



The Time Value of Money

By Kenneth B. Collins

Which would you prefer: that I pay you \$100 today – or wait a year and I'll pay you then?

Today, you say, because money available today is worth more than the same amount at a future date, based on its potential earning capacity. This core principle of finance holds that, provided money can earn interest, any amount of money is worth more today than it is tomorrow.

Take an example. Assuming a 5% interest rate, \$100 invested today (its "present value") will be worth \$105 in one year (its "future value"). Conversely, \$100 received one year from now is worth only \$95.24 today ($\$100 \div 1.05$), assuming the same 5% interest rate.

The time value of money is one of the basic principles of financial management. It underpins the concept of interest, and it can be used to compare investments such as loans, bonds, mortgages, leases and savings. Because most such investments involve fixed amounts as well fixed interest rates and fixed time periods, it is relatively straightforward to calculate both their present and future values.

In our personal lives, the calculations can get quite complicated. You might, for example, be asking yourself: If I want to make a down payment of \$100,000 on a house in 7 years – and I have \$30,000 in the bank today and can earn 5% interest compounded annually on my savings, how much do I need to deposit in my account each month between now and the purchase date in order to have \$100,000 on hand at that time to make the down payment? (Answer: \$504.29)

It can get a lot more complicated if you are trying to analyze the value of a business today based on its projected net cash flows. One must consider the risks associated with the business achieving its projected earnings as well as all of the other factors that impact future cash flows such as state and federal tax rates, bank debt and interest rates, depreciation and amortization, working capital requirements, and capital investments.

Calculating the Net Present Value (NPV) of a business investment also requires an assessment of the cost of capital to determine the market value of that business in, say, five years (its "end value").

Given the present value of an investment (the price I am willing to pay today) and the projected value of that investment in, say, 5 years (the price I believe I can get then), investors measure their results in terms of return on investment (ROI), or in financial parlance, the Internal Rate of Return (IRR).

It's a relatively simple analysis for fixed investments such as bonds and securities – but it gets very complicated and involves risk analysis when it comes to acquiring or at least investing in a business enterprise.

Assessing all of these factors and their inter-relationships is best done with the help of financial modeling and an experienced investment banker.

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