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WORLD'S #1 QUICK REFERENCE GUIDE

Quick Study® BUSINESS

FINANCE

CORPORATION

Definition: A legal form of business organization wherein the firm's owners or stockholders have limited liability.

CORPORATE DECISIONS

- **INVESTMENT:** What real (physical) assets should the firm acquire? How much money should be invested in real assets?
- **FINANCING:** What securities or financial assets should the firm issue? How much money should be raised through the issuance of securities?
- **DIVIDEND:** What portion of the firm's profits should be paid to stockholders in the form of dividends?
- **WORKING CAPITAL:** Management of current assets and current liabilities.
- **GOAL OF THE FIRM:** To maximize shareholders' wealth or equivalently, to maximize the price of the firm's common stock.

ACCOUNTING STATEMENTS

BALANCE SHEET IDENTITY

Assets = Liabilities + Owners' Equity

INCOME STATEMENT

Sales

- Cost of Goods Sold (COGS)

= **Gross Profit (GP)**

- Administrative Expenses
- Depreciation
- Other Expenses

= **Earnings Before Interests and Taxes (EBIT)**

- Interest

= **Earnings before taxes**

- Taxes

=**Net Income (Net Profit)**

STATEMENT OF RETAINED EARNINGS

Beginning Balance Retained Earnings

+ Net Profit

- Dividends on Preferred Stock
- Dividends on Common Stock

= Ending Balance Retained Earnings

STATEMENT OF CASH FLOWS

Cash Flows from Operations

+ Cash Flows from Investments

+ Cash Flows from Financing

= Net Increase (or Decrease) in Cash

CASH FLOW IDENTITY

Cash flow from assets =

Sum of the Cash Flow paid to the suppliers of capital to the firm

FINANCIAL RATIOS

LIQUIDITY

Definition: Measure of the firm's ability to meet its short-term obligations.

$$\text{Current Ratio} = \frac{\text{current assets}}{\text{current liabilities}}$$

$$\text{Quick Ratio} = \frac{\text{current assets} - \text{inventory}}{\text{current liabilities}}$$

$$\text{Net Working Capital to Total Assets Ratio} = \frac{\text{current assets} - \text{inventory}}{\text{total assets}}$$

ACTIVITY

Definition: Measure of the firm's efficiency in generating sales with its assets.

$$\text{Inventory Turnover} = \frac{\text{cost of goods sold}}{\text{average inventory}}$$

$$\text{Collection Period} = \frac{\text{accounts receivable}}{\text{credit sales per day}}$$

$$\text{Fixed Asset Turnover} = \frac{\text{sales}}{\text{net fixed assets}}$$

$$\text{Total Assets Turnover} = \frac{\text{sales}}{\text{total assets}}$$

LEVERAGE

Definition: Measure of the firm's degree of indebtedness and its ability to meet long-term obligations.

$$\text{Debt Ratio} = \frac{\text{total liabilities}}{\text{total assets}}$$

$$\text{Debt to Equity Ratio} = \frac{\text{long – term debt}}{\text{stockholders' equity or equity}}$$

$$\text{Times Interest Earned Ratio} = \frac{\text{EBIT}}{\text{interest}}$$

$$\text{Cash Coverage Ratio} = \frac{\text{EBIT + depreciation}}{\text{interest}}$$

$$\text{Fixed Charge Coverage Ratio} = \frac{\text{EBIT + lease payments}}{\text{interest + lease payments}}$$

$$\text{Equity Multiplier Ratio} = \frac{\text{total assets}}{\text{total equity}}$$

PROFITABILITY

Definition: Measure of the returns on assets and equity.

$$\text{Gross Profit Margin} = \frac{\text{gross profit}}{\text{sales}}$$

$$\text{Net Profit Margin} = \frac{\text{net income}}{\text{sales}}$$

$$\text{Return on Assets (ROA)} = \frac{\text{net income}}{\text{total assets}}$$

$$\text{Return on Equity (ROE)} = \frac{\text{net income}}{\text{equity}}$$

$$\text{Price / Earnings (P/E) Ratio} = \frac{\text{price per share of common stock}}{\text{earnings per share}}$$

$$\text{Earnings per share (EPS)} = \frac{\text{earnings available to common stockholders}}{\text{number of shares of common stock outstanding}}$$

$$\text{Market-to-Book Ratio} = \frac{\text{common stock price per share}}{\text{book value of common stock per share}}$$

Dupont system:

ROE = net profit margin x total asset turnover x equity multiplier

or

ROE = ROA x (1 + debt-to-equity ratio)

TIME VALUE OF MONEY

PRESENT VALUES

- **SINGLE AMOUNT:** Present Value (**PV**) of a lump sum (**FV_n**) given at the end of **n** periods at an interest rate of **r** %.
  - **Discounted once per period:** $PV = \frac{FV_n}{(1+r)^n}$
  - **Discounted "m" times per period:** $PV = \frac{FV_n}{(1+\frac{r}{m})^{m \times n}}$
  - **Discounted Continuously: PV = FV_n x e^{-rn}** (**e** = base of natural logarithms)
- **ANNUITIES**
  - **Ordinary Annuity** – Present value of an ordinary annuity (**PVA**) of **PMT** per period for **n** periods at **r** % per period:

$$PVA = \sum_{t=1}^{n} \frac{PMT}{(1+r)^t} = \frac{PMT}{r}\left[1 - \frac{1}{(1+r)^n}\right]$$

  - **Annuity Due** – Present value of an annuity due (**PVD**) of **n** cash flows (**PMT**) at **r** % per period:

$$PVD = \sum_{t=1}^{n} \frac{PMT}{(1+r)^t} \times (1+r) = \frac{PMT}{r}\left[1 - \frac{1}{(1+r)^n}\right] \times (1+r)$$

  - **Perpetuity:** Present value of a perpetuity (**PVP**) of **PMT** per period at **r** % per period: $PVP = \frac{PMT}{r}$
- **SERIES OF CASH FLOWS** – Present value of a series of cash flows (**CF_t**) at times, **t = 1,2,…,n,** at **r** % per period:

$$PV = \sum_{t=1}^{n} \frac{CF_t}{(1+r)^t} = \frac{CF_1}{(1+r)} + \frac{CF_2}{(1+r)^2} + \ldots + \frac{CF_n}{(1+r)^n}$$

FUTURE VALUES

- **SINGLE AMOUNT**: Future value at the end of **n** periods (**FV_n**) of a present amount (**PV**) invested today at **r** % per period.
  - **Compounded once per period: $FV_n = PV(1+r)^n$**
  - **Compounded m times per period:**

$$FV_n = PV\left(1 + \frac{r}{m}\right)^{n \times m}$$

  - **Compounded continuously: $FV_n = PVe^{rn}$**
- **ANNUITIES**
  - **Ordinary Annuity** – Future value at the end of n periods of an ordinary annuity (FVA) of PMT per period for n periods at r % per period:

$$FVA = \sum_{t=1}^{n} PMT(1+r)^{n-t} = \frac{PMT}{r}\left[(1+r)^n - 1\right]$$

  - **Annuity Due** – Future value at the end of **n** periods of an annuity due of **PMT** per period at **r** % per period:

$$FVD = \sum_{t=1}^{n} PMT(1+r)^{n-t+1} = \frac{PMT}{r}\left[(1+r)^n - 1\right] \times (1+r)$$

- **SERIES OF CASH FLOWS** – Future value at the end of **n** periods of a series of cash flows,**CF_t**, at times, t 1,2,…,**n**:

$$FV = \sum_{t=1}^{n} CF_t(1+r)^{n-t} = CF_1(1+r)^{n-1} + CF_2(1+r)^{n-2} + \ldots + CF_n$$

EFFECTIVE ANNUAL RATE (EAR)

$$EAR = \left(1 + \frac{\text{nominal rate}}{m}\right)^m - 1$$

where **m** = number of compounding intervals.

ANNUAL PERCENTAGE RATE (APR)

APR = rate per period x periods per year

RISK AND RETURN

RETURN

- **EXPECTED RETURN (E(r))** – The expected return of an investment with **n** possible outcomes, r_i, **i=1,..., n**, each with probability of p_i:

$$E(r)=\sum_{i=1}^{n} p_i \times r_i = p_1 \times r_1 + p_2 \times r_2 + \ldots + p_n \times r_n$$

