Does price matter? A case in Slovenia private forest management

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ABSTRACT

In addition to planning appropriate measures and their dynamics, foresters are often faced with the problem of implementing measures and activating forest management. The latter is particularly relevant on small private forest property and in times of intense climate change impacts. This study analyses data on timber purchases from private forests in Slovenia. Based on timber purchases, the study analyses the factors influencing the activity of forest owners to implement forest management in their forests. In a market economy, the price of products or services encourages or discourages management activity. We wanted to find out whether the price and the purchase of timber from private forests in Slovenia are positively correlated. Using an online application, we obtained data from the Statistical Office of the Republic of Slovenia on the volume, value and average price of timber purchased at the national level. The Pearson correlation coefficient was used to evaluate the relationship between the unit price and the volume of purchases by type of use and by group of tree species. The study showed that, for the vast majority of timber purchases, the dynamics of timber purchases from private forests is not driven by price, but on the contrary - the price of timber depends on the dynamics of timber supply on the market. The study also showed that the price of timber and the dynamics of timber purchases from private forests in Slovenia are positively correlated in the case of some of the less exploited tree species.

KEYWORDS

Wood purchase, wood price, private forests, forest management, Slovenia

1 INTRODUCTION

Forests perform a variety of functions, classified as ecological, social and productive. The relationship between these functions can vary considerably in terms of emphasis, and the measures of forest management is adapted accordingly. The combination of functions may vary, requiring specific and more complex treatment with different levels of active involvement of stakeholders.

The conditions necessary for the provision of forest functions are ensured by a system of forest management plans, which define measures to ensure the fulfilment of individual

forest functions. It is not enough to plan measures. It is also necessary to ensure that they are implemented. In addition to the planning of appropriate measures and their dynamics, foresters are often faced with the problem of implementing the measures or activating forest management - especially when the structure of forest owners is unfavourable in terms of their motivation to manage the forest (small and fragmented ownership, (in)dependence on income from forestry, lack of skills and knowledge to carry out the forest work, remoteness, co-ownership, etc.). In countries where private forests dominate, the implementation of forest management measures depends to a large extent on the motivation of forest owners. However, the motivation of forest owners to manage their forests and thus to implement forest management plans can vary considerably. Several studies and typologies of forest owners have been carried out to analyse the motives and preparedness for managing private forests (Ficko et al., 2019; Poje et al. 2016; Tiebel et al., 2022; Malovrh et al., 2015).

In a market economy, besides a number of other factors (knowledge about forest management, forestry equipment, accessibility of the forest, development of the market for forest operation, the organisation of forest owners' cooperation, the activity of the public forest service, the incentive system provided by the state, and many others), supply and demand are certainly among the most important factors that motivate forest owners to manage forests and, consequently, determine the price of forest products and services.

In this study, we wanted to find out whether the price of wood influences the dynamics of purchasing wood from private forests in Slovenia. We hypothesised that a higher timber price on the market would have a positive effect on the volume of timber purchased from private forests in Slovenia.

2 METHODS

To analyse the relationship between the price of wood and the purchase of wood from private forests in Slovenia, we used publicly available data from the Slovenian Statistical Office (SiStat, 2023). The data on purchases of different wood assortments (logs, pulpwood and panels, other industrial roundwood, firewood) are collected from units (purchasers) that buy wood from private producers or private forest owners. The representative enterprises are selected as units that buy wood directly from private forest owners. Slovenian Statistical Office collects monthly the data on the quantities and values of wood purchased. The average price per unit is calculated on the basis of the value and quantity of wood purchased.

Data were analysed for the last decade (2013 to 2022). Pearson's correlation coefficient was used to analyse the relationship between the quantities purchased by species group and wood assortment and by the corresponding average wood value.

3 RESULTS

The application of the Slovenian Statistical Office (SiStat, 2023) provided queries showing the volumes of wood purchased by year and by wood assortment and by group of tree species, their values and average prices per unit purchased (Table 1).

Table 1. Total volumes and average prices of timber purchased from private forests over the last decade, by type of wood assortment in Slovenia.

Year	Volume [m³]				Average price [EUR/m³]			
	Sawlogs	Wood for pulp and panels	Other industrial roundwood	Firewood	Sawlogs	Wood for pulp and panels	Other industrial roundwood	Firewood
2013	389,220	145,656	26,299	46,667	72.90	34.65	38.77	38.19
2014	482,240	263,667	36,671	86,523	64.51	26.89	34.19	36.10
2015	645,842	259,325	36,700	106,452	59.33	25.23	34.46	29.43
2016	902,225	293,431	30,668	85,075	60.67	25.16	35.71	30.90
2017	741,278	242,156	29,150	60,381	63.34	30.07	39.90	36.26
2018	697,237	254,592	27,572	88,434	65.67	35.34	42.46	41.88
2019	640,119	236,738	27,986	91,889	63.42	34.93	43.19	45.66
2020	524,202	240,781	25,523	90,254	63.03	35.07	38.67	40.36
2021	542,986	244,204	16,079	59,122	86.71	37.65	38.52	43.45
2022	527,923	199,543	23,303	52,082	102.00	47.09	53.97	56.75

The volumes of wood purchased and their average values show slightly different dynamics. While prices, after an initial fall in 2014, show a predominantly upward dynamic, the volumes purchased are also generally increasing, but with a more intense dynamic, which also shows distinct intermediate periods of rapid increases and decreases in the volume of timber purchased.

