

Course: BBA Part III

Paper: XVIII

Topic: Time Value of Money

Teacher's Name: Prof. (Dr.) Reyazuddin

School: Commerce and Management

Date: 28/08/2020

## Time Value of Money

The time value of money (TVM) is the concept that money you have now is worth more than the identical sum in the future due to its potential earning capacity. This core principle of finance holds that provided money can earn interest, any amount of money is worth more the sooner it is received. TVM is also sometimes referred to as present discounted value.

### Understanding Time Value of Money (TVM)

The time value of money draws from the idea that rational investors prefer to receive money today rather than the same amount of money in the future because of money's potential to grow in value over a given period of time. For example, money deposited into a savings account earns a certain interest rate and is therefore said to be compounding in value.

Further illustrating the rational investor's preference, assume you have the option to choose between receiving \$10,000 now versus \$10,000 in two years. It's reasonable to assume most people would choose the first option. Despite the equal value at the time of disbursement, receiving the \$10,000 today has more value and utility to the beneficiary than receiving it in the future due to the opportunity costs associated with the wait. Such opportunity costs could include the potential gain on interest were that money received today and held in a savings account for two years.

### Time Value of Money Formula

Depending on the exact situation in question, the time value of money formula may change slightly. For example, in the case of annuity or perpetuity payments, the generalized formula has additional or less factors. But in general, the most fundamental TVM formula takes into account the following variables:

- FV = Future value of money
- PV = Present value of money
- $i$  = interest rate
- $n$  = number of compounding periods per year
- $t$  = number of years

Based on these variables, the formula for TVM is:

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

Time Value of Money Examples

Assume a sum of \$10,000 is invested for one year at 10% interest. The future value of that money is:

$$FV = \$10,000 \times [1 + (10\% / 1)]^{(1 \times 1)} = \$11,000$$

The formula can also be rearranged to find the value of the future sum in present day dollars. For example, the value of \$5,000 one year from today, compounded at 7% interest, is:

$$PV = \$5,000 / [1 + (7\% / 1)]^{(1 \times 1)} = \$4,673$$