Ranking grouping of agricultural machine engineering enterprises in Vinnytsia region

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Abstract. There had been analyzed the functioning of the agricultural machine engineering in Vinnytsia region as for their financial state. There had been conducted their grouping depending on the efficiency of their activity. There had been composed the ranking score of the enterprises following a number of the set factors – factor maneuvering, the total solvency ratio, direct invested capital turnover ratio, rate of return on sales of products and rate of return on invested capital of the company/

As a result of this analysis were identified strengths and weaknesses of the enterprises of agricultural machine engineering. It was divided on three groups: the first group attribute companies with poor financial state, the second - companies that operate unstable and the third - the enterprise, which increase its potential. Revealed that there was no change in the rating, indicating the absence of sharp decay and lack of sharp growth.

It is proved that the development of agricultural machine building enterprises of Vinnytsia region is contradictory: on the one hand, there are companies that develop and conduct modernize and adapt to new conditions, on the other hand - there are businesses that either do individual orders or rent their space for rent, which undoubtedly indicates their complete degradation. Thus, our group of companies allowed to further ensure substantial differentiation of agricultural engineering enterprises of Vinnytsia region in terms of opportunities and their activities.

A number of identified trends allowed to form a clearer picture of state enterprises. It is shown that the efficiency of business management to some extent can be displayed using a comprehensive integrated approach to assessing the financial condition.

Key words: agricultural engineering, financial state, analysis, factor, ranking score

INTRODUCTION

The development of agricultural machine engineering is an objective and logical process on the territory of Ukraine. Branched agricultural sector, with its internal peculiarities management and traditions require a new material base for agricultural production. Negative trends that took place in agriculture led to a number of system problems with producers of machinery.

Along with the Ukraine's independence and breaking some economic relations with enterprices of the independent republics there took place a number of changes. The destruction pf system of centralized, efficient and timely management system of enterprises led to their significant differentiation.

THE ANALYSIS OF RECENT RESEARCHES AND PUBLICATIONS

Significant contribution to the study of activity of industrial enterprises had been made by such famous scientists: O. Chorna, O. Marchenko, N. Tarasenko, V. Podolska, G. Kramarenko, Y. Tsal-Tsalko, O. Sheremet, B. Lytvyn, R. Kostyrko and others. Despite the availability of scientific developments in this area, the issues, of methodological and applied aspects in managing the investment activity in terms of an integrated evaluation of the financial condition of the company as for theit industry peculiarities requires further researches.

OBJECTIVES

A significant problem in functioning of agricultural machine engineering enterprises was an unreasonable financial and economic policy of short-term management. It should be noted that for certain businesses such measures were reasonable and effective, but for most of them it became a failure. Under such conditions with the increasing in domestic and foreign competition on the market the companies must have and rationaly represent an aggregate of results of enterprise's activity by evaluation of financial condition for expansion of its activities and stimulation interests of investors.

THE MAIN RESULTS OF THE RESEARCH

Comlex evaluation of agricultural machine engineering enterprises requires the recognition of a number of its scopes of activity following certain criteria. Thus, monitoring the financial condition of a large number of companies that are located in the same area or belong to the same industry group requires a small group of indexes (no more than five or six), because only then it is possible to create the conditions for efficiency and complexity in analysis and on the other hand - eliminate the contradictions in conclusions. In view of these limitations, we assume a methodic, suggested by E. Mnich [1, p. 265] to be most appropriate since it allows to make complex ranking according to financial accounts.

The methodic implies for the determination of the ranking using the score by the expression:

$$R = 2 \cdot p_1 + 0{,}1 \cdot p_2 + 0{,}08 \cdot p_3 + 0{,}45 \cdot p_4 + p_5 \quad (1.1)$$

p_1 – maneuver factor (standard value for 0.1);

p_2 – total solvency ratio factor (standard value for 2.0);

p_3 – turnover invested factor capital (co normative value> 2.5);

p_4 – rate of return on sales factor (5 normative value is determined discount rate with Nations bank of Ukraine);

p_5 – rate of return on capital invested factor (factor of economic profitability standards is not limited).

Regulation minimum value of figure ranking R≥1. The financial condition of an enterprises with the ranking less than 1 is described as unsatisfactory [1, 268].

