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Intensity and competitiveness of land use at regional level

Summary. The purpose of the research is to evaluate the competitiveness of land use of agricultural enterprises in regions of Ukraine and impact on it of level of intensity. As result of investigation it was identified the economic substance of the competitiveness of land use of agricultural enterprises; proposed to identify potential and actual level of competitiveness of land use of agricultural enterprises. It is proposed and tested the scientific and methodical approach to rating evaluation of the competitiveness of land use of agricultural enterprises in regions.

Key words: competitiveness, land use, agricultural enterprises, intensity, costs, competitiveness index

Introduction

Today the agricultural economic science and practice of management in agriculture have the dilemma of ensuring the competitiveness of the industry as a whole, economic objects and products and competitiveness problem is multifaceted and multidimensional, because it should be viewed in different foreshortenings. The problem of forming and increasing of competitiveness of land use of agricultural enterprises is a key not only in the national agricultural economics and science, but also in agricultural policy. This is due to the strategic importance of land as a subject of labor and as a potential product in the land market, to guarantee food security and its role in providing ecosystem services and the formation of export potential of the domestic agricultural sector. Incidentally, the common view is that the main competitive advantages of the country should be associated with the third of the world's fertile chernozems, which account for more than half of the arable land in the country. However, not only to compete, but to win and successfully compete in the global market, fertile soil is not enough, especially in connection with the spread of soil-degradation processes that threaten the conservation of comparative competitive advantages and competitiveness of crop production of the country[1]. Therefore, the competitiveness of land use of agricultural enterprises largely determines Ukraine's competitiveness in the global agricultural market.

[1] A.V. Kucher, L.Yu. Kucher: Expert assessment of economic losses caused by soil degradation at agricultural enterprises, Actual Problems of Economics 2015, No 8, p. 165–169.

Issues of competitiveness on the market of various types of products are traditional for economic science. They are highlighted in numerous scientific works of scientists, including recent publications: A. Kostadinov[2], W. Józwiak[3], A. Kowalski, M. Wigier[4] , J. Kulawik[5], O. Nepochatenko[6], O. Nykolyuk[7], D. Parmakli[8], J. Radka[9] and others. The problem of land use and competitiveness is studying by D. Colyer[10]. The study of V.E. Ball, J.-P. Butault, C.S. Juan and R. Mora is dedicated for international competitiveness of agriculture in the European Union and the United States[11]. In paper by M. Sabatino evaluated the degree of resilience of the different districts and their competitive capacities during the economic crisis[12]. However, the theory of the formation of competitiveness of land use of agricultural enterprises is at an early stage and has a number of unresolved issues. Unexplored questions remain essence of the competitiveness of land use, methods of measurement, the impact of competition in the land rental market on the formation of competitiveness of land use, the impact of soil fertility on the formation of competitiveness of land use and resource potential of agricultural enterprises.

The purpose of the research is to evaluate the competitiveness of land use of agricultural enterprises in regions of Ukraine and impact on it of level of intensity.

[2] A. Kostadinov: Въздействието на международните цени на зърно върху българския зърнен пазар, Евдемония продъкшън 2014; A. Kostadinov, D. Mollov: Конкурентоспособност на зърнопроизводителите в България, Икономически алтернативи 2015, No. 3.

[3] W. Józwiak (Ed.): Effectiveness, production costs and competitiveness of Polish agricultural holdings at present and in the medium- and long-term perspective, Instytut Ekonomiki Rolnictwa i Gospodarki, Warsaw 2014.

[4] A. Kowalski, M. Wigier (Eds): Competitiveness of the Polish food economy in the conditions of globalization and European integration, Instytut Ekonomiki Rolnictwa i Gospodarki, Warsaw 2014.

[5] J. Kulawik: Regulacje środowiskowe i innowacje a konkurencyjność, Zagadnienia Ekonomiki Rolnej 2016, No. 1. DOI: 10.5604/00441600.1196358.

[6] O.O. Nepochatenko, S.A. Ptashnyk, V.O. Nepochatenko: The analysis of the competitive environment of agricultural enterprises, Ekonomika APK 2016, No. 5.

[7] O.M. Nykolyuk: The multidimensional methods of assessing the competitiveness of farm enterprises, Ekonomika APK 2016, No. 3.

[8] D. Parmakli, L. Bahchivandzhi: Comparative analysis of efficiency of the use land in agriculture Republic of Moldova and Odessa region of Ukraine, Agricultural and Resource Economics: International Scientific E-Journal [online] 2016, Vol. 2, No. 1.

[9] I. Radka: Съвременни проблеми на фирмената стратегия и конкурентоспособността на българските предприятия, Изд. Звезди, 2012.

[10] D. Colyer: Land, Land Use and Competitiveness [electronic resource], access mode: http://ageconsearch.umn.edu/handle/19099.

