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THE WOOD MARKET IN THE BRASOV – COVASNA AREA (II): THE ATTRACTIVENES OF THE OFFER

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Abstract

This is the second part of the paper concerning the Brasov-Covasna wood market (Part I: Behavior of Firms in Auction). This paper continues the analysis of company behavior and the attractiveness in the field of wood-felling at auctions organized between 2012 and 2013 in the studied area for timber sourced from special protection forests. Here we will present the derived indicators which were used to study company behavior at auctions and the results obtained by analyzing these indicators. As was the case for the first paper we have found significant differences in the behavior of companies taking part in these auctions compared to those bidding for wood in general production forests.

Key words: *group shelter wood system; semi-selection feeling; attractiveness.*

INTRODUCTION

In the first paper we presented several general aspects regarding the primary wood market for wood sold at auction and we have mentioned the fact that there are few analyses related to this subject (none in the Brasov-Covasna area) (Drăgoi 2000, Antonoaie V and Antonoaie C 2012, Antonoaie V 2014, Antonoaie VL 2014).

First, we need to elaborate further on the particularities of such felling processes, the factors which influence the business behavior and the potential tools companies have at their disposal either as owner or administrator of the forest fund. This will help them prepare and present an *attractive offer* for felling and processing at acceptable auction selling prices.

Accidental products can occur in any type of functional forest. The Forest Code (ROMSILVA 2015, FORESTNEWS 2015) describes accidental products type I as: “a volume of wood created by processing trees completely affected by biotic and abiotic factors, from trees over 60 years of age partially affected by biotic and abiotic factors or from trees from legally approved felling”. For accidental products type II the description reads (FORESTNEWS 2015): “volume of wood resulted from felling trees less than 60 years of age partially affected by biotic and abiotic factors”. We must mention that accidental felling are not only used as a way to constantly improve the health of the trees but also as a way to administer the forest through treatments of intensive felling (shelter wood, selection and semi-selection or combinations of the three). Consequently, in the case of accidental felling we can see very different situations, even in the same felling area (for example: the average tree volume can be very small, even 0,1 mc/piece or very large, of 3-4mc/piece; another situation, pertaining to an important indicator for fellers: the number of trees felled per 1 hectare of forest, which can be very large, at over 100 trees/ha to very small to around 3-4 per ha); this has a direct effect on the skidding and hauling distances and consequently on the attitude of managers when it comes to bidding for such a felling area and such a forest in general. Shelter wood and selection (or semi-selection) felling are generally part of the intensive felling category (Nicolescu NV 2003).

Here, the rules for felled trees at every intervention are different (these differences can be seen in the questions of the survey of the quantitative research presented in the first part of the paper). Thus, in the case of shelter wood felling for example, we can have significant differences in the

volume of felled trees when it comes to the stage of the felling process. The first stage is when the actual felling area is opened followed by a second one to enlarge that area and a third, the final one where two ore more areas are linked together. In much the same way, the settling and specific felling conditions are not the same from the first felling to the last (number of trees per hectare of forest, existing seed on every stage that must be protected, restrictions regarding setting up roadways to collect the wood etc.).

For selection and semi-selection felling (the most intensive felling process) the volumes extracted are the highest (as far as average tree volume is concerned). This creates significant difficulties when it comes to collecting the wood with horses or oxen (under forest protection conditions).

OBJECTIVES

The essential objective of this second part of the paper is the same as for the first one: "highlight the specific behavior of campanies in the field of wood felling at auctions for wood sourced from special protection forests", with the above mentioned effects of correctly defining the primary wood market.

A secondary objective is to verify the validity on possible analysis tools for company behavior in wood auctions and for increase the attractiveness of the offer.

METHOD, MATERIALS AND EQUIPMENT

Aside from the methodology aspects mentioned in the first part of the paper we have used the following:

a. The concept of "active participant" – a company which bids for at least one auctioning step;
b. IC – "interest coefficient" – defined as the ratio between the number of active participants and the total number of companies which registered for a specific auction;
c. The selling price/asking price ratio and its value according to the interest coefficient and the number of active participants;
d. The influence of several factors linked to different products sizes which can be obtained from felled wood and the interest coefficient;
e. The link between the number of auctions won and the number of active participation of a company in auction specifically organized for felling in special protection forests.

