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MARKET CONCENTRATION AND ECONOMIC PERFORMANCE

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In this paper, we describe the trend of market concentration, the formation of strategic groups in Russian industry, principles of integration of firms in strategic groups, and the reasons for increase of market concentration.

Purpose - to propose the methods of measuring industry concentration in terms of coordination.

Methodology: methods of system analysis, economic analysis, the methodological approaches of the theory of industrial organization, regression analysis.

Results: Authors provide the methods of measuring industry concentration in terms of coordination. Authors established laws of formation of strategic groups (coalitions). The relationship between the concentration rate and business cycle sensitivity of firms in Russian industry was described.

Practical implications: The methods of measuring industry concentration is of interest to economists, business strategists, and government agencies.

Keywords: globalization, grouping, integration, competition, concentration, oligopoly, efficiency.

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РЫНОЧНАЯ КОНЦЕНТРАЦИЯ И ЭКОНОМИЧЕСКАЯ ЭФФЕКТИВНОСТЬ

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В статье рассмотрены тенденции роста концентрации на отраслевых рынках в условиях глобализации, процессы формирования стратегических групп в отраслях промышленности России, причины роста концентрации.

Цель - разработать методический подход для оценки уровня концентрации производства в условиях группирования предприятий.

Метод или методология проведения работы: методы системного, экономического анализа, методические подходы теории организации промышленности, методы математического моделирования, регрессионного анализа.

Результаты: Разработана методика расчета действительного уровня концентрации в условиях образования стратегических групп. Установлены закономерности образования стратегических групп (коалиций). Определена взаимосвязь между уровнем структурной концентрации и чувствительностью фирм к циклическим колебаниям.

Область применения результатов: предложенный методический подход к оценке уровня концентрации на товарных (отраслевых) рынках может быть использован в практике деятельности антимонопольных органов и органов государственной статистики, а также предприятиями для разработки стратегии входа на рынок.

Ключевые слова: глобализация группирование; интеграция; конкуренция; концентрация; олигополия; эффективность.

Introduction

The economic reality demonstrates the growth of concentration of the industry markets, the coordination of the activities, and what is the basis of creation, function, and development of large corporate structures. The trend of concentration in industries in Russia, providing the highest growth rates of gross domestic product, in general, reflects the general laws in the industrialized countries of the development of industries with capital-based and knowledge-based technologies [6].

The conclusion that the increase of market concentration is the basis for the formation of monopolies, and its consequence - inefficient use of resources - is not perfect. Firstly, the high concentration of production is not a sufficient condition for the monopolization of the market and, therefore, is not identical to monopoly; secondly, highly concentrated industries produce knowledge-intensive and capital-intensive products and provide innovative processes.

Therefore, research is needed in the direction of the determination of a reasonable compromise between the positive impact of high levels of concentration on the development of the industries and its negative consequence in regard to policy, expressed in the potential possibility of transformation of the structure of the monopolistic market.

The fundamental conclusion of the theory of industrial organization is that there is a causal relationship between the concentration rate and the profitability of the industry. The restructuring of the industry reflects the processes of grouping of enterprises and shows their desire to act in a coordinated way, thereby avoiding the intense competition. Therefore, it is important research into the effectiveness of industrial structures in the conditions of formation of strategic groups (coalitions), which is a reflection of the objective tendencies of growth of market concentration [6].

Determining the level of concentration in terms of coordination remains a challenge. Official concentration index does not reflect the real rate because it does not allow you to capture the informal relations between rivals. When there are

the integration processes, concentration will be significantly higher. The number of strategic groups in the industry, as well as the composition of enterprises forming a group, together determine such factors as profitability, the average total costs, which reflect the efficiency of resource use, and the market results - the price and supply volume. The branch structure with a high level of concentration may be more effective than the structure with a low level of concentration. This needs to be considered in the antitrust practice in order that competition laws are not contrary to the objective processes of growth concentration.

Sections 1 and 2 describe the trends of changes in the concentration in Russian industry and summarize the factors that determine the growth of concentration.