To ensure the reliability in evaluation of activity of agricultural machine engineering enterprises of Vinnytsia region there had been chosen for the analysis of the years 2007-2014 for analysis [2]. Defined system of indexes (Table 1) as for the maneuvering factor, the factor of overall solvency ration, direct factor of turnover of invested capital, the factor of invested capital turnover and the factor of profitability of capital invested to the company allowed to reveale the strengthes and weaknesses in the enterprise activity and to identify the dynamics of their work.

Table 1

Rating Evaluation of Agricultural Machinery Enterprise

Enterprise	Year	Factors					
		Factor maneuvering	Total solvency ratio	Direct sales ratio of invested capital	Profit ratio of product sales	Profit ratio of investment in venture capital	Rating assessment of the company
1. Public Joint-Stock Company (PJSC) «Khmilnikcilmash»	2007	0,42	1,38	0,90	0,17	0,06	1,18
	2008	-	-	-	-	-	-
	2009	0,45	3,07	0,32	-0,10	-0,15	1,05
	2010	-	-	-	-	-	-
	2011	0,39	2,05	0,94	0,26	0,08	1,26
	2012	0,38	1,90	0,49	0,15	-0,10	0,96
	2013	0,09	1,61	0,49	0,14	-0,12	0,27
	2014	0,38	1,61	0,45	0,10	-0,17	0,86
2. Private joint stock company (JSC) «Vinnitskii doslidnii zavod»	2007	0,47	1,72	2,69	0,09	0,18	1,55
	2008	0,49	3,39	1,30	0,03	-0,03	1,42
	2009	0,58	5,26	2,00	0,07	0,11	0,99
	2010	-	-	-	-	-	-
	2011	0,65	2,65	0,75	0,23	0,15	1,88
	2012	0,57	1,67	0,92	0,34	0,43	1,96
	2013	0,58	2,19	0,88	0,37	0,36	1,98
	2014	0,65	9,33	0,33	0,10	0,09	2,39
3. PJSC «Kalinivskii remontno-mekhanichnii zavod»	2007	0,20	3,03	0,20	-0,47	0,002	0,23
	2008	0,18	1,64	0,23	-1,75	-0,15	-0,40
	2009	-0,06	1,22	0,05	-3,28	-0,19	-1,66
	2010	-0,50	1,01	0,04	-7,90	-0,63	-3,99
	2011	-1,59	0,86	0,18	-0,69	-0,45	-3,07
	2012	-2,82	0,76	0,36	0,10	-0,40	-5,89
	2013	4,82	0,87	0,27	-0,02	1,13	10,87
	2014	1,04	0,71	0,59	0,51	1,30	3,73
4. JSC "Voronovitske spetsializovane pidpriiemstvo "Ahromash"	2007	0,05	1,42	0,00	-	-0,17	0,07
	2008	0,003	1,02	0,00	-	-0,16	-0,05
	2009	-0,11	0,52	0,00	-	-0,12	-0,39
	2010	-	-	-	-	-	-
	2011	-0,42	0,31	0,01	-19,56	-0,20	-9,87
	2012	-0,76	0,24	0,001	1,00	-0,29	-1,34
	2013	-1,17	0,21	0,00	-	-0,18	-1,37
	2014	-1,51	0,20	0,003	1,00	-0,19	-2,78
5. JSC «Ladizhinskii remontno-mekhanichnii zavod»	2007	0,44	2,60	0,39	-0,21	-0,04	1,04
	2008	0,09	1,65	0,43	-0,22	-0,09	0,17
	2009	-0,39	1,82	0,42	-0,08	-0,03	0,92
	2010	0,10	4,99	0,39	-0,11	-0,05	0,63
	2011	0,11	5,00	0,71	0,32	-0,04	0,88
	2012	0,10	4,78	0,58	0,34	-0,09	0,79
	2013	0,04	1,68	0,49	0,25	-0,16	0,24
	2014	0,44	1,03	0,64	0,34	-0,03	1,16
6. PJSC «Barskii mashinobudivnii zavod»	2007	0,59	6,48	1,17	0,15	0,04	2,03
	2008	0,59	4,70	1,49	0,16	0,05	1,89
	2009	0,63	2,24	1,31	0,14	0,02	1,67
	2010	-	-	-	-	-	-
	2011	0,70	3,15	1,52	0,14	0,04	1,94
	2012	0,70	3,15	0,76	0,14	0,04	1,88
	2013	0,73	6,23	1,46	0,12	0,02	2,28
	2014	0,74	5,23	1,93	0,16	0,09	2,21
7. JSC «Vinnitskii zavod «Budmash»»	2007	-2,41	0,52	1,50	0,19	-0,66	-5,22
	2008	-2,66	0,62	1,33	0,27	0,04	-4,99
	2009	-6,34	0,51	0,40	0,03	-0,86	-13,45
	2010	-	-	-	-	-	-
	2011	71,92	0,38	0,79	0,05	10,65	154,61
	2012	-3,91	0,31	0,91	-0,04	1,40	-7,74
	2013	2,49	0,20	0,68	0,12	-0,10	5,00
	2014	-1,72	1,37	0,53	-0,35	0,76	-2,66
8. PJSC «Bratslav»	2007	0,27	1,45	2,22	0,17	0,03	0,97
	2008	0,36	1,73	3,22	0,21	0,33	1,58
	2009	0,25	1,30	2,45	0,10	0,13	1,06
	2010	-	-	-	-	-	-
	2011	-0,92	0,54	0,63	0,17	0,02	-1,64
	2012	-0,81	0,55	0,55	0,18	0,06	-1,38
	2013	-	-	-	-	-	-
	2014	-	-	-	-	-	-
9. JSC "Haisinske raionne pidpriiemstvo "Silhosptekhnika"	2007	0,24	19,66	0,34	-0,38	-0,12	2,52
	2008	0,21	14,07	0,12	-1,58	-0,15	0,98
	2009	0,23	12,01	0,07	-3,15-	0,04	0,29
	2010	-	-	-	-	-	-
	2011	0,10	5,69	0,10	-2,66	-0,15	-0,57

