

Price trends for forest products

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Abstract. The forest complex, as a subject of study, possesses unique characteristics and distinct features that are related to its multi-layered structure. This structure connects primary industries and secondary industries that are dependent on the forest resource base. One key characteristic of both the national and global forest products markets is the significant fluctuation in prices for various types of forest products, both on a global and domestic scale. The ban on imports of forest products to European countries from 2022 has led to negative trends in price fluctuations for forest products in the domestic market. Prices for many types of forest products decreased by 1.5 – 2 times during the period of 2022-2023. The Russian Federation faces challenges in the sustainable and efficient development of the forest industry due to the unpredictable fluctuations in global and domestic prices for forest products. Therefore, in such conditions, the study of pricing and the development of an optimal mechanism for pricing timber products becomes an important aspect of management.

1 Introduction

Prices for forest products in the forest market, both domestically and internationally, are subject to significant fluctuations. This poses challenges in successfully executing the state program aimed at promoting sustainable and efficient development of the forest industry. There are also some differences and peculiarities of price dynamics in the domestic and foreign markets, in certain regional markets. An area of research that holds significant importance in the pricing of forest products is to determine the influencing triggers on trends and cyclical dynamics. Certain scientists create classifications of pricing factors to determine the extent to which these factors affect the price changes of forest products. The development of pricing policy emphasizes the significance of selecting the most suitable pricing methods, considering various factors and the unique characteristics of enterprises and the product sales market. Currently, there are numerous approaches and methods available for pricing products. In market conditions, the pricing mechanism for forest products, influenced by environmental factors, can be referred to as a tactical approach, which is determined by the prevailing market conditions. The second approach of pricing for forest products is to form prices based on their value and production costs.

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2 Relevance of the research

Given the current circumstances of fluctuating prices in the global timber market and domestically, it is becoming increasingly important to analyze price fluctuations and trends, assess development prospects, and create price forecasts for different timeframes.

Therefore, the significance of analyzing the price dynamics of timber products in both domestic and global markets is crucial for predicting the future of the Russian forestry industry. The aim of this study is to analyze the prices of timber products in the domestic market and identify the factors that influence price trends. The set goal has defined the following scientific and practical tasks:

- The objective is to examine scientific literature regarding the prediction of product prices, with a focus on timber products.
- Tasks include gathering relevant information, establishing price databases, and analyzing the data.
- Additionally, calculations and analysis will be conducted to assess the main characteristics and patterns of price fluctuations in the domestic timber market using economic and mathematical techniques.
- The aim is to identify key trends and understand the nature of price changes for timber products in the domestic market.

The forest complex, as a subject of study, possesses unique characteristics and distinct features that are related to its multi-layered structure. This structure connects primary industries and secondary industries that are dependent on the forest resource base. At the same time, a number of structural determinants are difficult to analyze and often do not quantify the impact on the price situation on the market of timber products. In addition, an important aspect of the activities of the national forest complex is its integration into the international division of labor and its connection with global market processes. As a result, any global changes have a significant impact on the economic activity of the Russian forest industry. The study's scientific novelty lies in the clarification of methodological approaches to pricing and the expansion of practical tools for forecasting product prices in the domestic market for timber products.

3 Theoretical studies

Many issues of pricing for industrial products in the scientific literature remain controversial and require proper research and justification [1, 2, 10]. A significant number of pricing studies are conducted in relation to the products of the oil and gas industry, as it is a key industry of the global and national economies. There are numerous studies available on consumer products, particularly consumer goods, which receive continuous monitoring and attention from various government and public organizations. However, there is a lack of sufficient scientific research on the pricing of forest products. Nevertheless, the complexities and multifaceted nature of price dynamics present significant challenges and problems [10]. Among the scientific works, it should be noted the publication of Z.I. Fetishcheva and I.N. Nazarenko [15], who studied the pricing policy at enterprises of the forestry complex. The peculiarities of the dynamics of timber prices in the regional context were studied by P.T. Voronkov, L.V. Borisova and A.N. Belov [3]. Scientists have determined that for enterprises of the forest complex to be competitive, it is necessary to have a certain assortment, which allows them to have a stable condition, since prices for forest products vary in different ways. E.V. Cheblakova [14] analyzed the influence of factors on forest products and highlighted the peculiarities of the formation of forest tariffs. The author found that with low forest tariffs, "conditions are created for mismanagement, irrational attitude to the forest, its depreciation, and there is a shortage of funds for carrying out the necessary forestry work" [14].