[11] V.E. Ball, J.-P. Butault, C.S. Juan, R. Mora: Productivity and international competitiveness of agriculture in the European Union and the United States, Agricultural Economics 2010, Vol. 41, Issue 6. DOI: 10.1111/j.1574-0862.2010.00476.x.

[12] Sabatino M.: Competitiveness and Resilience of the productive districts in Sicily. The behavior of the Sicilian production areas during the economic crisis, Contemporary Economics 2016, Vol. 10, Issue 3. DOI: 10.5709/ce.1897-9254.212.

Research methodology

The following practices were used in the process of research: system analysis and logical generalization – to determine the economic substance of intensity and competitiveness land use of agricultural enterprises; settlement-analytical – to evaluation the indicators of potential and actual competitiveness of land use of agricultural enterprises; correlation and regression analysis – to measure tightness correlation connection and identification of dependencies; induction and deduction – to generalize the research results; abstract-logic – to make conclusions and suggestions.

Results of the research

According to the literature, competitiveness can be analysed at various levels of the economy: at the product level, the enterprise level, the sector level, or the level of the entire economy. Several measures exist for each of these levels[13]. Investigating the problem of international competitiveness of agriculture in the European Union and United States, V.E. Ball, J.-P. Butault, C.S. Juan, R. Mora address to the formal definition of the concept of competitiveness and relating it to the more conventional concept of relative productivity[14]. We also rely to some extent on the concept of relative productivity of using agricultural land.

In the result of the research it was theoretically grounded dual essence of competitive land use that includes,

- on the one hand, the competitiveness of agricultural enterprises on the land rental market, which refers to the willingness of other things being equal offer and pay the higher rents and as a result – to expand land use, while maintaining the potential for expanded reproduction of production;
- on the other hand is an integrated feature of the agricultural enterprise, which characterizes ability its models of land use to compete with similar models of other enterprises in the micro-, meso-, macro- and global levels by: effectiveness of use of land resources, mechanism rent, size of the newly created (value added), product quality, level of soil fertility reproduction.

In this research, we focus on the second aspect of the competitiveness of land use of agricultural enterprises. We proposed a scientific and methodical approach to evaluation of competitiveness of land use of agricultural enterprises, which, unlike the existing ones, based on the use of system of indicators, based on which there is one expects integral competitiveness index and it allows considering various aspects of land use of enterprise and making management decisions.

Researching the types of competitiveness of land use of agricultural enterprises we propose to allocate actual and potential competitiveness. Potential competitiveness of land use characterizes the ability of agricultural enterprises to compete with other manufacturers in terms of production costs per unit of land area that, in essence, indicates

[13] V.E. Ball, J.-P. Butault, C.S. Juan, R. Mora, op. cit.

[14] P. Bielik, M. Rajčániová: Competitiveness analysis of agricultural enterprises in Slovakia. Agricultural Economics 2004, Vol. 50, No 3, p. 556–560.

the degree of intensity of production and compliance with the most advanced technology. The actual competitiveness of land use characterizes the ability of agricultural enterprises to compete with other manufacturers in terms of effectiveness use of land resources, where opportunities appear simple or extended reproduction in the next production cycle. Other things being equal, the actual competitiveness of land use of agricultural enterprises depends strongly on the potential competitiveness.

The proposed scientific and methodical approach on rating evaluation of competitiveness of land use of agricultural enterprises of regions is based on the estimation of partial indices of competitiveness on which the index integral and comprehensive assessment (place) in the region is calculated. To determine the partial indices of competitiveness we can compare the indicators of the region with the region-benchmark in the country (describes the progress achieved at the level of national leadership); the average data for the country (describes the progress achieved at the national standard); external representant (describing achievements to the world standard or world leadership). In this study, we chose the base of comparison average data for Ukraine, which helped to determine the current level of competitiveness of land use of agricultural enterprises of regions compared to the average achieved level. Accordingly, if the competitiveness index (CI) is above 1, the land use of agricultural enterprises in the region is more competitive than the average national level; if CI <1, the land use of agricultural enterprises in the region are less competitive than the average national level.

The next phase of the research consisted in identifying of cost indicators of potential competitiveness of land use of agricultural enterprises of Ukraine's regions (Table 1). In the role of key indicators it was selected amount of costs per unit of land area as a whole, in crop production and by major crops. It was found that these indicators in the context of the studied regions vary significantly, because under them we cannot make an unambiguous conclusion about the region leaders and outsiders. So then there were calculated indexes of cost indicators of potential competitive of land use of agricultural enterprises of Ukraine's regions, on which defined the integral competitiveness index (ICi) and rating (Table 2).

Based on the obtained rating assessments it was carried out segmentation of regions where conventionally four types were allocated: high (ICi >1.400), above the average (1.000< ICi <1.400), below average (0.800< ICi <1.000) and low (ICi <0.800) level of potential competitiveness of land use. Among the regions with relatively high potential of competitiveness of land uses there are Lviv (1.777), Ivano-Frankivsk (1.459) and Kyiv (1.426) region; among the outsiders are Kirovohrad (0.780), Odessa (0.737), Kherson (0.691), Zaporizhya (0.636) and Luhansk (0.511) region; the rest of the regions hit the middle group. Thus, if the enterprises of leading regions spending per unit of land area to approximately to 55.4% more than the average in Ukraine, then the enterprises of regions outsiders spend per unit of land area on average 32.9% less.

