

Time Value of Money

We know intuitively that £1, €1 or \$1 today is not the same worth as it was 10, 20 or 50 years ago. The time value of money (TVM) is an important concept in finance for the analysis of options open to individuals and company executives in making their decision to invest today and forgo consumption or to delay investment and consume immediately.

The erosion of the value of money over time will have an impact on decisions made today. It is therefore critical to have the necessary tools to systematically compare £1, €1 or \$1 received over different periods of time. This section will introduce you to the key tools used in practice relating to the concept of the time value of money.

The **NPV rule** is a core principle in capital budgeting used to evaluate investment decisions. It accounts for the **time value of money** and helps decide if a project **adds value**.

- **NPV** = Present value of cash inflows – Initial investment
- **Accept** a project if **NPV > 0**
- **Reject** if **NPV < 0**
- **Indifferent** if **NPV = 0**

Internal rate of return (IRR) method is used by company decision makers to assess whether to invest in capital projects.

- As the IRR is a percentage rate, the method tends to find favour with many managers in assessing investment opportunities.
- The IRR takes account of the scale of the investment but there are a number of problems with the technique when used in practice. The benefits and problems with IRR will be discussed in this section.

Finance theory favours the net present value rule which is being increasingly used by managers in supporting their capital investment decision.

Managers in practice will appraise projects using different methods but the net present value method is the technique that expresses the present value impact of accepting a capital project, when discounted at the rate reflective of the 'cost' of funds from the providers of finance. If this reflects the rate of the next best opportunity and is applied systematically to expected future cash flows and their timing the net present value rule is the favoured technique.

As we have seen, the IRR technique comes with challenges. The technique can be modified to alleviate the multiple IRR problem but the underlying implicit assumption that cash flows released by a project are re-invested at the same rate as the project under consideration may in some circumstances be unreasonable.

However, there are additional capital investment appraisal techniques (such as Payback) that are used in practice. These are not covered in the foundational course but should be further explored as necessary.

Return on Investment (ROI) is a performance measure used to evaluate the efficiency of an investment or compare the efficiency of a number of different investments. ROI tries to directly measure the amount of return on a particular investment, relative to the investment's cost.

What is ROI?

Return on investment (ROI) is a *financial metric* used to calculate the benefit an investor will receive in relation to their investment cost. It is calculated by dividing the net profit (benefits minus costs) by the costs of the investment, and expressing that figure as a percentage or ratio.

The ROI formula is: **$ROI = (Current\ Value\ of\ Investment - Cost\ of\ Investment) / Cost\ of\ Investment$**

How is ROI used in practice?

ROI is used to evaluate the financial performance of an investment or to compare the efficiencies of several different investments. The higher the ROI percentage, the better the investment's return is relative to its cost over a period of time.

ROI is a useful metric for making financial decisions about potential investments and for comparing competitive investment proposals. Investors use ROI calculations to compare different investment opportunities and select those expected to yield the highest returns. ROI is an important measure because it tells investors how efficiently their capital is being reinvested in the organisation and how much profit or loss was generated compared to the resources invested.

Summary of ROI

A comprehensive financial analysis examines a company's financial statements, including the income statement, balance sheet, and cash flow statement. This allows an assessment of profitability, liquidity, leverage, and other key financial metrics.

Measures such as Return on Investment (ROI) evaluate potential value creation. Reviewing projected cash flows indicates the timeline for debt repayment and future capital needs. The balance sheet provides insight into the company's current debt level and ability to take on additional financing.

The process involves a detailed review of all major financial statements, ratios, and cash flow projections to determine the viability and potential returns of an investment opportunity. This provides the necessary quantitative foundation for an informed business decision.