



Microeconomics

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**THE RESEARCH
OF MARKET CONCENTRATION
OF FERROALLOYS PRODUCTION BRANCH**

Abstract

This paper determines a level of a market power and competitive structure of the world market of ferroalloys. The firms that are forming «core» of the market are identified and their role in a global competition of ferroalloy manufacturers is determined.

Key words:

The concentration index; Lind's Index; Herfindal-Hirshman Index; the entropy index; the logarithm dispersion of the market shares ratio; Ginni Index; Lorenz Curve.

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Introduction

Statement of the problem. A competition development, as well as market concentration amplification is accompanied by creation of new conditions for strengthening competitiveness. Even in the market globalization conditions the competitive policy is implemented through a prism of its influence on the competitiveness of the national manufacturers and economy.

A research of the market concentration is based on comparison of the size of an enterprise to a market size where it functions. The higher is a size in comparison with a scale of the whole market, the stronger is a concentration of manufacturers (sellers) at this market. The problem lies in the determination of parameters for an estimation of the enterprise' size and of the market's allocation criterion. Very often the concept «market» is identified with concept «branch». The distinctions between both are based on the reason that a market is unified by the needs satisfaction, and a branch is unified by the character of used resources and technologies. The concepts «a market» and «a branch» coincide for the ferroalloys' branch, as ferroalloys have no goods-substitutes. Conditionally the whole market of ferroalloys can be divided into 2 big segments: large-capacity ferroalloys (ferromanganese, ferrosilicomanganese, ferrosilicium, ferrochrome) and small-capacity ferroalloys (ferronickel, ferrotitanium, ferrovanadium, ferrobrom, ferroniobium and so forth). **The area** of this **research** is limited to the market of large-capacity ferroalloys, as they are the most widely used products and traditionally manufactured by the branch.

The analysis of the last researches and publications has shown, that the problem of research of the concentration of branch (the market) participants dominate in works of the western (F. M. Sherrer, D. Ross) and the Russian scientists (S. B. Avdasheva and N. M. Rozanova, V. Tsapelik and A. Jakovlev). The Ukrainian economists, even applying to bases of the branch markets' organization, use a small number of parameters for an estimation of concentration. The most outstanding research on a considered problem has done by E. M. Azarjan and L. A. Radkevich [1].

The unsolved part of a considered **problem** is limited use of parameters of the market power of firms during branch structure estimation in modern conditions. **The purpose** of the present research consists in an estimation of the global branch structure on production of large-capacity ferroalloys with use of the various parameters describing firm's market power.

Theoretical bases of a quantitative estimation of the branch's structure

Generally, there are basic characteristic features of the market that determine the ratio and a character of interrelation between subjects of the market as structure of the branch (the market) [2]. Very often quantitative methods of estimation are used for concentration level during analysis of branch structure. The concentration of the sellers reflects relative size and number of the firms that exist in the branch.

Since the market share is an indicator of competitiveness, a research of the market concentration based on a market share will enable to establish, what advantage the firm can achieve and will estimate a degree level this advantage can be protected in a concrete competitive situation.

At market delimitation it is necessary to consider the borders of a competition, as a general factor of goods and market relations. During this process, all competitors of the given enterprise should be taken into consideration. The market, where given enterprise perceives a real relations of competition and monopoly, has been named as «relevant» in the western literature [3]. The relevant market for N. Rozanova means the market with potential infringements or uninfringements of a diligent competitiveness principles, misuse of a leading position or a market power of the firm. Thus the market is determined as a circle of sellers and buyers of the goods concerning which concepts of a competition or monopoly can be applied [4]. The relevant market can be described by several characteristics: product boundaries, temporary boundaries, technological boundaries, geographical borders and availability of entry barriers to the branch for potential competitors.

Thus during the determination of the relevant market should be followed:

- 1) All real competitors that making both given researched production, and the goods with high short-term replacement;
- 2) Potential competitors and those capacities that in the course of the year without significant additional expenditures can be reoriented on production of considered production or its close substitutes.

On this basis it becomes possible to count the shares of those or other concrete enterprises (firms).

