COMPARATIVE ANALYSIS OF THE US IMPORTATION SEASONALITY OF WOODEN MOLDINGS MADE OUT OF BRAZILIAN AND CHILEAN CONIFERS

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Resumo

Análise comparativa da sazonalidade das importações americanas de molduras de madeira de coníferas do Brasil e do Chile. As molduras de madeira de coníferas são consideradas produtos madeireiros de maior valor agregado, utilizadas para diversas finalidades na construção civil. O Brasil é o principal exportador mundial desse produto, tendo os Estados Unidos como o seu principal mercado de destino. A análise do comportamento das importações e exportações é de grande importância para definir estratégias com intuito de obter ou aumentar a vantagem competitiva e para melhorias na comercialização dos produtos. O objetivo deste estudo foi analisar a sazonalidade das importações americanas de molduras de madeira de coníferas do Brasil e do Chile, principal concorrente do produto brasileiro no mercado americano. Para realização deste trabalho, foram coletados dados mensais da quantidade das importações americanas das molduras brasileiras e chilenas no período de 2011 a 2017 na base de dados do Departamento de Agricultura dos Estados Unidos/ Foreign Agricultural Service. Utilizou-se a metodologia proposta por Hoffman (2006) para o cálculo dos índices estacional e de sazonalidade. Os resultados indicaram que as importações americanas das molduras de madeira de coníferas, tanto do Brasil quanto do Chile, possuem comportamento sazonal com uma grande amplitude de variação do índice estacional.
Palavras-chave: importações, sazonalidade, molduras de madeira.

Abstract

Conifer wood moldings are classified as high value-added wood products and are used for several purposes in civil construction. Brazil is the world's leading exporter of this product and the United States are its main destination market. It is very important to analyze the behavior of such importations and exportations to set strategies to obtain or increase the competitive advantage and improve the commercialization of these products. The objective of this study was to analyze the US importation seasonality of conifer wood moldings from Brazil and Chile, the main competitor of the Brazilian product in the US market. To write this paper, monthly data of the quantity of US importations of Brazilian and Chilean moldings from the period of 2011 to 2017 were collected from the database of the United States Department of Agriculture/Foreign Agricultural Service. The methodology proposed by Hoffman (2006) was employed to calculate the seasonal and seasonality indexes. The results indicated that the US importation of conifer wood moldings, both from Brazil and Chile, have a seasonal behavior, with great variation of the seasonal index.
Keywords: importations, seasonality, wooden moldings.

INTRODUCTION

The segment of wooden moldings, made out of conifers or otherwise, exhibited a constant evolution of the volume produced. Between 2006 and 2015, the molding production increased 27.6%, an annual average of 2.7% (ABIMCI, 2016). Analyzing only the exportations of conifer wood moldings, the most exported product, the quantity exported increased 20.44% between 1998 and 2015 (VALERIUS; SILVA, 2017). This growth is especially due to the strategic option of this segment of choosing the foreign market, with the United States as its main destination market.

According to UnComtrade's (2018) data, in 2017, about 95% of the total commercialized by the Brazilian companies was sent to the United States. In this market, the Chilean product is the main competitor of the Brazilian product. From the total imported to the United States, 34.4% comes from Brazil and 24.1% comes from Chile (UNCOMTRADE, 2018).

The competitiveness of the companies that compose this sector is one of the main factors that affect its performance in the world market. The competition capacity depends on several factors, both exogenous and endogenous to the company, such as the government policies, the country's infrastructure, the business strategies, the companies' capability of responding to treats and weaknesses, of adapting themselves, of continuously innovating themselves, et cetera (COSTA *et al*).

Additionally, it is essential that the companies are acquainted with the market in which they trade, the rules that guide them, and the factors that affect them. All these pieces of information are the foundation to come up with better strategies and actions, with the purpose of creating competitive advantages that would allow a company beat the competition, win the market, satisfy its clients, and gain profit in the market segment in which it trades.

Therefore, being aware of the importation and exportation behaviors is very important to set strategies, focus on obtaining or increasing competitive advantages and improve the commercialization of the product (SOARES *et al*, 2015).