For the data analysis and processing SPSS and Microsoft Excel software packages were used.

RESULTS AND DISCUSSION

A. In the Brasov area 30 forest areas were auctioned for felling of accidental products, with the main characteristics described in Table 1. The results of the auctions are also presented here (selling price) and the derived indicators calculated, which are: the interest coefficient (IC), the auction price ratio and relative selling price increase compared to the asking price (auction steps varied in the studied period between a minimum of 6,3 lei on the 29th of November 2012 and a maximum of 10 lei on the 27th and 13th of November 2013).

The following was observed:

- Out of the 30 surfaces up for auction, 28 had accidental products category I and 2 (nr. 9 and 21 in Table 1) has accidental products category II;
- There were considerable differences between felling areas regarding the number of trees felled per hectare; it ranges from a maximum of 135 trees/ha (but with a small average volume of 0.42 m$^{3/}$tree for an accidental type II felling) to a minimum of 2,13 trees/ha (for coniferous trees with a high average volume of 3,06mc/tree);
- The interest coefficient calculated varies between a minimum of 0,08 (position 19 in Table 1 with 12 participants for the auction but only one active participant; for a felling area with 63% silver fir, 23% spruce and 1% beech with a very large surface and considerable distance to cover to the felling area – 47 ha, a small number of trees per hectare – 3,62 – and a proportion of working wood of 64%) and a maximum of 0.46 (position 16 in Table 1 with 6 active participants out of a total of 13; for a felling area mainly covered in coniferous trees: 70,4% silver fir and 29,6% spruce, with large average volume trees – 3.06 mc/tree; it is the area mentioned before with the highest dispersion; the high interest coefficient for this area

was mainly caused by the high average volume per tree, which put plainly guaranteed superior products after processing);

- The relative increase in the auction price was between the 5% minimum (26,7% of the total bidding positions) and 50% maximum (6,7% of the bidding positions).

Table 1

Accidental felling [ACCF]

	NT/ha	TVF [mc]	TWD [mc]	ATV [mc/tree]	NRP	NEP	IC	AP [lei]	SP [lei]	PR	IAP [%]
1	7,84	978	753	3,17	8	2	0,25	200	240	1,20	20%
2	6,64	1158	884	3,64	8	1	0,13	200	210	1,05	5%
3	10,05	1810	1317	2,94	8	2	0,25	200	230	1,15	15%
4	5,19	548	388	1,70	8	1	0,13	200	210	1,05	5%
5	17,04	510	373	1,45	9	2	0,22	200	240	1,20	20%
6	2,33	449	258	1,32	7	1	0,14	160	168	1,05	5%
7	10,84	2839	2158	3,24	14	4	0,29	155	217,4	1,40	40%
8	12,14	3069	2356	2,96	12	5	0,42	155	209,6	1,35	35%
9	135,00	34	15	0,42	10	1	0,10	160	168	1,05	5%
10	14,77	1136	859	2,05	10	1	0,10	160	168	1,05	5%
11	8,80	1523	1139	2,20	12	2	0,17	160	176	1,10	10%
12	48,24	961	477	0,62	11	5	0,45	140	203	1,45	45%
13	2,81	406	281	1,85	13	3	0,23	190	247	1,30	30%
14	7,26	1022	729	1,75	13	2	0,15	190	218,5	1,15	15%
15	6,75	904	635	2,76	13	3	0,23	190	247	1,30	30%
16	2,13	98	62	3,06	13	6	0,46	200	270	1,35	35%
17	17,64	1155	840	2,58	12	5	0,42	180	261	1,45	45%
18	4,32	243	174	2,03	13	3	0,23	180	243	1,35	35%
19	3,62	329	205	1,94	12	1	0,08	180	189	1,05	5%
20	8,23	638	375	0,64	7	1	0,14	120	126	1,05	5%
21	17,55	227	33	0,13	7	1	0,14	120	126	1,05	5%
22	4,76	535	317	1,19	13	3	0,23	200	270	1,35	35%
23	30,56	1847	1337	1,87	11	2	0,18	160	216	1,35	35%
24	3,60	323	236	2,52	10	3	0,30	160	224	1,40	40%
25	14,60	1218	850	2,93	11	4	0,36	160	224	1,40	40%
26	6,04	491	343	2,92	11	3	0,27	160	224	1,40	40%
27	10,00	545	331	2,51	11	3	0,27	160	240	1,50	50%
28	10,80	2150	1440	2,27	11	3	0,27	160	240	1,50	50%
29	8,84	1552	992	1,80	11	3	0,27	160	192	1,20	20%
30	12,02	1339	815	1,83	11	3	0,27	130	192	1,48	48%