By the end of 60s of the 20th century in the West, there was a system of parameters of statistics for concentration of the market power. These are:

- 1) The concentration index;
- 2) The Lind's index;
- 3) The Herfindal-Hirschman index;
- 4) The entropy index;

5) The parameters of a market share dispersion and dispersions of market shares' logarithms; and

6) The Ginni index.

For the relevant market the following characteristics were used in this research paper:

- Product boundaries – the market of large-capacity ferroalloys disregarding ferrochrome;
- Temporary boundaries – the year 2002;
- Technological boundaries – the manufacturers of large-capacity ferroalloys as the main product and as the connected;

Table 1.

**Distribution of the world market large-capacity ferroalloys
(disregarding productions of ferrochrome)
among the participants, year 2002**

№	Enterprise	Market share, %
1	«Zestafon Ferroalloy Plant» (Georgia)	1.0
2	JSC «Chelyabinsk Electrometallurgy Combine» (Russian Federation)	1.2
3	«CFA» (Brazil)	1.3
4	«Aksusk Ferroalloy Plant» (Kazakhstan)	1.4
5	JSC «Kuznetsk Ferroalloy Plant» (Russian Federation)	1.4
6	JSC» Stakhanov Ferroalloy Plant» (Ukraine)	1.6
7	«KPFL» (Brazil)	2.0
8	«PPM» (Brazil)	2.1
9	«KAEMI» (Brazil)	2.3
10	«SEAS», «SEPO» (France)	2.3
11	«Sibra» (Brazil)	2.3
12	«Orava Ferroalloy Plant» (Slovakia)	3.0
13	«Ferroatlantica» (Spain)	3.2
14	JSC «Zaporozhye Ferroalloy Plant»(Ukraine)	3.5
15	JSC «Nikopol Ferroalloy Plant» (Ukraine)	4.7
16	«Tetco» (Australia)	6.8
17	Other manufacturers	7.0
18	China Ferroalloy Plants	8.3
19	«Tinfos» (Norway)	13.8
20	«Elkem» (Norway)	14.6
21	«Samancor» (Republic of South Africa)	16.2
	TOTAL:	100.0

- Geographical borders – the world market manufacturers of large-capacity ferroalloys (Table 1);
- Easy entry to the given market for other enterprises.

It is necessary to note, that for the Chinese ferroalloy industry it is typical a plenty of the small companies equipped with a small amount of small furnaces, which rather fast and easy proceed from one kind of ferroalloys to other. It depends on market conjuncture that makes difficult a precise identification of each company with determination of definition of a corresponding share of the market. Therefore, to simplify calculation the total market share of Chinese Ferroalloy Plant has made 8.3%.

«Other manufacturers» concern to the column with the Russian enterprises – the JSC «Serovsk Ferroalloy Plant», the JSC «Alapaevsk Metal Plant», the JSC «Novolipetsk Metal Plant», the JSC «Kosogorsk Metal PLant», and Ukrainian enterprises – the JSC «Kramatorsk Metallurgical Combine», the JSC «Konstantinovsk Metallurgical Combine», and also numerous Japanese and Indian ferroalloy plants and other small manufacturers of the rest of the world, to identify and determine which market share it is not obviously possible.

The impossibility of precise determination of the world market smallest companies and market shares corresponding to them has caused some blunder in calculation of statistical parameters of a market power concentration.

An estimation of a market power of firms in the global branch on production of large-capacity ferroalloys

Let us analyze the parameters of the market monopolization for the designated relevant market.

1) **The concentration index** reflects an inequality in the market, emphasizing a position of the largest firms. It calculates as the sum of market shares k of the largest firms, which are acting on the market:

$$CR = \sum Y_i, i = 1, \dots, k, \quad (1)$$

Where Y_i – the size of a firm (for example, a market share);
 k – quantity of the firms for which the parameter settles up.

The data that describes a concentration in production of large-capacity ferroalloys in the world for various numbers of the largest companies are presented in the Table 2. It gives more information about the structure of the branch than the ratio of only one group (for example, three leaders).

Table 2.