	Year						
	2012	0,02	1,38	0,08	-1,81	-0,15	-0,78
	2013	-	-	-	-	-	-
	2014	-	-	-	-	-	-
10. PJSC «Nemirivske raionne pidpriiemstvo «Ahromash»»	2007	0,19	7,60	0,09	-0,37	-0,03	0,93
	2008	0,14	5,95	0,04	-0,65	-0,16	0,43
	2009	0,07	3,97	0,03	-2,90	-0,01	-0,78
	2010	0,08	4,26	0,02	-5,68	-0,02	-1,99
	2011	0,09	6,42	0,03	-1,18	-0,01	1,11
	2012	0,01	1,91	0,03	-2,07	-0,05	0,77
	2013	0,01	0,02	0,02	-4,10	-0,03	-1,85
	2014	0,01	1,60	0,02	-3,09	-0,03	-1,24
11. JSC «Ahromashkomplekt»	2007	-0,12	1,03	1,05	-0,03	-0,09	-0,16
	2008	-0,09	0,63	0,68	-0,35	-0,85	-1,08
	2009	-3,40	0,50	0,31	-0,20	-0,37	-7,19
	2010	-4,45	0,42	0,25	-0,45	-0,23	-9,35
	2011	-2,65	0,48	0,25	0,42	-0,63	-6,00
	2012	0,11	0,61	0,11	0,45	-0,001	0,49
	2013	-0,06	0,62	0,06	-0,33	-0,07	0,14
	2014	-0,05	0,69	0,10	0,32	-0,01	0,11
12. JSC «Zhmerinske raionne pidpriiemstvo «Ahromash»»	2007	0,29	1,70	0,42	-1,70	0,34	0,33
	2008	0,31	1,57	0,66	-0,27	-0,05	0,66
	2009	0,31	1,62	0,83	2,04	0,13	1,9
	2010	0,17	2,01	0,51	-0,07	0,22	0,77
	2011	0,50	1,78	0,52	0,11	-0,01	1,26
	2012	0,31	1,27	0,43	0,22	0,40	1,28
	2013	-	-	-	-	-	-
	2014	-	-	-	-	-	-
13. JSC «Koziatinske raionne pidpriiemstvo «Ahromash»»	2007	0,11	2,66	0,64	-0,11	-0,08	0,42
	2008	0,06	1,87	0,75	-0,19	-0,14	1,64
	2009	-	-	-	-	-	-
	2010	-	-	-	-	-	-
	2011	-0,0030	0,91	0,93	0,63	-0,03	0,42
	2012	0,03	1,97	0,77	0,81	-0,03	0,65
	2013	0,003	1,06	0,91	0,79	-0,15	0,38
	2014	-0,04	0,39	0,87	0,58	-0,05	0,2
14. PJSC «Vinnitske spetsializovane pidpriiemstvo «Remtekhsilmash»»	2007	-0,001	1,00	0,001	-250,38	-0,003	0
	2008	0,02	1,02	0,14	-0,64	0,04	-0,1
	2009	0,003	1,00	0,10	-0,31	0,06	0,85
	2010	0,05	1,06	0,11	0,04	0,01	0,24
	2011	0,07	1,10	0,15	0,93	0,01	2,26
	2012	0,13	1,19	0,22	0,91	0,07	0,88
	2013	0,24	1,51	0,34	0,78	0,13	1,14
	2014	0,33	2,61	0,42	0,66	0,06	1,31

