

ANALYSIS OF VALUE ADDED DISTRIBUTION AND LEVEL OF TRANSACTION COSTS IN THE RUSSIAN CORPORATIONS

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Abstract: Modern understanding of the corporation as an integrated system driven by a common goal of profit maximization has brought both economic theory and management practices to a deadlock. Incorrect understanding of the modern corporation's core, as well as inability to adequately assess them, became one of the causes of the global economic crisis. One of the promising "reanimation" options of the modern firm theory is the institutional approach. However, this approach is in dire need of measurable operational criteria and indicators that would tie business practices together with their basic theoretical categories: institute, contract, and transaction costs.

The scope of this paper is to offer and demonstrate the possibilities of testing methodology for assessing the corporation as an institutional unit of an economic system. To do so, we propose a new approach in the assessment of institutional compliance of the corporations with the expectations of their major subjects. It is based on estimating the distribution of the gross added value between the subjects. Moreover, the technique of assessing the level of transaction costs in corporations, based on data accounting, is proposed. The methods were tested on examples of real Russian metallurgical industry corporations as reported between 2003 and 2012. The presence of a statistically significant negative connection between the share of value added revenue and level of transaction costs, as well as between the share of value added at the owners disposal and the transaction costs level, was established. The presence of a statistically significant positive connection between the level of transaction costs and share of value added, at the disposal of workers, was established.

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Introduction

Economic perturbations had occurred in the last two decades, including corporate scandals in America; the global economic crisis and almost forgotten collapse of the Asian stock markets have a common motive in its root—the inability of economic entities (traders, bankers, analysts, academics, and government officials) to assess the current situation. Primarily, the claims are directed toward scientists. In many ways, these claims are fair. The current system of assessing the economics and its critical actors, corporations, is hopelessly outdated. Those accounting criteria, which are usually considered important—profit amount and structure of assets, have long been controlled variables in the hands of an experienced accountant. In addition, almost "bare" in terms of such measures is a promising direction of economic science—institutionalism, whose basic concepts, of institutions and transaction costs, are not properly quantified. This is mainly due to the difficulty of passage from the analysis of the theoretical categories to specific events. However, despite the complexity, this task is urgent and solvable. This paper presents a new approach to the assessment of the institutional side of the corporation, based on the concepts of value added and the transaction costs level. In addition, the practical evaluation of these indicators, for the Russian metallurgical companies, was conducted.

Literature review

In modern economic science, the issue of measurement adequacy is widely discussed. At the macroeconomic level, authoritative scientists at the head of the Nobel laureate—Joseph Stiglitz (Stiglitz, Sen, & Fitoussi, 2009) proposed to revise the system of national accounts pointing to serious dysfunction in the assessment of its economic development. At the level of individual economic entities, it is a rejection of the model "maximizing" consumers, firms, and state, rooted in economics since the early

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20th century through the efforts of the authoritative scientists plurality—Marshall (1920), Clark (1908), Samuelson (1954), Friedman (1970), and Mankiw (2004). A number of scientists offer to turn to behavioral models, making emphasis on the descriptive aspect of the analysis, which is the basis for psychological explanations of behavior, e.g. Machlup (1952), Simon (1955), and Thaler & Benartzi (2004). Other authors who keep the neo-institutional direction, Coase (1937), Holmstrom & Tirole (1989), Holmstrom & Milgrom (1994), Holmstrom (1999), Whinston (2001), and Williamson (2005, 2010), offer to investigate internal interaction in the corporations, in the state, in the markets that result in more complex, but “solvable” methods of behavior using mathematical methods. However, as the most promising and appropriate approach, we see orthodox institutional theory presented in the works of Hodgson (1998, 2006), Winter (1964), Nelson & Winter (1973, 1982), and Pletnev (2013). This approach correctly indicates the priority of holistic, institutional elements of economic analysis over individuals. However, there are serious problems of rooting of this approach among a wide range of economists, practicing analysts, and university courses. The main problem, in our opinion, is the lack of national conventional approaches for assessing the institutional side in the activity of business entities, including corporations. Although there are individual attempts to measure them, e.g. Nikolaeva (2013), Barhatov & Pletnev (2010), their recognition and wider debate in scientific circles are not accredited. As long as these approaches remain in the shadows, the institutional theory of the firm may never see light as a magnificent “tool” in the hands of theorists or as to prove itself useful by the practitioners.

Data and methodology

This report proposes to consider two well-known categories, value added and transaction costs, as a basis for the development of calculable indicators that characterize the institutional side of the firm, as well as the possibility of their use in calculation and applied research.