In the last few years, several studies were made to identify seasonality standards in exportations, importations, and in the price of Brazilian agribusiness products. Examples thereof are the studies of Lazzarotto and Fioravanço, 2013; Signor *et al*. 2013; Marin, Cavalheiro, and Anschau, 2011.

As for the seasonality subject, in the forest-based sector, the following studies can be highlighted: the studies of Cardoso et al. (2013), in which the authors analyzed the price seasonality of the Brazilian cellulose shipped to the US market between 1997 and 2010, of Dreyer *et al*. (2017), in which the authors studied the price seasonality of the Brazilian plywood exported to the United States between 2004 and 2015, and of Soares *et al*. (2015), who analyzed the price seasonality of the Brazilian cellulose commercialized with China between 1997 and 2012.

Before the relevance of these seasonality studies for the analysis of importing markets and to set better commercialization strategies, the goal of this study was to analyze the US importation seasonality of conifer wood moldings from Brazil and Chile, the main competitor of the Brazilian product in the US market.

MATERIAL AND METHODS

Data source

To write this paper, monthly data of the quantity of US importations of Brazilian and Chilean conifer wood moldings from the period of 2011 to 2017 were collected.

The commerce data were obtained from the United Nations' database (UNCOMTRADE, 2018). According to the Mercosur Common Nomenclature's (NCM) classification, conifer wood moldings fit the code 44.09, which has the following definition: Wood (including strips and friezes for parquet flooring, not assembled) continuously shaped (tongued, grooved, rebated, chamfered, V-jointed, beaded, moulded, rounded or the like) along any of its edges, ends or faces, whether or not planed, sanded or end-jointed. It can also be: 44.09.10 – Of coniferous, 44.09.20 – Of non-coniferous, 44.09.21 - Of bamboo, and 44.09.29 - Others. This study analyzed only the conifer wood moldings (code 44.09.10) because it is the main product of the category imported by the United States.

Seasonality analysis

The objective of the seasonality forecast is to analyze how a product's quantity or price vary over the year, influenced by characteristics of the year or market seasons, which exert a lot of influence over the production and sales strategies.

To determine the seasonal variation of the quantity of Brazilian and Chilean conifer wood moldings imported by the United States, the seasonal index was calculated initially for the period of June 2011 to June 2017, according to Equation 1, proposed by Hoffmann (2006) and employed by Soares *et al*. (2015), Cardoso *et al*. (2013), and Dreyer *et al*. (2017), allowing us to see the variation of the quantity imported by the US market over the whole period of analysis, around its mean value.

$$D_{ij} = \frac{P_{ij}}{G_{ij}} \qquad\qquad 1$$

Where:
D_{ij} = seasonal index;
P_{ij} = quantity – linear meters (m);
G_{ij} = mobile geometric mean of the quantity;
i = year;
j = month.

Then, the seasonal index of the quantity was determined according to Equation 2. This index exhibits the oscillation trend of the variable (HOFFMANN, 2006).

$$\varepsilon_{-j} = \frac{G_j}{C} \; x \; 100 \qquad\qquad 2$$

Where:
ε_j= seasonal index
Gj = geometric mean of the quantity of the j-nth month;
C = geometric mean of the seasonal indexes.

The last stage consisted in determining the irregularity index, which was obtained by Equation 3. This index allows us to set the lower and upper limits of the calculated seasonal indexes, respectively, by the product and quotient of the seasonal and irregularity indexes (HOFFMANN, 2006).

$$S_j = EXP(s_j) \qquad 3$$

Where:
Sj = irregularity index;
sj = standard deviation of the quantity of the j-nth month.

RESULTS

Figures 1 and 2 respectively show the behavior of the seasonality index of the quantity of Brazilian and Chilean conifer wood moldings imported by the United States between 2011 and 2017.

Figure 1. Seasonality index of the quantity of conifer wood moldings imported by the United States from Brazil between 2011 and 2017.
Figura 1. Índice de sazonalidade da quantidade importada pelos Estados Unidos de molduras de madeira de coníferas do Brasil no período de 2011 a 2017.

