CONCLUSIONS REGARDING THE INFORMATIONAL EFFICIENCY USAGE ON CONVERTED TIMBER SELLING

Ioan STREMPPEL

Universitatea de Vest “Vasile Goldis” Arad, Filiala Baia Mare

Abstract

Selling of the converted timber is the most efficient method in the wood market, being a “win-win” situation. Because there is no asymmetry for the information (both partners know as much as the other about the quantity and the quality of the merchandise), the price is the adjusting instrument of the market, with market informational efficiency. This document is presenting some results of the analysis made in a new direction of the development of the wood market: informational efficiency or the degree in which the buyer or/and seller to the present sell uses the results of the previous sells. The analysis is starting assuming that both partners are using this information: the seller to establish a fair starting price, the buyer must estimate the maximum of the bid price or the maximum quantity of wood that is capable to acquire at the starting price. The methodology is using the correlation between the mobile environment of the starting prices and the selling ones, done both for the same place and in the neighboring zones. Also there is an analysis of the demand concentration made on the selling warehouses, in conjunction with the demanding enterprises that have bought different kind of logs. The results, not always statistical assured, are just a starting base for implementing the adjusting mechanism of the demand – offer equilibrium.

Keys words: market informational efficiency, Gini Index, trade with logs.

INTRODUCTION

Converted timber selling, situated on the road sideways in the Romanian forests, is, commercial and forestry speaking, the most fair method on wood commercialization., because is removing all the wooden selling distortions, linked
with tree selling, which is a property right sale. Furthermore, the process is releasing compatible date with the data base regarding the external sales, which will allow in future foreseeing how the unique price law wills action on the Romanian forestry economy. According with the first author which has launched the informational efficiency concept (Fama, 1970), when the information is fully used, the historical prices are worthless on future prices forecast – in order to be able to do the forecast, additional data is required.

The informational efficiency is not related with how the past reached wood prices will help to ground the present ones – but on the degree on which the price is established, in relation with all other parameters, but NOT in relation with the historical ones and it is the efficiency on the usage of the information in the present and NOT in the past!

For the markets, the informational efficiency is a concept antonym with the auto-correlation one. On a wood market, where the information is used efficiently, the prices are swinging aleatory around the equilibrium price, as a Brownian move. These series (chronological, in essence) are considered stationary and the future prices on which a wood stand will be sold depend solely on the wood characteristics from that stand and NOT on the past prices obtained.

Logs storage in some specialized centers, for some future sales (known as “wood markets”) could be subject for optimization; even if the storage process is associated with some costs, the sell could be an income source, when is taking advantage of some periods, when the demand is increasing. An important study, related with the previous statement, was done on the Vancouver logs market (Zhang et Binkley, 1993), where the authors have been used the following correlation between two consecutives prices for the same product:

\[
\ln\left(\frac{p_{i,t+1} - c_{i,t}}{p_{i,t}}\right) - r = \alpha_i + \beta_i (m_t - r) + \varepsilon
\]

where: \( p_{i,t} \) is the “i” assortment price, at “t” moment, \( p_{i,t+1} \) is the next price in the chronological series, \( r \) is the average profit rate, on a long period of time, \( c_{i,t} \) is the storage cost, for the “i” assortment price, at “t” moment, \( m_t \) is the average profit rate, achieved by selling of all assortments and \( \alpha, \beta \) and \( \varepsilon \) are the coefficients, respectively the estimation error. This study was done to establish the time extend of the “t” moment, so that \( \alpha \) and \( \beta \) coefficients will be statistical irrelevant and error estimation to have no correlation in between. The authors were giving different values to the “t” parameter – days, trimesters or years – and the conclusion what they have reached is that the quarterly price lists assures the maximum efficiency, which is a new proof that the past reached prices are NOT influencing the present ones.

Another study, done in the south of USA (Prestemon, 2003) has demonstrate that the pin wood selling prices are rare stationary, which are affecting, in some degree, the efficiency of the trims, when optimizing models, by
using dynamic programming, are used. Neverless, even when large data series are used, the informational efficiency is hard to get, as Linden et Uusivuori (2000), where demonstrating, using an annual price series on the Finnish wood market, covering a 95 years period. Theoretically speaking, the informational efficiency analysis over a market allows the right sizing of the data base used on the starting/selling price estimation, on establishing, using scientifically basis, the starting price on a bid sale, together with the perspective for performing a marketing study, on a larger scale – as for a county forestry directorate or at a regional level. Although the methodologies, previous presented, can’t be yet used, in the condition where long chronological series are missing, using the primarily study for the informational efficiency on a wood market, the present study is focusing on the correlation analysis on the mobile averages on the offer prices, respectively on the adjudging ones, for the logs situated on the road sideways, using miscellaneous calculation hypothesis over the presented averages. The scope of the present study was, using the well-known methods, presented in several past studies, is to establish an analysis process for the informational efficiency on a wood market in the Maramures area (as representative in Romania), so that it can be asses how useful are the previous sale recordings and to establish the optimum time period to run a retrospect price analysis, to be used as a prognosis for the next time period, eventually for the next sale. Together with this issue, the degree of demand concentration was analyzed, for the main forestry species and assortments (aesthetic veneer stumps, technical veneer stumps, round wood for timber).