Section 3 discusses issues about a correlation between the concentration rate and sensitivity of businesses and industries to fluctuations in economic activity and which industries are more prone to changes in business.

We have proved that industries with high concentration are the most sensitive to fluctuations in economic activity, which is reflected in the volume of production. However, the oligopolistic structure of these industries allows businesses to find and successfully put into practice the tools of macroeconomic stabilization, such as price fixing, output limitation, and education coalitions. Behavioral factors in the decline in demand have a major effect on the stability of highly concentrated industries.

Section 4 describes the processes of grouping companies in order to maximize profits. In industries with a high concentration rate, companies tend to form coalitions. Such association allows enterprises to remain effective in the market compared to the autonomous operation while maintaining legal independence.

In the next section we introduce the methodical approach to assess the real concentration rate in the formation of strategic groups, which allows us to give a more truthful assessment of the concentration.

Section 6 presents the empirical results of the methodology- the regularities of the formation of strategic groups in oligopolistic industries.

1 Globalization as a cause of transformation of the structure of Russian industry

Analysis of the enterprise activity on the real markets allows the assertion that the structure of most industrial markets is not stable and is constantly changing in the direction of growth of concentration as a result of cooperative policies on the part of sellers. What are the causes of the increase of concentration and integration of enterprises in the industry of Russia and other countries?

In the last decade much has changed in the economy of the industrialized countries because the modern world is undergoing a process of deep transformation. Advances in science promote the concept of creating a new "information society", "a consumer society", "a new industrial society", etc., and each of them affects the process of globalization.

This term, globalization, is used to describe the various processes, such as the world's economic, political and cultural integration, the unification of the world economy in a single market. On this basis there is a formation of a unified global network of the market economy.

Views on the causes of globalization are debatable. Historians link this process with the development of capitalism. Economists see the cause of globalization in the transnationalization of the financial markets and the rapid growth of international trade. Political scientists focus on the spread of democratic institutions. There are informational-technological approaches to the explanation of the processes of globalization. The development of information technologies contributes to the acceleration of this phenomenon.

The empirical reality is that the institutional economy is increasingly modified in the direction of major corporations and financial and industrial associations, including the integration and coordination of market participants on the supply side [1].

2 Concentration rate in Russian industry

The thesis that market structure determines the behavior of the enterprises, and that in turn influences market results, has repeatedly been tested by Russian and foreign economists. The theory of industrial organization focuses on identifying the relationship between the concentration rate and profitability of the industry. Most economists are in agreement that the increasing concentration, as a rule, leads to monopoly power, resulting in the loss of social welfare [7]. However, the restructuring of the highly concentrated market in a monopoly is possible only under certain conditions. Therefore, the problem of the relationship «structure-conduct-performance» is more complex than it seems in the framework of economic theory.

To evaluate the changes of the level of aggregate concentration in Russia, we refer to data on the share of the largest companies in their number of employees, their profits, and in their production in the economy as a whole. In our study we used the 100 and 200-firm concentration ratio. Table 1 presents data characterizing the position of 100 and 200 of the largest companies in the Russian economy. The General trend is that the share of the100 and 200 largest corporations in the country's economy has been growing since 1998, regardless of the indicator.

Table 1

100 and 200-firm concentration ratio Russian economy

Year	Russian economy	100 largestfirms	200 largestfirms	100-firm concentration ratio, %	200-firm concentration ratio, %
Profits in the economy of Russia, RUR mln.					
1995	250599	97494,5	105222,3	38,9	42
1996	124989	93540,8	95384,5	74,8	76,3
1997	173998	118720,9	121187,2	68,2	69,9
1998	-115111	-1824,3	-12984,4	1,6	11,3
1999	723158	-10395	-5623,3	-	-
2000	1190597	601492,3	627850,3	50,5	52,7
2001	1141253	591278,8	616691,5	51,8	54
2007	8746652	2382441	2547560	27,24	29,13
2008	10488515	2869326	3054578	27,36	29,13
2009	9334151	2254836	2356290	24,16	25,25
2010	9866197	2151640	2311611	21,81	23,43
2011	10428570	3329403	3609654	31,93	34,62
Volume of production (GDP), RUR mln.					
1995	1540500	684342,2	735372,8	44,4	47,7
1996	2145700	718567,4	778896,3	33,5	36,3

