

Current Trends in Changes of the Cost Structure of Industrial Enterprises in Russia

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Abstract. The article presents the results of the study of the impact of cost structure on the profitability of goods sold in the processing industries of Russia for the period from 2005 till 2017. This allowed the authors to conclude that the material and other costs of enterprises had a major influence on the dynamics of profitability. The total share of these costs during the study period was 84-85%. In addition, regression analysis showed the effects of changes in the share of material costs on the change in the share of other costs. The value of the coefficient of determination was 0.860487, which indicates a high dependence between the indicators under consideration. At the same time, the authors could not find such a close relationship between material costs and other cost elements.

In practice, the composition of the material costs of enterprises is quite clearly defined by the Tax Code of the Russian Federation, which simplifies their control. A wide list of costs included in other costs enables enterprises to manipulate these costs, because not always the priority objective of the organization is to improve the financial performance.

According to the authors, the development of industry guidelines for cost accounting and calculating the cost of production, the need for which is due to the influence of industry and technological features on the cost structure, the method of their planning and accounting will contribute to improving the financial performance of industrial enterprises.

1. Introduction

In connection with the need to improve the efficiency of industrial production in Russia, a special interest is the study of current trends in the cost structure of industrial enterprises. Obviously «the optimal structure of costs on different types of knowledge is of vital importance for effective innovative development of enterprises, especially under difficult economic conditions» [1]. Modern scientists argue «there is a correlation between the structure of costs ... and the quantity of new products made by the company» [2].

In the conditions of constantly increasing competition and dynamically changing market situation, the modern Russian industrial enterprise needs an effective system of financial planning and cost management at the enterprise in order to maintain a sufficient level of profitability and liquidity, as well as to increase the efficiency of production. A sufficient number of works are devoted to these issues [3,4,5,6].

But statistics show that for the period from 2005 to 2017, the level of profitability of sold products (goods, works, services) in the Russian industry decreased from 15.3% in 2005 to 11.5% in 2017, for mining from 35.6% in 2005 to 25.9% in 2017 [7]. In 2018, against the background of the increase in



the profitability of sold products in the field of mining to 27.2%, the trend of reducing the profitability in manufacturing industries continued. In 2018, the figure was 10.5% [8].

Issues of cost management of enterprises, the factors affecting the costs devoted to a large number of works of domestic [9,10,11,12,13,14,15,16] and foreign authors [17,18,19,20,21,22,23].

German scientists Yuan, Q. -, Cui, Z. -, & Liu, C. are considering costing methods [24], «additional coordination cost does not always result in improved logistic performance» [25], «cost reduction through the use of technology has become the competitive strength of companies» [26]. Foreign scientists in their studies assess the impact of the environment on the cost structure «the most important impacts from the environment, quantifying their influence on its cost structure» [27].

Generalization of publications on this subject shows that traditionally the main attention is paid to the methods of cost accounting and calculation of production costs, because the grouping of costs, among other factors, directly affects the cost of goods produced and sales, and, consequently, the financial results and product profitability. In addition, it has an impact on the value of stocks of finished products and the valuation of work in progress balances. In turn, some scientists argue «the rapid growth of labour costs is not conducive to employment growth and competitiveness» [28]. The analysis of the main trends in wages in the global economy and the identification of key factors determining these trends are presented in the work of L. Gafarova [29].

Changes in the operating conditions of enterprises (transition to market mechanisms, the globalization of the economy, rising prices for material and fuel and energy resources, etc.) influenced the cost structure of enterprises, and therefore there is a need to identify and summarize trends in costs of industrial enterprises of Russia, which it is of great interest from the point of view of developing mechanisms for the state regulation of business entities.

2. Analysis of the cost structure of industrial enterprises of the manufacturing industries of Russia

Different authors have their own view on the significance and use of classifications and cost structure of the enterprise on various grounds [30,31,32,33] (the concept and classification of costs in the enterprise at T.Burnashev, S.Vdovinoy [34]). Each author, based on the objectives of the classification, relies on his own experience in determining and analyzing the cost structure. So some authors believe that the cost structure depends on the characteristics of the main activity of the enterprise [35], others focus on cost centers [36], others relate costs to technological processes [37], the fourth link the classification of costs depending on the type of profit [38].

As noted in the work [39] «the management accounting system is adapted to the conditions of a particular enterprise, which must be developed on the basis of management goals and capabilities».