In the next phase of the research it was defined the cost indicators of actual competitiveness of land use of agricultural enterprises of regions of Ukraine (Table 3a, b).

Table 1. Cost indicators of potential competitiveness of land use of agricultural enterprises Ukraine's regions, 2014*

Names of regions	It is got on 1 ha of ag.-c. lands (UAH)		It is got on 1 ha to of arable land in plant (UAH)			Production costs for 1 ha of crop area (UAH)			
	production costs	current costs	production costs	current costs	costs for mineral fertilizers	grains	sunflower	potatoes	sugar beets
Ukraine	8 476	8 020	6 728	6 332	896	5 667	4 400	38 050	18 097
Vinnytsya	11 041	10 481	7 847	7 333	1 229	7 016	4 542	49 441	19 895
Volyn	14 013	13 330	7 365	6 891	1 616	6 054	3 454	24 143	11 327
Dnipropetrovsk	8 032	7 625	4 963	4 654	656	3 844	4 219	26 448	19 475
Donetsk	7 287	6 861	5 445	5 111	565	4 511	5 655	41 670	**
Zhytomyr	7 347	7 036	6 435	6 169	884	7 006	4 521	21 961	5 188
Zakarpattya	9 630	9 154	9 145	8 640	1 892	5 598	3 937	35 610	–
Zaporizhya	5 001	4 663	4 227	3 919	538	3 882	3 695	20 765	–
Ivano-Frankivsk	18 298	17 403	9 522	9 229	1 258	7 616	6 141	13 955	25 752
Kyiv	14 933	14 201	8 682	8 195	1 149	6 640	6 768	32 224	33 930
Kirovohrad	6 328	5 886	5 774	5 379	803	5 344	4 078	11 737	13 749
Luhansk	2 836	2 645	3 943	3 658	524	3 981	2 698	13 655	**
Lviv	17 387	16 891	17 329	16 832	1 620	7 161	6 123	44 344	17 533
Mykolayiv	6 073	5 739	5 601	5 290	789	4 186	4 296	17 659	24 817
Odesa	4 866	4 616	4 682	4 441	850	4 089	3 979	29 602	–
Poltava	9 997	9 631	8 053	7 757	898	6 516	5 510	34 760	21 957
Rivne	10 395	10 018	8 761	8 476	1 156	7 149	4 455	33 260	2 028
Sumy	6 949	6 603	6 112	5 792	896	6 548	4 483	33 556	14 874
Ternopil	11 151	10 407	9 940	9 235	1 419	7 607	5 222	63 450	16 331
Kharkiv	7 382	6 944	5 732	5 340	809	4 909	5 112	19 413	11 806
Kherson	6 345	5 990	4 964	4 640	449	3 951	2 635	29 018	–
Khmelnytskiy	7 215	6 859	5 813	5 577	1 004	7 511	5 456	52 936	15 581
Cherkasy	13 071	12 468	8 264	7 792	1 154	7 616	5 758	41 878	17 201
Chernivtsi	11 383	10 874	7 882	7 543	1 215	6 673	4 419	62 092	**
Chernihiv	8 592	8 237	7 910	7 572	1 140	7 151	5 397	28 573	14 420

* Here and below – excluding the temporarily occupied territories of the Autonomous Republic of Crimea, also excluding the part of the anti-terrorist operation zone.

** Data deleted State Statistics Service of Ukraine in order to ensure fulfillment of the Law of Ukraine "On State Statistics" for confidentiality of information.

Source: author's calculations based on the data of State Statistics Service of Ukraine: Basic economic indicators of agricultural production at agricultural enterprises: Statistics Bulletin of the 2014 year, Harvesting of agricultural crops, fruits, berries and grapes in the regions of Ukraine of the 2014 year: Statistics Bulletin.

Table 2. Indices cost indicators of potential competitiveness of land use of agricultural enterprises Ukraine's regions, 2014*