At the same time, it is encouraged to consider these categories as applied to the company not as a “network of contracts” and a market agent, but as a corporation being an autonomous form of institutional organization of material production (Pletnev, 2010).

The “value added” is defined as the difference between the sales revenues and the costs for the services of third-party organizations, raw materials, and semi-processed units (Pletnev, 2013). If we turn to Marx's interpretation, we can say that the value added is a newly created value. Nowadays, there is much saying regarding the value added already; special attention of modern economists to the problem of added value is not coincidental—it appears as a more successful “substitute” for profit in evaluating the corporation performance. However, the potential of the added value is higher; it does not only fully reflect the result of the economic entity, but it also allows us to determine the structure of its distribution—specific forms of value added, e.g. wages, interest, taxes, and dividends, those quite accurately demonstrate “for whom” one or another corporation works. Obviously, this can occur within intra-sectoral comparisons when differences in the structure of value added cannot be explained by technological features of production and reflect “individual” institutional features of a particular corporation—existing within its domestic institutions.

Also, value added and its share in the proceeds may be an indicator of institutional effectiveness of a corporation, reflecting how it is embedded in the institutional fabric of the economics, as it is “permitted to host” in the economics and to create an added value.

Thus, the added value of the corporation can be considered as an easily calculated, observed criterion of the institutional corporation effect, and its share of total revenue as the potency of the corporation. Correlation of value added shares for individual subjects: workers (the share of wages and social benefits), investors (share of interest paid), state (share of taxes), and the owners (share of net profit).

Transaction costs of Russian corporations are extremely difficult to measure directly because accounting mechanisms are not “sharpened” under their identification and assessment to the present day. In such conditions, “level” assessment of transaction costs of the corporation is possible, which is based on the use of accounting data. These data are used to produce factors having theoretically grounded connection with the transaction costs. Nikolaeva (2008) and Pletnev & Nikolaeva (2009) proposed to use three calculated indicators according to the balance sheet and income statement: the proportion of administrative and selling expenses in corporation revenue, the period of assets turnover, and the share of stocks in the current asset value. Each factor is normalized and the average of the normalized indicators is calculated:

$$\gamma_j = \frac{1}{n} \sum_{i=1}^n \frac{\Pi_{ij} - \bar{\Pi}_i}{\sigma_i} \quad (1)$$

wherein,

Π_{ij} – i^{th} value of the indicator (i varies from 1 to 3) for the j^{th} observation;

$\bar{\Pi}_i$ – average value of the i^{th} sample indicator;

σ_i – standard deviation of the i^{th} sample indicator.

The first factor reflects the explicit transaction costs; the other two are implicit factors recorded by “slowing down” of the corporation in comparison with its competitors. However, in its original form, this technique has one drawback—namely, the complexity of interpreting obtained values in the range of -3 to 3. In this regard, it is proposed to apply the logistic transformation of this function to convert the values into a convenient scale from 0 to 1. The closer the value of the level of transaction costs to 1, the higher it is to the respective corporations:

$$\gamma_j = \frac{1}{\left(1 + \exp \left(- \sum_{i=1}^n \frac{\Pi_{ij} - \bar{\Pi}_i}{\sigma_i} \right) \right)} \quad (2)$$

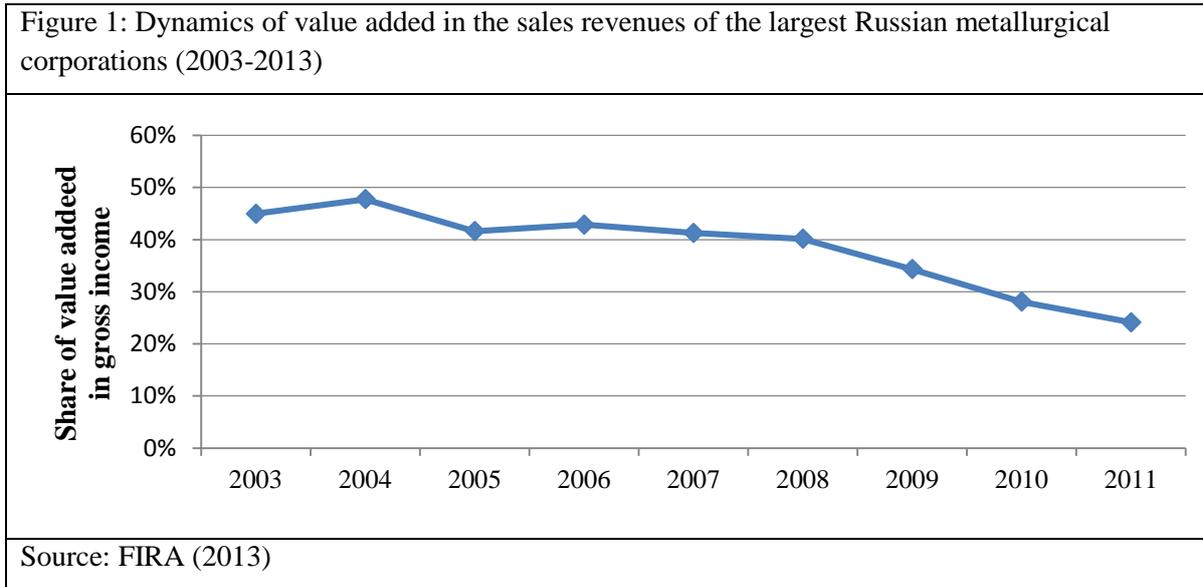
Calculated in such a way, the level of transaction costs will accurately characterize the ratio of transaction costs in various corporations of one sample, and the change in the level of transaction costs at the same corporation in the dynamics.

