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.
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.

3 Theoretical studies
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. Makhalov [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].

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

- 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.
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

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.
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 10,909 rubles/dense m³ (Fig. 3). A significant decrease in prices in 2022-2023 also occurred for veneer, plywood, wood slabs, and other timber products.

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](https://example.com/fig4.png)


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](https://example.com/fig5.png)


### 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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References