Generalized dynamics of activity of agricultural machine engineering enterprises through the ranking is shown in Fig. 1, which openly presents positive and negative results of activity of enterprises and their competitive position.

Research of regularities in functioning an agricultural machine building enterprises showed their separation, which took place in accordance with the results of a complex evaluation. The availability of positive and negative values in ranking reflects the significant differences in the efficiency of functioning of the companies that allows to product their grouping according to similar results.
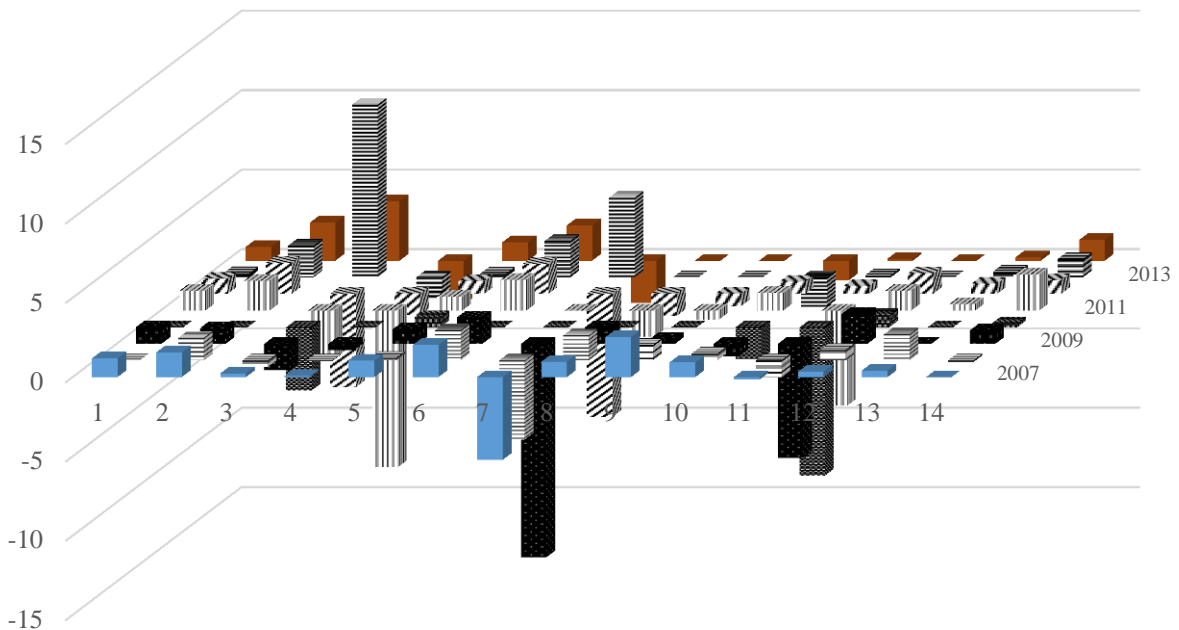

Fig. 1 – Change in ranking of activity of agricultural machine engineering enterprises