The calculations were performed using data provided by the system of information disclosure from, First Independent Rating Agency, FIRA PRO. This article used data of large Russian metallurgical corporations (Severstal, MMK, NLMK, EVRAZ West Siberian Metallurgical Plant, EVRAZ Nizhny Tagil Metallurgical Plant, ChMK, Ural Steel, and Oskol Electric Steel Works), and retrieved data with queries “bukhgalterskii balans” (balance sheet) and “otchyot o pribyliakh i ubytkakh” (income statement) for those corporations from 2003 to 2012.

Results and Discussion

The dynamics and structure of the added value in Russia's largest steel corporations (all JSCs), operating in the markets of ferrous metals, namely: Severstal, MMK, NLMK, EVRAZ West Siberian Metallurgical Plant, EVRAZ Nizhny Tagil Metallurgical Plant, ChMK, Ural Steel, Oskol Electric Steel Works, and etc., were analyzed. As a result, a steady decline in the share of value added in the revenue of metallurgical corporations was found to be from 45% to 24% in 2003 and 2011, respectively (Figure

1). A trace can be seen in the “shift” in the structure of the added value that occurred after 2008 due to the crisis.

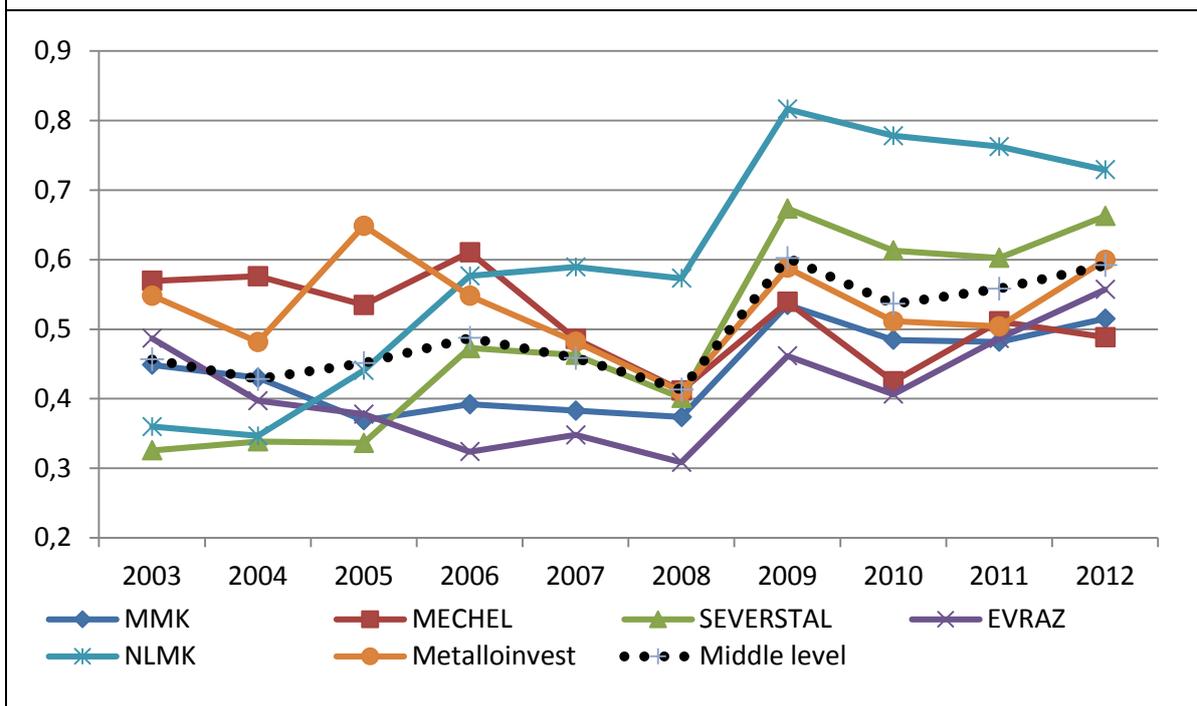


This shift is characterized by an abrupt decline in the share of owners and a simultaneous increase in the share of workers and investors, as shown in Figure 2. This fact can be regarded as a positive trend, but the use of accounting statements as a source of data leaves open the possibility of the fact that this shift has taken place on paper; and, in reality, a part of the income of the owners just faded.



The calculation of the level of transaction costs in Russian metallurgical corporations from 2003 to 2011 was done through the same sample used for estimating value added, as shown in Figure 3. We can see that the level of transaction costs of Russian metallurgical corporation increased steadily except for a small “setback” in 2008, which was undoubtedly due to the economic crisis. An existence of a trend for the average of all corporate level of transaction costs is confirmed at the 5% significance level.

Figure 3: Dynamics of the level of transaction costs of the largest Russian metallurgical corporations (2003 to 2013)



* – for EVRAZ and Metalloinvest corporations, corresponding figures are calculated as the total for JSC “EVRAZ West Siberian Metallurgical Plant” and “EVRAZ Nizhny Tagil Metallurgical Plant” (EVRAZ corporation), as well as for JSC “Ural Steel” and JSC “Oskol Electric Steel Works” (Metalloinvest corporation).

Source: FIRA (2013)

In continuing the analysis of proposed measuring instruments of institutional side of the corporations (added value and transaction costs), their correlation was assessed for the considered set of corporations based on data from years 2003 to 2012. Initial hypothesis was that (1) a higher proportion of value added revenue, as well as (2) a larger proportion of workers in the added value, should correlate negatively with the level of transaction costs.

