Farm Business Management: The Fundamentals of Good Practice

Chapter 7: Investment Analysis

Questions

1. Draw a graph of consumption in time 1 and time 2 and draw in three indifference curves, each representing different rates of time preference. Label the indifference curves with their degree of time preference.

2. What is meant by discounting?

3. What is wrong with using the average percentage return on capital as a criterion in investment analysis?

4. Why is the payback period not a good measure of an investment?

5. Given $5000 is invested today, and $6000 received in 2 years, what is the internal rate of return (IRR) of the investment?

6. How is net present value (worth) calculated?

7. Calculate the IRR of an investment that costs $10,000 in the first year and $2000 in the second year, and returns $1000 in the third year, $1400 in the next year, and thereafter to 'infinity' $1800. Is this investment worthwhile?

8. Calculate both the net present value (NPV) and the investment ratio for an investment that costs $10,000 in the first year and $3000 in the second year, both costs and returns $1000 and $2000 in the third year, returns $1500 in the fourth year, and thereafter to 'infinity' returns $2000 per year. Assume a discount rate of 10%. Is the project worthwhile? Give reasons.

9. What is the annuity equivalent, for 10 years, of a project with a NPV of $10,000 when the discount rate is 5%?

10. If the investment ratio on developing 1 ha of land is 1.26, what is the investment ratio if 50 ha is developed?

11. If 40 units of an investment are started 3 years earlier compared with a project involving 20 units of an investment, what will happen to the investment ratio of the programme? Why?

12. Given the investment project information below, estimate the year-by-year cash flow and calculate the NPV assuming a discount factor of 5% and a tax rate of a flat 50%. Development costs in year 1 $18,000, extra farm costs in year 1 $3000, in year 2 $1500, in year 3 $2000, and finally in year 4 $2200. Principal payments on the loan are $1000 per year in years 2, 3 and 4. Similarly, interest charges are $2000 in years 2, 3 and 4, whereas depreciation is $500 in year 2 and $400 in years 3 and 4. In addition, the pre-development taxable income was $10,000, which carries on each year, but on top of this the development gives $200 in year 2, $3000 in year 3 and $8000 in year 4.

13. What is an ex-post study of an investment project?

Tasks

1. What evidence is there for concluding that farmers exhibit time preference? Explain the significance of the evidence.

2. Would you ever find a farmer with zero rate of time preference? Give your reasoning.

3. What is a primary cost and should these be included in cost–benefit analysis? Similarly for secondary costs? Explain your rationale.

4. Give an example of an intangible benefit. Should they be included in an investment analysis? Give reasons.

5. Why might it be economical for a government to subsidize an irrigation scheme? Would you support such subsidies philosophically?

6. Describe a use of the formula giving the future value of a uniform series.

7. What is the capital recovery factor? What can it be used for? Give examples.

8. Define what is meant by the 'amortization factor' and outline its use.

9. List three characteristics of typical primary industry investment projects. Give examples from your personal knowledge.

10. What are the requirements of a useful investment analysis criterion? Do you agree the IRR is not a suitable investment criterion? Give your reasoning.

11. Under what circumstances is the IRR acceptable as an investment criterion? Give examples.

12. What is meant by 'scale of investment'? And is the NPV proportional to the scale of investment? Discuss whether increasing scale might alter your conclusions.

13. Is it possible for the ranking of projects to change when the discount rate changes? Why?

14. Uncertainty about future prices, costs and productivity mean investment analysis can be incorrect. List the methods that might be used to overcome this problem, or at least give an idea of the impact of uncertainty.

15. What planning horizon should be used when evaluating investment projects? How critical is selecting the right planning horizon? Give your logic.