Figure 2. Seasonality index of the quantity of conifer wood moldings imported by the United States from Chile between 2011 and 2017.

Figures 3 and 4, though, present the behavior of the seasonal index of the quantity of Brazilian (Figure 3) and Chilean (Figure 4) conifer wood moldings imported by the United States between 2011 and 2017.
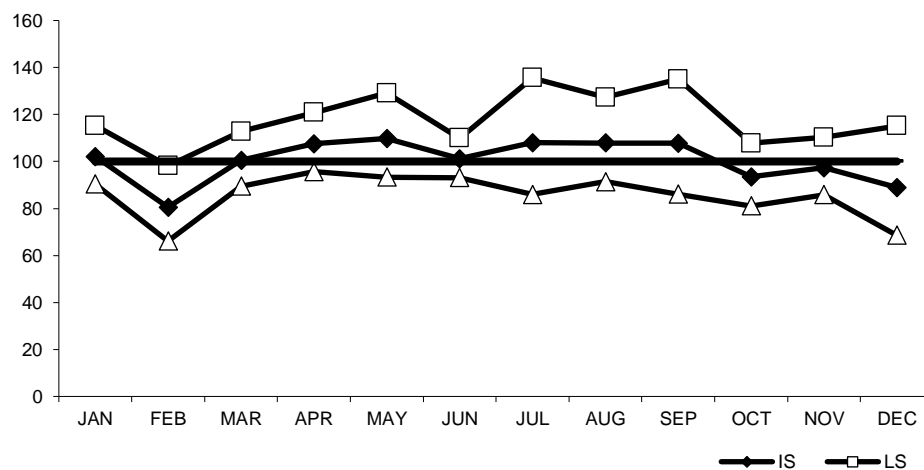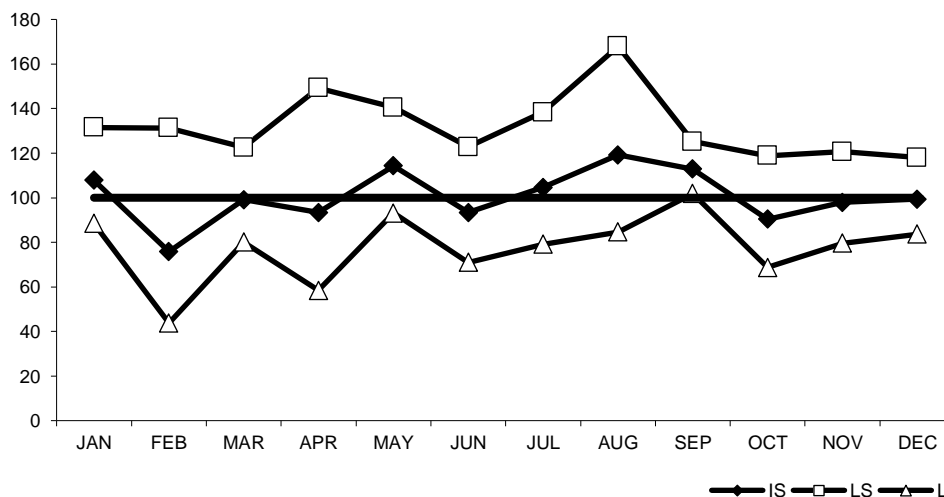

Figure 3. Seasonal index of the quantity of Brazilian conifer wood moldings imported by the United States between 2011 and 2017.
Figura 3. Índice estacional da quantidade importada pelos estados unidos de molduras de madeira de coníferas brasileiras no período de 2011 a 2017.

Figure 4. Seasonal index of the quantity of Chilean conifer wood moldings imported by the United States between 2011 and 2017.
Figura 4. Índice estacional da quantidade importada pelos estados unidos de molduras de madeira de coníferas chilenas no período de 2011 a 2017.