Names of regions	The partial index of cost of indicators of potential competitiveness of land use									Integral index	Ratings of regions
	it is got on 1 ha of ag.-c. land (UAH)		it is got on 1 ha to of arable land in plant (UAH)			production costs for 1 ha of crop area (UAH)					
	production costs	current costs	production costs	current costs	costs for mineral fertilizers	grains	sunflower	potatoes	sugar beets		
Ukraine	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	×
Vinnytsya	1.303	1.307	1.166	1.158	1.372	1.238	1.032	1.299	1.099	1.219	8
Volyn	1.653	1.662	1.095	1.088	1.804	1.068	0.785	0.634	0.626	1.157	9
Dnipropetrovsk	0.948	0.951	0.738	0.735	0.732	0.678	0.959	0.695	1.076	0.835	19
Donetsk	0.860	0.856	0.809	0.807	0.631	0.796	1.285	1.095	**	0.892	15
Zhytomyr	0.867	0.877	0.956	0.974	0.987	1.236	1.028	0.577	0.287	0.865	16
Zakarpattya	1.136	1.141	1.359	1.365	2.112	0.988	0.895	0.936	–	1.241	7
Zaporizhya	0.590	0.581	0.628	0.619	0.601	0.685	0.840	0.546	–	0.636	23
Ivano-Frankivsk	2.159	2.170	1.415	1.457	1.405	1.344	1.396	0.367	1.423	1.459	2
Kyiv	1.762	1.771	1.290	1.294	1.282	1.172	1.538	0.847	1.875	1.426	3
Kirovohrad	0.747	0.734	0.858	0.849	0.896	0.943	0.927	0.308	0.760	0.780	20
Luhansk	0.335	0.330	0.586	0.578	0.584	0.703	0.613	0.359	**	0.511	24
Lviv	2.051	2.106	2.576	2.658	1.808	1.264	1.392	1.165	0.969	1.777	1
Mykolayiv	0.717	0.716	0.833	0.835	0.881	0.739	0.976	0.464	1.371	0.837	17
Odesa	0.574	0.576	0.696	0.701	0.949	0.722	0.904	0.778	–	0.737	21
Poltava	1.179	1.201	1.197	1.225	1.002	1.150	1.252	0.914	1.213	1.148	10
Rivne	1.226	1.249	1.302	1.339	1.290	1.261	1.013	0.874	0.112	1.074	12
Sumy	0.820	0.823	0.908	0.915	1.000	1.155	1.019	0.882	0.822	0.927	14
Ternopil	1.316	1.298	1.477	1.458	1.584	1.342	1.187	1.668	0.902	1.359	4
Kharkiv	0.871	0.866	0.852	0.843	0.903	0.866	1.162	0.510	0.652	0.836	18
Kherson	0.749	0.747	0.738	0.733	0.501	0.697	0.599	0.763	–	0.691	22
Khmelnytskiy	0.851	0.855	0.864	0.881	1.121	1.325	1.240	1.391	0.861	1.043	13
Cherkasy	1.542	1.555	1.228	1.231	1.288	1.344	1.309	1.101	0.951	1.283	5
Chernivtsi	1.343	1.356	1.172	1.191	1.356	1.178	1.004	1.632	**	1.279	6
Chernihiv	1.014	1.027	1.176	1.196	1.272	1.262	1.227	0.751	0.797	1.080	11

Notes: See the footnote for the Table 1.

Source: author's calculations based on the data of previous table.

Table 3a. Cost indicators of actual competitiveness of land use of agricultural enterprises Ukraine's regions, 2014*

Names of regions	Obtained on 100 ha of ag.-c. land (ths. UAH)				Return of land – Zemleviddacha				Coefficient of payback of production costs			
	gross production	commodity production	clean production	profit	by gross production	by commodity production	by clean production	by profit	by gross production	by commodity production	by clean production	by profit
Ukraine	688.0	933.1	433.4	182.8	0.346	0.469	0.218	0.092	0.812	1.101	0.511	0.216
Vinnytsya	966.3	1026.9	460.0	165.6	0.415	0.441	0.198	0.071	0.875	0.930	0.417	0.150
Volyn	970.1	940.9	460.3	200.4	0.534	0.518	0.253	0.110	0.692	0.671	0.328	0.143
Dnipropetrovsk	590.0	814.2	379.8	167.6	0.299	0.412	0.192	0.085	0.735	1.014	0.473	0.209
Donetsk	454.1	697.2	393.9	93.8	0.210	0.322	0.182	0.043	0.623	0.957	0.541	0.129
Zhytomyr	731.1	815.9	332.8	134.1	0.514	0.573	0.234	0.094	0.995	1.110	0.453	0.183
Zakarpattya	470.9	1 013.0	338.5	67.4	0.295	0.635	0.212	0.042	0.489	1.052	0.351	0.070
Zaporizhya	347.0	568.7	271.1	100.8	0.167	0.273	0.130	0.048	0.694	1.137	0.542	0.202
Ivano-Frankivsk	1 540.4	2 583.1	1 085.2	675.2	0.879	1.474	0.619	0.385	0.842	1.412	0.593	0.369
Kyiv	1 118.2	1 481.4	618.8	252.8	0.529	0.701	0.293	0.120	0.749	0.992	0.414	0.169
Kirovohrad	558.5	830.5	433.6	215.1	0.282	0.420	0.219	0.109	0.883	1.312	0.685	0.340
Luhansk	337.8	313.8	162.5	68.6	0.219	0.203	0.105	0.044	1.191	1.106	0.573	0.242
Lviv	1 224.3	1 856.2	1 033.5	480.8	0.783	1.187	0.661	0.307	0.704	1.068	0.594	0.277
Mykolayiv	489.0	785.7	369.3	186.6	0.292	0.469	0.220	0.111	0.805	1.294	0.608	0.307
Odesa	492.6	582.3	271.3	127.2	0.266	0.314	0.146	0.069	1.012	1.197	0.558	0.261
Poltava	720.1	1 148.7	542.4	202.3	0.332	0.529	0.250	0.093	0.720	1.149	0.543	0.202
Rivne	821.3	1 346.5	635.8	303.5	0.433	0.710	0.335	0.160	0.790	1.295	0.612	0.292
Sumy	668.2	918.9	398.1	197.5	0.380	0.523	0.227	0.112	0.962	1.322	0.573	0.284
Ternopil	971.3	1 348.5	503.1	211.8	0.487	0.677	0.252	0.106	0.871	1.209	0.451	0.190
Kharkiv	706.0	899.5	385.5	171.1	0.362	0.461	0.198	0.088	0.956	1.219	0.522	0.232
Kherson	500.3	811.2	377.2	173.3	0.223	0.361	0.168	0.077	0.788	1.278	0.594	0.273
Khmelnytskiy	943.3	965.3	484.4	302.8	0.422	0.431	0.217	0.135	1.307	1.338	0.671	0.420
Cherkasy	1 112.9	1 334.3	636.7	275.0	0.432	0.518	0.247	0.107	0.851	1.021	0.487	0.210
Chernivtsi	996.1	1 474.6	627.6	297.3	0.442	0.654	0.278	0.132	0.875	1.295	0.551	0.261
Chernihiv	657.1	888.1	281.7	54.3	0.439	0.593	0.188	0.036	0.765	1.034	0.328	0.063

