Economic and financial aspects of the organization in metal-processing enterprises in the modern Russian economy

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Abstract. The article is justified the significance of the manufacture of machinery and equipment. Consider how the situation has changed in this industry after the transition to a market economy. The key financial ratios are given and the Herfindahl-Hirschman index is calculated. To conduct a study were used such methods as induction, analysis and econometric methods of calculation. The results of the study showed that the situation in the Russian machinery-producing industry deteriorates from year to year, which could lead to the bankruptcy of enterprises and a further lag in Russian industry.

1. Introduction

The system of national economy is characterized primarily by its economic blocs and subjects. Successful economic performance requires appropriate material and technical resources [1, pp.7]. Developing the metal-fabricating industries is the driving force of the scientific and productive development in any state. It is a machinery-producing industry that ensures the development of the country's productive forces and its self-sufficiency, which serves as a factor of homeland security. It can be called the core of the progress in other sectors of the economy [2, pp.48]. Not without reason, the Soviet planned economy was focused more on the so-called group «A». However, its share fell sharply with the collapse of the USSR. Production relations have also changed. Produces quantity is no longer a main company performance indicator even in the machine-building enterprises. Now they are assessed by financial indicators, particularly by the revenue level, profit margin and registered capital [3, pp.58].

The purpose of this article is to determine the place of this industry in the modern Russian economy and analyze its development prospects. In this regard, we estimated the market size, gave a geographical structure of the industry, calculated the dynamics of financial status and its changes in recent years, and also made a comparison between industry averages and national average.

2. Method & Materials

We used a historical approach, mathematical modeling and econometric calculation methods, induction, and analysis as research methods.

First of all, you need to specify that after the start of the transition towards a market economy, the metal-fabricating industry began to drastically lose its leading position. There were many reasons for this. This includes reducing the equipment need due to a massive decline in manufacturing, the financial problems of most enterprises — it has become expensive for them to buy new machine
tools. Also, increased competition from foreign firms that held off from the domestic market, as well as the IMF and WTO policies [4, pp. 30]. On the example of metal-cutting equipment manufacturing, we see that the contraction of volumes began in the late 1980s. But by 1990 it has reached about 40% and by 1995 the decline was more than 6 times. At the present time, we manufacture 4.5 times fewer machine tools than in 1995 and 28 times less than in 1980.

![Figure 1. Dynamics of machine tools manufacturing](image)

So, we see that the manufacturing volume has fallen significantly. Perhaps the remaining plants began to work qualitatively and more successfully? To determine this, consider key economic indicators: revenue and profit.

According to the directory, formed by auditors on the basis of the accounting statements according to the official data of the Federal State Statistics Service of the Russian Federation and the Federal Tax Service, there are 142 enterprises in the industry of “Manufacture of metal-working machines”. The study concentrates on 119 enterprises that provided their data. With that in mind, we can consider the situation in the industry [5].

3. Results

The main criterion for dividing enterprises by range of activity is revenue. In this industry, 62% (74 enterprises) are micro-enterprise (revenues from 10 to 120 million rubles), 36% (43 enterprises) to enterprises with revenues less than 10 million rubles, 0.8% (1 enterprise in each) – medium-sized and large enterprises. If we compare the data as a whole across all industries, then a larger percentage of firms belong to enterprises with revenues of up to 10 million rubles (55.6%). There is a different trend in the industry of machine tools manufacturing due to sector-specific issues.

Considering enterprises territorial boundaries, we see that the majority (57%) of enterprises operate in the Central Federal District (59% of micro-enterprises and 56% of enterprises with revenues up to 10 million rubles). In second place (18.5%) - the Volga Federal District (15% and 21%, respectively). The smallest amount of enterprises in the Far Eastern Federal District (2.5% of all enterprises analyzed) [5]. This trend has persisted since the Soviet period.

In the calculation of the concentration ratio, the following results were obtained:

\[ CR10= 17.87+10.89+6.39+4.97+4.68+4.44+4.42+3.28+2.47+2.47=61.87 \]

This result underlines a moderate concentration ratio. For a better understanding, we calculated the Herfindahl — Hirschman index: HHI=626.7, which is rated as an unconcentrated industry.
Therefore, we can make a conclusion that this industry is closer to monopolistic competition. But it is conceivable that concentration in the industry will increase due to the financial indicators analysis by enterprises (Figure 2).

![Figure 2. Changes in enterprises financial status in industry in 2017 compared to 2016](image)

Therefore, 35 (almost 30%) enterprises of the industry have improved or significantly improved their financial indicators: one large enterprise, 23 micro-enterprises, 11 enterprises with revenues up to 10 million rubles. Indicators of 46 (almost 40%) enterprises deteriorated: 1 medium-sized enterprise, 25 micro-enterprises, 20 enterprises with revenues up to 10 million rubles. Improvement, as well as deterioration, could have happened due to several factors: manufactured goods found/failed to find market acceptance, for example, due to high prices, which has hardened by high production costs, due to unskilled labor of customer relationship managers and other factors [6].

Moreover, if we consider the financial status of metal-working machinery manufacturing enterprises in comparison with the industrial financial performance, we found that a number of enterprises, although they have deteriorated their financial status, have a good or approximately similar financial performance with industry. There are enterprises that have improved performance, but their condition remains unsatisfactory or poor (Figure 3).

![Figure 3. The financial status of enterprises compared with industrial financial performance](image)
4. Discussions
We consider the overall, without dividing enterprises, then 24.37% of them have excellent performance, as much as poor. There are almost 16% of enterprises with good performance and on the other hand 20% with unsatisfactory performance. If enterprises in the near future do not change their development strategy, then about 40% of them may withdraw from the market, which will increase the concentration ratio.

Comparing enterprises performance with the all-Russian financial performance we got slightly different outcomes (Figure 4) [7].

![Figure 4](image)

**Figure 4.** The financial status of enterprises compared with the average financial performance in the Russian Federation.

5. Conclusion
As a result, we obtained that many metal-processing enterprises have financial performance worse than most enterprises in other industries (and markets) of the Russian economy. This corresponds to the situation that exists in the industry since 1992. Therefore, our study confirmed that the Russian machine tool building has a comparatively low-profit margin. Despite some growth in GDP (primarily due to the MIC), the industry under consideration is in a relatively unfavorable financial status. This may lead to the bankruptcy of a number of enterprises and the further underrun of Russian industry from foreign competitors.

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