Conversely, at high tariffs, the cost of processing industries increases, which ultimately affects the prices of the final products of the forest complex. I. V. Evseeva and A. N. Makhlov [7] studied the pricing trends for the products of the forest complex, and concluded that price formation depends largely on the channels of commodity movement, and from taxation in the state. The authors have established the structure and types of prices. A team of scientists from the Siberian State University of Science and Technology, including T.G. Ryabov, A.P. Mohirev, S.O. Medvedev, and A.S. Lyshko, led by Academician M.F. Reshetnev [6] was installed that forest products are influenced by both general price-forming factors (Fig.1) and "certain difficulties and specifics are inherent: forest assessment, climatic conditions, forest taxes, integrated use of wood, assessment of secondary resources and much more"[6].

Demand factors:

- effective demand;
- the level of savings, savings;
- volume of demand;
- consumer properties
- and others .

Consumer choice factors:

- the structure of customer needs;
- product substitution ;
- product competitiveness
- and others .

Supply factors:

- production capabilities of the enterprises of the forest complex;
- stock level;
- production and handling costs;
- the ratio of variable and fixed costs;
- the price of the means of production, the cost of capital;
- application of fiscal policy;
- profit and its distribution directions;
- and others .

State regulation of prices, carried out in two forms:

- administrative (direct) price regulation);
- economic (indirect) regulation (taxes, excise taxes, duties)
- etc.

Fig.1. General price-forming factors of value formation

M. V. Sergeeva [12] conducted an analysis of pricing in the logging sector of Russia, and determined that two models of price formation are used (market price and contract price). The author devoted special attention to the study of the first model in which the price is set based on an analysis of supply and demand. When modeling timber prices, greater importance is given to the supply aspect. The optimal cutting time is determined by setting it at the point where the rate of change in logging volume is equivalent to the change in the interest rate on land lease. In her analysis, M. Frolova [16] examined the decrease in lumber prices. T.V. Sharonova, M.S. Abrosimova, and T.P. Vieru [17] conducted a study on the changes in prices at woodworking enterprises during the period of sanctions. E.U. Osmanova and A.V. Kulakova [11] investigated the features of regional pricing in the forestry complex on the example of the Republic of Crimea. E. S. Zambrzhitskaya and E. Y. Shchepotyeva [8] investigated the cost system and cost calculation of products in the woodworking industry with subsequent improvement of accounting methods. Scientists V.I. Grigoriev and N.A.

Ermakova [5] traced the transformation of the benefit of products in the forest complex. Special attention to price analysis began to manifest itself in 2022-2023, when sanctions restrictions on Russian forest products triggered a process of sharp price fluctuations for many types of forest products [4, 13].

At present, research has been carried out on the pricing and price trends of forest products. Nevertheless, these studies are inadequate. Moreover, the evolving nature of this industry calls for further research and the development of novel forecasting techniques.

4 Research objectives and methods

In order to validate the known variations and the trend movement process, statistical analysis techniques and economic and mathematical methods were employed to model the stochastic price dynamics of domestic timber products [4]. The study involved conducting regression and correlation analysis. To confirm the disparities in price time series for timber products, one-dimensional and two-dimensional analysis of variance were utilized.

To study prices for forest products, data from the Federal State Statistics Service, the Federal Customs Service, and other sources were utilized.

5 The results

The importance of studying pricing and creating an optimal pricing mechanism for timber products is increasing as international trade relations undergo transformation due to anti-Russian policies [13]. The Russian forest complex has recently faced unprecedented sanctions pressure. At the beginning of 2022, a ban was imposed on the import of the bulk of forest products to European countries, which accounted for 75% of the volume of forest products produced in Russia. Wood and wood products, wood pulp, charcoal, kraft paper, certain types of cardboard, furniture and furniture sets were sanctioned. In October 2022, due to the adoption of the eighth package of EU sanctions, almost the entire list of pulp and paper products fell under the export embargo. The plants located in Siberia and traditionally focused on the Chinese market turned out to be in a more advantageous position, almost without feeling a sales failure. Moreover, for producers from the European part of the Russian Federation, the closure of the European export direction led to the need to reduce production volumes. These problems have predetermined negative price trends and high price volatility for all types of forest products in the domestic market. An analysis of the dynamics of lumber prices showed that over the period 2021 and March 2022, the price rose by 57%. Since the sanctions began in 2022, prices have been falling, which continued in 2023. (Fig. 2). In October 2023, the price of softwood lumber was 2,560 rubles per cubic meter, which approximately coincides with the beginning of 2021. Similar price dynamics is observed for other products of the logging and woodworking industries. The trend coefficients of the linear equations of the dynamics of wood prices for the analyzed period have negative values.