Notes: See the footnote for the Table 1.

Source: author's calculations based on the data of State Statistics Service of Ukraine: Gross agricultural output Ukraine (at constant prices 2010) of the 2014 year; Assessment of agricultural lands [electronic resource], access mode: http://land.gov.ua/hroshova-otsinka-zemel/otsinka-zemel-s-h-pryznachennia.html.

Table 3b. Cost indicators of actual competitiveness of land use of agricultural enterprises Ukraine's regions, 2014*

Names of regions	Obtained in crop production on 100 ha of arable land (ths. UAH)				Coefficient of payback of production costs in crop production				Coefficient of payback of current costs in crop production			
	gross production	commodity production	clean production	profit	by gross production	by commodity production	by clean production	by profit	by gross production	by commodity production	by clean production	by profit
Ukraine	615.0	761.9	394.5	172.1	0.914	1.132	0.586	0.256	0.971	1.203	0.623	0.272
Vinnytsya	979.7	888.6	422.3	167.2	1.248	1.132	0.538	0.213	1.336	1.212	0.576	0.228
Volyn	771.4	642.1	364.8	176.0	1.047	0.872	0.495	0.239	1.119	0.932	0.529	0.255
Dniprop-etrovsk	471.8	606.1	329.6	161.3	0.951	1.221	0.664	0.325	1.014	1.302	0.708	0.347
Donetsk	334.0	555.7	356.5	88.7	0.613	1.020	0.655	0.163	0.654	1.087	0.698	0.173
Zhytomyr	836.8	712.1	318.3	145.7	1.300	1.106	0.495	0.226	1.357	1.154	0.516	0.236
Zakarpattya	1095.0	951.2	433.4	126.1	1.197	1.040	0.474	0.138	1.267	1.101	0.502	0.146
Zaporizhya	390.7	490.8	258.2	100.4	0.924	1.161	0.611	0.238	0.997	1.252	0.659	0.256
Ivano--Frankivsk	752.8	991.2	535.6	232.7	0.791	1.041	0.563	0.244	0.816	1.074	0.580	0.252
Kyiv	703.4	981.4	472.4	211.0	0.810	1.130	0.544	0.243	0.858	1.198	0.576	0.257
Kirovohrad	674.2	755.6	423.8	221.3	1.168	1.309	0.734	0.383	1.254	1.405	0.788	0.411
Luhansk	526.7	470.9	258.7	119.4	1.336	1.194	0.656	0.303	1.440	1.287	0.707	0.326
Lviv	850.3	1891.5	1206.8	579.0	0.491	1.092	0.696	0.334	0.505	1.124	0.717	0.344
Mykolayiv	541.4	728.9	361.3	190.3	0.967	1.301	0.645	0.340	1.023	1.378	0.683	0.360
Odesa	459.6	564.2	276.0	136.0	0.982	1.205	0.590	0.290	1.035	1.271	0.622	0.306
Poltava	623.9	873.1	471.7	184.0	0.775	1.084	0.586	0.228	0.804	1.126	0.608	0.237
Rivne	613.8	1120.8	623.5	318.3	0.701	1.279	0.712	0.363	0.724	1.322	0.736	0.376
Sumy	793.5	831.0	394.6	211.8	1.298	1.360	0.646	0.346	1.370	1.435	0.681	0.366
Ternopil	890.9	1068.3	479.7	202.6	0.896	1.075	0.483	0.204	0.965	1.157	0.519	0.219
Kharkiv	660.5	723.4	345.4	157.3	1.152	1.262	0.603	0.274	1.237	1.355	0.647	0.295
Kherson	512.4	586.2	301.2	123.3	1.032	1.181	0.607	0.248	1.104	1.263	0.649	0.266
Khmelnyts-kiy	651.2	696.7	347.9	199.8	1.120	1.199	0.599	0.344	1.168	1.249	0.624	0.358
Cherkasy	807.4	978.2	524.1	244.7	0.977	1.184	0.634	0.296	1.036	1.255	0.673	0.314
Chernivtsi	899.3	1040.1	508.3	266.4	1.141	1.320	0.645	0.338	1.192	1.379	0.674	0.353
Chernihiv	619.0	796.9	280.3	71.7	0.783	1.008	0.354	0.091	0.817	1.052	0.370	0.095

