Return and Risk on Forest Ownership Estimated by Stumpage Price and National Forest Inventory Statistics

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Résumé (in French)


La moyenne de ces éléments fut: prix (6.0%), montant du change (1.3%), abattages (2.9%) et coût (0.4%). Le résultat montre que les propriétés forestières ont eu un rendement réel relativement bas de 3.0% avec un risque modéré si on le compare, par exemple, au rendement des actions de l’industrie forestière, qui est de 7.0%.

Les tendances durant la période d’inflation élevée 1972-1984 et la période de faible inflation 1985-1997 sont différentes car le rendement réel des propriétés forestières est tombé de 3.5% à 2.6%. Le risque systématique des propriétés forestières dans l’analyse CAPM fut proche de 1 (0.98), indiquant par la que le rendement des propriétés forestières varie presque autant que le rendement du marché.

Le "rendement anormal" des propriétés forestières fut bas (-3.21), ce qui montre que le rendement des propriétés forestières ne compense pas sa variabilité systématique. Les résultats montrent que les propriétés forestières ont été dans une certaine mesure une protection contre l’inflation attendue et une protection efficace contre l’inflation inattendue.

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The Finnish economy heavily depends on the forest sector, its share of net exports of goods being 30% in 1997 (Sevola 1998). However, neither the return and risk of forest ownership nor that of the forest industry itself has been analysed prior to this study, the first results of which were documented by Penttinen et al. (1996) and Lausti and Penttinen (1998). This paper examines the returns and risks of non-industrial private forest (NIPF) ownership in Finland, and introduces new methods for that purpose. Unfortunately, no statistically representative sample of the book-keeping network of forest holdings for profitability studies exists, although some results have been published (e.g. Penttinen and Kinnunen 1992), so that this portfolio management and Capital Asset Pricing Model (CAPM) analysis of forest ownership was inspired by the lack of reliable data on the comparative economic performance of forestry. The present results are based on empirical forest statistics, for example national forest inventory (NFI) and stumpage prices, which are not merely a sample of forest holdings, areas, but a systematic data base.
The average nominal return on forest ownership in Finland has been 9.8% over the 1972-1997 period. Forest ownership return can be broken down into four components – price change, volume change, fellings, and costs. The average components have been price change 6.0%, volume change 1.3%, fellings 2.9% and cost 0.4%. Note that the net increment component, which is felling and volume change aggregated, was 4.2%. Forest ownership has thus produced a relatively low real return of 3.0% with moderate risk in Finland during the 1972-1997 period compared e.g. with the real return of forest industry stocks at 7.0%. The trends during the high inflation era of 1972-1984 and the low inflation era of 1985-1997 are different, because the real return on NIPF ownership dropped from 3.5% to 2.6% and the inflation rate from 10.4% to 3.2%.

The systematic risk of NIPF ownership in the Capital Asset Pricing Model (CAPM) analysis has been close to one (0.98), indicating that NIPF forest ownership return fluctuates almost as much as market return. We have constructed the return series of private housing, offices, bonds, debentures, stocks and forest ownership. The so-called abnormal return of NIPF forest ownership has been only –3.21, which indicates that NIPF ownership return does not compensate its systematic variability. Forest ownership provides risk-reducing benefits in a portfolio with stocks, but does not reduce risk much in a portfolio with other asset classes in Finland.

However, the real return of forestry has not fluctuated much between the two periods and indicating that forest ownership might have some inflation hedging properties. Here the expected inflation has been estimated by using the inflation forecasts of the Research Institute of the Finnish Economy (ETLA). Results show that Forest ownership has been to some extent a hedge against expected inflation and an effective hedge against unexpected inflation over the longer five and ten year holding periods.

References:


