Finance Notes

The Time Value of Money

The difference in the value of a dollar today and a dollar promised in the future; a dollar today is worth more than it in the future. People prefer to consume goods today rather than wait to consume similar goods in the future as money has a time value and earning capacity. Thus, people require compensation for deferring consumption.

- The value of a dollar invested at a positive interest rate grows over time
- Trade-off between money today and money in the future depends on rate of interest earned through investment. Higher interest, more likely forgo consumption as investment will make more money.

Time Line:
Identifies the rate of interest, magnitude and timing of cash flows.

Future Value (FV)

The value of an investment after it earns interest after one or more periods.

Compounding:
Process by which interest earned on an investment is reinvested, so in future periods interest is earned on interest as well as the principal.

$$FV = PV \ x \ (1 + i)^n$$

Present Value (PV)

The value today of a cash flow promised in the future.

$$PV = \frac{FV_n}{(1 + i)^n}$$

Discounting:
Process by which the present value of future cash flows is calculated (opposite of compounding).

Relationship between time the discount rate and present value:

- Further in the future a dollar will be received, the less it is worth today
- Higher the discount rate, the lower the present value of the dollar
- The longer you have to wait for money, the less it is worth today
- Just as with future value, relationship between PV and time is exponential