1997	2521900	835904,3	915047,6	33,1	36,3
1998	2654500	1067500,9	1108949,2	40,2	41,8
1999	4766800	1017533	1108104	21,3	23,24
2000	7063392,8	3353304	3667685	47,4	51,9
2001	9041000	4049344	4391037	44,7	48,5
2005	21609800	12446386	14046452	57,6	65
2007	33247500	15116902	17177808	45,47	51,67
2008	41276800	18074313	20723375	43,8	50,22
2009	38808700	21691554	25090613	55,9	64,66
2010	45166000	21315477	24697415	47,19	54,68
2011	54369100	25908025	29863815	47,65	54,93
Number of employees, thousand people					
1995	17197	4482,8	5135,8	26	30
1996	16038	3824,8	4495,8	24	28
1997	15310	3777,4	4456,7	25	29
1998	14119	3228,5	3966,9	23	28
1999	13077	3228,2	3961,1	24,6	30,2
2000	13294	3266,9	3921,3	24,5	29,4
2001	13335	3541,3	4184,4	26,5	31,3
2005	15678	4374,1	48754,8	27,9	59,88
2007	15666	4464,8	9548,4	28,5	60,95
2008	15115	4208,3	9043,5	27,84	59,83
2009	14113	4023,6	8976,1	28,51	63,6
2010	14309	4032,4	8955,1	28,18	62,58

We also used the 3, 4, 6, 8-firm concentration ratio in our study. The variables used to satisfy the objective of this paper are obtained from Russian statistics for the years 2008-2011.

Data presented in Table 2 allowed us to make a conclusion about the trend of growth in the mining and manufacturing industry [4].

Table 2

Concentration ratio in Russian industries (in percent)

Year	Mining	Manufacturing	Electricity, gas and water
CR-3			
2008	21,5	12,4	10,7
2009	21,9	15,2	17,4
2010	23,4	15,1	16,8
2011	34,3	16,3	16,0
CR-4			
2008	24,5	14,1	13,6
2009	25,1	17,4	20,1
2010	28,1	17,5	20,0
2011	40,9	18,1	18,7

CR-6			
2008	30,1	17,4	17,9
2009	31,2	20,4	24,8
2010	35,7	20,6	24,6
2011	51,3	21,4	23,8
CR-8			
2008	34,6	19,9	21,6
2009	36,3	23,0	28,4
2010	41,4	23,1	28,2
2011	59,6	23,7	28,2

The increase of industry concentration in Russia and other countries is dictated by the necessity to search for ways of increasing the competitiveness of enterprises. Successful business in the world markets is usually associated with large corporations, which have the ability to use economies of scale, to have flexibility of production facilities, and to innovate and implement the investment process, including R&D. The desire to maximize profits leads to the formation of different kinds of coalitions and evidence of continuous restructuring of Russian industry. This is the process of forming more effective functioning mechanisms. At present, even large companies cannot be characterized as completely independent, because they retain a growing trend towards strategic alliances, the movement to "organized" markets, which are a higher form of evolutionary development of the markets [6].

3 Product Market Concentration and Firms' Business Cycle Sensitivity

Among Russian and foreign scientists, there is not a clear opinion about the existence of the relationship between the concentration and the stability of firms and industries. Some questions remain unclear. For example, is there a correlation between the concentration ratio and the Business Cycle Sensitivity of firms? Which industries are more prone to changes in business? In what degree is the industry with a high concentration exposed to shrinking demand as opposed to industries with low concentration?

We used the statistical data on the production index (percentage change) in industries from 2000 to 2011 to evaluate the Business Cycle Sensitivity of the manufacturing industry in Russia.

To assess the sustainability of industries and identify cyclical industries, we suggest using the following method, which consists of these steps:

1) The calculation of index of output growth (percent change) by industry.

2) The calculation of the index variation in the fields and in the manufacturing industry as a whole.