METHODS

The data used in the present study where offered by the Baia Mare Forestry County Directorate and covers a brief period of time: between 2002 and 2003. In 2003, 963 stump batches where sold (with a total of 28,492.226 m³), from a total of 30,236 m³ offered in 1055 batches, from which 92 where not sold. This amount was sold by a total selling points of 165, from which 97 where improvised on the road sideways. In 2002, 2002 batches where sold, with a total of 22,945 m³. The data base used had not the names of the selling points and for this reason, the sale analysis was done solely for the forestry departments (suppliers) and wood processing firms (demanders). Another major difference is that in 2002, the Baia Mare Forestry County Directorate was also managing the forestry departments in the neighboring county, Satu Mare. For the informational efficiency analysis purpose, the correlation analysis between the mobile averages of the average prices, for each sale, was used. How? By comparing two statistical data rows: the average selling price and the average adjudging price.

The values for each row where generated as mobile averages on the last “n” records. Giving different values to “n”, it was tested if there is an interval for which, by calculating the two average prices, the correlation will be insignificant,
according with the same approach on the primarily study, done on Vancouver wood market1. The following relation can be used to calculate the mobile averages:

\[ V_i = \frac{\sum_{j=i-n}^{i} p_j}{n}, \]

where “vi” is the mobile average for the “n” previous “pj” values.

Having the start and adjudging price lists for the two mentioned years (“m” values) the mobile average of the two rows can be calculated, assigning values gradually higher to “n”, till the correlation between the two rows is statistically insignificant.

Generally speaking the statistical tool which allows to measure the degree in which a resource is unequal distributed is the Lorentz curve, who is define taking into account the five quintiles of the distribution. If you put on the ordinate, the cumulative relative frequencies and on the abscissa, the ones who correspond to the five quintiles, we will obtain a Lorentz curve. When the absolute frequencies are equals for all the values which the variable “x” is taken, the five points, correspondent to the five quintiles are situated on the angle biseector, formed with the two axes. This method was recently used in an application who was analyzing the supplemental income distribution obtain from the picking up of the wild fruits, in Finland (Kangas, 2001). The Gini index was proposed for the first time by the Italian statistician Gini, for the analysis of the population income distribution. The concentration analysis is looked now with big interest, because is allowing measuring the amount of the enterprises concentration taking into account several criteria: concentration measurement of labor tasks, unequal distribution on any kind (Elisabeta Jaba, 1998).

The Gini factor calculation is based on the following relations:

\[ G = \sum_{i=1}^{n} v_i c_i \]

\[ c_i = v_i \sum_{j=1}^{i} q_j \]

in which: “qi” is the gravity of the quantity harvested by the enterprise “I”, from the total volume, and “vi” is the gravity of the value for the wood harvested by the

---

1 În this case, the time spell was found, for which the partial regressing coefficients are insignificants and the errors are bot corelated among it.
same enterprise “I”, from the total of the sales. If the whole wood is acquired by a single enterprise, the Gini index will have the value “1”, because the left side of the second above formula will have the value 1. Of course, this situation will be very unfavorable for the seller, because the price will be dictated by the buyer. On the other side, if all the enterprises will buy at equal prices, the Gini index will have the value “0”. This is also an unwanted situation, because, regardless of the value “n”, the same selling price is showing the lack of concurrence between the enterprises. These are the two extreme situations for a forest administration: monopoly and false polipson. Graphically, the Gini index represents the fraction between the surface of the concentration area and the Gini square area, the first being showed by the square diagonal and the concentration curve (fig. 1).

![Fig nr. 1. The graphic representation of the concentration curve](image)

To identify the most important enterprises which have been acquired converted timber, near the forest roads, the analysis of the sensibility of the concentration Gini index was used, for the selling warehouses, in 2003, respectively forest departments, in 2002.