Notes: See the footnote for the Table 1.

Source: author's calculations based on the data of State Statistics Service of Ukraine.

In the role of key indicators there were selected following their groups:

- obtained on 100 ha of agricultural land – gross production, commodity production, clean production and profit as a whole and individually in plant;
- return of land (Zemleviddacha) by gross production, commodity production, clean production and profit; coefficient of payback of production costs by gross production, commodity production, clean production and profit as a whole and individually in plant;
- coefficient of payback of current costs in crop by gross production, commodity production, clean production and profit.

Thus, generally it was calculated for each region 24 cost indicators that, as expected, had a significant variation in the context of the studied regions.

In view of the examined components there were calculated partial indices of actual competitiveness of land use of agricultural enterprises of regions, based on which were defined the integral index of competitiveness and generalized rating assessment characterizing complex development of the researched phenomenon (Table 4a, b).

Following mentioned above segmentation, among the regions with relatively high actual competitiveness of land use are Lviv (1.766) and Ivano-Frankivsk (1.734) region (Kyiv region (1.145) in the group of leaders did not get); among the outsiders Zaporizhya (0.790), Donetsk (0.753) and Chernihiv (0.750) region; the other, that most of the regions hit the middle group (the 13 regions have achieved above average, and six regions were lower than the average level of competitiveness). So if agricultural enterprises of leading regions obtained from the unit of land and/or reach of payback of costs in approximately to 75.0% more than the similar average in Ukraine, it agricultural enterprises of regions outsiders obtained per unit of land area on average 23.6% less.

Naturally the question arises, under the influence of which factors such differences are formed. Initially, it was verified the assumption that the level of actual competitiveness land use of agricultural enterprises is influenced by a potential level that indicates the current level of intensity of production and integrates almost all anthropogenic factors. It should be noted that the intensity characterizes of land use material component of intensifying at a particular time, which is reflected in the concentration of production resources used per unit of land area, taking into account the extent of tension of usage of these resources.

The results of pair correlation analysis demonstrated that between the integral index of potential competitiveness and integral index of actual competitiveness of land use is direct noticeable correlation connection ($r = 0.685$). Visually detected the dependence of demonstrate the Figure.

According to parameters of the equation of a straight line, increasing of the integral index of potential competitiveness per unit contributes to increase of the integral index of actual competitiveness of land use at 0.582. The coefficient of determination ($R^2 = 0.470$) indicates that the variation of resultant variable at the 47.0% depending on the oscillation factor features, and at the 53.0% – from other factors. Other factors may include the leading role can belong to land quality, which requires separate research.

Table 4a. Indices cost indicators of actual competitiveness of land use of agricultural enterprises Ukraine's regions, 2014

