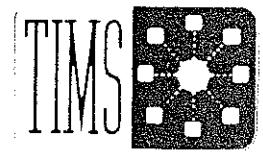

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ABSTRACTS

INVESTMENT

VIRTANEN, I., AHO, T. (Finland)
ROI AND IRR UNDER INFLATION

ANALYSIS OF RELATIONSHIPS BETWEEN ROI AND IRR UNDER INFLATION
- A Constant Real Cash-Flow Case -

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The paper deals with two indices commonly used for measuring the profitability of an investment: the return on investment (ROI) and the internal rate of return (IRR). ROI may be considered as a simplified approximation for IRR and is commonly used instead of that. There are, however, several factors which cause differences between these two measures of profitability:

- the time dimension of cash-flows: the IRR-method takes the time value of money into account whereas in ROI no discounting occurs
- the depreciation method: IRR is based on annuity depreciation, in ROI the straight line depreciation is usually applied
- the service life of the investment: due to the lack of discounting in ROI, the two indices differ the more the longer the service life
- inflation: under inflation ROI also contains apparent profitability due to nominal increase of the cash-flows.

In the paper a mathematical model is constructed for comparing the behaviour of ROI and IRR in the constant real cash-flow case. In the model the difference between ROI and IRR is expressed as a function of three parameters: the profitability of the investment, the service life and the rate of inflation. Both analytical and simulated numerical solutions for the model are derived. On the basis of the results a clear description of the effects of the parameters on the relationships between ROI and IRR is obtained and, thus, several conclusions and recommendations for the usefulness of ROI can be made.