- **VARIANCE OF RETURNS** (σ2) – The variance of returns of an investment with **n** possible outcomes and with an expected return, **E(r)**:

$$\sigma^2 = \sum_{i=1}^{n} (r_i - E(r))^2 \times p_i =$$

$$(r_1 - E(r))^2 \times p_1 + \ldots + (r_n - E(r))^2 \times p_n$$

- **STANDARD DEVIATION** (σ):

$$\sigma = \sqrt{\sigma^2}$$

- **COEFFICIENT OF VARIATION (CV):**

$$CV = \frac{\sigma}{E(r)}$$

- **COVARIANCE OF RETURNS** (σ**ij**): The covariance between the returns of asset **i** and asset **j**, each having **n** possible outcomes with joint probabilities $p_s(r_i, r_j)$:

$$\sigma_{ij} = \sum_{s=1}^{n} (r_{is} - E(r_i))(r_{js} - E(r_j)) \times p_s(r_i, r_j) =$$

$$(r_{i1} - E(r_i))(r_{j1} - E(r_j)) \times p_1(r_i, r_j) + \ldots$$

$$(r_{in} - E(r_i))(r_{jn} - E(r_j)) \times p_n(r_i, r_j)$$

- **CORRELATION COEFFICIENT** (ρ**ij**)

$$\rho_{ij} = \frac{\sigma_{ij}}{\sigma_i \times \sigma_j}$$

- **TWO-ASSET PORTFOLIO:**
  - **Expected Return** ($(E(r_p)$) – The expected return on a two-asset portfolio with proportion x_i invested in asset **i**, and x_j invested in asset **j**:

$$E(r_p) = x_i \times E(r_i) + x_j \times E(r_j)$$

  - **Variance of returns** (σ_p2):

$$\sigma_p^2 = x_i^2 \sigma_i^2 + x_j^2 \sigma_j^2 + 2x_i x_j \sigma_{ij}$$

- **N-ASSET PORTFOLIO:**
  - **Expected Return** ($E(r_p)$) – The expected return on an N-asset portfolio having a proportion x_i invested in asset **i, i=1,…,N:**

$$E(r_p) = \sum_{i=1}^{N} x_i \times E(r_i)$$

  - **Variance of Returns** (σp2):

$$\sigma_p^2 = \sum_{i=1}^{N} \sum_{j=1}^{N} x_i x_j \sigma_{ij}$$

BETA COEFFICIENT

- **ASSET**

$$\text{Beta of an asset} = \beta = \frac{\text{covariance of the asset returns with the market index portfolio}}{\text{variance with the market portfolio}} = \frac{\sigma_{im}}{\sigma_m^2}$$

- **PORTFOLIO (ßr):** The beta coefficient of an N-asset portfolio with x_i invested in asset **i** with beta equal to β_i :

$$\beta_p = \sum_{i=1}^{N} x_i \beta_i = x_1 \beta_1 + x_2 \beta_2 + \ldots + x_N \beta_N$$

CAPITAL ASSET PRICING MODEL (CAPM)

In equilibrium, the expected return (as well as the required return) **(E(R$_i$))** on asset **i** having a beta coefficient, β_i, is given by:

$$E(R_i) = R_f + \beta_i [E(R_m) - R_f]$$

where R_f is the risk-free rate of return, and $E(R_m)$ is the expected return on the market portfolio. The term $[E(R_m) - R_f]$ is the expected market risk premium.

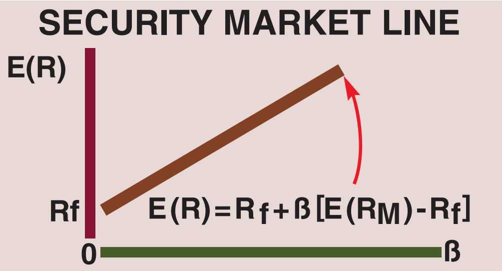
RISK

- **SINGLE ASSET**: The risk of a single asset held in isolation is equal to the variance of the returns on the asset, σ2.
- **PORTFOLIO**: The risk of a portfolio of assets is given by the variance of the returns in the portfolio, σ_p^2.
- **SINGLE ASSET IN A PORTFOLIO**: The risk of a single asset held as a part of a portfolio of assets is given by the beta coefficient for that asset.
- **SYSTEMATIC RISK**: The portion of the total risk that cannot be eliminated through diversification. This risk is also known as "market" risk. The systematic risk of an asset or portfolio is given by their beta coefficients.
- **DIVERSIFIABLE RISK**: The portion of the total risk of a portfolio that can be eliminated through diversification. Note that:

Total Risk = Systematic Risk + Diversifiable Risk

SECURITY MARKET LINE (SML)

Definition: A graphical representation of the **CAPM**.



The slope of the **SML** is equal to **[E(R$_M$) - R$_f$]**.

