Problems of increasing the efficiency of using fixed and working capital of petrochemical enterprises

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Abstract. The article discusses topical issues of analysis of the state and improving the quality of management of the structure of fixed and working capital of enterprises of the petrochemical complex. Evaluation of indicators affecting the efficiency of their use made it possible to determine the directions for improving the process of forming the value of fixed and circulating assets of petrochemical enterprises. In conclusion, the authors highlight the successful practices of enterprise asset management.

1. Introduction

The role of the fixed capital of an enterprise in expanded reproduction is determined, first of all, by its impact on labor productivity. For example, even K. Marx noted that an increase in the mass of means of labor and their improvement are the most important conditions, and an increase in the number of objects of labor is only a consequence of an increase in labor productivity. In particular, labor productivity in industry increased over the period 1970-1979. by 52%, and the growth of capital-labor ratio during this period was 82%. Thus, the impact of the saturation of production with fixed assets on labor productivity largely depends on their technical and technological perfection.

An important point in understanding the role of the process of reproduction of fixed assets is the fact that it is in this process that the technical reconstruction and re-equipment of the petrochemical industry as a whole is carried out. In conditions when a good production potential has already been created, the greatest importance is acquired not by the quantitative growth of fixed assets, but by their quality, achieved through, first of all, technical improvement.

The continuous increase in the mass of fixed assets, their qualitative improvement and more efficient use are powerful factors in the growth of production and increase in its efficiency. Basic production assets are the technical base of production for petrochemical enterprises. Thus, the importance of fixed assets is enormous, since they characterize the economic potential of the enterprise, the scale and pace of development of the entire enterprise as a whole depend on their size, quality, technical excellence and effective use.

2. Materials and methods

In the structure of fixed assets of the chemical industry, more than one third falls on the most active part of the assets - working machines and equipment, power machines and equipment, which play a decisive role in the production process. The higher the share of the active part of fixed assets, the more progressive their structure, determined by the technological features of production. Therefore, the
structure of fixed assets of the petrochemical industry is unique, and its individual branches differ significantly from the structure of funds for the industry as a whole.

Table 1. Structure of fixed assets by branches of the petrochemical industry in Russia,%

| Types of fixed assets | Branches of the petrochemical industry |
|-----------------------|----------------------------------------|
|                       | Mining chemistry | Basic chemistry | Plastics and resins | Chemical fibers | Chemical fibers | Rubber-asbestos |
| Building              | 26,53%           | 31,42%           | 34,57%              | 37,82%          | 22,51%          | 44,44%          |
| Constructions         | 31,93%           | 16,93%           | 10,4%               | 7,6%            | 12,79%          | 6,07%           |
| Transfer devices      | 11,22%           | 13,98%           | 12,05%              | 9,49%           | 19,44%          | 4,81%           |
| Machinery and equipment, including power machines and equipment | 25,80% | 35,15% | 40,82% | 43,81% | 42,05% | 42,44% |
| Working machines and equipment | 22,05% | 28,86% | 330,03 | 38,71% | 34,96% | 36,73% |
| Vehicles              | 4,16%            | 2,03%            | 1,37%               | 0,7%            | 1,73%           | 1,25%           |
| Tools, production and household inventory | 0,36% | 0,49% | 0,79% | 1,21% | 0,48% | 0,66% |
| Total fixed assets    | 100%             | 100%             | 100%                | 100%            | 100%            | 100%            |

The efficiency of the use of fixed assets increases as the proportion of equipment in their composition increases. In this regard, the issue of determining the active part of fixed assets for petrochemical enterprises is very important.

This research was carried out on the example of PJSC "Nizhnekamskneftekhim", one of the largest petrochemical enterprises in Europe. The main product segment of the company is traditionally synthetic rubbers, which in 2020 accounted for about 41% of the proceeds from the sale of products of its own production. More than a third of revenue in 2020, the Company started the active phase of construction of a new olefin complex with a capacity of 600 thousand tons of ethylene per year. The project is carried out using the most modern environmentally friendly technologies.

The financial results of the enterprise are highly dependent on the dynamics of prices for petrochemical raw materials on world markets, since there is a high share of exports in the volume of shipped products. Therefore, the proceeds and profits of the enterprise are highly dependent on the conditions for the implementation of export supplies.