3) The index of cyclicity (IC) is calculated as

$$IC = \frac{variation \text{ of index of output growth in industry}}{variation\ of\ output\ growth\ in\ manufacturing\ industry}.$$

This ratio can be used to assess the cyclical trends in the economy and the Business Cycle Sensitivity of firms and industries.

4) Evaluation. If the ratio is greater than the unit, this means that the industry is sensitive to changes in demand.

Figure 1 shows the distribution of industries in the degree of sensitivity to changes in the business cycle.

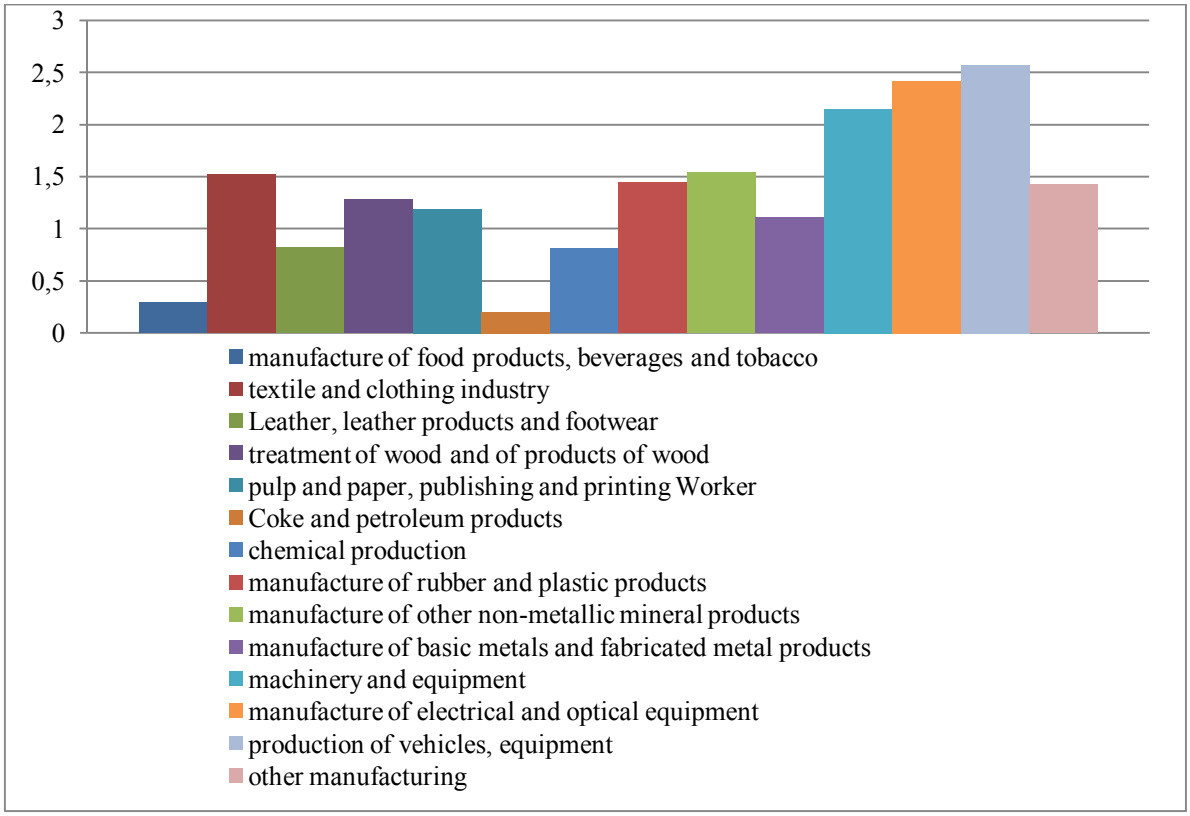

Fig. 1. Cyclic ratio in Russian manufacturing industries in 2000-2011.

Dispersion and cyclic ratio have a close relationship. The correlation was 0.958, so they can be considered complementary.

According to Figures 1, we can see that the production of industrial products is cyclical, and the production of essential goods is a non-cyclic sector of the economy, because the amplitude of fluctuations in output of non-consumer goods (machinery and equipment) in the manufacturing industry of Russia for 2000-2011 is much higher than peak- production of food, beverages, tobacco, leather and shoes, etc.