VALUATION

VALUE OF AN ASSET

The value of an asset with expected cash flows, **CF$_t$**, at times, **t=1,2,…,n**, with required rate of return, **r**:

$$\text{Value of asset} = \sum_{t=1}^{n} \frac{CF_t}{(1+r)^t} = \frac{CF_1}{(1+r)} + \frac{CF_2}{(1+r)^2} + \ldots + \frac{CF_n}{(1+r)^n}$$

VALUE OF A BOND

The value of a bond with coupon interest payments of **I** per year, maturity value (or par value) of **M**, maturity of **n** years, and a required rate of r_d:

- **ANNUAL COUPONS**:

$$\text{Bond Value} = \sum_{t=1}^{n} \frac{I}{(1+r_d)^t} + \frac{M}{(1+r_d)^n} = \frac{I}{r_d}\left[1 - \frac{1}{(1+r_d)^n}\right] + \frac{M}{(1+r_d)^n}$$

- **SEMIANNUAL COUPONS**:

$$\text{Bond Value} = \frac{\frac{I}{2}}{\frac{r_d}{2}}\left[1 - \frac{1}{(1+\frac{r_d}{2})^{2n}}\right] + \frac{M}{(1+\frac{r_d}{2})^{2n}}$$

VALUE OF COMMON STOCK

- **THE VALUE TODAY (Po)** of one share of common stock with expected cash dividends, D_t, at times, **t-1,2,…,∞**, and a required rate of return, r_s:

$$P_o = \sum_{t=1}^{\infty} \frac{D_t}{(1+r_s)^t} = \frac{D_1}{(1+r_s)} + \frac{D_2}{(1+r_s)^2} + \ldots$$

- **CONSTANT GROWTH** – The value of one share of common stock with a current dividend per share of D_0, expected to grow at a constant growth rate of **g %** per period, and a required rate of r_s:

$$P_o = \frac{D_o(1+g)}{r_s - g} = \frac{D_1}{r_s - g}; r_s > g$$

CAPITAL BUDGETING

PROJECT OPERATING CASH FLOW

The incremental operating cash flow after taxes (**ΔOCF**) for a project in a firm with a marginal corporate tax rate, **T**, is given by:

$$\Delta OCF = (\Delta Revenues - \Delta Costs) \times (1-T) + T \times \Delta Depreciation$$

where Δ denotes incremental quantities.

PROJECT NET CASH FLOW (ΔNCF)

$$\Delta NCF = \Delta OCF - \Delta NWC - \Delta CI$$

where **ΔNWC** is the incremental change in net working capital, and **ΔCI** is the incremental capital investment required by the project.

DISCOUNTED CASH FLOW TECHNIQUES

- **NET PRESENT VALUE (NPV)**: A project with net cash flows, **ΔNCFt (t=0,1,…,N)**, and a required rate of return of **k**, has a net present value **(NPV)**:

$$NPV = \sum_{t=1}^{N} \frac{\Delta NCF_t}{(1+k)^t} = \Delta NCF_0 + \frac{NCF_1}{(1+k)} + \ldots + \frac{NCF_N}{(1+k)^N}$$

- **INTERNAL RATE OF RETURN (IRR)**: The **IRR** of a project is the rate of discount that makes the **NPV** of the project's cash flows equal to zero. The **IRR** of a project with net cash flows, **ΔNCF$_t$ (T=0,1,2,…,N)**, is the solution to the following polynomial equation:

$$NPV = \sum_{t=0}^{N} \frac{\Delta NCF_t}{(1+IRR)^t} = 0$$

$$\Delta NCF_0 + \frac{\Delta NCF_1}{(1+IRR)} + \ldots + \frac{\Delta NCF_N}{(1+IRR)^N} = 0$$

- **PROFITABILITY INDEX (PI)**: The **PI** of a project with net cash flows, **ΔNCF$_t$ (T=0,1,…,N)**, and a required rate of return of **k**, is given by:

$$PI = \frac{\text{present value of future cash flow (t=1 to t=N)}}{\text{initial outlay } (\Delta NCF_0)} = \frac{\sum_{t=1}^{N} \frac{\Delta NCF_t}{(1+k)^t}}{\Delta NCF_0}$$

- **ACCEPT/ REJECT CRITERIA**
  - **Independent Projects:**

ACCEPT/REJECT CRITERIA

INDEPENDENT PROJECTS

TECHNIQUE	ACCEPT	REJECT	INDIFFERENT
NPR	> 0	< 0	= 0
IRR**	> k*	< k*	= k*
PI	> 1	< 1	= 1

k is the required rate of return on the project*
*** This criterion is correct for projects with standard patterns of cash flows*

  - **Mutually Exclusive Projects:** Two projects are mutually exclusive if the acceptance on one project precludes the firm from undertaking the other project. For mutually exclusive projects, the firm should select the project with the greatest **NPV**.

