and OAO Valuyskiy LVZ as satisfactory.

The last example shows that the IA values calculated in the course of the comparative evaluation characterize the relative (and not absolute) level of sustainability of the functioning of enterprises, that is, their level relative to the level of other enterprises. A IA value of 10 does not always mean that the enterprise is absolutely stable, and a value of 0 does not necessarily mean that there is no sustainability of the functioning.

Summarizing the results of a study of a sample of Belgorod Region food industry enterprises, it should be noted that four of them in 2016 had an adequate financial status (and ZAO Bakery Plant Starooskolskiy had a satisfactory financial status). All enterprises increased revenues from sales, were profitable and capable, if not to increase, then preserve their equity assets. Most of them (three out of five) showed an increase in profits. So if the sample were representative, we could conclude that the food industry in the Belgorod region is functioning steadily.

3. Conclusions

We believe that continuous monitoring and comparative assessments of the stability of functioning of enterprises at the regional level in different sectors would be useful. An obstacle to this is the low availability of data from financial statements of organizations. Since 2017, the number of organizations disclosing their reporting on the Internet has decreased significantly. This is precisely the reason that we analyze on very limited samples of enterprises that can not claim representativeness. We use them to demonstrate the feasibility and methodology of inter-farm comparisons and sectoral generalizations based on the calculation of integrated assessments.

4. References

- [1] Benderskaya O 2016 Sustainable functioning: the basis or alternative to sustainable development *Belgorod Economic Bulletin* **1**(813) 132-137
- [2] Slabinskaya I, Benderskaya O 2016 Stable development' term and its usage in Russian economic editions *Journal of Fundamental and Applied Sciences* **8**(2S), 1494-1501
- [3] Slabinskaya I, Benderskaya O 2017 A comparative assessment of the sustainability of Belgorod building materials industry enterprises in 2014-2015 *Bulletin of BSTU named after V.G. Shukhov* **2** 248-254
- [4] Slabinskaya I, Benderskaya O 2017 Sustainability of Belgorod region enterprises of building materials and building structures industry under sanctions *Advances in Engineering Research* **133** 102-107
- [5] Benderskaya O 2017 Dynamics of the stability of the functioning of the Belgorod's enterprises of industry of building materials and construction industry in 2013-2016 and their comprehensive assessment for 2016 *Bulletin of BSTU named after V.G. Shoukhov* **10** 172-180

- [6] Slabinskaya I, Benderskaya O, Mitrokhin A, Truhin A 2015 Methods of company financial stability monitoring *International Business Management* **9**(6) 1091-1096
- [7] Chizhova E, Vesnina O 2017 Formation of the innovative environment by klasteriation of the construction industry *Bulletin of BSTU named after V.G. Shoukhov* **3** 151-155
- [8] Doroshenko Y, Bukhonova S, Somina I, Klimashevsky K 2014 The study of synergistic effect in investment and innovative activity of enterprises within building materials industry *Industrial And Civil Engineering* **12** 33-36
- [9] Doroshenko Y, Golubotskikh M 2017 Factors of competitive sustainability and assessment of their influence on enterprises within building materials industry *Belgorod Economic Bulletin* **1**(85) 26-31
- [10] Doroshenko Y, Klimashevskaya A 2017 The analysis of scientific and technical potential of the enterprises of construction materials industry in the context of assessment of need of carrying out technological modernization for the industry *Bulletin of BSTU named after V.G. Schukhov* **1** 214-218
- [11] Kravchenko L, Hodorenko E 2017 The issue of efficiency improvement with regard to company's economic activity *Belgorod Economic Bulletin* **1**(85) 202-209
- [12] Usatova L, Arskaya E, Budnichenko O 2014 The importance of profit and mechanism of its distribution in modern conditions *Belgorod Economic Bulletin* **3**(75) 175-186
- [13] Benderskaya O, Slabinskaya I 2015 Methods of analytical research *BSTU named after V.G. Shukhov* (Belgorod)
- [14] Bukhonova S, Doroshenko Y, Trunov E 2004 Application of sustainability performance indicators in company management *Economic Analysis: Theory and Practice* **9** 10-21
- [15] Chizhova E 2016 The philosophy of innovative development *Bulletin of BSTU named after V.G. Shoukhov* **4** 232-235
- [16] Chizhova E, Shevchenko M 2011 Integral efficiency of management system of the industrial enterprise *Bulletin of BSTU named after V.G. Shoukhov* **1** 95-99
- [17] Doroshenko Y, Bukhonova S, Somina I, Manin A 2014 Modernization of model for initiation of investment projects as a factor of 164 balanced maintenance of region's investment-innovational activity *Journal of Applied Engineering Science* **12**(4) 265-272
- [18] Schetinina E, Starikova M, Borzenkova K, Chizhova E, Androsova G 2014 The development of the business strategy based on the commercialization of innovations *International Journal of Applied Engineering Research* **9**(22)16881-16890
- [19] Shevchenko M, Kosyanov E 2016 Big Data: problems, prospects and interrelation with economic system *Belgorod Economic Bulletin* **4**(84) 31-3
- [20] Tkachenko Y, Kurilo E 2016 Problems in ensuring economic stability of a business unit *Belgorod Economic Bulletin* **3**(83) 62-66
- [21] Tupikin P 2016 Some aspects in creating an economic stability system of a business unit *Belgorod Economic Bulletin* **4**(84) 85-89