# TIME VALUE OF MONEY

The time value of money (TVM) is the concept that a sum of money is worth more now than the same sum will be at a future date due to its earnings potential in the meantime.

The time value of money is a core principle of finance.

A sum of money in the hand has greater value than the same sum to be paid in the future. The time value of money is also referred to as the present discounted value.

Investors prefer to receive money today rather than the same amount of money in the future because a sum of money, once invested, grows over time.

For example, money deposited into a savings account earns interest. Over time, the interest is added to the principal, earning more interest. That's the power of compounding interest.

If it is not invested, the value of the money erodes over time.

If you keep ₹1,000 at your home idle for three years, you will lose the additional money it could have earned over that time if invested. It will have even less buying power when you retrieve it because inflation reduces its value.

As another example, say you have the option of receiving ₹10,000 now or ₹10,000 two years from now. Despite the equal face value, ₹10,000 today has more value than it will two years from now due to the opportunity costs associated with the delay.

In other words, a delayed payment is a missed opportunity.

The time value of money has a negative relationship with inflation. The value of single rupee goes down when prices rise, which means you can't purchase as much as you were able to in the past.

# FORMULA

$$FV = PV \times [1 + (i / n)]^{(n \times t)}$$

Where:
FV = Future value of money
PV = Present value of money
i = Interest rate
n = Number of compounding periods per year
t = Number of years

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# Examples of Time Value of Money

Let's assume a sum of ₹10,000 is invested for one year at 10% interest compounded annually. The future value of that money is:

$$FV = ₹10{,}000 \times \left(1 + \frac{10\%}{1}\right)^{1\times 1}$$

$$FV = ₹11{,}000$$

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The formula can also be rearranged to find the present value. For example, the present-day rupee amount compounded annually at 7% interest that would be worth ₹5,000 one year from today is:

$$PV = \left[\frac{₹5{,}000}{\left(1 + \frac{7\%}{1}\right)}\right]^{1\times 1}$$

$$PV = ₹4{,}673$$

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