DISCUSSION

The upper (LS+) and lower (LI-) limits presented in Figure 1 show, for each month, the spread interval of the seasonal indexes of the quantity of Brazilian conifer wood moldings imported by the United States.

According to the results, despite the fall in June, the Brazilian product US importations tend to be greater between April and September, especially in July, the month in which the index was higher. A possible explanation for the greater demand during that time are the seasons. This period includes the spring and summer in the United States, a period in which the number of constructions is greater and, consequently, the demand for this product increases. This hypothesis is confirmed by the Census Bureau's (2018) data, which show that, between April and

September, the number of housing units that began to be built was 62% higher in comparison with the period between October and March.

As for the period between October and March, the importations tend to be lower. This period includes the fall and winter in the United States, a period in which the rhythm of civil constructions slows down.

Therefore, we can say that the period between April and September is the best one to trade conifer wood moldings with the United States, period in which this market imports more of the Brazilian product. More attention should be given to this period for the development of strategies.

Nevertheless, although the period from April to September presents the higher levels of Brazilian molding importation, the great amplitude given by the lower and upper limits show that there is great variance in the indexes around the mean, indicating that there are risks that should be taken into account.

As for the seasonality index behavior of the US importations from Chile, the main competitor of the Brazilian product, the upper (LS+) and lower (LI-) limits (Figure 2) showed, just like the analysis of the Brazilian product, that the demand tends to be greater between April and September, also with an elevated decrease in June. As for the period between October and March, the importations tend to be lower.

It is noteworthy that, similarly to the Brazilian product, there is a variation between the mean value and the upper and lower limits in some periods, which indicates that the market strategies of the Chilean and Brazilian companies should take said instability into account.

Analyzing the quantity oscillation standard of the Brazilian product imported by the United States (Figure 3), we notice that there is, indeed, great instability in the seasonal index's behavior. Said instability is represented by the variation amplitude of the seasonal index, which was of approximately 62, as the lower index (68.25) was registered in December 2011 and the higher index (130.25) in July 2013.

The seasonal index's variation amplitude (Figure 4) of the Chilean product US importations was of 101.76, which was higher than the value presented by the Brazilian moldings, as the lower index (48.65) was registered in January 2015 and the higher index (150,41) in August 2012.

We noticed that the lower and higher indexes for the Chilean and Brazilian products did not happen in the same years, indicating that the factors responsible for such standard oscillations in the importations cannot be the same.

We recommend that future studies make efforts to identify which variables caused such variation during these periods. Once these factors are identified, it will be possible to create models that will help predict the behavior of the Brazilian product US importations based on the oscillation of this behavior's determining variables, as well as strategies to decrease such oscillation.

Comparing the seasonal behavior of the Chilean and Brazilian product US importations, some important differences are noteworthy. The demand of the Brazilian product decreases more between October and December, as the importations of the Chilean product are lower between January and June.

At the same time, August has an elevated positive standard deviation for the Chilean importations, as the demand of the Brazilian product in the US market decreases in this month.

Ergo, it becomes evident that there is a different behavior in the seasonal standard of the Chilean and Brazilian molding US importations in some months. Therefore, it would be of value analyzing these differences more attentively to identify opportunities and threats that would assist the companies that export these products to develop market strategies.

Knowing the seasonal behavior of the quantity imported by the United States, a market in which the Brazilian and Chilean companies effectively compete, is important to set strategies to obtain or increase their competitive advantage regarding the aspects of the product's commercialization.

Nevertheless, as reported by Cardoso *et al*. (2013), the use of this tool is not enough to determine the best commercialization strategy of the Brazilian product. In other words, it should be accompanied by market, production, and financial analyses.

CONCLUSIONS

- The US importations of conifer wood moldings, both from Brazil and Chile, have a great seasonal index variation amplitude.
- There are some important differences between the seasonal behavior of the Chilean and Brazilian product US importations. The demand of the Brazilian product decreases more between October and December, as the importations of the Chilean product are lower between January and June.
- As the Brazilian product's importations increase from April onward, pinnacling in July, the Chilean product's demand is lower during said period, pinnacling in August.

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