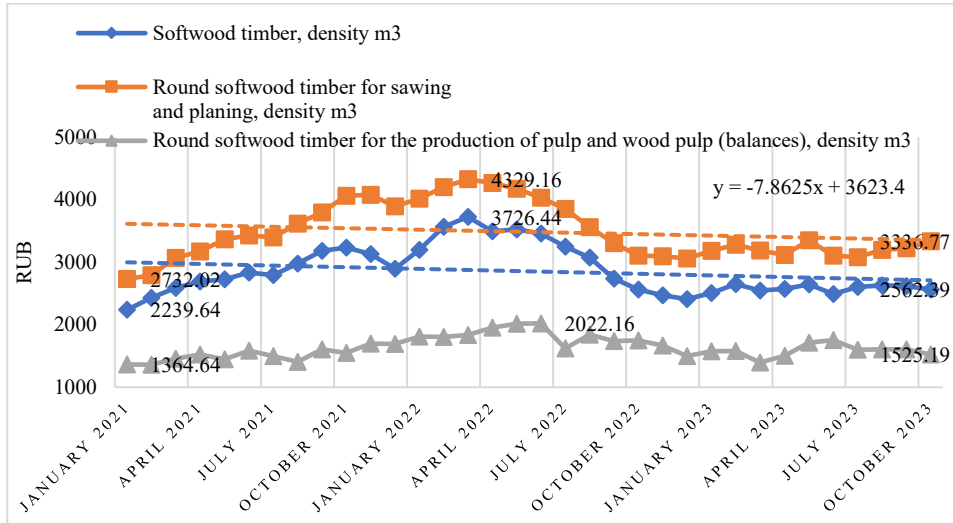


Fig. 2. Dynamics of average prices for Russian timber producers

Source: compiled by the author based on data from Federal State Statistics Service. [electronic resource]. URL:<https://rosstat.gov.ru/statistics/price> (accessed 12/01/2024).

The situation is more uncertain in the dynamics of prices for lumber, which is also an export-oriented type of product. Before the sanctions were imposed, the share of export sales of Russian lumber was about 70% of the production volume. Consequently, the price dynamics for lumber is primarily determined by global market trends, and the sanctions imposed have had a negative impact on lumber prices. As a result, since April 2022, prices for softwood lumber have decreased by 35% from 16,737 rubles/ m3 up to 10909 rubles/ dense m3 (fig.3). A significant decrease in prices in 2022-2023 also occurred for veneer, plywood, wood slabs, and other timber products.

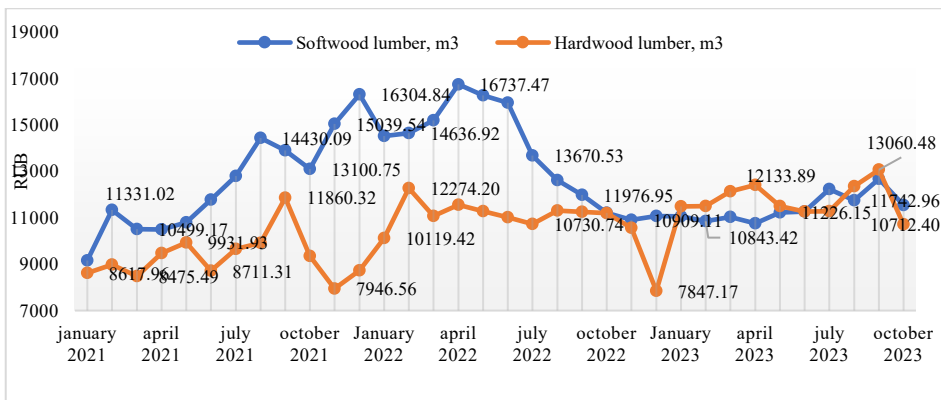


Fig. 3. Dynamics of average prices for lumber from Russian manufacturers

Source: compiled by the author based on data from Federal State Statistics Service. [electronic resource]. URL:<https://rosstat.gov.ru/statistics/price> (accessed 12/01/2024).

A different and more positive situation is observed in the dynamics of prices for pulp and offset paper. Although a small, but positive trend remained for offset paper until the end of 2022 (Fig.4). In 2023, there was a decrease in the dynamics of pulp prices – in a few months

the price decreased by 15%. In general, linear trends in the dynamics of prices for pulp and paper for the period 2021-2023 have positive coefficients.