The main cost groupings that have received the most extensive use in practice are the grouping of costs by economic elements, based on their economic content and homogeneity, and costing items, reflecting the direction of use of costs. The last group is usually used for purposes of calculation of the cost of certain products.

Information on the costs of enterprises in the context of economic elements is presented in the external accounting (financial) statements of organizations in the explanations to the balance sheet and the report on financial results, which emphasizes its importance for making informed economic decisions by external users. It gives an idea of the cost structure as a whole for the organization and is determined by the industry specifics. In addition, this classification allows for an analysis of the cost structure both for the economy as a whole [40] and for certain types of activities [41,42,43].

Traditionally, the main share in the cost of industrial products accounted for material costs. So according to the statistical yearbook in 1987, the share of material costs in the cost of industrial products was 74.1%, the share of depreciation was 9%, the share of wages and social insurance contributions was 13.9%, and the share of other costs was 3%. [44].

The study of the cost structure of industrial enterprises of processing industries for the period 2005-2017. showed that the dominance of material costs in the total cost remained (Fig. 1).

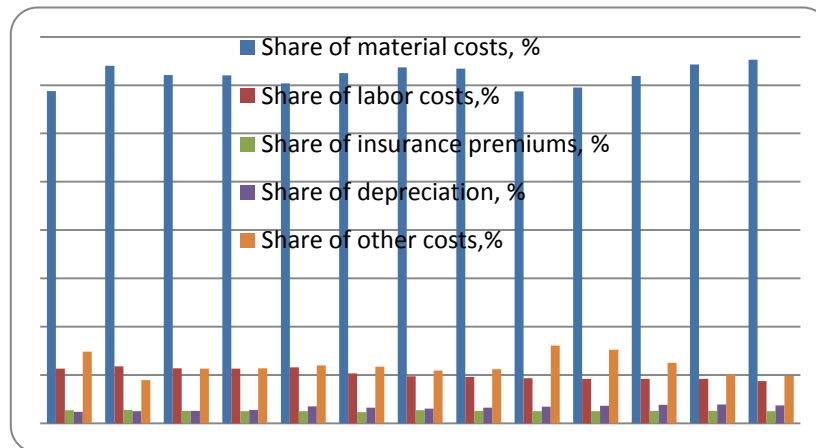


Figure 1. The structure of the cost of production and sale of products for processing industry 2005-2017.

The share of material costs ranged from 68.8% in 2005 to 75.3% in 2017. As part of the material costs, the most significant items are the costs of raw materials and materials, as well as fuel and energy. The analysis showed an increase in the cost of raw materials since 2014, which was primarily due to the complication of the general economic situation in connection with the introduction of sanctions (Fig. 2). The consequence was the fluctuation of the exchange rate and the increase in prices for imported material resources, which, with a high degree of dependence of Russian enterprises on foreign supplies, had a negative impact on the value of material costs of enterprises.

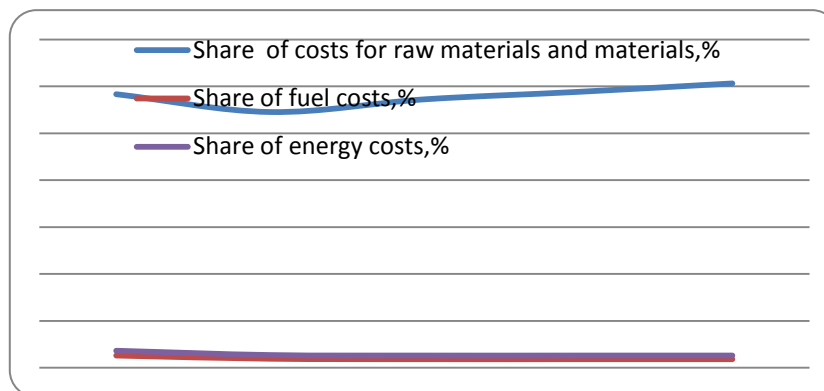


Figure 2. The structure of material costs for the manufacturing industries 2010-2017.