NON-DISCOUNTED CASHFLOW TECHNIQUES

- **PAYBACK PERIOD:** The length of time it takes the firm to recover the project's initial investment.
- **ACCOUNTING RATE OF RETURN (ARR):**

$$ARR = \frac{\text{Average annual income}}{\text{Average book value}}$$

VALUE OF PREFERRED STOCK

- **VALUE TODAY** of a share of preferred stock with expected dividends of D_{ps} per share and a required rate of r_{ps}:
- **Value of Preferred Stock** = $\frac{D_{ps}}{r_{ps}}$

COST OF CAPITAL

DEFINITION

The rate of return that must be earned on new investments having the same average risk as the firm's existing assets, in order to provide all investors in the firm with fair market rates of return.

COST OF DEBT

- **WITHOUT FLOTATION** or issuance cost:

k_d=After-tax cost of debt=(1-T) x Before-tax cost of debt

where T = marginal corporate tax rate, and the before-tax cost of debt is equal to the yield to maturity offered by the firm's debt.

- **WITH FLOTATION** cost:

K_d = (1-T) x Before-tax cost of debt / (1-f_d)

where f_d is the % flotation cost.

COST OF PREFERRED STOCK (kp)

- **WITHOUT FLOTATION COST:**

$$k_p = \frac{D_p}{P_p} = \frac{\text{Dividend per share on preferred}}{\text{Price per share of preferred stock}}$$

- **WITH FLOTATION COST:**

$$k_p = \frac{D_p}{P_p\,(1-f_p)}$$

where f_p is % flotation cost on preferred stock.

COST OF RETAINED EARNINGS (k_s)

- **USING THE CONSTANT-GROWTH MODEL:**

$$k_s = \frac{D_1}{P_o} + g$$ where D_1 = expected dividend per share one year hence; **Po**= current market price of common stock; **g**= constant growth rate of dividends.

COST OF EQUITY (ke)

- **USING THE CONSTANT-GROWTH MODEL:**
  - Without flotation cost: $k_e = \frac{D_1}{P_o} + g$
  - With flotation cost: $k_e = \frac{D_1}{P_o(1-f_e)} + g$

where f_e is the % flotation cost.

- **USING THE CAPITAL ASSET PRICING MODEL:**

$$k_e = R_f + \beta_e\,[E(R_m) - R_f]$$

where β_e= beta coefficient of the stock; R_f= risk-free rate; $E(R_m)$= expected return on the market portfolio.

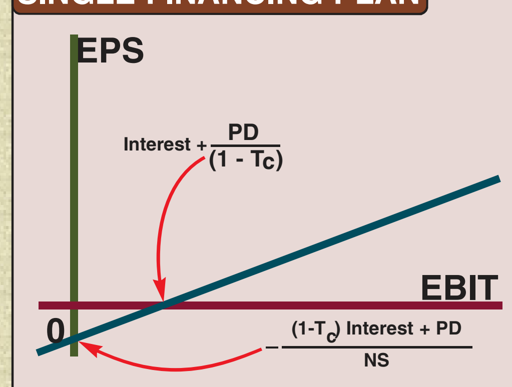
WEIGHTED AVERAGE COST OF CAPITAL (WACC)

$$WACC = W_d k_d + W_p kp + W_s k_s + W_e k_e$$

where W_d, W_p, W_s, and W_e are the "weights" or proportions of each source of capital. These "weights" can be based on:

1.market values 2. book values 3. target values

SINGLE FINANCING PLAN



CAPITAL STRUCTURE THEORIES

DEFINITION

Decisions about the mix of financing sources employed by the firm. The optimal capital structure is that mix of financing that maximizes the total value of the firm.

MODIGLIANI-MILLER (MM)

- **CASE 1**: No taxes.

Proposition I: In the absence of taxes or transactions costs, capital structure decisions have no effect on firm value:

$$V_L = V_u$$

where V_L is the value of a levered firm (a firm with debt in its capital structure,) and V_u is the value of an unlevered but otherwise identical firm to the levered one.