Based on these results, we grouped the manufacturing industry according to fluctuations of supply and demand as follows:

1) The most sensitive sectors ("circular"): the production of transport vehicles, equipment, automotive, electric, electronic and optical products, and machinery. Cyclic ratio is greater than two units, as the volume of production in these sectors varies considerably, especially in times of economic crisis.

2) The industries with average sensitivity: textile and garment manufacturing, processing of wood and of products of wood, pulp and paper products, publishing and printing, rubber and plastic products, manufacture of other non-metallic mineral products, including production of construction materials, manufacture of basic metals and fabricated metal products. For this group of industries the ratio is in the range of 1-1,54.

3) The least sensitive sectors ("stable"): manufacture of food products, beverages and tobacco, leather, leather products and footwear, manufacture of coke and refined petroleum, and the chemical industry, where the ratio is much less than unity.

Thus, the grouping of industries in terms of sustainability suggests that the first group consists of manufacturers of investment goods and consumer durables, which have a high level of concentration. Reductions in the period of low demand can also be explained as measures to counteract lower prices owing to the possession of market power. Level of prices of most goods in these industries remained stable during the crisis in 2008-2009. Therefore, the reduction in demand has an impact mainly on production and employment.

Cyclical fluctuations in demand, in turn, determine the propensity of such industries to greater concentrations, occurring in various forms (from the coordination of prices in the industry to the creation of a coalition or cartel).

The opposite pattern is observed in industries that produce goods of everyday use, which have a lower level of concentration and a more developed competitive environment. They cannot resist price increases, and reduced demand has a greater effect on prices than on the level of production.

Highly concentrated industries in Russia, depending on the cycle, can be divided into two groups. The first group is characterized by constant underutilized manufacturing facilities related to the development and implementation of better alternatives or to increased competition by the reduction of barriers to entry, such as by foreign firms.

Another group includes industries where cyclical fluctuations in demand may be accidental in nature and have a particularly acute impact on their efficiency and stability.

Especially in the first group of industries is excess capacity in relation to demand, expectations of increasing demand in the long term, a high degree of absorption of capital, and high social importance of these industries for the country. These characteristics tend to limit the possible reallocation of resources (labor, financial, fixed assets) in the economy. In addition, companies in Russian industries, as a rule, are closely concentrated in a space that allows us to consider such regional markets as highly specialized. A striking example of this is the Russian engineering industry, which experienced a decline in the early 1990s, and still is "unhealthy" in connection with the presence of high foreign competition.

Such branches may be in difficult financial straits being without state support, protectionism, or cartel agreements, resulting in tighter price competition during a downturn in the economy. In this state, the industry may exist for a long time, because the manufacturer will prefer the strategy of survival rather than a bankruptcy. This is explained by a high share of fixed costs in the cost structure, inability to convert the facility, and the reluctance of the personnel to leave their jobs. The stagnation in the industry primarily affects the labor force and investors, particularly in regions with high geographic concentration and specialization, where there are no more attractive areas of investment and when closing a business will be associated with the high cost of the state-- for example, payment of subsidies on unemployment, stagnation in related industries, social unrest in the region, etc.

The way out of this situation for businesses can be state support or mitigation of the antitrust laws, which would allow companies to coordinate their activities on the market, fix prices, and standardize production. Such actions are able to protect the industry from the rigors of competition and reduce losses from the company restructuring.

Analysis of the product prices of cyclical industries in the contraction of output in 2008 denotes a coordinated policy on the market. Choosing an oligopolistic strategy compares losses and profits. Typically, large firms in highly concentrated markets are more likely to engage in cooperation activities, as each of them is aware of its dependence on the competitor. On the other hand, there is the problem of maintaining cooperative agreements, because when price elasticity of demand in cyclical industries is high enough, there is always a temptation to breach the cartel agreement and lower prices in the period of recovery.

