Referencer for Quick Revision

Final Course Paper-2: Strategic Financial Management

A compendium of subject-wise capsules published in the monthly journal "The Chartered Accountant Student"

Board of Studies
(Academic)
ICAI

INDEX

STRATEGIC FINANCIAL MANAGEMENT: A CAPSULE FOR QUICK REVISION

The subject "Strategic Financial Management" basically involves in applying the knowledge and techniques of financial management to the planning, operating and monitoring of the finance function in particular as well as the organization in general. So, strategic financial management basically involves planning the utilization of company's resources in such a manner that it brings maximum value to the shareholders in the long run.

In this regard, an attempt has been made to convey the concepts of Strategic Financial Management to the students in a lucid and simple manner in the form of capsules. It will help the students in undergoing a quick revision of a particular chapter. Further, even though the capsule has been prepared keeping in view the new course, the students of old course may also be benefitted from it.

Although every effort has been made to portray the concepts to the students in the capsule form in the simplest possible manner, it cannot be taken as a substitute for the Study Material. Students are therefore advised to refer the ICAI Study Material including Practice Manual and other Publications such as Suggested Answers, Revisionary Test Papers etc.

CHAPTER 5 - SECURITY VALUATION

Introduction

Knowing what an asset is worth and what determines its value is a pre-requisite for making intelligent decisions while choosing investments for a portfolio or in deciding an appropriate price to pay or receive in a business takeover and in making investment, financing and dividend choices when running a business. While some assets are easier to value than others, for different assets, the details of valuation and the uncertainty associated with value estimates may vary. However, the core principles of valuation always remain the same.

Basic Return Concepts

A sound investment decision depends on the correct use and evaluation of the Rate of Return. Some of the different concepts of return are given as below:

Required Rate of Return

The minimum rate of return that the investor is expected to receive while making an investment in an asset over a specified period of time.

Discount Rate

The rate at which present value of future cash flows is determined.

Internal Rate of Return

The discount rate which equates the present value of future cash inflows to its cost i.e. cash outlay.

Equity Risk Premium

Equity risk premium is the excess return that investment in equity shares provides over a risk-free rate of return, such as return from tax free government bonds. This excess return compensates investors for taking on the relatively higher risk of investing in equity shares of a company.

Calculating the Equity Risk Premium

The Equity Risk Premium can be derived from Capital Asset Pricing Model (CAPM), which is as follows:

$R_x = R_f + \beta_X (R_m - R_f)$

Where:

R_X = Expected return on equity share of company X

R_f = Risk-Free Rate of Return

β_x = Beta of Company X i.e. Systematic Market Risk of the Company

R_m = Expected Return of Market or Market Portfolio or Return from Market Index

The equity risk premium is basically excess of a Security's Return over Risk-Free Rate Return and accordingly the CAPM can be remodeled as follows:

Equity Risk Premium = $R_x - R_f = \beta_x (R_m - R_f)$

The $(R_m - R_f)$ portion is called Market Risk Premium.

Discount Rate Selection in relation to Cash Flows

Nominal Cash Flow and Real Cash Flow	•Nominal cash flow is the amount of future revenues the company expects to receive and expenses it expects to pay out, without any adjustments for inflation. •Real cash flow shows a company's cash flow with adjustments for inflation.
Discount rate for Equity Valuation	•For nominal cash flow, Nominal Rate of Discount is used. •For real cash flow, real rate of discount is used.

Valuation of Equity Shares

- Dividend Based Models
- Earnings Based Models
- Cash Flows Based Model

Dividend Based Models

Valuation Based holding period of One Year: If an investor holds the share for one year then the value of equity share is computed as follows:

$$P_0 = \frac{D_1}{(1 + Ke)^1} + \frac{P_1}{(1 + Ke)^1}$$

Valuation Based on Multi Holding Period: In this type of holding following three types of dividend pattern can be analyzed.

(i) Zero Growth: Also, called as No Growth Model, as dividend amount remains same over the years infinitely. The value of equity can be found as follows:

$$P_0 = \frac{D}{(Ke)}$$

ii) Constant Growth: Although assumption is quite unrealistic assumption but the value of equity shared can be found by using following formula:

$$P_0 = \frac{D_1}{Ke - g} \text{ or } \frac{D_o(1+g)}{(Ke - g)}$$

(iii) Variable Growth in Dividend: Just like the constant growth assumption this assumption also appears to be unrealistic but valuation can also be done on the same. Valuation on the basis of this assumption can further be classified in Two-Stage Dividend Discount Model and Three Stage Dividend Discount Model.

Earning Based Models

Gordon's Model: Valuation as per this model shall be

$$\frac{EPS_1 (1-b)}{Ke - br}$$

Where, r = Return on Retained Earnings
b = Retention Ratio

Walter's Approach: As per this model, the value of equity share shall be:

$$\frac{D+(E-D)\ \frac{r}{K_e}}{Ke}$$

Price Earning Ratio or Multiplier Approach: As per this approach the share price or value can simply be determined as follows:
Value = EPS X PE Ratio
This ratio can be estimated for a similar type of company or of industry after making suitable adjustment in light of specific features pertaining to the company under consideration.