Proposition II: The rate of return on equity (K_E) increases linearly with the debt-to-equity (**D/E**) ratio:

$$K_E = K_o + \left(\frac{D}{E}\right)(K_O - K_d)$$

where K_o is the weighted-average cost of capital, and K_d is the cost of debt.

- **CASE 2: Corporate taxes.**

Proposition I: In a world where corporate income is subject to taxation and there are no bankruptcy costs, the firm value increases with leverage:

$$K_E = K_a + \frac{D}{E}(1-T_c)(K_a - K_d)$$

where T_c is the marginal corporate tax rate, and is the market value of the firm's debt.

Proposition II: The levered cost of equity increases with the after-tax debt-to-equity ratio:

$$K_E = K_a + \frac{D}{E}(1-T_c)(K_a - K_d)$$

where K_a is the after-tax weighted-average cost of capital.

TRADE-OFF OR STATIC THEORY

This theory adds the possibility of costly financial distress and bankruptcy to Modigliani-Miller under corporate taxes:

$$V_L = V_U + T_C D - \text{Present value of financial distress costs}$$

According to this theory, the optimal level of debt in a firm's capital structure is determined by the balance of the tax-shield provided by debt and the present value of financial distress costs.

MILLER'S MODEL

This theory of capital structure incorporates corporate as well as personal income taxes in the selection of the optimal capital structure for the firm. Under Miller's model:

$$V_L = V_U + D\left[1 - \frac{(1 - T_C)(1 - T_S)}{(1 - T_B)}\right]$$

where T_s is the personal income tax rate on equity income, and T_B is the personal income tax rate on debt income.

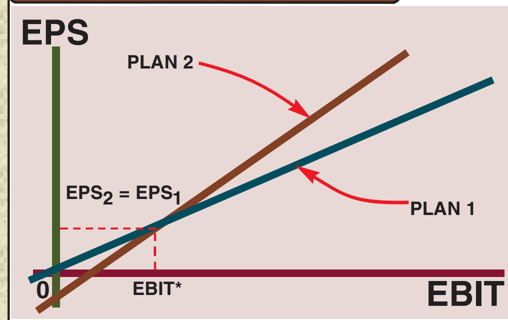
EPS - EBIT ANALYSIS

This technique is used to analyze the relationship between earnings per share (EPS) and EBIT under a given financing plan. The EPS under a given financing plan is given by:

$$EPS_{plan} = \frac{(EBIT - Interest)(1 - T_C) - PD}{NS}$$

where **PD** = preferred dividends; **NS** = number of common stock shares outstanding. The break-even level of EBIT under a given plan is given by: $EBIT_{BE} = Interest + \frac{PD}{(1-T_c)}$

TWO FINANCING PLANS



FOR TWO FINANCING PLANS, the indifference level of EBIT is the EBIT that yields the same EPS for each plan.

At EBIT*, $EPS_{plan1} = EPS_{plan2}$

BREAK-EVEN AND LEVERAGE

NOTATIONS

p = price per unit; **v** = variable cost per unit; **FC** = total fixed cost; **Q** = number of units; **I** = interest.

BREAK-EVEN

The break-even number of units, **Q***, is given by:

$$Q^* = \frac{FC}{P - V}$$

DEGREE OF OPERATING LEVERAGE

Refers to the sensitivity of the firm's **EBIT** to changes in the firm's sales. The degree of operating leverage **(DOL)** at **Q** units is:

$$DOL\ at\ Q = \frac{\%\,\Delta\,EBIT}{\%\,\Delta\,Sales} = \frac{Q(p-v)}{Q(p-v)-FC}$$

where Δ denotes change and **EBIT = Q (p-v) – FC**.

DEGREE OF FINANCIAL LEVERAGE

Refers to the sensitivity of the firm's **EPS** to changes in the firm's **EBIT.** The degree of financial leverage **(DFL)** at **Q** units is given by:

$$DFL\ at\ Q = \frac{\%\,\Delta\,EPS}{\%\,\Delta\,EBIT} = \frac{EBIT}{EBIT - I} = \frac{Q(p-v)-FC}{Q(p-v)-FC-I}$$

DEGREE OF COMBINED LEVERAGE

Refers to the sensitivity of **EPS** to changes in the firm's sales. The degree of combined leverage **(DCL)** at **Q** is given by:

$$DCL\ at\ Q = DOL \times DFL = \frac{Q(p-v)}{Q(p-v) - FC - I}$$

LEASING

DEFINITION

Leasing is an alternative to owning the asset through 100% debt financing wherein the leasor grants the use of a fixed asset for a specific amount of time in exchange for payment usually in the form of rent from the leasee.