The table of concentration's levels in the world production of large-capacity ferroalloys

The number of the largest firms in group of the branch	A share in total amount of sales, %
Three	44.6
Four	52.9
Eight	74.9

For the same number of the largest firms, the higher the index of concentration is farther the market from the ideal of absolute competition. The information given by the concentration index is insufficient to characterize the market. The following features limit this parameter use and determine many possible discrepancies at use, are:

- The index of concentration does not mind the size of firms, which has not got into sample k ;
- Among the firms, which have got into sample k , there can be a various distribution of the shares;
- The index of concentration does not allow adjudicating on a relative size of firms from sample;
- The index of concentration does not count the share of the market covered at the expense of import. Therefore, it can show the overestimated level of concentration of branch and it is inapplicable to an estimation of regional and local market structures.

This parameter is applicable as the rough indicator that describes an availability of a small number of dominating companies that distinguishes an oligopoly from the perfect and monopolistically competition, or as the additional parameter that can be used together with other parameters of concentration.

2) **The Lind's index** as well as the concentration index is calculated only for the several k largest firms and hence it does not take into account the situation in the market «outskirts». However, unlike concentration index, the Lind's index is focused on the market «core» distinction account.

For the two largest firms it is equal to their market shares percentage:

$$I_L = \frac{Y_1}{Y_2} \times 100\%. \quad (2)$$

For the three largest firms the Lind's index is calculated according to the formula:

$$I_L = \frac{1}{2} \times \left[\frac{Y_1}{(Y_2 + Y_3)/2} + \frac{(Y_1 + Y_2)/2}{Y_3} \right] \times 100\%. \quad (3)$$

For the four firms it is following:

$$I_L = \frac{1}{3} \times \left[\frac{Y_1}{(Y_2 + Y_3 + Y_4)/3} + \frac{(Y_1 + Y_2)/2}{(Y_3 + Y_4)/2} + \frac{(Y_1 + Y_2 + Y_3)/3}{Y_4} \right] \times 100\%. \quad (4)$$

The Lind's index for the two, three and four largest firms of the large-capacity ferroalloys world market has made 110.96 %, 112.84 % and 150.31 % respectively. The received Lind's Index calculation results for the two (110.96 %) and three (112.84%) largest firms demonstrate insignificant distinction of market power among the greatest three firms at the large-capacity ferroalloys market. The Lind's index calculated for the four firms (150.31 %) essentially differs from the first two parameters. This fact allows us to make a conclusion that only the largest three firms – «Samancor» (Republic of South Africa), «Elkem» и «Tinfos» (Norway), make the «core» of the large-capacity ferroalloys world market and influence the market situation.

3) **The Herfindal-Hirschman index** is the most popular parameter that takes into account the number of firms as well as their unequal market positions. The Herfindal-Hirschman index is calculated as the sum of all firms' shares working in the market:

$$HHI = \sum Y_i^2, \quad i = 1, \dots, n, \quad (5)$$

The Herfindal-Hirschman index gets value from 0 (in case of perfect competition) up to 1 (in case of absolute monopoly). If the market share is calculated in percentage, the index will get value from 0 to 10000. The index value reduces with increasing number (n) of firms and grows with increasing inequality between firms at any amount of them. During raising market shares to square power the Index gives higher weight to parameters of the large firms, then for the small one. It means, if there is lack of exact data on market shares for the small firms, so the total answer will not be affected much. However it is very important to measure a market share for the largest sellers. The larger is the Index value, the higher is the sellers' concentration on the market.

A market is considered to be normal for the competition, if $HHI < 1000$. Within these Index boundaries the firms' merger is allowed. A market is considered as uncompetitive, if the Index value exceeds 1800 units. In this case the firm's merger is prohibited. There is a need in an additional market research, when Index value ranges between 1000 and 1800. The ratio of HHI values to the firms' number and shares of the largest manufacturers is presented in the Table 3 [3].

Table 3.