The share of labor costs in manufacturing industries is decreasing, which is explained by the replacement of live labor due to the increase in the capital-labor ratio and was reflected in the increase in the share of depreciation in the cost structure from 2.4% in 2005 to 3.7% in 2017 (Fig. 3):

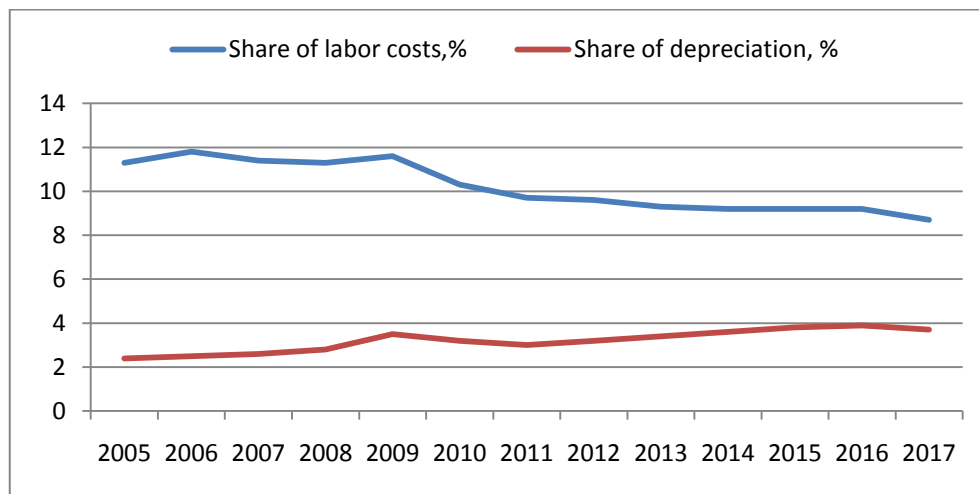


Figure 3. The share of labor costs and depreciation in the total cost of production and sale of products in the manufacturing industries of Russia.

The most significant changes occurred in the share of other expenses. If in the 70-80s the share of other expenses in the cost price of industrial products was in the range of 3% -4%, now it has become comparable to the share of labor costs. So, in 2005, the share of labor costs, taking into account insurance premiums, was 14%, the share of other expenses, 14.8%. In 2017, the share of labor costs, including insurance premiums, was 11%, the share of other expenses was 9.8%. In some periods, for example, in 2013–2015, the share of other expenses exceeded the total share of wages, including insurance premiums.

3. Analysis of the impact of cost structure on the profitability of goods sold in the processing industry of Russia

In order to manage the financial performance of enterprises, it is necessary to study the impact of the cost structure on the profitability of products sold. Chinese scientists Mei, Y., Ye, J., & Zeng, Z. propose new method for dynamic control and optimization of costs on the basis of multi-level hierarchical network PERT-Petri (MLHPP) [45], French scientists have conducted «to provide quantitative estimates of the evolution of factor costs» [46], «integrated multi-product dynamic cost» [47], offer «the integrated modelling technique was further used to show how dynamic impacts of MEs (manufacturing enterprises) on cost» [48]. We study dependence using regression analysis (also used by Brazilian scientists [49]), which shows an increase in the share of one of the cost elements leads to a decrease in the share of other elements. Swiss scientists in their study identified «a list of factors was determined that had the greatest impact on the effective feature – the prime cost» [50] and their influence [51]. Since material costs occupy an overwhelming share in the sum of expenses for the production and sale of products in the manufacturing industries of Russia, it is of particular interest to clarify the closeness of the relationship between the change in their share and the change in the share of other cost items.

Due to the small share of depreciation, which shows a fairly stable growth dynamics, at the first stage, we will analyze the impact of changes in the share of material costs on the change in the share of labor costs, taking into account social contributions. Data presented in the graph (Fig. 3) show the absence of a close relationship between these indicators, which is confirmed by the results of regression analysis.