Cash Flow Models

Free Cash Flow to Firm Model (FCFF) – In FCFF model, the value of equity is determined by first computing the value of firm, using FCFF and Cost of Capital i.e. WACC (Ko) and then deducting Debt from the same.

Free Cash Flow to Firm Model (FCFE) – In FCFE model, the value of equity is determined by using FCFE and Cost of Equity (Ke).

Calculation of Free Cash Flow to Firm (FCFF)

(a) Based on its Net Income:
FCFF= Net Income + Interest expense *(1-tax) + Depreciation -/+ Capital Expenditure –/+ Change in Non-Cash Working Capital

(b) Based on Operating Income or Earnings Before Interest and Tax (EBIT):
FCFF= EBIT *(1 - tax rate) + Depreciation -/+ Capital Expenditure –/+ Change in Non-Cash Working Capital

(c) Based on Earnings before Interest, Tax , Depreciation and Amortisation (EBITDA):
FCFF = EBITDA* (1-Tax) +Depreciation* (Tax Rate) -/+ Capital Expenditure – /+Change in Non-Cash Working Capital

(d) Based on Free Cash Flow to Equity (FCFE):
FCFF = FCFE + Interest* (1-t) + Principal Prepaid - New Debt Issued + Preferred Dividend

(e) Based on Cash Flows:
FCFF = Cash Flow from Operations (CFO) + Interest (1-t) -/+ Capital Expenditure

Calculation of Free Cash Flow to Equity (FCFE): Free Cash flow to equity is used for measuring the intrinsic value of the stock for equity shareholders. The cash that is available for equity shareholders after meeting all operating expenses, interest, net debt obligations and re-investment requirements such as working capital and capital expenditure. It is computed as:
Free Cash Flow to Equity (FCFE) = Net Income - Capital Expenditures +Depreciation - Change in Non-cash Working Capital + New Debt Issued - Debt Repayments
or
FCFE = Net Profit + depreciation - ΔNWC - CAPEX + New Debt - Debt Repayment.
ΔNWC = changes in Net Working Capital.
CAPEX = Addition in fixed assets to sustain the basis.
FCFE can also be used to value share as per multistage growth model approach.

Valuation of Rights

Immediately after the right issue, the price of share is called Ex Right Price or Theoretical Ex-Right Price (TERP) which is computed as follows:

$$\frac{nP_o + S}{n+1}$$

n = No. of existing equity shares
P0 = Price of Share Pre-Right Issue
S = Subscription amount raised from Right Issue

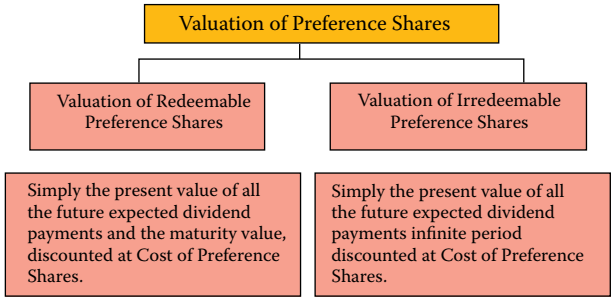
However, theoretical value of right can be calculated as follows:

$$\frac{P_o - S}{n + n_1}$$

N_1 = No. of new shares offered

Valuation of Preference Shares

Preference shares, like debentures, are usually subject to fixed rate of dividend. In case of non-redeemable preference shares, their valuation is similar to perpetual bonds.



Formula for Valuation of Redeemable Preference Share

$$= \frac{Dividend_1}{(1+r)^1} + \frac{Dividend_2}{(1+r)^2} + \ldots\ldots + \frac{(Dividend_n + Maturity\ value)}{(1+r)^n}$$

Formula for Valuation of Irredeemable Preference Share

$$\text{Irredeemable Preference share value} = \frac{Dividend}{\text{Required return on Preference share}}$$

Basics of a Bond

Par Value: Value stated on the face of the bond of maturity.

Coupon Rate and Frequency of Payment: A bond carries a specific interest rate known as the coupon rate.

Maturity Period: Total time till maturity.

Redemption: Repayment of principal at par or premium.

Bond Valuation Model

The value of a bond is:

$$V = \sum_{t=1}^{n} \frac{I}{(1+k_d)^t} + \frac{F}{(1+k_d)^n}$$

$$V = I\,(PVIFA_{k_d,n}) + F(PVIF_{k_d,n})$$

Where,
V = value of the bond
I = annual interest payable on the bond
F = principal amount (par value) of the bond repayable at the time of maturity
N = maturity period of the bond.

Bond Values with Semi-Annual Interest

The basic bond valuation equation thus becomes:

$V = {}^{2n}\Sigma_{t=1}\,[(I/2) / \{(1+k_d/2)^t\}] + [F / (1+k_d/2)^{2n}]$

$= I/2(PVIFA_{kd/2,2n}) + F(PVIF_{kd/2,2n})$

Where,

V = Value of the bond

I/2 = Semi-annual interest payment

$K_d/2$ = Discount rate applicable to a half-year period

F = Par value of the bond repayable at maturity

2n = Maturity period expressed in terms of half-yearly periods.

Price Yield Relationship

A basic property of a bond is that its price varies inversely with yield. The reason is simple. As the required yield increases, the present value of the cash flow decreases; hence the price decreases and vice versa.

Bond Duration

Duration is nothing but the average time taken by an investor to collect his/her investment. If an investor receives a part of his/her investment over the time on specific intervals before maturity, the investment will offer him the duration which would be lesser than the maturity of the instrument. Higher the coupon rate, lesser would be the duration.

(a) Macaulay Duration

$$\text{Macaulay Duration} = \frac{\sum_{t=1}^{n} \frac{t*C}{(1+i)^t} + \frac{n*M}{(1+i)^n}}{P}$$

Where

n = Number of cash flows
t = Time to maturity
C = Cash flows
i = Required yield (YTM)
M = Maturity (par) value
P = Bond price

(b) Modified Duration

This is a modified version of Macaulay duration which takes into account the interest rate changes because the changes in interest rates affect duration as the yield gets affected each time the interest rate varies.

The formula for modified duration is as follows:

$$\text{Modified Duration} = \left[\frac{\text{Macaulay Duration}}{\left(1+\frac{YTM}{n}\right)}\right]$$

Where
n = Number of compounding periods per year
YTM= Yield to Maturity

Term Structure Theories

Popularly known as Yield Curve, shows how yield to maturity is related to term to maturity for bonds that are similar in all respects, except maturity.

Unbiased Expectation Theory	•As per this theory the long-term interest rates can be used to forecast short-term interest rates in the future on the basis of rolling the sum invested for more than one period.
Liquidity Preference Theory	•As per this theory forward rates reflect investors' expectations of future spot rates plus a liquidity premium to compensate them for exposure to interest Rate Risk.
Preferred Habitat Theory	•As per this theory the Premiums are related to supply and demand for funds for various maturities – not the term to maturity and hence this theory can be used to explain almost any yield curve shape.

Convexity Adjustment

Although, the duration is a good approximation of the percentage of price change for a small change in interest rate but the change cannot be estimated so accurately due to convexity effect. This estimation can be improved by adjustment on account of 'convexity'. The formula for convexity is as follows:

$C^* \times (\Delta y)^2 \times 100$

Δy = Change in Yield

$$C^* = \frac{V_+ + V_- - 2V_0}{2V_0(\Delta^2)}$$

V_0 = Initial Price

V_+ = price of Bond if yield increases by Δy

V_- = price of Bond if yield decreases by Δy

Convertible Debentures

Convertible Debentures are those debentures which are converted in equity shares after certain period of time. The equity shares for each convertible debenture are called Conversion Ratio and price paid for the equity share is called 'Conversion Price'.

Further, conversion value of debenture is equal to Price per Equity Share x Converted No. of Shares per Debenture.

Valuation of Warrants

A warrant is a right that entitles a holder to subscribe equity shares during a specific period at a stated price. These are generally issued to sweeten the debenture issue. Theoretical value of warrant can be found as follows:

(Mp – E) x n

MP = Current Market Price of Share

E = Exercise Price of Warrant

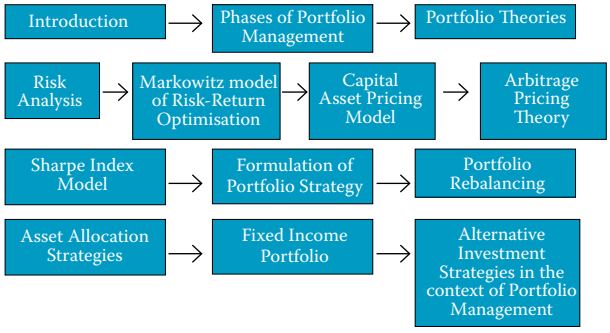
n = No. of equity shares convertible with one warrant

Zero Coupon Bond

As name indicates these bonds do not pay interest during the life of the bonds. Instead, zero coupon bonds are issued at discounted price to their face value, which is the amount a bond will be worth when it matures or comes due. When a zero coupon bond matures, the investor will receive one lump sum (face value) equal to the initial investment plus interest that has been accrued on the investment made.

CHAPTER 6 : PORTFOLIO MANAGEMENT

Chapter Overview



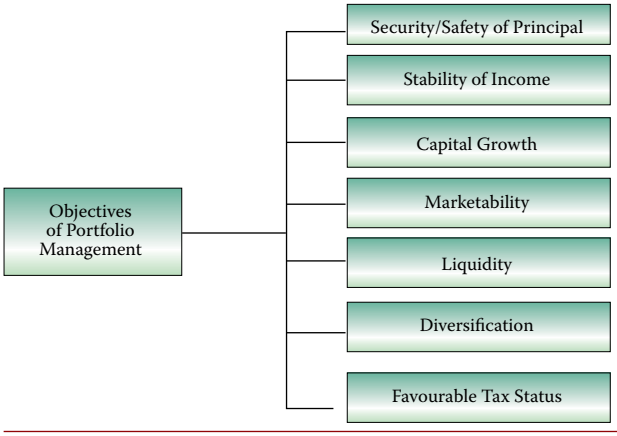
Introduction

Investment in the securities such as bonds, debentures and shares etc. is lucrative as well as exciting for the investors. Investment in a portfolio can reduce risk without diluting the returns. Every investment is characterized by return and risk. In general, risk refers to the possibility of the rate of return from a security or a portfolio of securities deviating from the corresponding expected/average rate and can be measured by the standard deviation/variance of the rate of return.

Activities in Portfolio Management

- Selection of securities.
- Construction of all Feasible Portfolios with the help of the selected securities.
- Deciding the weights/proportions of the different constituent securities in the portfolio so that it is an Optimal Portfolio for the concerned investor.

Objectives of Portfolio Management



Phases of Portfolio Management

Security Analysis – Security analysis constitutes the initial phase of the portfolio formation process and consists in examining the risk-return characteristics of individual securities and also the correlation among them.

Portfolio Analysis – Portfolio Analysis is the process of reviewing the entire portfolio of securities in a business. The review is done by careful analysis of risk and return.

Portfolio Selection – This process is concerned with assessing the performance of the portfolio over a selected period of time in terms of return and risk and it involves quantitative measurement of actual return realized and the risk borne by the portfolio over the period of investment.

Portfolio Revision – Once an optimal portfolio has been constructed, it becomes necessary for the investor to constantly monitor the portfolio to ensure that it does not lose its optimality.

Portfolio Evaluation

Sharpe Ratio - Measures the Risk Premium per unit of Total Risk for a security or a portfolio of securities.

Formula

$$\frac{R_i - R_f}{\sigma_i}$$

Where

R_i = Expected return on stock i

R_f = Return on a risk less asset

σ_i = Standard Deviation of the rates of return for the i Security or Portfolio

Treynor Ratio - Measures the Risk Premium per unit of Systematic Risk (β) for a security or a portfolio of securities.

Formula

$$\frac{R_i \quad R_f}{\hat{a}}$$

Where

R_i = Expected return on stock i

R_f = Return on a risk less asset

β_i = Expected change in the rate of return on stock i associated with one unit change in the market return (Beta)

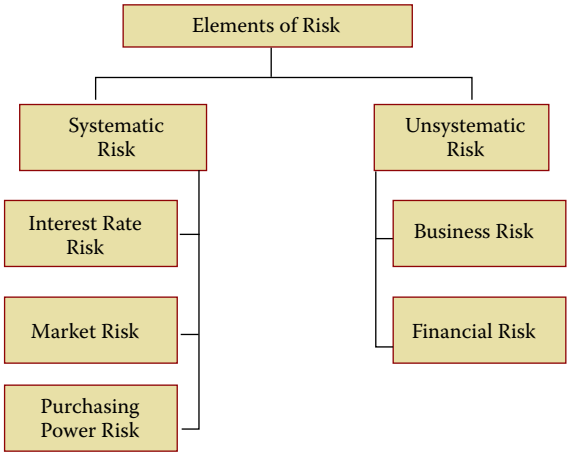
Jensen Alpha - This is the difference between a portfolio's actual return and those that could be expected in line with systematic risk of a security or portfolio using CAPM. Hence, purely a reward for bearing market risk.

Portfolio Theories

Traditional Approach – The traditional approach to portfolio management concerns itself with the investor, definition of portfolio objectives, investment strategy, diversification and selection of individual investment.

Modern Approach (Markowitz Model or Risk-Return Optimization) – The essence of his theory is that risk of an individual asset hardly matters to an investor. What really matters is the contribution it makes to the investor's overall risk.

Elements of Risk



Systematic Risk
The first group i.e. systematic risk comprises factors that are external to a company (macro in nature) and affect a large number of securities simultaneously. These are mostly uncontrollable in nature.

(i) Interest Rate Risk: This arises due to variability in the interest rates from time to time. A change in the interest rates establishes an inverse relationship in the price of security i.e. price of securities tends to move inversely with change in rate of interest.

(ii) Purchasing Power Risk: It is also known as inflation risk, as it also emanates from the very fact that inflation affects the purchasing power adversely. Purchasing power risk is more in inflationary conditions especially in respect of bonds and fixed income securities. It is not desirable to invest in such securities during inflationary periods.

(iii) Market risk: This is a type of systematic risk that affects prices of any particular share move up or down consistently for some time periods in line with other shares in the market.

Unsystematic Risk
The second group i.e. unsystematic risk includes those factors which are internal to companies (micro in nature) and affect only those particular companies. These are controllable to a great extent.

(i) Business Risk: Business risk emanates from sale and purchase of securities affected by business cycles, technological changes etc.

(ii) Financial Risk: It arises due to changes in the capital structure of the company. It is also known as leveraged risk and expressed in terms of debt-equity ratio.

Calculation of Expected Return

The expected return of the investment is the probability weighted average of all the possible returns. If the possible returns are denoted by X_i and the related probabilities are $p(X_i)$ the expected return may be represented as X and can be calculated as:

$$\overline{X} = \sum_{i=1}^{n} x_i\, p(X_i)$$

It is the sum of the products of possible returns with their respective probabilities.

Measurement of Risk

Risk aspect should also be considered along with the expected return. The most popular measure of risk is the variance or standard deviation of the probability distribution of possible returns.

Variance of each security is generally denoted by σ^2 and is calculated by using the following formula:

$$\sum_{i=1}^{n} [(X_i - \overline{X})^2\, p(X_i)]$$

Measurement of Systematic Risk

The systematic risk of a security is measured by a statistical measure which is called Beta (β). There are two statistical methods i.e. correlation method and the regression method, which can be used for the calculation of Beta.

Correlation Method: Using this method beta (β) can be calculated from the historical data of returns by the following formula:

$$\beta_i = \frac{r_{im}\sigma_i\sigma_m}{\sigma_m^2}$$

Where

r_{im} = Correlation coefficient between the returns of the stock i and the returns of the market index.

σ_i = Standard deviation of returns of stock i

σ_m = Standard deviation of returns of the market index.

σ^2_m = Variance of the market returns

Regression Method: The regression model is based on the postulation that there exists a linear relationship between a dependent variable and an independent variable. The model helps to calculate the values of two constants, namely Alfa (α) and Beta (β). The formula of the regression equation is as follows:

$Y = \alpha + \beta X$

where

Y = Dependent variable
X = Independent variable
α and β are constants.

$\alpha = Y - \beta X$

The formula used for the calculation of α and β are given below.

$$\beta = \frac{n\sum XY - \sum(\quad X)(\ \sum Y)}{n\sum X^2 \sum(\quad X)^2}$$

where

n = Number of items.
Y = Dependent variable scores.
X = Independent variable scores.

Portfolio Analysis

Portfolio Return

The formula for the calculation of expected portfolio return may be expressed as shown below:

$$\bar{r}_p = \sum_{i=1}^{n} x_i \bar{r}_i$$

$\bar{r}_p$ = Expected return of the portfolio.

X_i = Proportion of funds invested in security

$\bar{r}_i$ = Expected return of security i.

n = Number of securities in the portfolio.

Portfolio Risk

Two important terms associated with the computation of Risk of Portfolio are as follows:

(i) Covariance: A statistical measure between two securities or two portfolios or a security and a portfolio indicates how the rates of return for the two concerned entities behave relative to each other.

The covariance between two securities A and B can be calculated using the following formula:

$$COV_{AB} = \frac{\sum [R_A - \overline{R_A}][R_B - \overline{R_B}]}{N}$$

At the beginning please add the summation sign in the numerator where

COV_{AB} = Covariance between x and y.

R_A = Return of security x.

R_B = Return of security y.

$\overline{R_A}$ = Expected or mean return of security x.

$\overline{R_B}$ = Expected or mean return of security y.

N = Number of observations.

(ii) Coefficient of Correlation: A statistical measure between two securities or two portfolios or a security and a portfolio indicate degree of relationship with each other.

The coefficient of correlation between two securities A and B can be calculated using the following formula:

$$r_{AB} = \frac{Cov_{AB}}{\sigma_A \sigma_B}$$

where

r_{AB} = Coefficient of correlation between x and y.

Cov_{AB} = Covariance between A and B.

σ_A= Standard deviation of A.

σ_B = Standard deviation of B.

From above formula the covariance can be expressed as the product of correlation between the securities and the standard deviation of each of the securities as shown below:

$Cov_{AB} = \sigma_A \sigma_B r_{AB}$

The variance of a portfolio with only two securities in it can be calculated with the following formula.

$$\sigma_p^2 = x_1^2\sigma_1^2 + x_2^2\sigma_2^2 + 2x_1x_2(r_{12}\sigma_1\sigma_2)$$

where

σ_p^2 = Portfolio variance.

x_1 = Proportion of funds invested in the first security.

x_2 = Proportion of funds invested in the second security ($x_1+x_2 = 1$).

σ_1^2 = Variance of first security.

σ_2^2 = Variance of second security.

σ_1 = Standard deviation of first security.

σ_2 = Standard deviation of second security.

r_{12} = Correlation coefficient between the returns of the first and second securities.

Calculation of Return and Risk of Portfolio with more than two securities

The expected return of a portfolio is the weighted average of the returns of individual securities in the portfolio, the weights being the proportion of investment in each security. The formula for calculation of expected portfolio return is the same for a portfolio with two securities and for portfolios with more than two securities. The formula is:

$$\bar{r}_p = \sum_{i=1}^{n} x_i \bar{r}_i$$

Where

$\bar{r}_p$ = Expected return of portfolio.

x_i = Proportion of funds invested in each security.

$\bar{r}_i$ = Expected return of each security.

n = Number of securities in the portfolio.

Markowitz's Model of Risk Return Optimisation

The essence of the theory is that risk of an individual asset hardly matters to an investor. The investor is more concerned to the contribution it makes to his total risk. Markowitz has formalized the risk return relationship and developed the concept of efficient frontier. For selection of a portfolio, comparison between combinations of portfolios is essential. The investor has to select a portfolio from amongst all those represented by the efficient frontier. This will depend upon his risk-return preference. As different investors have different preferences with respect to expected return and risk, the optimal portfolio of securities will vary considerably among investors.

As a rule, a portfolio is not efficient if there is another portfolio with:

- A higher expected value of return and a lower standard deviation (risk).
- A higher expected value of return and the same standard deviation (risk).
- The same expected value but a lower standard deviation (risk).

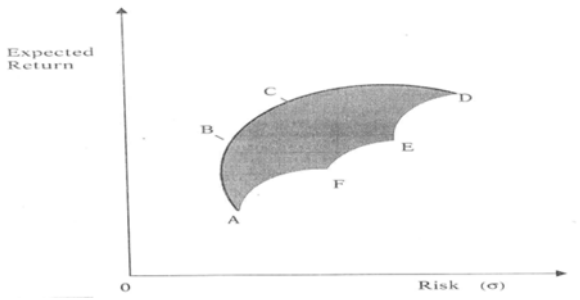


Fig. Markowitz Efficient Frontier

Capital Asset Pricing Model (CAPM)

CAPM model describes the linear relationship risk-return trade-off for securities/portfolios. The CAPM method also is solely concerned with non-diversifiable risk.

The non-diversifiable risks are assessed in terms of beta coefficient, β, through fitting regression equation between return of a security/portfolio and the return on a market portfolio.

$$Rj = Rf + \beta (Rm - Rf)$$

Where,

R_f = Risk free rate

R_m= Market Rate

β= Beta of Portfolio

Arbitrage Pricing Theory Model (APT)

Unlike the CAPM which is a single factor model, the APT is a multi-factor model having a whole set of Beta Values – one for each factor. Arbitrage Pricing Theory states that the expected return on an investment is dependent upon how that investment reacts to a set of individual macro-economic factors (degree of reaction measured by the Betas) and the risk premium associated with each of those macro – economic factors.

According to CAPM, $E(R_i) = R_f + \lambda\beta_i$

Where, λ is the average risk premium $[E(R_m) - R_f]$

In APT, $E(R_i) = R_f + \lambda_1\beta_{i_1} + \lambda_2\beta_{i_2} + \lambda_3\beta_{i_3} + \lambda_4\beta_{i_4}$

Where, $\lambda_1, \lambda_2, \lambda_3, \lambda_4$ are average risk premium for each of the four factors in the model and $\beta_{i_1}, \beta_{i_2}, \beta_{i_3}, \beta_{i_4}$ are measures of sensitivity of the particular security i to each of the four factors.

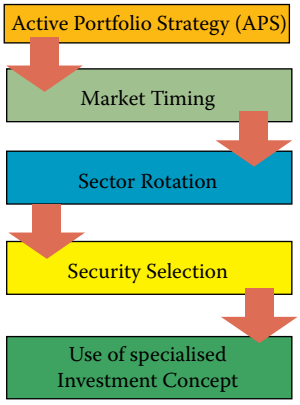
Sharpe Index Model

William Sharpe has developed a simplified variant of Markowitz model that reduces substantially its data and computational requirements.

Types of Sharpe Index Model

Single Index Model - This model assumes that co-movement between stocks is due to change or movement in the market index.	**Sharpe's Optimal Portfolio** - This model is based on desirability of an investor for excess return of risk free rate of return to beta.

Formulation of Portfolio Strategy



Passive Portfolio Strategy

Passive strategy, on the other hand, rests on the tenet that the capital market is fairly efficient with respect to the available information. Hence they search for superior return. Basically, passive strategy involves adhering to two guidelines. They are:

Guidelines - passive portfolio strategy	Create a well diversified portfolio at a predetermined level of risk.
Guidelines - passive portfolio strategy	Hold the portfolio relatively unchanged over time unless it became adequately diversified or inconsistent with the investor risk return preference.

Portfolio Rebalancing

It means the value of portfolio as well as its composition. The relative proportion of bond and stocks may change as stock and bonds fluctuate in response to such changes. Therefore, Portfolio rebalancing is necessary.

Buy and Hold Policy - Sometime this policy is also called 'do nothing policy' as under this strategy no balancing is required and therefore investor maintains an exposure to stocks and therefore linearly related to the value of stock in general.

Constant Mix Policy - This strategy involves periodic rebalancing to required (desired) proportion by purchasing and selling stocks as and when their prices goes down and up respectively.

Constant Proportion Insurance Policy - Under this strategy investor sets a floor below which he does not wish his asset to fall called floor, which is invested in some non-fluctuating assets such as Treasury Bills, Bonds etc.

Asset Allocation Strategies

Many portfolios containing equities also contain other asset categories, so the management factors are not limited to equities. There are four asset allocation strategies:

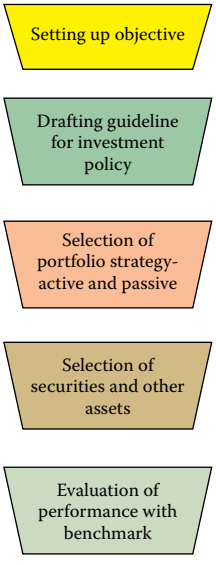
Integrated Asset Allocation	Under this strategy, capital market conditions and investor objectives and constraints are examined and the allocation that best serves the investor's needs while incorporating the capital market forecast is determined.
Strategic Asset Allocation	Under this strategy, optimal portfolio mixes based on returns, risk, and co-variances is generated using historical information and adjusted periodically to restore target allocation within the context of the investor's objectives and constraints.
Tactical Asset Allocation	Under this strategy, investor's risk tolerance is assumed constant and the asset allocation is changed based on expectations about capital market conditions.
Insured Asset Allocation	Under this strategy, risk exposure for changing portfolio values (wealth) is adjusted; more value means more ability to take risk.

Fixed Income Portfolio

Fixed Income Portfolio is same as equity portfolio with difference that it consists of fixed income securities such as bonds, debentures, money market instruments etc. Since it mainly consists of bonds, it is also called Bond Portfolio.

Fixed Income Portfolio Process

Just like other portfolios, following five steps are involved in fixed income portfolio.



Alternative Investment Strategies in context of Portfolio Management

Plainly speaking, Alternative Investments (AIs) are Investments other than traditional investments (stock, bond and cash). Some of the alternative investment strategies are briefly discussed as follows:

Real Estates

As opposed to financial claims in the form of paper or a dematerialized mode, real estate is a tangible form of assets which can be seen or touched. Real Assets consists of land, buildings, offices, warehouses, shops etc.

Valuation of Real Estates

Generally, following four approaches are used in valuation of Real estates:

Sales Comparison Approach – It is like Price Earning Multiplier as in case of equity shares. Benchmark value of similar type of property can be used to value Real Estate.

Income Approach – This approach like value of Perpetual Debenture or unredeemable Preference Shares. In this approach the perpetual cash flow of potential net income (after deducting expense) is discounted at market required rate of return.

Cost Approach – In this approach, the cost is estimated to replace the building in its present form plus estimated value of land. However, adjustment of other factors such as good location, neighbourhood is also made in it.

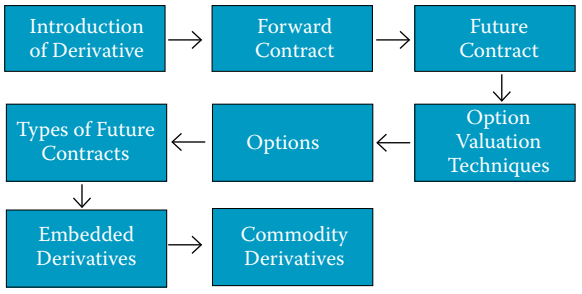
Discounted After Tax Cash Flow Approach – In comparison to NPV technique, PV of expected inflows at required rate of return is reduced by amount of investment.

Private Equity

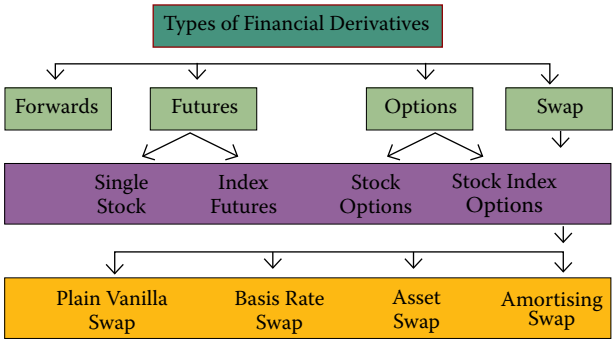
Following 3 types of private equity investment has been discussed here:

CHAPTER 9 : DERIVATIVES

Chapter Overview



What is a Derivative ?
It is a product whose value is to be derived from the value of one or more basic variables called bases (underlying assets, index or reference). The underlying assets can be equity, forex and commodity.



Forward Contract

A forward contract is an agreement between a buyer and a seller obligating the seller to deliver a specified asset of specified quality and quantity to the buyer on a specified date at a specified place and the buyer, in turn, is obligated to pay to the seller a pre-negotiated price in exchange of the delivery.

In a forward contract, the contracting parties negotiate on, not only the price at which the commodity is to be delivered on a future date but also on what quality and quantity to be delivered and at what place. No part of the contract is standardized and the two parties sit across and work out each and every detail of the contract before signing it.

Futures Contract

A Future Contract is like Forward Contract with following distinguishing features:

- In contrast to tailor-made Forward Contract, Future Contracts are standardized in nature.
- While Forward Contracts are OTC contracts, Future Contracts are traded on organized exchanges.
- Generally, settlement in Forward Contract takes place through actual delivery and almost 99% Future Contracts are settled through Cash Settlement.
- Future contracts are subject to Marking to Market i.e. adjustment of profit or loss on the position taken on daily basis. Forward contracts are not subject to such settlement on a daily basis.
- While there is a Margin requirement in Future Contract, no such margin is required in Forward Contract.
- Forward Contracts are subject to counter party risk. Since the parties in Future Contract are connected through Exchange Mechanism there is no counter party risk.