The ratio of the Herfindal-Hirschman index to the fixed number of firms' shares

HHI value	Minimal number of firms in the market	The greatest possible share at unlimited number of firms (in %)			
		1	2	3	4
		The largest manufacturers			
500	20	22	31	39	44
1000	10	31	44	54	63
1800	6	42	60	72	85
3000	4	54	75	95	100
5000	2	70	100	100	100

Table 3 shows that from the monopolization point of view (HHI less than 1000) the market assumes a presence of 10 and more competitive firms, where share of the largest one can not exceed 31%, the largest two – 44%, the largest three – 54%, and the largest four – 63%.

American scientists have proved the correlation between the Concentration index and the Herfindal-Hirschman index [5]. It allows making certain conclusions by two parameters about a situation on the analyzed market (branch):

- For a normal concentration case the indexes values make $CR3 < 45\%$, $HHI < 1000$. At such parameters the market is considered as un-concentrated;
- For an average concentration level case the indexes values make $45\% < CR3 < 70\%$, $1000 < HHI < 1800$. At such parameters the market is considered as moderately concentrated;
- For a high concentration level case the indexes values make $CR3 > 70\%$, $HHI > 1800$. At such parameters the market is characterized by weak competitive environment.

Table 4 gives data describing market shares distribution among the ferroalloy enterprises in 2002 and the Herfindal-Hirschman index calculation.

The above calculation results of the Concentration index for three largest large-capacity ferroalloys manufacturers (44.6) and the Herfindal-Hirschman index (918.64 units) though satisfy the normal concentration condition ($CR3 < 45\%$, $HHI < 1000$), but practically are equal to its margin value. It testifies the threat of the field structure change and the market transition to moderately concentrated one.

Table 4.

The Herfindal-Hirschman index calculation, 2002

No	Enterprise	Market share	Herfindal-Hirschman Index
1	«Zestafon Ferroalloy Plant» (Georgia)	0.010	0.00010
2	JSC «Chelyabinsk Electrometallurgy Combine» (Russian Federation)	0.012	0.00014
3	«CFA» (Brasil)	0.013	0.00017
4	«Aksusk Ferroalloy Plant» (Kazakhstan)	0.014	0.00020
5	JSC «Kuznetsk Ferroalloy Plant» (Russian Federation)	0.014	0.00020
6	JSC «Stakhanov Ferroalloy Plant» (Ukraine)	0.016	0.00026
7	«KPFL» (Brazil)	0.020	0.00040
8	«PPM» (Brazil)	0.021	0.00044
9	«KAEMI» (Brazil)	0.023	0.00053
10	«SEAS», «SEPO» (France)	0.023	0.00053
11	«Sibra» (Brazil)	0.023	0.00053
12	«Orava Ferroalloy Plant» (Slovakia)	0.030	0.00090
13	«Ferroatlantica» (Spain)	0.032	0.00102
14	JSC «Zaporozhye Ferroalloy Plant» (Ukraine)	0.035	0.00123
15	JSC «Nikopol Ferroalloy Plant» (Ukraine)	0.047	0.002209
16	«Tetco» (Australia)	0.068	0.00462
17	Other manufacturers	0.070	0.00490
18	China Ferroalloy Plants	0.083	0.00689
19	«Tinfos» (Norway)	0.138	0.01904
20	«Elkem» (Norway)	0.146	0.02132
21	«Samancor» (Republic of South Africa)	0.162	0.02624
	TOTAL:	1.00	0.09186

As the Herfindal-Hirschman index value is directly connected to the firms market shares dispersion parameter, during its calculation besides the formula the following formula can be used (5):

$$HHI = n\sigma^2 + \frac{1}{n}, \quad (6)$$

Where σ^2 – firm's market shares dispersion parameter that equals to

$$\sigma^2 = \sum \frac{(Y_i - \bar{Y})^2}{n}, \quad (7)$$

At that \bar{Y} – an average firm's market share determined as

$$\bar{Y} = \frac{1}{n}, \quad (8)$$

Where n – number of firms in the market.

For the analyzed market the parameter HHI, calculated by the formula (6), gives the same result as the formula (5):

$$HHI = 21 \cdot 0,00211 + (1/21) = 0,091864.$$

The formula (6) based on the Herfindal-Hirschman index gives opportunity to divide influence between number of firms in the market and market distribution between them. If all the firms in the market control an equal share, so the dispersion parameter equals to zero, and the Herfindal-Hirschman index value is inversely one to the number of firms in the market. In case of constant number of firms in the market, the more their shares differ, the higher is the index value.