EQUIVALENT LOAN VALUE

- The equivalent loan value of a financial lease over the life of the asset is given by:

$$\text{Equivalent Loan Value} = \text{Present value of lease cash flows at the after-tax borrowing rate} + \text{Present value of after-tax salvage value}$$

where r_B=(1-T_c) x borrowing rate; S_N = after-tax salvage.

$$ELV = \sum_{t=1}^{N} \frac{(1-T_c)L_t + T_c \times DEP_t}{(1+r_B)} + \frac{S_N}{(1+r_B)^N}$$

$$\text{Lease cash flow} = \text{After-tax lease payment} + \text{Loss of depreciation tax shield}$$

- Lease instead of buying the asset through debt financing if ELV < present value of loan needed to purchase the asset.

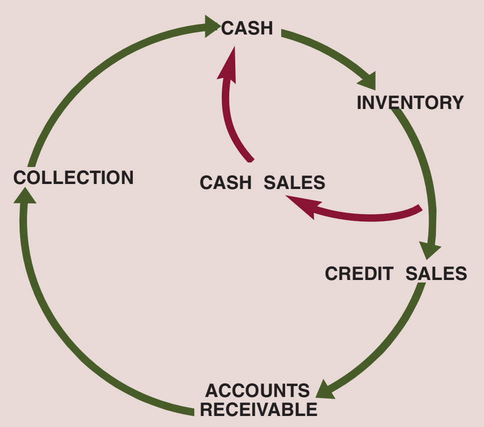
WORKING CAPITAL MANAGEMENT

Definition: Management of current assets and current liabilities.

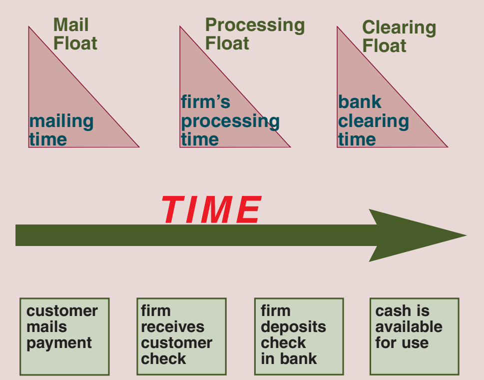
NET WORKING CAPITAL (NWC)

$$\text{NWC} = \text{current assets} - \text{current liabilities} = \text{cash} + \text{marketable securities} + \text{accounts receivable} + \text{inventory} + \text{other current assets} - \left[\text{accounts payable} + \text{other current liabilities}\right]$$

CASH CYCLE



CASH COLLECTION TIME



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NOTE TO STUDENT
This ***QuickStudy®*** guide is an **outline of the basic topics** taught in Finance courses. Due to its condensed format, use it as a writing guide but not as a replacement for assigned class work.

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DIVIDENDS

DEFINITIONS

- **DIVIDEND PAYOUT RATIO** = $\frac{\text{Dividends per share}}{\text{Earnings per share}}$
- **DIVIDEND YIELD** = $\frac{\text{Annual dividends per share}}{\text{Common stock price per share}}$
- **DECLARATION DATE:** Date on which board of directors formally declares a dividend.
- **DATE OF RECORD:** Date on which the holder of record is designated to receive a dividend.
- **EX-DIVIDEND DATE:** Two business days before the date of record.
- **PAYMENT DATE:** Date on which the dividend is actually paid.
- **STOCK DIVIDEND:** Distribution of new share of common stock to existing shareholders. The amount of the increase has to be 25% or less of the total shares outstanding.
- **STOCK SPLIT:** Distribution of new shares to existing stockholders. The amount of the increase has to exceed 25% of the total number of shares outstanding.
- **STOCK REPURCHASE:** The firm purchases its own shares.

DIVIDEND POLICIES

- **CONSTANT DIVIDEND PAYOUT:** A firm pays a constant percentage of earnings in dividends.
- **STABLE DOLLAR DIVIDEND PER SHARE:** The firm maintains a policy of paying a stable dollar dividend per share over time.
- **CONSTANT DIVIDENDS PLUS EXTRA:** The firm pays a small dividend every quarter plus an extra year-end dividend when the firm experiences a good year.