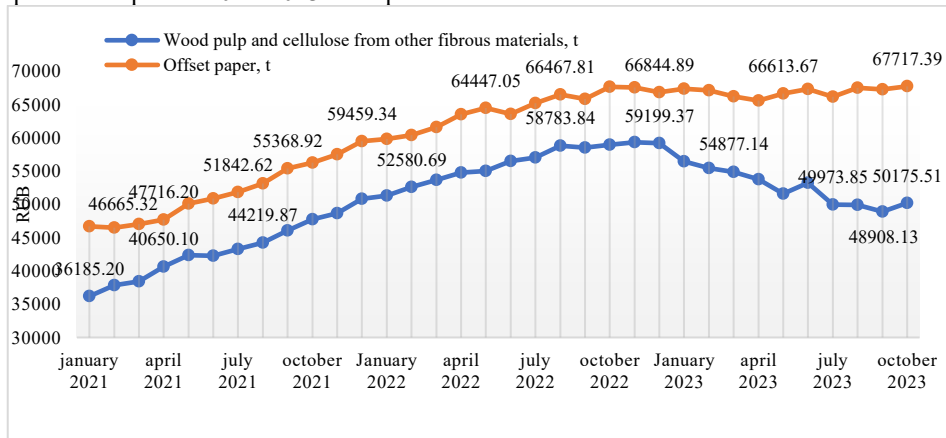


Fig. 4. Dynamics of average prices for pulp and offset paper from Russian manufacturers

Source: compiled by the author based on data from the Federal State Statistics Service. [electronic resource]. URL: <https://rosstat.gov.ru/statistics/price> (accessed 12/01/2024).

The negative trends in cardboard prices started in May 2022, and by January 2023, prices had decreased by half. The linear trends show negative coefficients (Fig. 5). In addition, there were significant fluctuations in price dynamics throughout 2023.

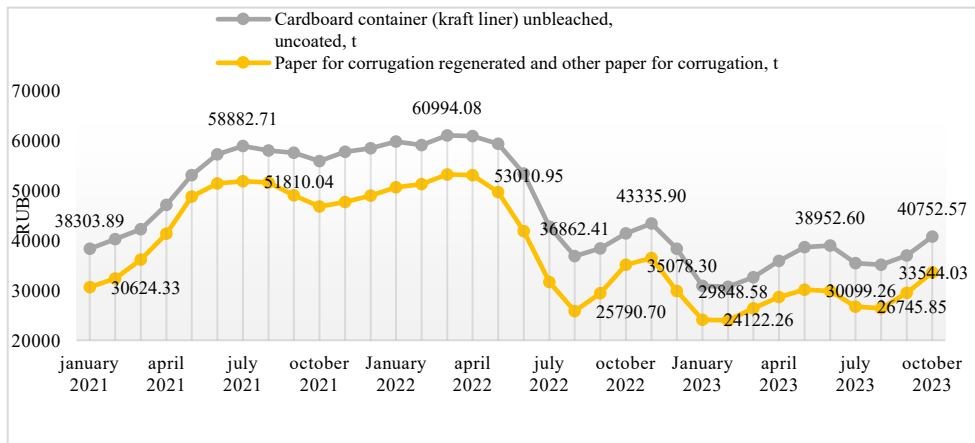


Fig. 5. Dynamics of average prices for cardboard from Russian manufacturers

Source: compiled by the author based on data from [electronic resource]. URL: <https://rosstat.gov.ru/statistics/price> (accessed 12/01/2024).

5 Conclusions

The analysis of timber prices in the domestic market and the identification of determinant factors in the current period showed negative price trends for all types of forest products. These trends are associated with a complex geopolitical situation, because of which there is a destruction of commodity flows, the disintegration of world trade. Initially, this impacted the export-oriented sectors of the Russian economy within the global system. The forest complex is traditionally export-oriented, and for some types of forest products, the volume

of supplies to the world market amounted to about 60% -70% of the production volume. Accordingly, the ban on the import of Russian forest products has led to financial and economic problems in the activities of Russian timber producers. Russian producers of forest products are forced to look for new markets, reduce production volumes, change pricing policies, offering significant discounts and deferrals. New timber supply relations are being built with friendly countries. Today, Russian timber producers are reorienting the supply of timber products to Asian and African countries, which causes transformations of the logistics system, which is accompanied by an increase in the cost of transportation and maintenance of warehouse hubs. All this has led to negative trends in the domestic market.

The unstable dynamics of world prices for timber products is also associated with the above-mentioned problems, which are layered with cyclical fluctuations. We utilized data from the Federal State Statistics Service, the Federal Customs Service, and other sources to study prices for forest products.

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