NT/ha – numbers of trees/ha; [mc] – cubic meters; TVF - Total volume of trees; TWD - Thick wood (part of work wood for industrial use); ATV - Average tree volume; NRP - Number of registered participants in the auctions; NEP - Number of effective participants in the auctions (have taken at least one bid); IC - Interest coefficient IC=NEP/NRP; AP - Asking price in auction; SP - Selling price in auction; [lei] – Romanian currency; PR – Price Ratio [PR=SP/AP]; IAP - Increase of the auction price

- We cannot establish a direct, systematic connection between the increase in the auction selling price and the number of trees to be felled on a hectare of forest (Fig 1); we would expect that the SP/AP (selling price/asking price) ratio be high (because an auction with

several steps has occurred) if the number of trees per hectare is high (which would considerably ease felling and collecting, especially by reducing the skidding and hauling distances, even more so it there is a horses or oxen skidding and hauling constraint); consequently we must take into account other elements to be able to explain the managerial behavior when one continues to bid in an auction (when he is willing to pay a higher price for a particular felling area);

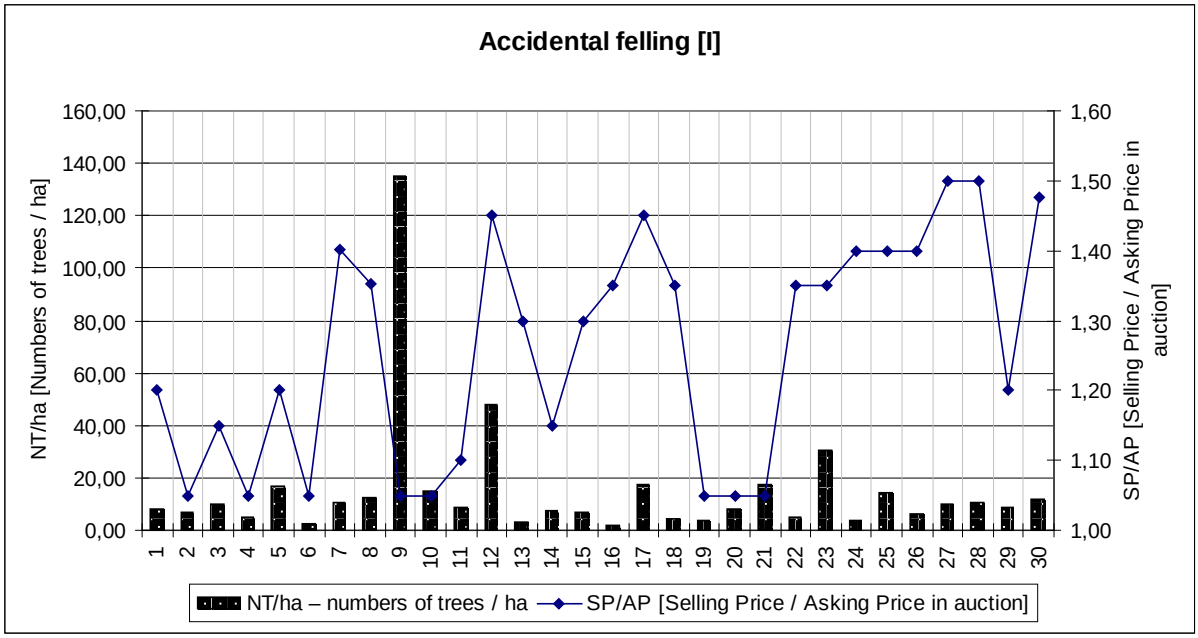

Fig. 1.
Accidental felling (I): Correlation between NT/ha and Price Ratio [SP/AP]

