

IAS/IFRS forest accounting and valuation on profitability book-keeping farms

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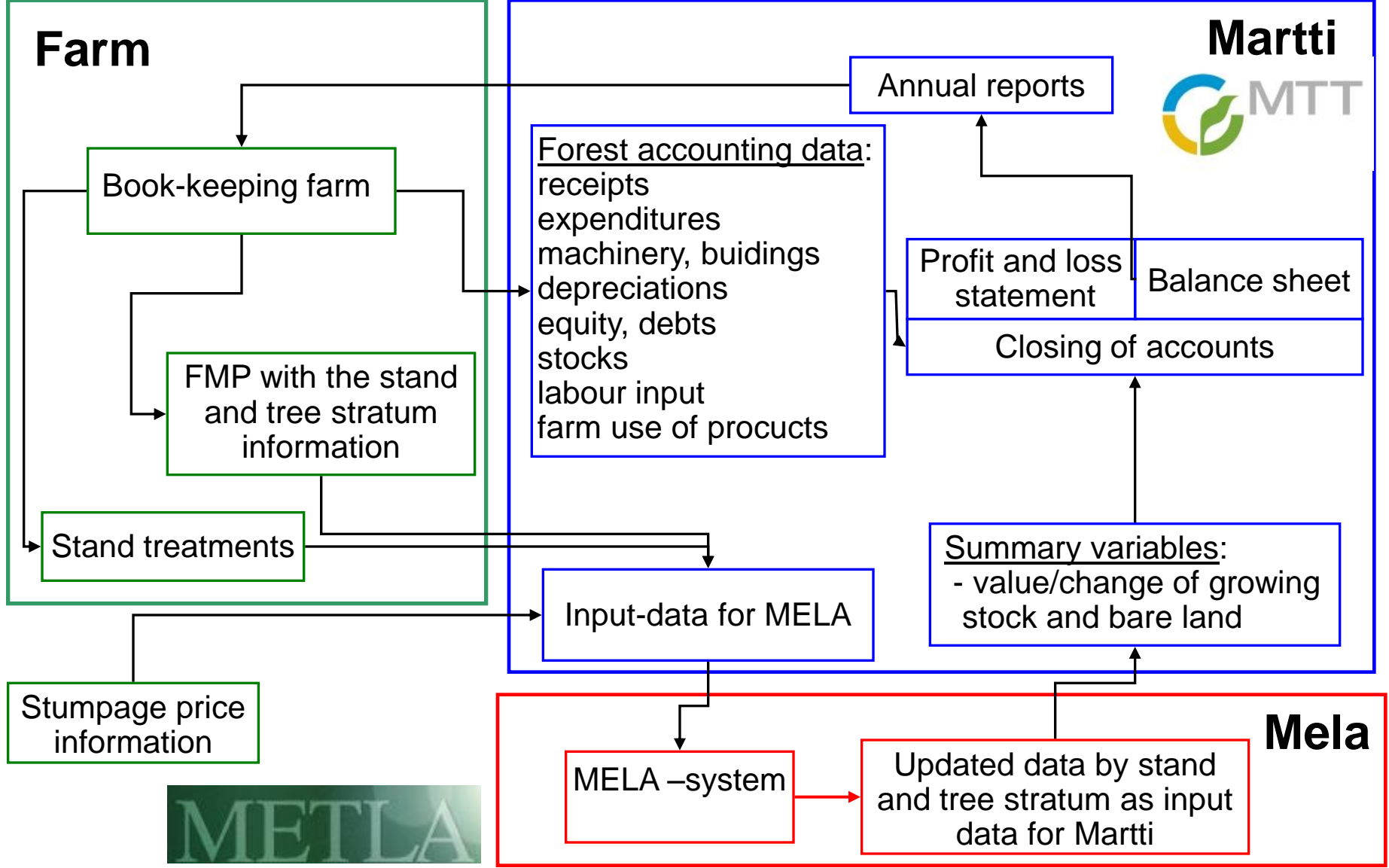
The profitability book-keeping of MTT

- ▶ Agriculture, horticulture, reindeer husbandry, forestry and the diversification of business.
- ▶ A book-keeping farm can be disaggregated into different production lines (business areas), forestry being one.
- ▶ Based on the accounting data collected annually from the approximately 1050 bookkeeping farms.
- ▶ The monitoring is based on the profitability book-keeping application, MARTTI.
- ▶ Since 1995, the Farm Accountancy Data Network (FADN) of the European union (EU) has also been taken care by MTT Economic Research.

The MELA-application of Forest Research Institute (FRI)

- ▶ **A relative recent forest management plan (FMP) of the forest holding with forest inventory data.**
- ▶ **Updates of the FMP after the forest inventory.**
- ▶ **FMP software MELA contains**
 - **growth models**
 - **simulation and optimisation**

MARTTI and MELA have been integrated via Internet



BOOK-KEEPING OF FORESTRY; IAS/IFRS

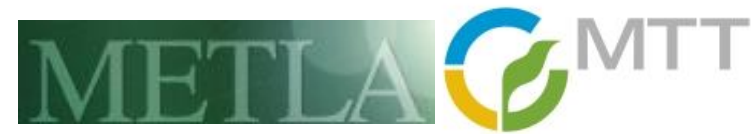
- ▶ **IAS 41 Agriculture for the growing stock with fair value: moreover, all optional reporting of IAS 41 implemented.**
- **IAS 16 Property, Plant and Equipment for the bare land with revaluation option (NOT IAS 40 Investment property).**
- **IAS 2 Inventories for harvested biological assets, fair value used.**
- **IAS 41.34 applied for government grants (NOT IAS 20 Accounting for Government Grants).**
- **No intangible assets such as production quotas exist, and thus IAS 38, Intangible Assets NOT needed.**
- **No asset impairment found, IAS 36 Impairment of assets ignored.**

BOOK-KEEPING OF FORESTRY; IAS/IFRS

POINTS OF INTEREST:

- **”Right” interest rate: Swedish industry 6.25%, Forestia in Finland 7%, our analysis suggests 4% in Southern Finland.**
- **Fair valuation of the growing stock = NPV with stumpage prices.**
- **Fair valuation of the bare land = NPV with 150 years calculation.**
- **Reforestation: decommissioning costs NOT investments.**

Information systems solutions



CHOICES:

- **Target variable (NPV) in the value of the growing stock definitions when applying the simulation and optimisation.**
- **Target variable (NPV) and constraints in allowable cut definitions.**
- **Which output variables of MELA relevant, in all hundreds available.**
- **How could the forest inventory of the forest management plan of a forest holding be obtained in a machine readable form (problem).**
- **What organisations and who is in charge of different phases of the production process? Extranet helps only in providing output results**

EMPIRICAL EVIDENCE

- **Forest inventory of a recent forest management plan.**
- **Updates after the plan such as fellings and silvicultural activities.**
- **After thinning: measurements such as basal area in some cases but simulated volumes by roundwood assortment in most cases.**

Closing of the books in Martti -application



BALANCE SHEET	
Assets	Equity and Liabilities
NON-CURRENT ASSETS	EQUITY
Intangible assets	Capital
Tangible assets	Reserves
Land and water areas	LIABILITIES
Bare land value	Long-term liabilities
Biological assets	Short-term liabilities
Non-merchandise growing stock	
Investments	
CURRENT ASSETS	
Stocks	
Work in progress	
Allowable cut	
Receivables	
Financial assets	
Cash in hand and at bank	
Total assets	Total equity and liabilities

Forest land
-bare land value

Fair value of growing stock
-young and middle aged stands
-allowable cut

The impact of changes in stumpage prices on the fair value of growing stock during the accounting period. -removes of price changes from the fair value of the growing stock, which is calculated at current stumpage prices.