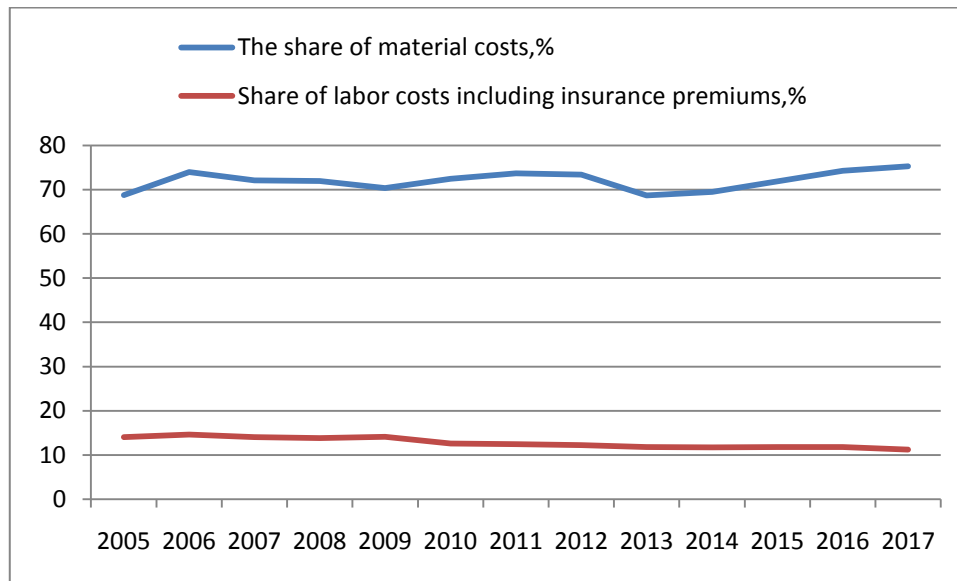


Figure 4. The share of material costs and labor costs, taking into account insurance premiums in the total amount of costs for the production and sale of products in the manufacturing industries of Russia.

The value of the coefficient of determination is 0,030736 that evidence of non-essential dependencies between the considered indicators.

A different picture is observed in the process of analyzing the impact of changes in the share of material costs on changes in the share of other costs (Fig. 4). The value of the coefficient of determination is 0.860487, which indicates a high relationship between the indicators under consideration.

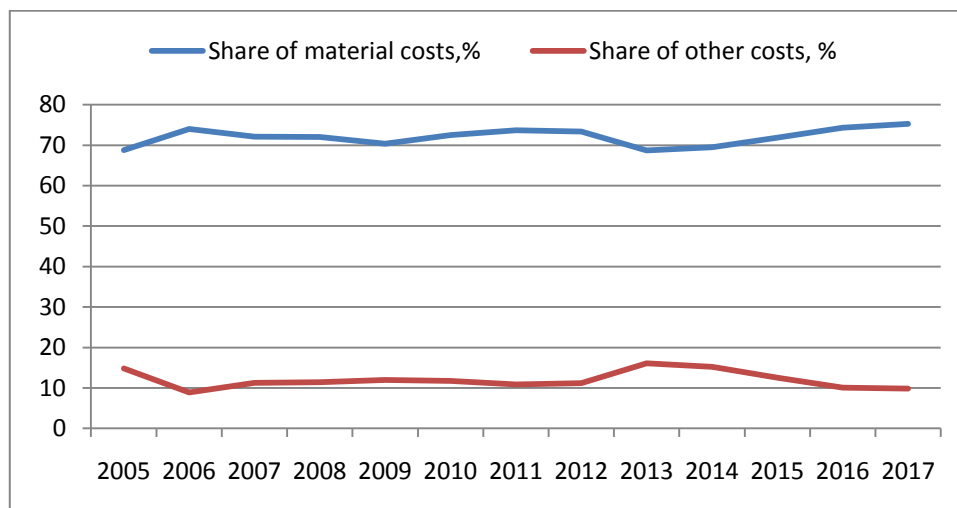


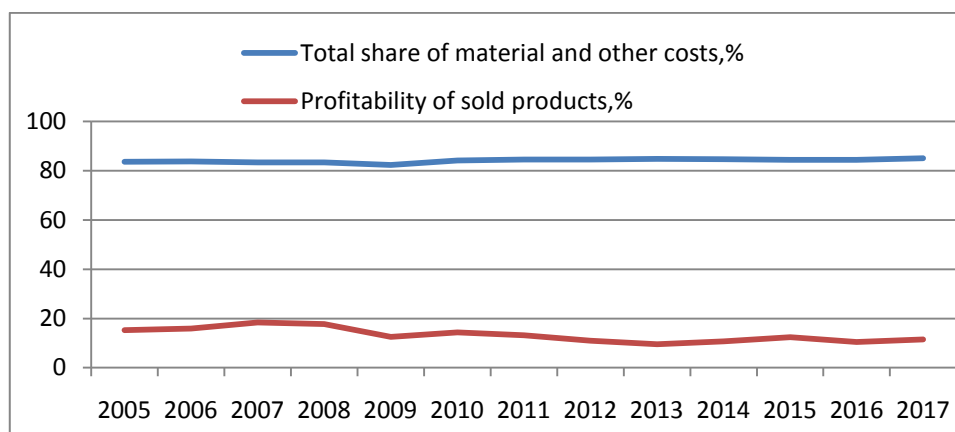
Figure 5. The share of material and other costs in the total cost of production and sale of products in the manufacturing industry of Russia.