The analysis is, in fact, the calculation of the concentration factor, taking into account all the enterprises, followed by the re-calculation of the same parameter, but taking out the buyers, one by one. Calculation the subtraction between the initial factor and the global ones, calculated by eliminating one by one the buyers, the bigger contributors to the demand concentration could be determined. The market informational efficiency analysis is based on the hypothesis that both the sellers and the buyers shared the same information, each of them adjusting their demand or price offer. The analysis method, for this case, was based on the correlation between the mobile averages for the starting, respectively adjudging prices, differentiated by enterprises, forest species and forest departments.
RESULTS

The data for the correlation between the starting and the adjudging prices, for the converted timber in year 2002 and 2003 where process on several Excel® matrix and the starting, respectively the selling prices were no more actualized, because the value of the correlation factor couldn’t be altered by the inflation (both value rows were affected by the same growth ratio). The correlation factor of the two mobile average rows was 0.48 (giving to “n” from the second relation a value equal with 3, with a probability coverage of 90%). If the price lists will be quarterly revised, the prices from the past sales will affect the prices offered. Analyzing the correlation between the monthly starting, respectively adjudging prices, the informational efficiency will be strong, because the correlation factor will be equal with 0.17, which means insignificantly. That means that listing the average prices obtain on the last month bidding sales, the price offer for a converted timber is NOT in relation with the price on that list, but only with the quality of the bought product and, of course, is dependent on the competition degree. Nevertheless, these kinds of conclusions must be consider with caution, because the data base covered only two years, respectively 22 months, with some months with no sales, which could unbalance the quarterly sold quantities. It must be concluded that the analysis was done on the initial data, without being layered by the forest departments, as normal. If the data will be stored in layers (by departments or warehouses) and this kind of entity could be considered a market, for sure the informational efficiency will be high, because for short rows of recorded data, the correlation factors will be insignificantly, even if the balance between the starting and the adjudging prices will be high – which is not the case.

DISCUSSION

This final assessment - small differences between those two prices – could raise some question marks in relation with the extent of the competition on that market. The Gini index for the oak timber aggregate demand had a value of 24%. Put it in a table, the data could be presented as entry values and the way this index could be calculated. The influence of the biggest enterprises on the concentration degree of the demand, for the forest species and species groups was tested according with the presented methodology and the result could be presented in the same manner: in a table. For fuel wood, in 2002 only four enterprises bought it, situated on the road sideways in the Romanian forests, and those enterprises are not found to buy other wood products. The average selling price was 47.5 RON (13.4€) m-3. The birch tree wood was sold for 71.1RON (20.1€) m-3, the buyers being three enterprises: Inex forest, Phoenix S.A. and Zolreva. The final usage for it was the non-ferrous industry and the concentration degree of the demand is low,
meaning that the price fluctuation from one buyer to another are small – a constant wood quality and a single final beneficiary: Phoenix S.A. For the beech technical veneer and for sycamore and durmast timber, even if can be found some important enterprises between the buyers, the analysis of the Gini index sensibility had proven that if these enterprises were not active on the market, the concentration index could be higher, which mean that those enterprises (Kolforest, Distractiv and Anlar) where acting as market regulators: not buying on higher prices, but in bulk, having as a result the flatness of the concentration curve. For the beech timber, the demand concentration will be the same, in any hypothesis regarding the presence or absence of the interested enterprises, which is a foreseeing conclusion, because this product has a constant demand on the Romanian wood market and to process it is quite easy, without the need of very sophisticated equipment, as need it to get the veneer. For the oak the situation is different: some enterprises are acting as virtual “strategic clients” – without it, the demand concentration will be smaller – meanwhile others have the same regulating effects – their disappearance will get a smaller demand concentration: e.g. Insieme, Haas, Magils and Radiana processing enterprises.

BIBLIOGRAPHY


Rezumat
Vânzarea buşteanului la drum auto este cea mai eficientă metodă de pe piaţa lemnului de la noi, fiind, în principiu, o situaţie de “toţi câştigă” Preţul este cel ce ajustează piaţa, deoarece nu avem o simetrie a informaţiei, care astfel asigură şi eficienţa acesteia. Prin această metodă se încercă o direcţionare a pietei, prin utilizarea, de către ambii actori ai tranzacţiei, a informaţiei de la precedenta
vânzare, în eficientizarea informației ce decide prezenta vânzare. Se pornește de la
premiza că ambii parteneri au acces la exact aceeași informație, iar vânzătorul a
stabilit un preț de pornire correct, iar cumpărătorul trebuie să estimeze prețul
maxim de adjudicare sau cantitatea maximă ce o va cumpăra, la acel preț de
pornire.

Rezultatele, deși nu sunt în totalitate acoperite de exprimarea statistică, pot
să constituie o bază pentru implementarea unui mecanism de ajustare a
echilibrului între cerere și ofertă.

Cuvinte cheie: eficiența informației pieței, coeficientul Gini, comerț cu
beșteni.