

# **New solution in forest market valuation issue: Faustmann's formula in forest real estate valuation**

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The aim of this study was to find out the suitability of the summation approach to determine the market value of a forest property in situations, where valuation targets are fairly large forest properties (area at least 10 hectares) and to investigate factors that affect the correction of the total value and its size. Such studies, which apply the summation approach based on target specific field inventories, have never before been carried out in Finland because of the expensive data collecting. Observation data consisted of 810 forest property sales made all over the country during years 1983-84, 1995 and 2007.

According to estimated price models the most effective factor that affected the market price of a forest property was the sum value of the target without the expected value, and that the correction of the total value used to correct the sum value to reach the market price, can be distributed to the parts of the sum value, in which case the values of such parts of the sum value in the forest real property market are to be valued.

The study showed that the estimated econometric models could be use in valuation of the market value. The correction of the total value was reduction on average, which in the two earlier samples was 40-50 % and in the sample of year 2007 about 10-20 %, indicating that competition and stumpage prices have increased on the market.

Results of old valuation solutions based on Faustmanns' theory have led to overestimated values in Finnish conditions. The main reason for that is to lower rates using discounting. Valuation of forest properties is possible using either comparison or income approaches. Both these methods can also be combined as a hybrid. The first one uses price information and data of sold properties on market conditions and cash flow based on growth and yield models of forests. In the second you can solve the discounting rates, which makes net present values equal to the market prices. This market oriented discounting rates, as investors' subjective time preferences, can be used as base in all forest growing areas.

An expert system in line with Heyer's (1887) idea will be developed to solve the problems in forest real estate valuation. The income approach method will be based on inventoried forest stand characteristics, simulated growth models by sites and the main tree species, estimated stumpage prices and the costs of civil culture. The method meets the requirements for the comparison approach in the sense that the internal logic of price.

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