- In much the same way there is no clear direct connection (in the studied instances) between the increase in the price of the wood at auction and the average tree volume (Fig. 2); it is true that the two variables are in direct connection (to a higher degree than those above) – (Fig. 1), but it is not enough to be able to consider it a clear connection which must be always taken into account;

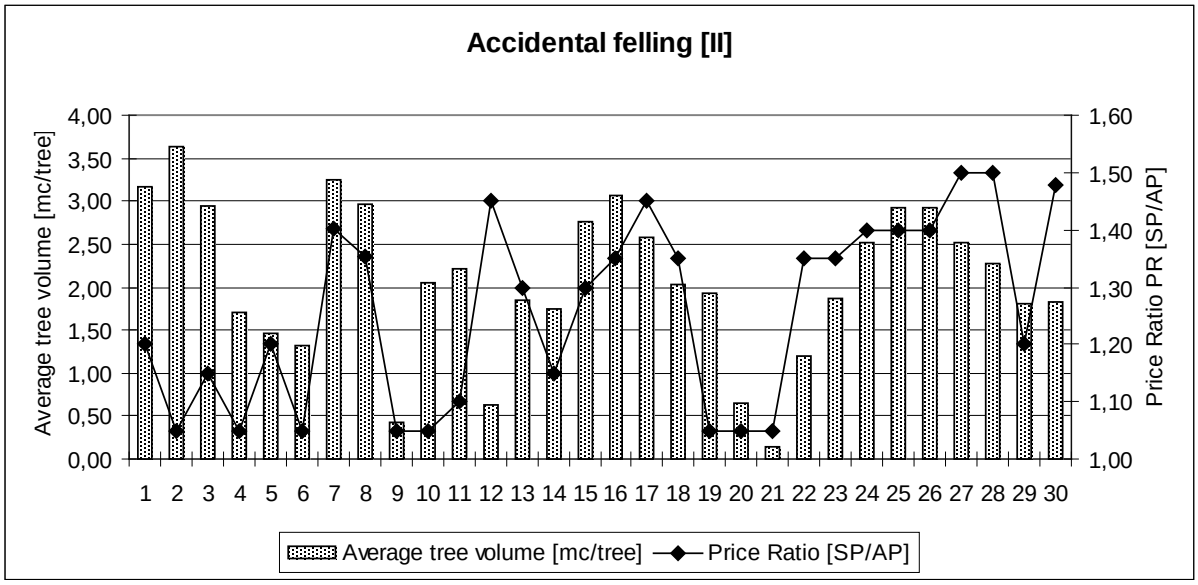

Fig. 2.
Accidental felling (II): Correlation between Average tree volume and Price Ratio [SP/AP]

- Nevertheless, as was expected, the interest coefficient directly influences the SP/AP ratio, as we can see in Fig. 3 [correlation coefficient is ***r = 0,765948759*** – is a strong correlation].