PROFIT AND LOSS ACCOUNT
Sales proceeds
Subsidies
Turnover
Change in stocks (+/-)
Other operating income
Variable costs
Fixed costs (incl. own work)
Depreciations
<u>Change in the fair value of biological assets</u>
Change in the growing stock
Change in allowable cut
Operating result
Financial income and expenses
Net result
Changes in stumpage prices
Realised profit (loss)
Interest claim for equity
Entrepreneur's profit

Change in the growing stock
Change in allowable cut

Closing of the books

BALANCE SHEET

- Bare land to 'Land and waters', revaluation each year
- Allowable cut to 'Work in progress' of Stocks
- Non-merchantable growing stock to 'Biological (tangible) assets'
- Reforestation costs expensed at once, neither reservations after felling nor depreciations after reforestation

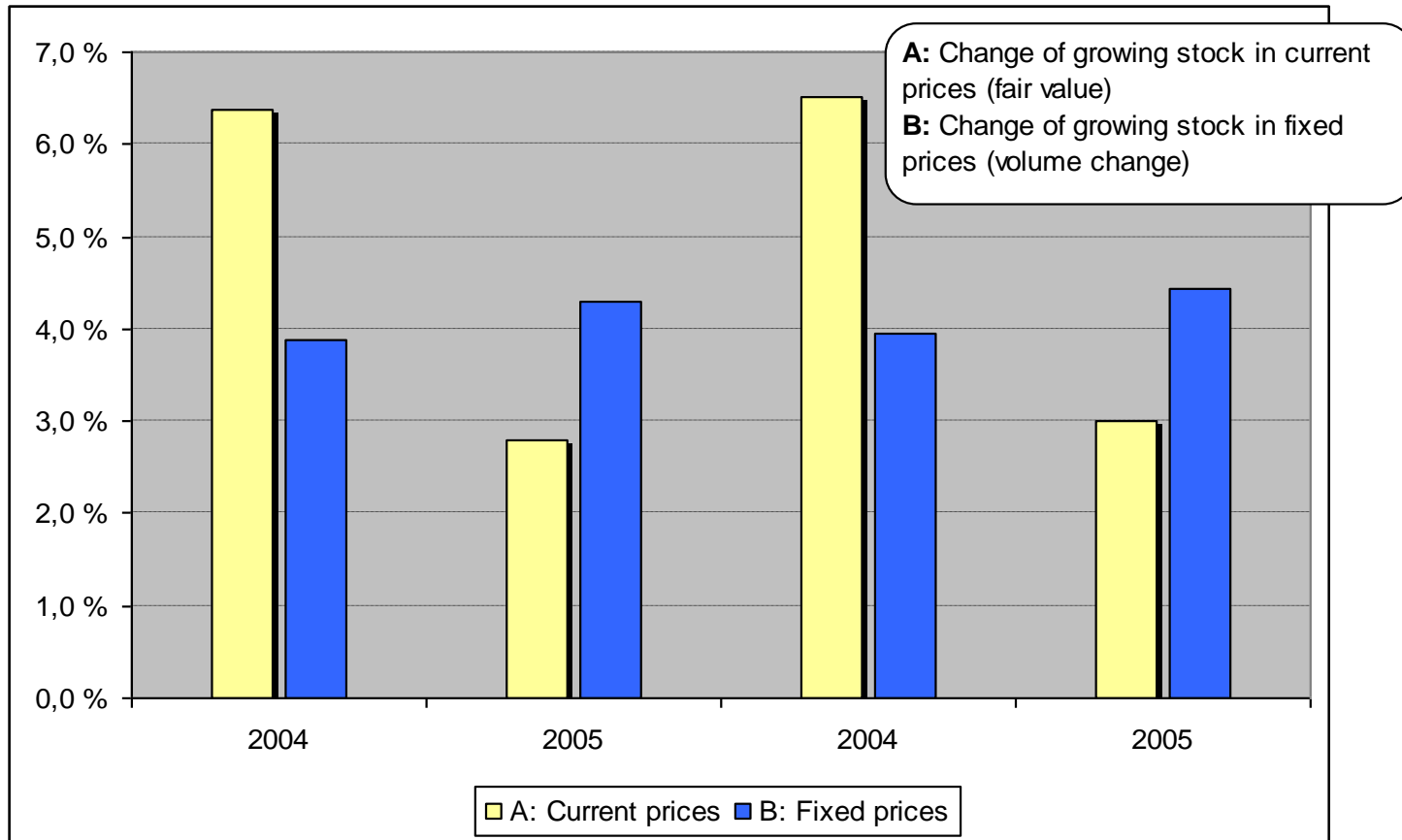
PROFIT AND LOSS ACCOUNT

- Change in the fair value of biological assets as late as possible, i.e. before Operating profit
- Profit (loss) of the financial year subtracted by the stumpage price impact on the change in the fair value => Realised profit (loss)
- Realised profit subtracted by the interest claim for the equity => Entrepreneur's profit