4) The Entropy index points an average share of firms on the market, which is calculated with natural logarithm reciprocal to its value. It represents the parameter inverse to concentration:

$$E = \sum Y_i \ln\left(\frac{1}{Y_i}\right), \quad i = 1, \dots, n. \quad (9)$$

The Entropy measures disarray of the market shares distribution between the firms in the market: the higher is the Entropy index, the lower is the sellers' opportunities to influence the market price. Thus, the Entropy index for the world large-capacity ferroalloys market equals to 2.6619. This fact means that less influential ferroalloys sellers have not yet lost the opportunities to influence the market price.

5) **The Logarithm dispersion of the market shares Ratio** is used to measure a level of inequality of a size of the firms acting in the market:

$$\sigma^2 = \frac{1}{n} \sum (\ln Y_i - \ln \bar{Y})^2, \quad i = 1, \dots, n. \quad (10)$$

To estimate an unevenness of the market shares distribution both the Logarithm dispersion of the market shares Ratio as well as the parameter of the market shares dispersion might be used. The Logarithm dispersion of the market shares Ratio is commonly used for the Western markets research.

During a calculation of an unevenness distribution for the world large-capacity ferroalloys market participants the parameter of the Market shares dispersion Ratio gives too small value (0.00211), and so it is difficult to speak about a real existence and sizes of deviation. So, it is more for the logical analyzed market to use the Logarithm dispersion of the market shares Ratio, which equals to 0.8646. Analysis of results confirms the stated above judgment on ambiguity

of the market situation: the world large-capacity ferroalloys market approaches to the high concentration level margin value, when the market power is concentrated in the hands of several large «players» (in our research in hands of the three largest companies).

It is necessary to note that the use of the Ratio restriction clearly dimension the fact that dispersion does not give the firms relative size characteristic. Therefore, dispersion is used only as an auxiliary total to estimate inequality of the firms' size.

6) **The Ginni Index** is a statistical index that bases on the Lorenz curve. The Lorenz curve, which repulses the inequality of dispersion of some signs, in case of concentration of vendors in the market shows the correlation between the per cent of the firms in the market and the market share, calculated like a progressive total, from the smallest to the biggest one.

In the Table 5 are shown intermediate calculations used for building the Lorenz curve for the large-capacity ferroalloys manufacture field.

In the relevant large-capacity ferroalloys market the Lorenz curve has following look (Figure 1).

The Ginni index is a ratio of figure square, limited by actual Lorenz curve and by Lorenz curve for absolutely even market shares distribution (so called «the absolute equality curve «), to the triangle square, limited by Lorenz curve for absolutely even market shares distribution and abscissa axis and ordinate axis:

$$G = \frac{\text{square } F}{\text{triangle } OKD \text{ square}}, \quad (11)$$

Where square F – the figure square between the Lorenz curve and the straight line OD (see figure 1).

The Ginni index gets value from 0 (absolute equality) up to 1 (absolute inequality). The higher is the Ginni index, so the higher is market shares distribution unevenness between the vendors. Therefore, with other equal conditions concentration on the market is higher.

The limitations of index are:

- Index characterises the level of market shares distribution unevenness, as the Logarithm dispersion of the market shares Ratio does;
- The calculation complexity – to define this index is necessary to know all firms share in the field, including the smallest one.

During the Ginni index definition for large-capacity ferroalloys manufacture field for square figure F definition are used 3 methods:

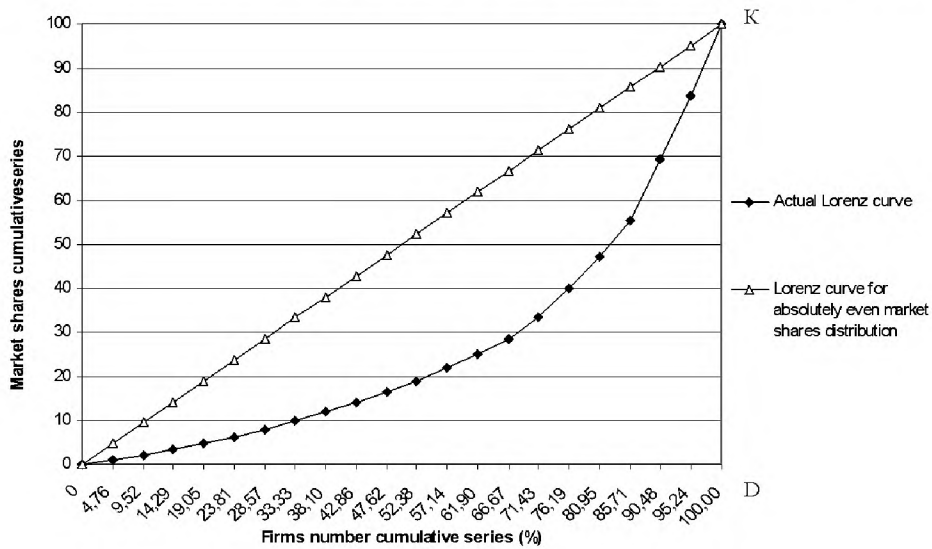
Table 5.

The initial information for the Lorenz curve building

№	Enterprise	Market shares, %	Market shares cumulative series, %	Unit weight of each firm in its total quantity, %	Firms number cumulative series, %
1	«Zestafon Ferroalloy Plant» (Georgia)	1.0	1.0	4.76	4.76
2	JSC «Chelyabinsk Electrometallurgy Combine» (Russian Federation)	1.2	2.2	4.76	9.52
3	«CFA» (Brasil)	1.3	3.5	4.76	14.29
4	«Aksusk Ferroalloy Plant» (Kazakhstan)	1.4	4.9	4.76	19.05
5	JSC «Kuznetsk Ferroalloy Plant» (Russian Federation)	1.4	6.3	4.76	23.81
6	JSC «Stakhanov Ferroalloy Plant» (Ukraine)	1.6	7.9	4.76	28.57
7	«KPFL» (Brazil)	2.0	9.9	4.76	33.33
8	«PPM» (Brazil)	2.1	12.0	4.76	38.10
9	«KAEMI» (Brazil)	2.3	14.3	4.76	42.86
10	«SEAS», «SEPO» (France)	2.3	16.6	4.76	47.62
11	«Sibra» (Brazil)	2.3	18.9	4.76	52.38
12	«Orava Ferroalloy Plant» (Slovakia)	3.0	21.9	4.76	57.14
13	«Ferroatlantica» (Spain)	3.2	25.1	4.76	61.90
14	JSC «Zaporozhye Ferroalloy Plant» (Ukraine)	3.5	28.6	4.76	66.67
15	JSC «Nikopol Ferroalloy Plant» (Ukraine)	4.7	33.3	4.76	71.43
16	«Tetco» (Australia)	6.8	40.1	4.76	76.19
17	Other manufacturers	7.0	47.1	4.76	80.95
18	China Ferroalloy Plants	8.3	55.4	4.76	85.71
19	«Tinfos» (Norway)	13.8	69.2	4.76	90.48
20	«Elkem» (Norway)	14.6	83.8	4.76	95.24
21	«Samancor» (Republic of South Africa)	16.2	100.0	4.76	100.0
	TOTAL:	100.0		100.0	

Figure 1.

The Lorenz curve for the world large-capacity ferroalloys manufacture field



1) Traditional – the square figure F with the certain accuracy degree is determined by subtraction from the triangle OKD square the figure square located under the actual Lorenz curve, which is calculated as the triangle and trapezes squares sum. The trapeze bases are numerically equal to the cumulative market shares frequencies, and heights are equal to appropriate firms' quantity unit weights. Certainly, this method gives the greatest error.