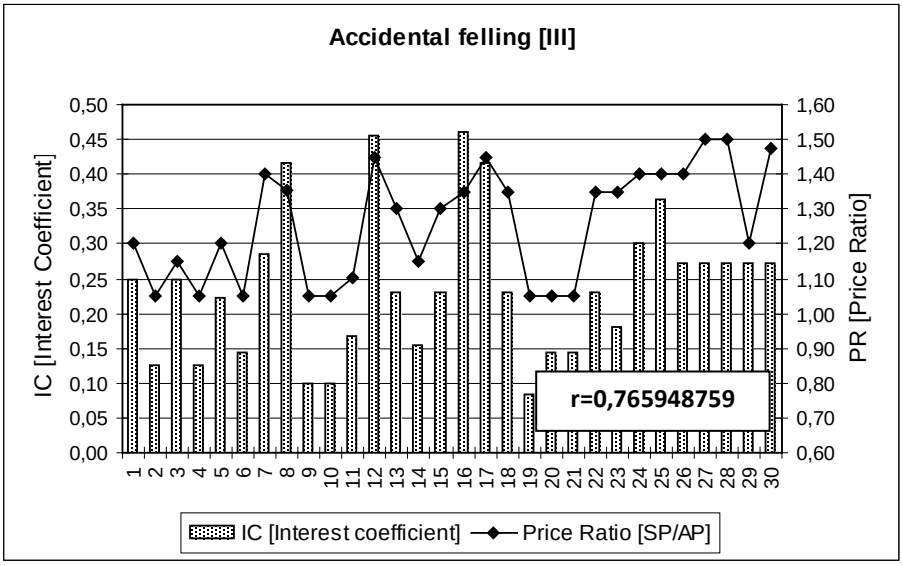

Fig. 3.
Accidental felling (III): Correlation between IC [Interest Coefficient] and Price Ratio [SP/AP]

B. Four auctions were held for wood from shelter wood felling (in two years) in the Brasov are, concerning 14 forest areas with a total volume of 9846 m^3. In Table 2 we can see the characteristics of these areas and the results of the auctions.

Table 2

Group shelter wood system felling [GSWF]

	NT/ha	TVF [mc]	TWD [mc]	ATV [mc/tree]	NRP	NEP	IC	AP [lei]	SP [lei]	PR	IAP [%]
1	47,12	497	177	1,44	3	1	0,33	125	131,3	1,05	5%
2	42,31	596	219	1,30	3	1	0,33	125	131,3	1,05	5%
3	90,95	271	165	1,42	3	1	0,33	125	131,3	1,05	5%
4	67,56	259	111	0,85	3	1	0,33	125	131,3	1,05	5%
5	78,90	1310	909	1,82	12	3	0,25	160	216	1,35	35%
6	116,36	174	50	0,68	7	2	0,29	135	155,4	1,15	15%
7	110,15	1023	578	1,41	7	2	0,29	135	155,4	1,15	15%
8	130,00	257	169	1,65	7	2	0,29	135	155,4	1,15	15%
9	50,37	653	456	2,40	11	3	0,27	200	250	1,25	25%
10	31,40	489	224	3,11	9	1	0,11	130	136,5	1,05	5%
11	46,00	499	112	1,14	10	3	0,30	130	156	1,20	20%
12	122,62	942	548	1,18	14	4	0,29	200	260	1,30	30%
13	81,17	2417	1783	1,93	14	4	0,29	200	260	1,30	30%
14	92,42	459	136	1,50	10	3	0,30	130	156	1,20	20%

NT/ha – numbers of trees/ha; [mc] – cubic meters; TVF - Total volume of trees; TWD - Thick wood (part of work wood for industrial use); ATV - Average tree volume; NRP - Number of registered participants in the auctions; NEP - Number of effective participants in the auctions (have taken at least one bid); IC - Interest coefficient IC=NEP/NRP; AP - Asking price in auction; SP - Selling price in auction; [lei] – Romanian currency; PR – Price Ratio [PR=SP/AP]; IAP - Increase of the auction price

We can conclude the following:

- Even though we can see some differences in this case regarding the number of trees felled/ha, they are not as strong as in the case of accidental felling; this is a normal situation, because these are regulated felling processes, according to the rules of the Forestry Code for an intensive treatment; the minimum number in this case is 31,4 trees/ha while the maximum is 130 trees/ha;
- The smallest interest coefficient (IC) is 0,11 (position 10 in Table 2; it is the second felling, aimed at widening the initial felling area; this small coefficient seems odd when we take into account the large volume of the average tree: 3.11mc/tree; nevertheless we can understand this situation by analyzing the difficulties involved in felling, debranching, sectioning and transporting such trees under the restrictions imposed for working in special protected forests and the necessity to protect the saplings and young trees growing in that particular area; and all of the above mentioned considerably increase the felling costs);
- The maximum interest coefficient is 0,33 (positions 1-4 in Table 2) but it does not correspond to a maximum selling price at auction; this maximum increase in visible on position 5 (Table 2), where we are dealing with the first felling, the least expensive and the least restrictive for the felling company;
- It is because these differences have occurred that we can not speak of a valid correlation between the interest coefficient and the increase of the auction price (this is also the reason why we have included Question 11 in the quantitative research in the first part of this paper; one of the reason companies would bid over the accepted increase limit, of 40%, would be the proportion of working wood type G1 in the total working wood – Table 3);

Table 3

Group shelter wood system felling – the importance of G I proportion

11. Which of the following factors would persuade you (in the case of sheltered felling) to bid to a selling price 40% higher than the asking price? A: The proportion of G I (Thick I) work wood to surpass 50% of the total					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	15	40.5	83.3	83.3
	no	3	8.1	16.7	100.0
	Total	18	48.6	100.0	
Missing	System	19	51.4		
Total		37	100.0		

- As was the case for products sourced by accidental felling (and even more so in this case), when speaking about shelterwood felling we must take into account several parameters to be able to find valid correlations to explain the company behavior in wood auctions for products obtained from special protection forests.

C. In the case of auctioned products obtained from selection and semi-selection felling, only six surfaces were sold in the two year period, but with a high wood volume (10.769 mc). Taking into account the fact that for this particular type of felling the trees must reach “target diameter” we can also explain the large average tree volume (over 2mc/tree) which in turn made these auctions very attractive. The small number of auctions for wood from selection and semi-selection areas can be explained by the fact that there are a limited number of felling areas of this sort in the counties were the research took place.

Nevertheless, the data collected is this case are not sufficient to have the certainty that the analysis is completely valid. But several conclusions can be supported with the following arguments:

- The variation of the average tree count per hectare of forest is smaller than in the previous cases (accidental and shelter wood); the minimum was 28,6 trees/ha and the maximum 75.8.
- The most important increase in the selling price (+60.4% more than the asking price) was linked with the highest interest coefficient – 0.6 (six out of the ten participants bid for at least

one auction step; the asking price was 173.30 lei/mc and after 12 bids the selling price was 264.60 lei/mc; this was for a semi-selection felling, 99% spruce and 1% beech, 82% working wood out of which 67% was of the Thick I category; the density of the targeted trees was also high – 60.2 trees/hectare; the average tree volume: 2.30 mc/tree); in other words it eas an ideal felling situation.

Table 4

Selectioned or semi-selectioned felling [SSSF]

	NT/ha	TVF [mc]	TWD [mc]	ATV [mc/tree]	NRP	NEP	IC	AP [lei]	SP [lei]	PR	IAP [%]
	43,48	1865	936	2,77	7	2	0,29	150	172,5	1,15	15,0%
	66,26	2384	1275	1,77	7	2	0,29	140	154	1,10	10,0%
	75,84	951	514	1,24	8	4	0,50	150	210	1,40	40,0%
	60,22	1910	1513	2,30	10	6	0,60	165	264,6	1,60	60,4%
	28,62	1632	851	2,46	12	1	0,08	180	189	1,05	5,0%
	35,00	2027	1626	2,50	13	2	0,15	200	280	1,40	40,0%

NT/ha – numbers of trees/ha; [mc] – cubic meters; TVF - Total volume of trees; TWD - Thick wood (part of work wood for industrial use); ATV - Average tree volume; NRP - Number of registered participants in the auctions; NEP - Number of effective participants in the auctions (have taken at least one bid); IC - Interest coefficient IC=NEP/NRP; AP - Asking price in auction; SP - Selling price in auction; [lei] – Romanian currency; PR – Price Ratio [PR=SP/AP]; IAP - Increase of the auction price

In Fig. 4 we can see a medium intensity correlation between the interest coefficient and the increase in the auction price [correlation coefficient is ***r = 0,720707***]. The only situation that falls out of this norm is position 6; even though all the characteristics regarding species (spruce) and tree size would have lead to the idea that companies should have been interested in this position (the selling price did rise 40% over the asking price) only two out of the 13 companies involved have bid for this felling are which lead us to believe that the explanation for this situation is neither technical or economical.