A different situation can be seen in areas with temporary or accidental fall in demand. The firm faces a situation where during the boom there is lack of capacity and in the decline, a surplus. Producers of similar goods with identical cost functions in the sectors affected by cyclical fluctuations in demand, in times of recession, may engage in particularly acute competition to minimize their losses. This strategy can lead to very undesirable consequences, namely to scare firms from the market. This is not necessarily about the most inefficient plants. The protracted crisis can affect even the once successful producers, who now find themselves without financial resources. Such an outcome is the last option. Most likely the company would prefer to merge or coordinate activities in the market.

Scherer said that in Japan during the relatively weak years of the 1956-1966 recession, a tendency towards concentration caused a crisis situation and resulted in a lot of inefficient small businesses [7]. In this respect Russia is comparable to Japan. Association of small businesses with large or medium businesses often is inevitable, leading to a restructuring of the industry in the direction of increasing concentration.

Undoubtedly, sharp fluctuations in the boom and bust are the cause of macroeconomic instability, which is associated with certain problems. Theoretically, to make up for losses incurred in a crisis, a company may significantly raise prices for their products in the period of business growth following the crisis. Such a situation does not please customers and can attract the attention of the government.

However, the statistics and the Russian practice show the opposite picture - oligopolists unwittingly arrive at the need for a cartel which is then forced to agree to apply the tools of price stabilization.

Thus, we can say that the industries with a high level of concentration are the most sensitive to fluctuations in economic activity, which is reflected in the volume of production. However, the oligopolistic structure of these industries allows businesses to find and successfully put into practice the tools of macroeconomic stabilization, such as price fixing, output limitation, and education coalitions. Behavioral factors involved in the decline in demand have a major effect on the stability of highly concentrated industries.

4 The activities of the coalitions in industries with high concentration

Researchers in the modern theory of industrial organization have shown great interest in market structures that contain elements of competition and cooperation. As a rule, these are oligopolistic markets with high concentration. The modern form of enterprise integration in these markets is the formation of strategic groups to coordinate activities. A coalition (or strategic group) is an association of companies on the basis of similarity of strategy: that is, the same direction of diversification of products, the number and types of channels of distribution, product quality, volume and direction of investment, the level of fixed costs, and the dynamics of the marginal costs.

The main motive for the grouping of enterprises is the desire to maximize profits. The formation of coalitions requires certain market conditions, in particular a high level of concentration. With this form of activity, the company can operate for a long time on the market compared with autonomous operation, while still maintaining legal independence. Obviously, this method of integration is not traditional and requires new approaches in management, both from the side of the state, as well as well as from the management staff of the enterprises themselves.

A sophisticated management system can be allowed to gain full control over the activities of integrated companies in the absence of legal execution of merger. We

are interested in the horizontal integration of firms from the position of sector efficiency, as well as the application of the rules of antitrust law in the context of the growth of concentration. What principles should be at the basis of this association?

5 Method of measuring industry concentration

There are several measures of the degree of product market concentration (PMC). The most commonly used is the Herfindahl-Hirschman index (HHI). There is a wide agreement that the HHI is an imperfect measure of concentration, for it does not take into account effects of horizontal integration and the creation of strategic groups. In the formation of strategic groups, the actual concentration rate is significantly higher.

We have studied the regularities of formation of strategic groups and the influence of the concentration of marketperformance. As a tool of analysis, we have used a well-known model in the theory of industrial organization of the functioning of market structures (basic is the original version of the Cournot).

Suppose a function of the total cost is convex [6]:

$$TC(q_i) = TFC_i + \alpha_i q_i + \beta_i q_i^2 + s_i q_i \text{ , } i=1(1)n$$

where, q_i- represents production of the i^{th}firm, TFC_i- total fixed costs of the i^{th}firm, a s_i - average transport costs of the i^{th}firm .