Names of regions	The partial indexes of cost of indicators of actual competitiveness of land use											
	obtained on 100 ha of ag.-c. land				return of land – Zemleviddacha				coefficient of payback of production costs			
	gross production	commodity production	clean production	profit	by gross production	by commodity production	by clean production	by profit	by gross production	by commodity production	by clean production	by profit
Ukraine	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Vinnytsya	1.405	1.101	1.061	0.906	1.200	0.941	0.907	0.774	1.078	0.845	0.815	0.694
Volyn	1.410	1.008	1.062	1.096	1.542	1.103	1.161	1.198	0.853	0.610	0.643	0.662
Dnipropetrovsk	0.858	0.873	0.876	0.917	0.863	0.879	0.882	0.923	0.905	0.921	0.925	0.966
Donetsk	0.660	0.747	0.909	0.513	0.607	0.687	0.836	0.471	0.767	0.869	1.058	0.596
Zhytomyr	1.063	0.874	0.768	0.734	1.484	1.222	1.072	1.024	1.225	1.009	0.886	0.845
Zakarpattya	0.684	1.086	0.781	0.368	0.853	1.354	0.974	0.459	0.602	0.955	0.688	0.324
Zaporizhya	0.504	0.609	0.626	0.551	0.482	0.583	0.598	0.526	0.855	1.033	1.061	0.933
Ivano-Frankivsk	2.239	2.768	2.504	3.693	2.540	3.142	2.840	4.187	1.037	1.282	1.161	1.708
Kyiv	1.625	1.588	1.428	1.383	1.529	1.494	1.343	1.300	0.922	0.901	0.811	0.784
Kirovohrad	0.812	0.890	1.001	1.177	0.816	0.896	1.006	1.182	1.087	1.192	1.341	1.573
Luhansk	0.491	0.336	0.375	0.375	0.632	0.433	0.483	0.483	1.467	1.005	1.121	1.119
Lviv	1.780	1.989	2.385	2.630	2.263	2.531	3.031	3.342	0.867	0.970	1.163	1.280
Mykolayiv	0.711	0.842	0.852	1.021	0.844	1.000	1.011	1.211	0.992	1.175	1.190	1.422
Odesa	0.716	0.624	0.626	0.696	0.769	0.670	0.672	0.747	1.247	1.087	1.091	1.211
Poltava	1.047	1.231	1.252	1.107	0.958	1.128	1.146	1.013	0.887	1.044	1.062	0.937
Rivne	1.194	1.443	1.467	1.660	1.251	1.513	1.537	1.739	0.973	1.177	1.197	1.352
Sumy	0.971	0.985	0.919	1.080	1.099	1.115	1.040	1.222	1.184	1.201	1.121	1.316
Ternopil	1.412	1.445	1.161	1.158	1.409	1.443	1.158	1.155	1.073	1.098	0.883	0.879
Kharkiv	1.026	0.964	0.890	0.936	1.046	0.983	0.907	0.953	1.178	1.107	1.022	1.073
Kherson	0.727	0.869	0.870	0.948	0.644	0.770	0.771	0.839	0.971	1.161	1.163	1.265
Khmelnytskiy	1.371	1.034	1.118	1.656	1.219	0.920	0.993	1.471	1.610	1.215	1.314	1.943
Cherkasy	1.618	1.430	1.469	1.504	1.249	1.105	1.134	1.161	1.049	0.927	0.953	0.974
Chernivtsi	1.448	1.580	1.448	1.627	1.277	1.395	1.277	1.433	1.078	1.177	1.079	1.209
Chernihiv	0.955	0.952	0.650	0.297	1.268	1.264	0.863	0.394	0.942	0.939	0.642	0.293

Source: author's calculations based on the data of previous table.

Table 4b. Indices cost indicators of actual competitiveness of land use of agricultural enterprises Ukraine's regions, 2014

Names of regions	The partial indexes of cost of indicators of actual competitiveness of land use												Integral index	Ratings of regions
	obtained in crop production on 100 ha of arable land (ths. UAH)				coefficient of payback of production costs in crop production				coefficient of payback of current costs in crop production					
	gross production	commodity production	clean production	profit	by gross production	by commodity production	by clean production	by profit	by gross production	by commodity production	by clean production	by profit		
Ukraine	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	×
Vinnytsya	1.593	1.166	1.070	0.971	1.366	1.000	0.918	0.832	1.376	1.007	0.924	0.838	1.033	13
Volyn	1.254	0.843	0.925	1.023	1.146	0.770	0.845	0.933	1.153	0.775	0.850	0.939	0.992	16
Dniprop-etrovsk	0.767	0.796	0.835	0.937	1.040	1.079	1.133	1.269	1.044	1.083	1.137	1.274	0.966	17
Donetsk	0.543	0.729	0.904	0.515	0.671	0.901	1.117	0.636	0.673	0.904	1.120	0.638	0.753	23
Zhytomyr	1.361	0.935	0.807	0.846	1.423	0.977	0.844	0.884	1.397	0.960	0.828	0.868	1.014	15
Zakarpat-tya	1.781	1.248	1.099	0.733	1.310	0.919	0.809	0.539	1.305	0.915	0.805	0.537	0.880	20
Zaporizhya	0.635	0.644	0.654	0.583	1.011	1.026	1.042	0.928	1.027	1.041	1.057	0.942	0.790	22
Ivano-Frankivsk	1.224	1.301	1.358	1.352	0.865	0.920	0.960	0.955	0.840	0.893	0.932	0.927	1.734	2
Kyiv	1.144	1.288	1.197	1.226	0.886	0.999	0.929	0.949	0.884	0.996	0.925	0.947	1.145	9
Kirovohrad	1.096	0.992	1.074	1.286	1.278	1.156	1.253	1.497	1.291	1.168	1.265	1.512	1.160	8
Luhansk	0.856	0.618	0.656	0.694	1.461	1.055	1.120	1.183	1.483	1.070	1.135	1.200	0.869	21
Lviv	1.383	2.483	3.059	3.365	0.537	0.964	1.188	1.305	0.520	0.934	1.151	1.265	1.766	1
Mykolayiv	0.880	0.957	0.916	1.106	1.058	1.150	1.101	1.327	1.054	1.145	1.096	1.323	1.058	11
Odesa	0.747	0.741	0.700	0.790	1.074	1.065	1.006	1.134	1.066	1.056	0.998	1.126	0.902	19
Poltava	1.014	1.146	1.196	1.069	0.848	0.958	0.999	0.892	0.828	0.936	0.976	0.872	1.023	14
Rivne	0.998	1.471	1.581	1.850	0.767	1.130	1.215	1.419	0.746	1.099	1.181	1.381	1.306	3
Sumy	1.290	1.091	1.000	1.230	1.420	1.201	1.102	1.353	1.411	1.193	1.093	1.344	1.166	7
Ternopil	1.449	1.402	1.216	1.177	0.981	0.949	0.824	0.796	0.994	0.962	0.834	0.807	1.111	10
Kharkiv	1.074	0.950	0.876	0.914	1.261	1.115	1.028	1.072	1.274	1.126	1.038	1.083	1.037	12
Kherson	0.833	0.769	0.763	0.716	1.129	1.043	1.035	0.970	1.137	1.050	1.042	0.977	0.936	18
Khmel-nytskiy	1.059	0.914	0.882	1.161	1.226	1.059	1.021	1.343	1.203	1.038	1.001	1.317	1.212	5
Cherkasy	1.313	1.284	1.329	1.422	1.069	1.046	1.082	1.156	1.067	1.043	1.080	1.154	1.192	6
Chernivtsi	1.462	1.365	1.288	1.548	1.248	1.166	1.100	1.320	1.228	1.146	1.082	1.299	1.303	4
Chernihiv	1.007	1.046	0.710	0.417	0.856	0.890	0.605	0.354	0.842	0.875	0.594	0.348	0.750	24

