



# TIME VALUE OF MONEY

CHAPTER 2

# CONCEPT OF TIME VALUE OF MONEY

- The concept of TVM refers to the fact that money received today is different in its worth from the money receivable at some other time in future.
- The English proverb 'A bird in hand is worth two in bush' gives correct implication of the concept TVM.
- For example, if an individual is given an option to receive ₹ 1000 today or to receive the same amount after one year, he will definitely choose to receive the amount today. The rupee received today has higher value than the rupee receivable in future.

# CONCEPT OF TIME VALUE OF MONEY

- The concept of TVM is applicable in equal strength to the individuals as well as the to the business firms.
- The decisions taken by a firm, will have financial implications generally over a period of time and often over a long term even upto ten years
- The TVM helps in converting the different rupee amounts arising at different point of time into equivalent values of a particular point of time.

# REASONS FOR TIME VALUE OF MONEY

Future Uncertainties

Preference for present  
consumption

Reinvestment Opportunities

# TOOLS OF TIME VALUE MONEY

- **FUTURE VALUE**: The value of a particular amount in future. For example, ₹ 1000 deposited in a bank account at 10% interest for a period of one year. This deposit of 1000 will amount to ₹ 1100 in one year. This ₹ 1100 is future value of ₹ 1000
- **PRESENT VALUE**: The value of particular amount if it is received today. For example, the PV of ₹ 1100 receivable after one year is ₹ 1000 today considering 10% interest rate which could be earned by depositing ₹ 1000 today for one year.

# COMPOUNDING TECHNIQUE

- The future value of a single present cash flow is given by:

$$FV = PV(1+r)^n$$

where r is rate of interest and n is time period

- The future value of non-annual compounding is given by:

$$FV = PV (1+r/m)^{nm}$$

where m is the number of times in a year compounding is done.

- The future values of a series of equal cash flows or annuity of cash flows:

$$FV = \text{Annuity amount} * CVAF_{(r,n)}$$

$CVAF_{(r,n)}$  is the value from the table

# DISCOUNTING TECHNIQUE

- The present value of a single present cash flow is given by:

$$PV = FV / (1+r)^n \text{ or } PV = FV(1+r)^{-n} \text{ or } PV = FV * PVF_{(r,n)}$$

where r is rate of interest and n is time period

- The present value of non-annual compounding is given by:

$$PV = FV / (1+r/m)^{nm} \text{ or } PV = FV * PVF_{(r,n)}$$

where m is the number of times in a year compounding is done.

- The present values of a series of equal cash flows or annuity of cash flows:

$$PV = \text{Annuity amount} * PVAF_{(r,n)}$$

$PVF_{(r,n)}$  and  $PVAF_{(r,n)}$  is the value from the table

# PRESENT VALUE AND FUTURE VALUE OF ANNUITY DUE

- Future Value of Annuity Due

$$FV = \text{Annuity amount} * CVAF_{(r,n)} * (1+r)$$

- Present Value of Annuity Due

$$PV = \text{Annuity Amount} * PVAF_{(r,n)} * (1+r)$$



# APPLICATIONS OF TVM

- Finding out the implicit rate of interest
- Finding out the number of periods
- Sinking fund
- Capital recovery
- Deferred payments