As for the above mentioned, it had been determined that the acquisition of the ranking assessment of enterprise value less than one (R <1) its financial state is unsatisfactory, starting from this condition. Let's conduct a grouping of the received values of the ranking figure. Noting the enterprises activity at a stable level, conside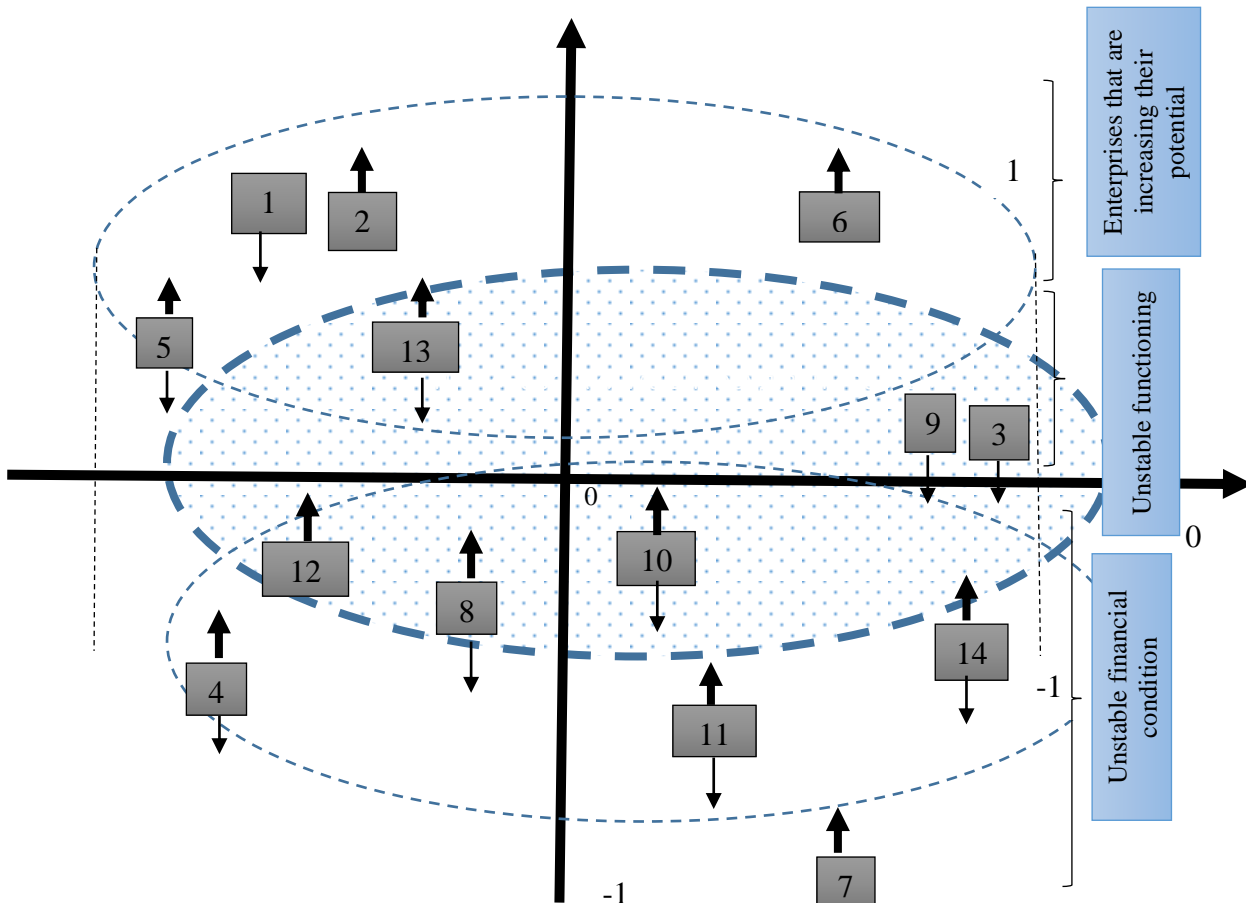ring some fluctuations, we consider it appropriate to split divide enterprises into three groups: the first shall include enterprises with unsatisfactory financial condition (R <0), the second - enterprises that operate unstable (0 <R <1) and the third - the enterprises, increasing in its potential (R> 1). The distribution of the enterprises under analysis is presented in the table. 2.

Table 2

Grouping agricultural machine engineering companies based on their ranking evaluation