However, of these hypotheses, only the first was confirmed (for 5 out of 6 corporations) that the production of products with higher added value is associated with the lower level of transaction costs in the respective periods. However, the proportion of workers in the added value either correlated positively with transaction costs, or showed zero connection as shown in Table 1.

Such nature of the correlation can be explained on the basis of the following: a higher level of transaction costs indicates a high level of “friction” in the institutional mechanism of the corporation. However, at the same time, higher value added attributable to workers shows a willingness of corporation owners to “share.” However, such a “split up” is not entirely voluntary, which also indicates the presence of hidden or apparent conflicts of interest between workers and owners—also a kind of “friction.” Thus, this directly affects the level of transaction costs in the corporation.

Table 1: Correlation of value added and level of transaction costs in Russian corporations

Corporation	Correlation of the level of transaction costs with:	
	value-added share in revenue	workers share in the added value
SEVERSTAL	-0.751	0.772

MMK	-0.335	0.759
NLMK	-0.892	0.889
EVRAZ	-0.580	0.845
MECHEL	-0.263	0.534
METALLOINVEST	0.177	0.145

Source: FIRA (2013)

Conclusion

We present here a new approach to the institutional side of the corporation based on the calculation of indicators of their value added structure and level of transaction. The advantage of the proposed approach is the simplicity of calculation, which is based on the use of corporate financial statements. The presented approach was tested in the analysis of Russian metallurgical corporations with indicators calculated for institutionally autonomous corporations, and not for legally independent companies. The results showed that from 2003 to 2011, the share of value added in revenue of the corporations, along with the proportion of corporation owners in value added, was steadily decreasing. However, the share of workers rose. After the crisis in 2008, the proportion of financial institutions (primarily banks) significantly increased and the state's share decreased slightly. The level of transaction costs showed unequal dynamics in different corporations; alongside we can note two general trends: a decline of share of transaction costs during the 2008 crisis and a small, but steady, upward trend. Also, the correlation of the indicators of value added distribution (value added in net sales and value added at the disposal of workers) and the level of transaction costs in the Russian metallurgical corporations was analyzed. It was stated that in the first case, the correlation is reversed; whereas in the second, it is direct. An explanation of these phenomena on the basis of the mechanism of “friction” was proposed. It should also be noted that this approach has considerable potential for use both “partially” and entirely for integrated research of a corporation, as an institutionally autonomous form of organization of material production in the modern economy.

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