Table 2. Main financial results of PJSC "Nizhnekamskneftekhim"

| Index | Indicator value, thousand rubles | Change in indicator thousand roubles | ± % |
|-------|---------------------------------|--------------------------------------|-----|
| 1. Revenue | 162 148 629 | 188 900 616 | 174 088 108 | 147 883 778 | -14 264 851 | -8,8 |
| 2. Expenses for ordinary activities | 131 860 434 | 158 878 813 | 146 354 630 | 127 337 734 | -4 522 700 | -3,4 |
| 3. Profit from sales | 30 288 195 | 30 021 803 | 27 733 478 | 20 546 044 | -9 742 151 | -32,2 |
| 4. Other income and expenses, except for interest payable | -176 198 | 740 373 | 2 057 502 | -15 329 700 | -15 153 502 | ↓ |
| 5. EBIT | 30 111 997 | 30 762 176 | 29 790 980 | 5 216 344 | -24 895 653 | -82,7 |
| 6. Net profit | 23 703 369 | 24 252 001 | 23 707 630 | 4 448 026 | -19 255 343 | -81,2 |
Due to the specifics of the industry affiliation, PJSC "Nizhnekmanskneftekhim" has a significant share of fixed assets in the structure of assets, this is due to the complexity of technological processes at the company's plants, which necessitates the use of a large number of units of main and auxiliary equipment. In general, in the period under review from 2016 to 2020 inclusive, a positive trend of an increase in the value of fixed assets of the enterprise can be noted. So, if at the end of 2016 PJSC "Nizhnekmanskneftekhim" had basic production assets worth 71.46 billion rubles, then by the end of 2020 their value increased to 191.46 billion rubles.

The main source of the formation of the fixed capital of the enterprise is its own capital and long-term borrowed funds, which were attracted to finance the implementation of investment projects of the enterprise related to the expansion of polymer production. As can be seen from Table 5, the amount of long-term loans increased sharply from 59.9 billion rubles. in 2019 to 107.5 billion rubles. in 2020. It should be noted that in 2016-2017. the company practically did not have long-term loans (very low values compared to 2018-2020), since the company almost completely paid off the loans. In 2016, the implementation of an investment project for the production of linear alpha-olefins with a capacity of 37.5 thousand tons per year was completed, and in 2017 the production of formaldehyde with a capacity of 100 thousand tons per year was launched.

However, starting in 2018, the management approved the implementation of a number of investment projects, and therefore the need for long-term loans has increased. Currently, a number of investment projects are being actively implemented, including "New olefin complex and its derivatives" (includes a complex for the production of ethylene with a capacity of 600 thousand tons per year, integrated production of plastics, namely polyethylene, polypropylene), "Construction of a CCGT- TPP "(construction of its own power source with a capacity of 495 MW)," isobutylene production "(with a capacity of 160 thousand tons per year)," Increasing the capacity of isoprene production ". The implementation of these projects has increased the needs of the enterprise in financing, as well as increasing the basic production assets. This is a favorable factor in increasing the production potential of the enterprise, which should have a positive effect on the growth of revenue and profits.

At the same time, it should be noted that the share of working capital in the value of assets has decreased from 44% in 2016 to 27% in 2020. The working capital of the enterprise is considered the most maneuverable, since the most liquid assets are concentrated in the turnover (cash, short-term financial investments, accounts receivable).

Working capital management, quality control of its condition and structure is very important for an enterprise, as it affects its solvency and financial stability. The structure of the company's working capital is dominated by cash and short-term financial investments, stocks of finished products and materials, and then in third place is accounts receivable.

The main source of working capital formation in 2020 was short-term liabilities, the amount of which increased from 12 billion rubles. in 2019 up to 24 billion rubles. in 2020. At the same time, the management conducts a fairly competent financial policy, since in the structure of sources of financing for the company's activities, the distribution is as follows: equity and reserves - about 50%, long-term liabilities - about 41%, short-term liabilities - 9%. Thus, stable liabilities prevail in the structure of sources of financing for the enterprise's activities, which, in turn, contributes to ensuring the normative value of the indicators of solvency and financial stability.

In the structure of equity capital, about 94% is retained (accumulated) profit, the amount of which at the end of 2020 amounted to 122.54 billion rubles. At the same time, since 2019, there has been a tendency towards a decrease in the amount of retained earnings, its maximum value was recorded in 2018, then its value exceeded 147 billion rubles. This decrease is due to the general downward trend in profits in 2019 and 2020, which is also associated with the crisis caused by the coronavirus pandemic.

Nevertheless, despite the high share of equity capital and reserves, due to a sharp increase in the amount of long-term liabilities, the value of the financial autonomy ratio decreased. It must be said that the standards of the presented indicators are met. This was achieved due to the fact that with the simultaneous growth of long-term liabilities, the share of short-term debt in the total amount of
liabilities decreased.