MAXIMUM REPORTING

- Split between the impacts of the price and physical changes
- Split between allowable cut and non-allowable cut

Ratio analysis for forestry



The return on assets (ROA) and the return on equity (ROE) for recognising (A) and ignoring (B) the price change

Theoretical framework: the constructive approach

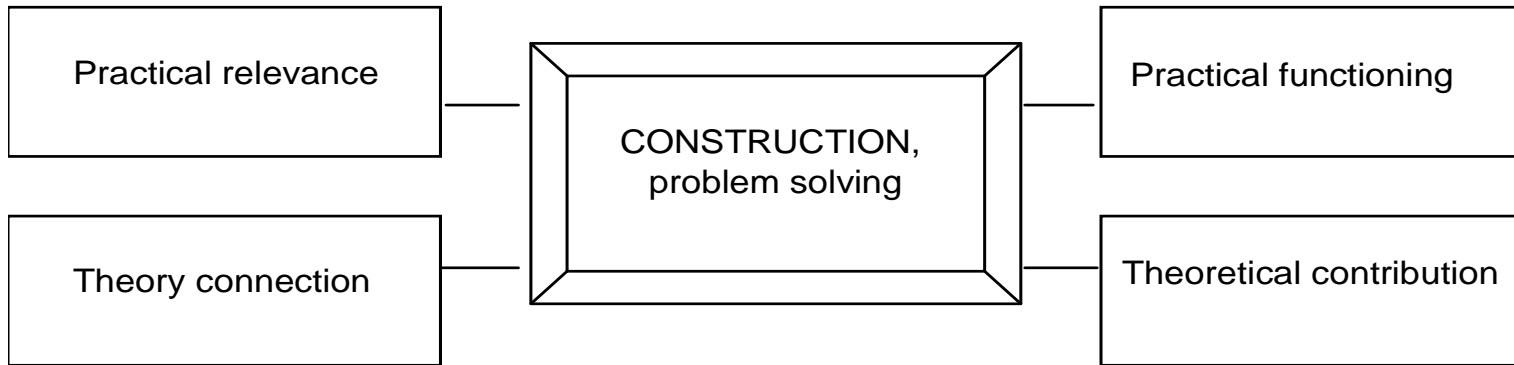


Figure. Elements of constructive research
Kasanen, E., Lukka, K. & Siitonen, A. 1993.
The constructive approach in management
accounting research. *Journal of Management
Accounting Research* 5(1): 243-264.

Solutions for profitability book-keeping



- The MTT Economic Research has a nearly 100 years tradition in profitability book-keeping
- The existing book-keeping is detailed and consists even work hours of the owner family disaggregated to activities such as forestry
- Present forest valuation based on taxation values = unsatisfactory
- Forest management plan and its update together with the book-keeping and FMP applications enable IAS/IFRS
- Fair value of the growing stock requires simulation and an optimisation with objective variable such as NPV
- Allowable cut requires as above but also a set of constraints
- Fair value of the bare land requires as above, but start with scratch
- Reforestation cost simply expensed immediately
- Subsidies recognised immediately after turnover
- Used stumpage prices those at the end of the fiscal year
- All solutions have been programmed and implemented

Summary and conclusions

- **Service improvement of the book-keeping is the focus.**
- **Availability of machine readable forest inventories is the problem.**
- **Updates of the inventories after the FMP present a challenge.**
- **Organisational challenges from farms to MTT Economic Research and the FFRI and back**
- **ICT technology using XML, firewalls etc in order to enable the discussion between the book-keeping system (MARTTI) and the FMP (MELA) tested and working.**
- **The development of forestry book-keeping and forest valuation have been implemented and results contributed.**
- **Forest valuation is a highly sensitive question especially in case of dispute between joint owners.**
- **The ambiguity of fair values is not a serious problem in case interest rate is supported by the market prices of the holdings.**

Thank you for your attention

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The International Financial Reporting Standards (IFRS) accounting system as applied to forestry. Working Papers of the Finnish Forest Research Institute 93. 38 pp. Available at:
<http://www.metla.fi/julkaisut/workingpapers/2008/mwp093.htm>.