REAL INTEREST RATE

$$\text{Real Rate of Interest} = \text{Nominal rate of interest} - \text{expected inflation}$$

ACCOUNTS RECEIVABLE (A/R)

INVESTMENT

$$\text{Average investment in A/R} = \frac{\text{total variable cost of annual sales}}{\text{A / R turnover}}$$

$$\text{A / R turnover} = \frac{360}{\text{collection period}}$$

DEFINITIONS (A/R)

- **CREDIT POLICY:** Involves the determination of credit terms and standards for the selection and granting of credit by the firm.
- **CREDIT SCORING:** A procedure for ranking credit applicants based upon key financial and credit characteristics.
- **CREDIT STANDARDS:** The set of minimum requirements for extending credit to a customer.
- **CREDIT TERMS:** Specify repayment terms for credit customers. Credit terms typically include:
  1. cash discount
  2. discount period
  3. credit period.

INVENTORY

$$\text{Total cost of inventory} = \text{order cost} + \text{carrying cost}$$

where order costs are associated with placing and receiving an order, and carrying costs are variable costs per unit of holding an inventory item over time.

INTERNATIONAL FINANCE

DEFINITIONS

- **EXCHANGE RATE:** Price of one currency in units of another currency.
- **BID RATE:** Price at which a dealer is willing to buy a given currency.
- **ASK RATE:** Price at which a dealer is willing to sell a currency.
- **% BID/ ASK SPREAD** = $\frac{\text{Ask rate - Bid rate}}{\text{Ask rate}} \times 100$
- **DIRECT QUOTE:** US dollar price of 1 unit of a foreign currency.
- **INDIRECT QUOTE:** Foreign price of one US dollar.
- **SPOT RATE:** Exchange rate of a currency for immediate delivery. Settlement within one to two business days.
- **FORWARD RATE:** Exchange rate of a currency with delivery at some point in the future.
- **CROSS RATE:** An exchange rate between two currencies other than the US dollar.

INTEREST RATE PARITY (IRP)

This theory states that the % annualized forward premium or discount in the foreign currency equals the interest rate differential between the two currencies.

$$\frac{F_n\left(\$_f\right) - S\left(\$_f\right)}{S\left(\$_f\right)} \times \frac{360}{n} = \frac{i_{us} - i_f}{(1 + i_f)}$$

where $\mathbf{i_{US}}$ and $\mathbf{i_f}$ are the interest rates for the US and foreign currencies, $\mathbf{F_n}$ is the n-days forward rate in US dollars per foreign currency unit, **S** is the spot rate in US dollars per foreign currency unit; **n** is the number of days of the forward rate. When the **IRP** holds, there are no covered-interest arbitrage opportunities

PURCHASING POWER PARITY (PPP)

This theory relates the % change in the spot rate for a currency to the inflation rate differential between countries over the time period.

$$\frac{S_t - S_{t-1}}{S_{t-1}} = \frac{I_{us} - I_f}{1 + I_f}$$

where $\mathbf{S_t}$, $\mathbf{S_{t-1}}$ are the spot rates for times **t** and **t-1**, $\mathbf{I_{US}}$, $\mathbf{I_f}$ are the US and foreign inflation rates over the period (t, t-1). If **PPP** exists, then the expected spot rate at the end of period **t** is given by:

$$E(S_t) = S_o\left[1 + \frac{I_{us} - I_f}{(1 + I_f)}\right]^t$$

INTERNATIONAL FISHER EFFECT (IFE)

If **PPP** holds and real rates of interest are equal across countries, then the **IFE** is given by:

$$\frac{S_t \quad S_{t-1}}{S_{t-1}} = \frac{i_{us} - I_f}{(1 + i_f)}$$

where $\mathbf{S_t}$, $\mathbf{S_{t-1}}$ are the spot rates at times **t** and **t-1** ; $\mathbf{i_{us}}$, $\mathbf{i_f}$ are the US and foreign interest rates. If the **IFE** holds, countries with low interest rates will have their currencies appreciate through time.

FOREIGN CURRENCY FINANCING

The effective financing rate of using a foreign currency over a single period is given by:

$$r_f = (1 + i_f)(1 + e_f) - 1$$

where $\mathbf{i_f}$ is the foreign currency interest rate per period, and $\mathbf{e_f}$ is the expected percentage change in the spot rate (dollar price of 1 unit of the foreign currency) over the period.