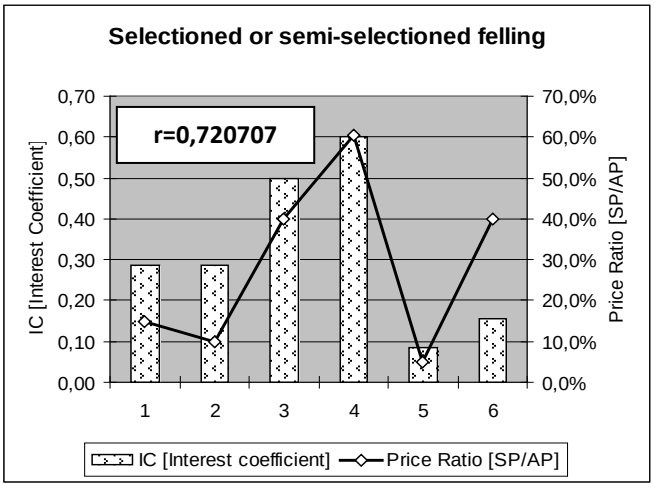

Fig. 4.
Selectioned or semi-selectioned felling: Correlation between IC [Interest Coefficient] and Price Ratio [SP/AP]

D. All the analyses carried out have focused on the idea of highlighting the behavior of managers from felling companies in the situations of auctioning for wood sourced from forests with a special protection role in regard to the attractiveness of the offer made by the forestry organizations.

Of course, the wood mass put up for auction is the direct result of applying specific forestry regulations and treatments adequate for those areas, as well as restrictions which can not be bypassed.

Therefore, how can a local Forestry Department increase the attractiveness of its offers? From discussions held with the directors of these organizations we have concluded the following:

- There is a clear dissatisfaction with the fact that many companies register for auctions but do not bid in them; this has lead to, in the case of accidental felling areas, to an awkward situation: 21 companies registered for a total of 301 times, but only 78 of these instances actually transformed into bids (25.9%). Of the total number of companies, only 15 took at least one bidding step. Moreover, out of the 21 companies only 11 ever successfully bid for a felling area. In the case of shelter wood felling, out of the 11 participating companies (124 total auction registrations) only 13 actually bid and 6 (33.3%) purchased a felling areas. As far as selection and semi-selection felling areas, 14 companies registered, 7 bid and only 3 (21,4%) completed a purchase.
- The high number of companies which register but do not actively take part in the bidding process clearly has other causes (aside from technical and economical reasons).
- A possible solution to change this situation and increase the attractiveness of the offers would be selling ”bundles” (selling a very attractive area with a less desirable one); this idea was tested (rarely) but it was not widely accepted (because most participants opposed it as it created a type of conditional sale);
- The only functional solution which produced some results (even though they were not the expected ones) was the reduction (to the lowest economical point) of asking price and the increase of the auctioning bid.

We believe that this solution (which has a good fundamental reasoning) can yield good results in the future. Moreover we believe that other bidding options could be tested, aside from the classical solution in place at the moment (proper simulations must be carried out beforehand and several pilot projects must first prove its validity).

CONCLUSIONS

This research has highlighted several particularities of the behavior of felling companies in auction as well as raised some issues regarding the attractiveness of the offer and the way in which felling companies understand and can actively take part in an auction. Further analysis in this area of research (when the research will be extended to the Covasna area) will bring forward other aspects (both general and particular) and could offer new solutions to the issues at hand.

Nevertheless, there is a definite need to extend the research to other areas where special protection forests are located and we must take into account a new category: companies from the wood processing industry, the downstream beneficiaries of the wood being sold at auction.

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