The correlation between the volume of wood purchased from private forests and its average price was also tested using Person's correlation coefficient for each species group and its assortment (Figure 1).

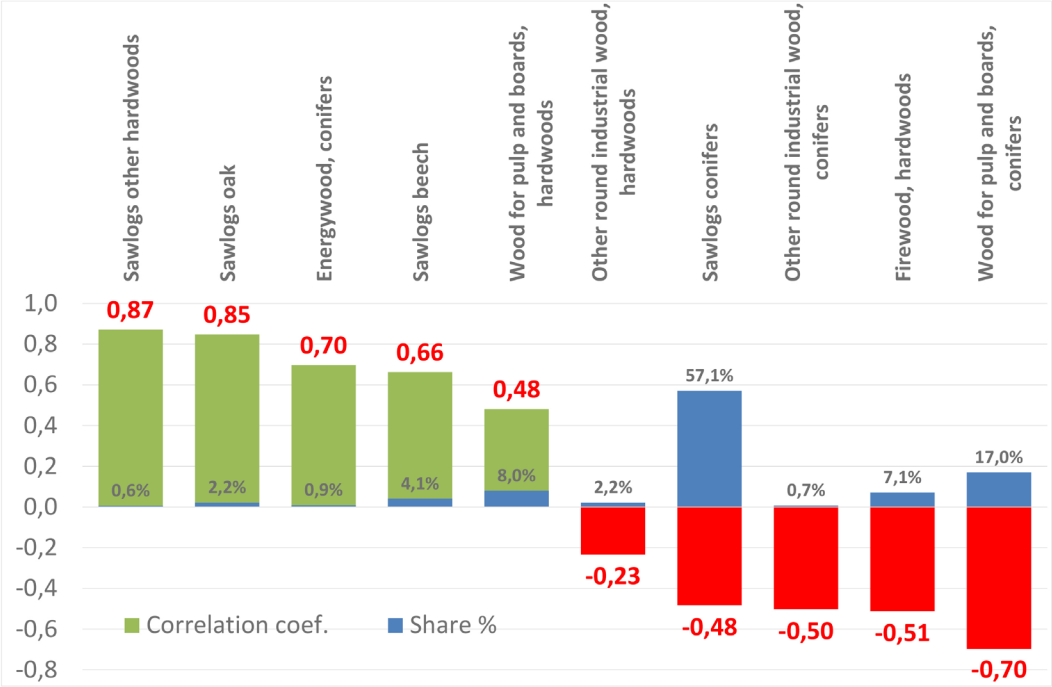

Figure 1. Correlation coefficient between the volume and value of timber purchased by tree species group and wood assortment, and their shares.

The analysis shows that for 84.2% of the volumes purchased, the volumes purchased and their prices are not positively correlated (correlation coefficient less than zero). The species with the highest proportions of purchases (coniferous pulpwood, hardwood energy wood and especially coniferous logs) show a high negative correlation. On the other hand, for some of the less used species (other broadleaved species, oak logs, coniferous energy wood) there is a positive correlation between the volume of purchases and the average price of wood. A positive relationship is also observed for some of the more common species, such as beech logs and hardwood pulpwood.

4 DISCUSSION AND CONCLUSION

Price increases and the purchase of wood from private forests in Slovenia do not follow each other for the vast majority of wood assortments. This is mainly due to the circumstances affecting forest management in the last decade. During this period, the increase in forest management activity by forest owners was strongly influenced by the salvage of timber from the consequences of storms and subsequent damage caused by destructive mechanisms (mainly by bark beetles, but partly also by catastrophic floods and fires). At the time of the storm and the resulting damage, there was an increase in the supply of timber on the market, which undoubtedly had a negative impact on the price of timber. The latter can be seen as a slight price decrease after the ice break in 2014, followed by a slight price dynamic until the pandemic year 2020. The price stagnation can also be explained by the fact that the supply of wood has also increased in neighbouring countries (Austria, Italy), which were not affected by the ice break, but whose forests were increasingly affected by climate change (and the resulting bark

beetle outbreak). The resilience of forests to the increasingly pronounced effects of climate change is important for the long-term success of forest management and the associated wood processing industry, and for ensuring the ecological and social role of forests. Forest management has an impact on the ecological and social functions of forests and on the business performance of wood processing industry. The ecological and social functions are better fulfilled by vital and stable forests with a mix and age structure of forest stands, appropriate to the forest site. The wood processing industry, on the other hand, needs a stable wood supply at a reasonable purchase price.

The analysis shows that the dynamics of wood purchases from private forests is not driven by price for the vast majority of wood purchases - on the contrary, the price of wood depends on the dynamics of wood supply. This is particularly evident in the current climate change-induced dynamics, where the forest management activities of most forest owners are motivated by mitigating the effects of climate induced disasters. Thus, we rejected the hypothesis that a higher timber price on the market has a positive effect on the volume of timber purchased from private forests in Slovenia.

At the same time, the study showed that the price of timber and the dynamics of timber purchases from private forests in Slovenia are positively correlated in the case of some less used tree species. However, the less used tree species have a higher future potential due to climate change, as they are more resilient to future climate change.

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https://doi.org/10.20315/SilvaSlovenica.0022.36