Then the concept of profit maximization strategic groups (coalitions) involves determining the volume of production of each coalition, the calculation of a single price for the goods, and the firm's volume of production of the following tasks:

$$\max_{Q_k} \Pi_k(Q_k) = P(\underset{Q_k}{Q})Q_k - TC_k(Q_k) \text{ , } k = 1(1)k_0$$

$$\sum_{k=1}^{k_0} Q_k - Q = 0 \qquad (1)$$

$$\sum_{i \in I_k(k_0)} q_i - Q_k = 0, \; k = 1(1)k_0, \; \underset{k=1}{\overset{k_0}{\Upsilon}} I_k(k_0) = \{1,2,...,n\}$$

$q_i \geq 0$, i=1(1)n.

where, Q_k - represents production of k^{th}coalition, the number of which is equal to $k = 1(1)(n-1)$; $I_k(k_0)$ - composition of the k^{th}coalition (the set of numbers of firms constituting the k^{th} coalition), the number of which in industry as well k_0; Q – total the volume of supply of goods in the market, equal $\sum_{i=1}^{n} q_i = Q$, P is the price of goods on the market. In the analysis of the problem (1) is the assumption of a linear inverse demand function P = a - bQ.

The economic interpretation of solving the problem is the following: the largest profit occurs at the point of a distribution of production between firms in the coalition when they have equal effectiveness and their marginal costs are equal. Profit maximization requires the equality of total marginal costs and total marginal revenue of the coalition [6]:

$$CMR_k(Q_k) - CMC_k(Q_k) = 0,\ k = 1(1)k_0.$$

If the industry is represented by n enterprises, the number of coalitions as well (n-1). The number of options for grouping of firms in the coalition can be very large.

The solution of problem (1) for a specific number of coalitions and for the composition of the firms in the group has no generalizing character. Therefore, it is proposed to study different variations of industry profit $\Pi(Q) = \sum_{k=1}^{k_0} \Pi_k(Q_k)$ for all values of the number of coalitions (k_0 - variable) and with a different composition of the firms in the group (set , $I_k(k_0)$, $k = 1(1)k_0$). The analysis of the maximum industry profit depending on the number of coalitions and the composition of the firms, allows us to interpret the regularities of formation of coalitions.

The solution of problem (1) leads to a result which allowed us to examine the relationship between the structural concentration and market performance within the Russian industry.

$$\frac{P - \overline{MC}}{P} = \frac{HHI_{k_0}}{|e_p|}, \qquad (2)$$

where $\overline{MC} = \sum_{k=1}^{k_0} CMC_k(Q_k)s_k$, HHI_{k_0} - Herfindahl-Hirschman Index (HHI) in the case of formation of coalitions, equal k_0, s_k - market share of the k^{th} coalition.

The study of the level of market concentration and the real data of the profitability of firms enabled the offering of a methodical approach, taking into account the informal horizontal integration, to assess the current level of concentration.

Currently, the HHI is calculated in accordance with the number of enterprises and the proportion of output, which correspond to the statistical reports, describing the procedure of their registration in the state register. However, such statistics do not reflect real trends: coordination of activities, the agreement on the market division, grouping, and the coalition in the «soft» form. The equality (2) turns into the strict inequality (3):

$$\frac{P - \overline{MC}}{P} > \frac{HHI}{|e_p|} \qquad (3)$$

Estimation of real level of concentration is possible with the methodological approach proposed by the authors. The essence of the approach is to use specifications (1) to obtain the equality (2).

The main stages of the methodology for determining the real level of concentration are the following [6].

The first stage contains an analysis and assessment of various quantitative indicators of product market, as well as the level of concentration: the number of suppliers, market shares of the firms, and the index of market concentration HHI.

The second stage involves the calculation of basic quantitative indicators of the efficiency (input and prices) in the case of its structural conformity indicator of the concentration rate, calculated according to official figures. If a match occurs, the expression (3) soon becomes an equality. If there is inequality (3), this means that the actual level of concentration is more than that calculated according to official figures.

The third stage involves the construction of a demand function P(Q). Next you need to evaluate the parameters of the demand function on the basis of the elasticity of demand .

The fourth stage of the approach (1) allows you to determine the number of coalitions and composition of the firms in them that are closer to actual current outputs and market shares of firms. Since the approach (1) provides state of equilibrium in the market, then the condition (2), where P and are values of price and demand elasticity, in which the coalition provide output, on the record.