2) The Simpson formula:

$$\int_a^b f(x)dx = \frac{h}{3}(y_0 + 4y_1 + 2y_2 + 4y_3 + 2y_4 + \dots + 4y_{n-1} + y_n), \quad (12)$$

Where y_n – difference of meanings between actual Lorenz curve and Lorenz curve for absolutely even market shares distribution,

h – unit weight of each firm in its total quantity (for a considered example $h = 4.76$)

3) Polynomial function – the statistical discrete data processing was done in mathematical package MahtCAD environment, that has allowed to receive polynomial function most precisely describing actual curve Lorenz meanings, thus the relative error was 0.4%:

$$f(x) = 5,476 \times 10^{-11} \times x^6 + 1,749 \times 10^{-5} \times x^3 + 0,282 \times x. \quad (13)$$

The curvilinear trapeze square is defined as:

$$\int_0^{100} f(x) dx = \int_0^{100} (5,476 \times 10^{-11} \times x^6 + 1,749 \times 10^{-5} \times x^3 + 0,282 \times x) dx. \quad (14)$$

Table 6 presents the intermediate and final results of calculations of the Ginni index.

Table 6

The Ginni Index calculations for the world large-capacity manganous ferroalloys market

Methods of square figure F calculation	Curvilinear trapeze square	Triangle OKD square	Square figure F	Ginni index, G
Traditional	2627.52	5000	2372.48	0.4745
Sympson formula	–	5000	2365.8	0.4732
Polynomial function	2629.54	5000	2370.46	0.4741

The Ginni index fluctuations in range of 0.20 to 0.35 reflect rather uniform participants market shares distribution, and the fluctuations in range of 0.50 to 0.70 are sign of the markets with less uniform distribution [6].

In the given research each of the methods gives about equal result with a small error, thus the size of a numerical estimation allows to characterize the world ferroalloys market as the market with less uniform market shares distribution.

The received Ginni index estimation confirms earlier conclusions about critical situation in the market by increasing the largest firms-participants concentration and intensifying shares of the world ferroalloys market differentiation.

Conclusions

The undertaken research has shown that market of the large-capacity ferroalloys manufacturers has oligopoly structure with three largest firms prevalence – South African «Samancor» and Norwegian «Elkem» and «Tinfos». Each

firm is a large economic agent with independent market policy. The oligopoly firms have influence on the market price and there are high entry barriers in the field.

The calculations of each concentration parameters have given following personal conclusions:

- According to the Lind's index – there are three firms that form «core» of the large-capacity ferroalloys world market and influence operators market policy;
- According to the market concentration index and the Herfindal-Hirschman index – the actual parameters lay within the normal concentration limits, but meaning of these indexes equals to margin meanings, that reflects a tendency of market transition to moderately concentrated;
- According to the Entropy index – less influential participants of the world ferroalloys market maintain an opportunity to influence the market price;
- According to the Ginni index – the size of quantitative estimation characterizes the world ferroalloys market as the market with less uniform market shares distribution.

The practical results indicate the critical situation on the market by increasing the largest firms-participants concentration and amplifying shares of the world ferroalloys market differentiation. It is necessary to note, that in the nearest prospect three largest firms influence on structure, strategies and behavior of the participants will amplify.

For further research in the given sphere it is necessary to define following: consideration in a complex, instead of use the detached market power concentration parameters calculations, will allow to prove and to define the concentration interrelation character and vendors monopoly authority degree in the various markets and geographical locations.

Bibliography

1. Азарян Е. М., Радкевич Л. А. (1999). Развитие рынка кондитерских изделий в Украине и изменение характера конкуренции за период 1995–1998 гг. // Маркетинг и реклама. № 2. – С. 33–37.
2. Розанова Н. (2003). Конкурентная политика в Канаде // Мировая экономика и международные отношения. № 11. – С. 72–80.

3. Тодаро М. П. (1997). Экономическое развитие: Учебник / Пер. с англ. под ред. С. М. Яковлева, Л. З. Зевина. – М.: Экономический факультет МГУ, ЮНИТИ. 671 с.
4. Цапелик В., Яковлев А. (1990). Количественные характеристики монополии // Вопросы экономики. № 6. – С. 38–46.
5. Шеррер Ф. М., Росс Д. (1997). Структура отраслевых рынков / Пер. с англ. – М.: Инфра-М. 689 с.
6. Экономика отрасли. (2003). Серия «Учебники и учебные пособия». Ростов н/Д: Феникс. 448 с.

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