Ranking evaluation		
R<0	0<R<1	R>1
PJSC «Kalinivskii remontno-mekhanichnii zavod» JSC "Voronovitske spetsializovane pidpriiemstvo "Ahromash" JSC «Ladizhinskii remontno-mekhanichnii zavod» JSC «Vinnitskii zavod «Budmash»» PJSC «Bratslav» JSC "Haisinske raionne pidpriiemstvo "Silhosptekhnika" PJSC «Nemirivske raionne pidpriiemstvo «Ahromash»» JSC «Ahromashkomplekt» PJSC «Vinnitske spetsializovane pidpriiemstvo «Remtekhsilmash»»	PJSC «Khmilnikcilmash» PJSC «Barskii mashinobudivnii zavod» PJSC «Bratslav» JSC "Haisinske raionne pidpriiemstvo "Silhosptekhnika" JSC «Ahromashkomplekt» JSC «Zhmerinske raionne pidpriiemstvo «Ahromash»» JSC «Koziatinske raionne pidpriiemstvo «Ahromash»» PJSC «Vinnitske spetsializovane pidpriiemstvo «Remtekhsilmash»»	PJSC «Khmilnikcilmash» JSC «Vinnitskii doslidnii zavod» PJSC «Barskii mashinobudivnii zavod» PJSC «Bratslav» JSC «Zhmerinske raionne pidpriiemstvo «Ahromash»» PJSC «Vinnitske spetsializovane pidpriiemstvo «Remtekhsilmash»»

In addition to the above, for unambiguous interpretation of the efficiency of activity of agricultural machine building enterprises it is necessary to present the absolute values of ranking assessments in their dynamics, which displays the nature of the objects under research (Fig. 2).

Note:

In the squares shown number of the company in accordance to the table

↑ - increasing trend;

↓ - decreasing trend.

Fig. 2. – Grouping of enterprises by the dynamics of the ranking evaluation during the years 2007-2014

The sets of evaluation results characterizes the extremely negative trends in development of agricultural machine building enterprises, since most of enterprises are characterized by unsatisfactory financial condition (R <0), which limits their potential for development right in the area of agricultural machinery, which is likely to facilitate the reorientation to the other kind of economic activity. In view of the significant number of enterprises functioning with the ranking value in the range 0<R<1, we can also note the difficulties in attracting investors to their development due to the instability in their functioning. So there is a small number of enterprises, which increase their potential (R>1) and which can for this purpose along with their own investment resources draw external investment support.

Further analysis of agricultural machine engineering enterprises shows that there are companies that over the period of 2007-2014 years were in all three defined categories. Among these enterprises PJSC «Vinnitske spetsializovane pidpriiemstvo «Remtekhsilmash»» and PJSC «Bratslav» are worth noting that, on the one hand, demonstrates the strengthening in solvency, and on the other hand - the instability in their operation.

The results of analysis allows to make a conclusion that there were two contradictory trends: on the one hand some certain enterprises with sufficient importance ranking evaluation on the other - there have been a trend of its declining (PJSC «Khmilnikcilmash», PJSC «Bratslav», JSC "Haisinske raionne pidpriiemstvo "Silhosptekhnika", JSC «Zhmerinske raionne pidpriiemstvo «Ahromash»»). At the same time, there were enterprises with growing ranking evaluation, although it was characterized by negative values, that indicate a negative operation of enterprise (JSC «Zhmerinske raionne pidpriiemstvo «Ahromash»», PJSC «Bratslav», PJSC «Nemirivske raionne pidpriiemstvo «Ahromash»»). So, therefore, we consider that along with the study of the absolute values of the ranking evaluation it is necessary to research its dynamics. In particular, it is possible to identify a number of enterprises with similar trends in development (Fig. 3).