Thus, the actual concentration ratio can be calculated by the expression 4:

$$HHI_{k_0} = \sum_{k=1}^{k_0} s_k^2 \ , \qquad (4)$$

where s_k - market share of the k^{th} coalition.

In the case where you know the market shares of firms and intentions in the direction of the formation of coalitions, the real concentration rate is defined as follows:

$$HHI_{k_0} = \eta(k_0) HHI \ ,$$

where η is the correction coefficient, $\eta(k_0) = \varphi(Q, P, CMC_1, ..., CMC_{k_0})$.

6 Empirical estimates

We have studied the market of building brick in the city of Novosibirsk in order to estimate the relationship "structure-conduct-performance". Application of the methodological approach has revealed the following regularities.

1) The concentration may be significantly different for similar market indicators (profit, industry-wide average costs).

2) For the same level of concentration in the industry (with a different number of association and composition of firms in them) there are a variety of market results (outcomes).

3) The best performance of the industry can be achieved with a high level of concentration, when firms are integrated in the strategic group. This provision is based on the fact that the mechanism of distribution of production between

companies in the coalition (cartel) allows them to achieve economy of resources at the expense of rational organization of activity.

4)The firm's best results are observed in the market cartel, when the average total cost in the industry is 4% lower than in the non-cooperative interaction between companies (the theory of Cournot), and industry profit is higher by 8%.

5) In conditions of organizational cartel, production volumes are distributed between the most efficient participants (determined by the lowest level of average cost per unit of product).

6) In addition, the increase in costs in one of the companies (or more) leads to a redistribution of the volume of production in favor of companies with the lowest marginal cost, but the system as a whole does not provide full compensation for the reduction of the industry output, but only part of it.

Consideration of various options in grouping of enterprises on the market of bricks helped to reveal the regularities of formation of coalitions. It was established that the enterprises which have a lower cost are more inclined to autonomous functioning and seek to occupy the position of the dominant firm. A higher rate of profit and lower average costs are achieved by uniting the enterprises with identical functions marginal costs. As a result of forming coalitions consisting of leading enterprises and less efficient producers, the effect is suppression of the power of enterprises with large marginal costs. If the marginal costs of firms differ greatly from the less efficient firms, there is no economic motivation for coalition formation.

Because the best performance of the industry can be achieved in the conditions of high concentration, the classification of markets, including the "dangerously concentrated," can lead to undesirable economic consequences. Firstly, the excess of this level requires the application of antitrust legislation, which causes the appropriate feedback enterprises and response, and, secondly, regulatory policy, based on a single indicator of the level of concentration and thus excluding the efficiency of the industry, cannot be recognized as scientifically justified.

This should be considered in the antitrust practice, with the goal that competition law is not contrary to the objective processes of growth of concentration. The purpose of antitrust regulation should be the improvement of market efficiency rather than a decline in the level of concentration.

Conclusion

In this paper we examined the relationship between the structure of the market, the behavior of enterprises and efficiency.

First, we reviewed change in the index of concentration in industries in Russia. The growth trend of concentration is an objective process, since the consolidation of enterprises is the basis of competitiveness on the regional and international markets. At present, even large companies cannot be characterized as completely independent, because they retain a growing trend towards strategic alliances, the movement to "organized" markets, which are a higher form of evolutionary development of the markets. The restructuring of the industry reflects the processes of grouping of enterprises and shows their desire to act in a coordinated way, thereby avoiding the intense competition.

Second, we studied the impact of market concentration in Russian industries and firms' business cycle sensitivity. We have proved that industries with high concentration are the most sensitive to fluctuations in economic activity, which is reflected in the volume of production. However, the oligopolistic structure of these industries allows businesses to find and successfully put into practice the tools of macroeconomic stabilization, such as price fixing, output limitation, and education coalitions. Behavioral factors in the decline in demand have a major effect on the stability of highly concentrated industries.

Third, we introduce the methodical approach to assess the real concentration rate in the formation of strategic groups, which allows us to give a more truthful assessment of the concentration, and to find the regularities of the formation of strategic groups in oligopolistic industries.

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