Thus, there is an assumption that enterprises neutralize the change in the amount of material costs by changing the amount of other costs, which is reflected in their total share in the total cost of production and sale of products in the processing industries of Russia. As can be seen from table 1, the total share of these costs was almost stable during 2005-2008 and ranged from 83.4% to 83.8%. A similar situation was observed from 2010 to 2016. The total share of material and other expenses ranged from 84.2% to 84.8%.

Table 1. The share of material and other costs in the total cost of production and sale of products in the manufacturing industry of Russia.

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Share of material costs, %	68,8	74	72,1	72	70,4	72,5	73,7	73,4	68,7	69,5	71,9	74,3	75,3
Share of other costs, %	14,8	8,9	11,3	11,4	12	11,7	10,9	11,2	16,1	15,2	12,5	10,1	9,8
Total share, %	83,6	83,8	83,4	83,4	82,4	84,2	84,6	84,6	84,8	84,7	84,4	84,4	85,1

As a result of the predominance of these costs in the cost of products sold, analysis showed a significant impact of the total share of these costs on the dynamics of profitability of products sold in manufacturing industries (Fig. 5).

**Figure 6.** The total share of material and other costs and profitability of sold products in manufacturing industries in Russia.

4. Conclusion

The analysis showed that the main impact on the dynamics of profitability of products sold in manufacturing industries over the study period from 2005. on 2017 provided material and other expenses of enterprises. The total share of these costs during the study period was 84-85%. At the same time, the composition of the material costs of enterprises is quite clearly defined (Art. 254 of the Tax Code of the Russian Federation), which simplifies their control. In addition, the methods of accounting and control of material costs on the basis of rationing are rather thoroughly consecrated in the literature and are widely used by enterprises. [52,53,54,55]

The situation with other costs is more complicated. One of the first regulatory documents regulating the composition of other expenses of organizations under market conditions was the "Regulation on the composition of costs for the production and sale of products (works, services) included in the cost of production (works, services) and on the procedure for generating financial results taken into account taxation of profits", approved by the Government of the Russian Federation of 05.08.1992 № 552. [56]

This resolution recommended the heads of ministries and departments of the Russian Federation to develop and communicate to enterprises and organizations sectoral instructions on planning, account-

ing and calculating the cost of products (works, services) in relation to the specifics of the relevant industries and activities as soon as possible.

The provision became invalid in connection with the introduction of Chapter 25 "Corporate Profit Tax" of the Tax Code of the Russian Federation.

In the letter of the Ministry of Finance of the Russian Federation of 29.04.2002 N 16-00-13/03 "About application of the regulatory documents regulating questions of accounting of costs of production and calculation of cost of production (works, services)" it was noted that measures for realization in 2001 – 2005 Accounting Reform Program in accordance with international financial reporting standards, approved by the Government of the Russian Federation (Letter no. KA-P13-06573 of 13.04.2001), provide, along with the development and approval by the Ministry of Finance of the relevant provisions on accounting (standards), defining the requirements, principles, rules and methods of management of individual assets, liabilities, financial and economic operations common to all economic entities, development and approval of industry instructions for accounting of income and expenses for ordinary types of activity, the executor of which is primarily the Federal authorities engaged in operational management of the branches of the Russian economy.

Currently, other expenses include commissions and other similar expenses for work performed by third parties (services rendered); the amounts of the corresponding taxes and fees assessed in accordance with the procedure established by the legislation of the Russian Federation; rental (leasing) payments for leased (leased) property; expenses for maintenance of official vehicles; travel expenses, legal and information services; the costs of managing the organization or its individual units, as well as the cost of acquiring management services for the organization or its individual units; expenses for stationery, expenses for postal, telephone, telegraph and other similar services, expenses for communication services, computer centers and banks, including expenses for fax and satellite services, electronic mail, and information systems (SWIFT, Internet and other similar systems).

A wide list of costs included in other costs enables enterprises to manipulate these costs, because not always the priority objective of the organization is to improve the financial performance. Often this goal is in conflict with the desire of business entities to reduce the tax burden. The main way to achieve this goal is to reduce the taxable base by increasing the expenses by lawful methods, which are accepted for profit tax purposes.

As before, the problem of developing industry guidelines and instructions for cost accounting and calculating production costs, the need for which is caused by the influence of industry and technological features on the cost structure, methods of their planning and accounting, remains topical. The solution of this problem will allow the use of new methods and approaches in managing the cost of production and will contribute to improving the financial performance of industrial enterprises.

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