Source: author's calculations based on the data of previous table.

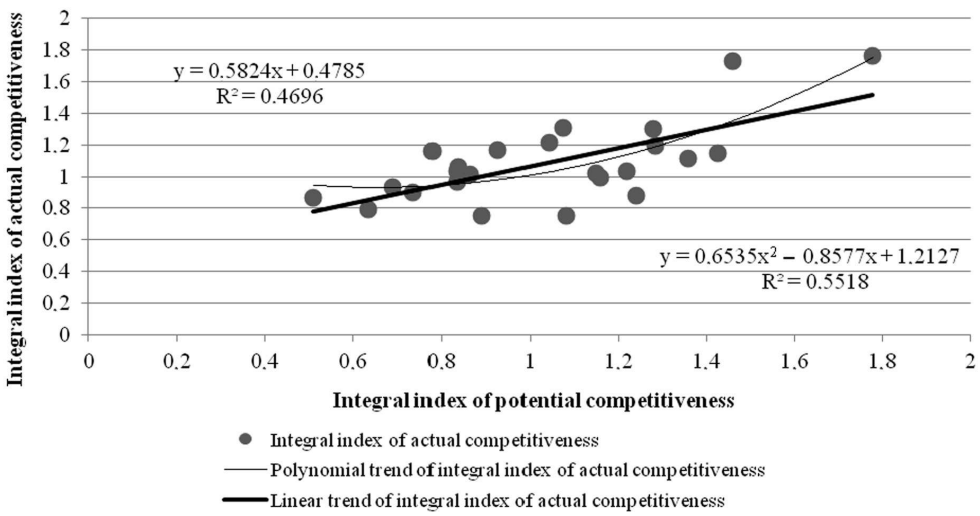

Figure. Dependence of integral index of actual competitiveness from the integral index of potential competitiveness of land use of agricultural enterprises of regions of Ukraine, 2014

Source: developed by the author based on the data of previous tables.

Conclusions

As result of investigation it was identified the economic substance of the competitiveness of land use of agricultural enterprises; proposed to identify potential and actual level of competitiveness of land use of agricultural enterprises. It is proposed and tested the scientific and methodical approach to rating evaluation of the competitiveness of land use of agricultural enterprises in regions. Based on the obtained rating assessments it was carried out segmentation of regions, where conventionally four types were allocated: high, above the average, below average and low level of competitiveness of land use. Among the regions with relatively high potential of competitiveness of land uses there are Lviv, Ivano-Frankivsk and Kyiv region; among the outsiders are Kirovohrad, Odessa, Kherson, Zaporizhya and Luhansk region; the rest of the regions hit the middle group. Among the regions with relatively high actual competitiveness of land use are Lviv and Ivano-Frankivsk region; among the outsiders Zaporizhya, Donetsk and Chernihiv region; the other, that most of the regions hit the middle group (the 13 regions have achieved above average, and six regions were lower than the average level of competitiveness). Carried out rating estimation of competitiveness of land use can have practical value during the rating management of economic systems at different levels, because it can be applied at all stages of the management process, being both instrument for economic analysis and strategic planning.

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