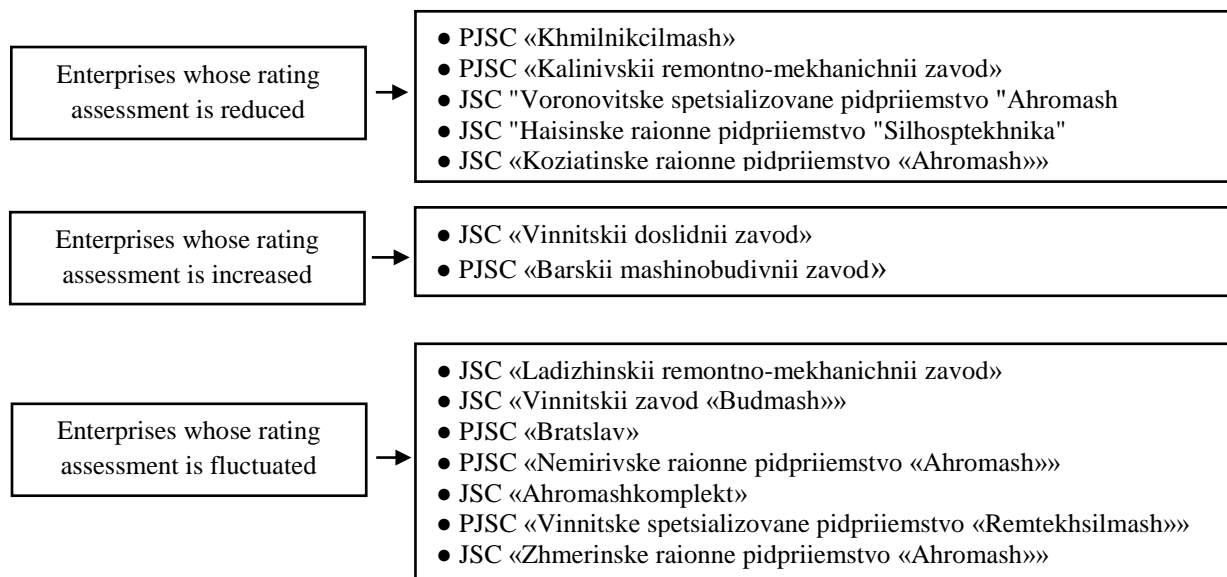| Enterprises whose rating assessment is reduced | → | ● PJSC «Khmilnikcilmash»
 ● PJSC «Kalinivskii remontno-mekhanichnii zavod»
 ● JSC "Voronovitske spetsializovane pidpriiemstvo "Ahromash
 ● JSC "Haisinske raionne pidpriiemstvo "Silhosptekhnika"
 ● JSC «Koziatinske raionne pidpriiemstvo «Ahromash»» |
| Enterprises whose rating assessment is increased | → | ● JSC «Vinnitskii doslidnii zavod»
 ● PJSC «Barskii mashinobudivnii zavod» |
| Enterprises whose rating assessment is fluctuated | → | ● JSC «Ladizhinskii remontno-mekhanichnii zavod»
 ● JSC «Vinnitskii zavod «Budmash»»
 ● PJSC «Bratslav»
 ● PJSC «Nemirivske raionne pidpriiemstvo «Ahromash»»
 ● JSC «Ahromashkomplekt»
 ● PJSC «Vinnitske spetsializovane pidpriiemstvo «Remtekhsilmash»»
 ● JSC «Zhmerinske raionne pidpriiemstvo «Ahromash»» |

Fig. 3 - Directions of rating assessment changes of agricultural engineering enterprises in Vinnytsia region

The analytical and graphical interpretation of the research results of scale and efficiency in the functioning of enterprises of agricultural machine engineering reflect their heterogeneity, which was caused first of all by the amount and technological peculiarities of activity. In view of the dynamics of ranking evaluation of agricultural machine engineering enterprises in Vinnytsia region as well as the main economic indicators of enterprises allows to make a conclusion about a significant level of relationship between the ranking evaluation and the level of profitability. Information obtained in the research showed that enterprises in the selected groups have a number of trends arising from the condition of their activities and appropriate development opportunities. The variation character of the ranking evaluation does not show saltatory nature neither in the way of growth, nor in the direction of decreasing, that indicate a lack of fundamental innovations in businesses that can lead to an increased production, and the absence of sharp negative influences. The above allows to conclude about the impact of internal resources of enterprises to operation of enterprise, that is, an inertia is a characteristic feature of the companies under research.

The general result of the above trends is that the development of agricultural machine building enterprises in Vinnytsia region is contradictory: on the one hand, there are enterprises that develop and modernize production to adapt to new conditions, and on the other hand - there are businesses that perfotm some individual orders or rent out their areas, which definitely shows their complete degradation. Thus, our grouping of enterprises allowed to be convinced in substantial differentiation of agricultural machine engineering enterprises in Vinnytsia region as for the opportunities and their activities. A number of identified trends allowed to form a clearer picture about condition of enterprises and in accordance with their capacity, to develop further appropriate activities of each of the companies, because in terms of

limited internal resources, most of inefficient enterprises are not able to maintain and develop their activities.

Analyzing the above, it is possible argued that the solution of problems related with enterprise development provides attracting investments that permit to develop its production activity, as enterprises of agricultural engineering machinery as part of the engineering machinery of the country is least adapted among the branches of engineering to market conditions.

CONCLUSIONS

The research of agricultural machine engineering enterprises in Vinnytsia region showed the heterogeneity in their development, the presence of number of internal issues, their complexity and diversity. Effective functioning of enterprises to some extent can be displayed using a complex integrated approach to evaluation financial condition.

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