**Fig. 1.** Structure of liabilities of the enterprise of PJSC "Nizhnekamskneftekhim" at the end of 2020

Throughout the entire study period from 2016 to 2020, the investment coverage ratio was close to the value of one. So, at the end of 2020, its value was 0.9. The standard value of this coefficient is in the range of 0.7-0.9. In fact, this ratio is called by another ratio of long-term financial independence. It shows how stable liabilities (equity capital and reserves and long-term liabilities cover the investments made in the fixed and working capital of the enterprise. A competent policy for managing the quality of the structure of funding sources for current assets was reflected, among other things, in a decrease in the share of short-term debt, starting from 2016. In addition, a very high share of cash in the structure of current assets, all this made it possible to prevent a decrease in liquidity ratios below standard values. The value of the indicator of financial autonomy in 2016-2017 was above the standard values, however, since 2018, due to the attraction of long-term sources of financing of fixed capital, this ratio has decreased. But it also remained at the level of the normative values.

Thus, the values of all the coefficients characterizing the structure of the sources of financing the fixed and working capital of the enterprise, as well as determining the financial stability, correspond to the normative values and the standard in the field of financial management of asset and resource management of the enterprise.

With regard to the quality standards of working capital and resource management of an enterprise, it is important to control and continuously monitor the value of its own working capital. If we consider the company's own working capital, taking into account long-term debt, which, according to Russian standards, is equated to stable liabilities, then this indicator, although it has a negative decline dynamics, still remains a positive value, which means it complies with the norms and standards of asset management quality.

If we consider the availability of our own working capital without taking into account long-term liabilities, then in this case there is also a negative decline dynamics, but since 2019 this value has become less than zero, negative values. This, of course, does not meet the standards of quality management of the state and structure of working capital. A negative value indicates a lack of the company's own circulating assets. So, at the end of 2019, the deficit of own working capital amounted to more than 23 billion rubles, and at the end of 2020 it was already more than 84 billion rubles. This is a negative factor in the development of production and economic activities of the enterprise. Since the lack of own working capital leads to a reduction in financing of the production program, which in the future may lead to a reduction in income from the main activities of the enterprise. Therefore, in order to maintain the volume of production of marketable products, the enterprise in the medium term will most likely have to resort to attracting short-term loans to replenish working capital.

The qualitative characteristics of working capital management have a strong impact on the solvency indicators of the enterprise, which is judged on the basis of the values of the liquidity ratios and on the basis of the assessment of the balance sheet liquidity. Management of the quality of the working capital is aimed at maintaining the solvency of the enterprise, ensuring the required level of liquid assets, to comply with the norms and standards of technical solvency.
3. Conclusion

The established practice of managing fixed and working capital in most companies in Russia is characterized by limited views on the asset as such, on its life cycle, and on the value of the asset. It is limited by the framework of the normative system of indicators, as a rule, it is not associated with the strategic goals of the organization and does not project these goals at the level of the organizational unit, that is, the structural divisions of the enterprise. At the same time, the classical quality management system for the state and structure of fixed and working capital can only be an integral part of the overall strategic management system of the company. PJSC "Nizhnekamskneftekhim" is aware of this and is trying to put it into practice, actively implementing investment projects with the aim of updating and increasing the value of fixed assets, attracting funding from outside, but not forgetting to maintain technical solvency standards. This is achieved by competent management of the structure of sources of financing of fixed and working capital.

At the same time, the analysis showed that many indicators characterizing the qualitative characteristics of the fixed and working capital management system have deteriorated.

An important qualitative characteristic of the fixed and working capital of the enterprise is the value of the net asset value. Net asset value is determined as the difference between the value of the company's assets (fixed and working capital is summed up in this case) and the amount of the company's debt (the sum of long-term and short-term liabilities).

The value of the company's net assets had a growth trend until 2018 inclusive, however, since 2019, there has been a decrease in the value of net assets. The main reasons for this negative phenomenon were a decrease in the value of current assets, as well as a sharp increase in the amount of long-term liabilities in 2019, which was associated with the need to attract additional financing for the implementation of investment projects. Since the amount of the authorized capital during the study period remained unchanged, due to a decrease in net assets, there was a decrease in the absolute difference between the value of net assets and the authorized capital.

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The not entirely favorable structure of the fixed and working capital of the enterprise against the background of the increased debt burden led to a decrease in the current liquidity ratio and the ratio of the provision of own working capital. At the same time, if the value of the current liquidity ratio, despite a significant decrease, nevertheless meets the regulatory requirements, then the ratio of the provision of own circulating assets does not correspond to the standards. In this sense, the quality of management of the composition and structure of fixed and working capital has deteriorated.
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