Options Contract

An Option may be understood as a privilege, sold by one party to another, that gives the buyer the right, but not the obligation, to buy (call) or sell (put) any underlying say stock, foreign exchange, commodity, index, interest rate etc. at an agreed-upon price within a certain period or on a specific date regardless of changes in underlying's market price during that period on the maturity date.

The various kinds of stock options include Put and Call options, which may be purchased in anticipation of changes in stock prices, as a means of speculation or hedging.

A Call Option gives its holder a right or choice (not an obligation) to buy an underlying from another party at a pre-determined price (Strike Price) irrespective of the market price in exchange of some consideration (Premium) after expiry or before expiry of a period (maturity date).

A Put Option gives its holder a right or choice (not an obligation) to sell an underlying to another party at a pre-determined price (Strike Price) irrespective of the market price in exchange of some consideration (Premium) after expiry or before expiry of a period (maturity date).

Futures and Options Contracts

The various types of Futures and Options contracts are discussed in the following paragraphs:

Stock, Commodity or Currency Futures	It is an agreement between two parties that commit one party to buy an underlying financial instrument (bond, stock or currency) or commodity (gold, soybean or natural gas) and one party to sell a financial instrument or commodity at a specific price at a future date.
Stock, Commodity or Currency Options	A privilege sold by one party to another, that gives the buyer a right not an obligation, to buy (call) or sell (put) a stock at an agreed upon price within a certain period on or a specific date regardless of changes in its market price during that period.
Stock Index Future	Stock index futures may be used to either speculate on the equity market's general performance or to hedge a stock portfolio against a decline in value.
Stock Index Option	It is a call or put option on a financial index. Investors trading index options are essentially betting on the overall movement of the stock market as represented by a basket of stocks.

Pricing/Valuation of Forward/Future Contracts

The difference between the prevailing spot price of an asset and the futures price is known as the basis, i.e.

Basis = Spot price – Futures price

In a normal market, the spot price is less than the futures price (which includes the full cost-of-carry) and accordingly the basis would be negative. Such a market, in which the basis is decided solely by the cost-of-carry is known as a Contango market.

Basis can become positive, i.e., the spot price can exceed the futures price only if there are factors other than the cost-of-carry to influence the futures price. In case this happens, then basis becomes positive and the market under such circumstances is termed as a Backwardation Market or Inverted Market.

Basis will approach zero towards the expiry of the contract, i.e., the spot and futures prices converge as the date of expiry of the contract approaches. The process of the basis approaching zero is called Convergence.

Future price = Spot price + Carrying cost – Returns (dividends, etc).

Purpose of Trading in Futures

Speculation
Speculation means trading in an asset or entering into a transaction with the possibility of a substantial gain and also the risk of losing most or the entire amount incurred.

Hedging
Hedging in simple language means to reduce any substantial losses/ gains suffered by an individual or an organization. To hedge, the investor takes a stock future position exactly opposite to the stock position. That way, any losses on the stock position will be offset by gains on the future position.

Option Valuation Techniques

- Binomial Model
- Risk Neutral Method
- Black Scholes Model
- Greeks

Binomial Model

This model is based on the concept of 'Replicating Portfolio' and the assumption that end of a given period there are two possible outcomes for a common stock, one is higher and other is lower. This Replicating Portfolio involves using a combination of borrowing at risk free rate and buying the underlying stock in such manner there will be same cash flow in either of price change after a period. To create this Replicating Portfolio, Delta Hedge Ratio (Δ) is computed. The value of option is computed on the assumption that a part stock buying in Delta Hedge Ratio shall be financed by borrowing at Risk-Free Rate and receipt of Option Premium which shall be equal to position of portfolio after the period specified.

Risk Neutral Method

Using the Binomial Model this is an alternative approach to value an option which is based on the assumption that investors are risk-neutral. As per this approach first the probability of price rise and fall is calculated and then option value is computed by computing the Present Value of expected future value.

Black Scholes Model

The Black-Scholes model is used to calculate a theoretical price of an Option. While Binomial Model is based on the assumption that there are possible values at the end of a period, this model is based on assumption that if this period is further shortened we shall get more frequent changes in the share price and there shall be wider range of price changes eventually on continuous basis. This model is based on following assumptions:

1. European Options are considered,
2. No transaction costs,
3. Short term interest rates are known and are constant,
4. Stocks do not pay dividend,
5. Stock price movement is similar to a random walk,
6. Stock returns are normally distributed over a period of time, and
7. The variance of the return is constant over the life of an Option.

This model is based on the concept of Replicating Portfolio as per which the amount an option writer would require as compensation for writing a call and completely hedging the risk of buying stock. Accordingly, as per this model the value of option is function of five variables:

1. Current Stock Price (S)
2. Future Exercise or Strike Price (X)
3. Continuously compounded risk-free rate of interest (r)
4. Time to Expiry i.e. time remaining until expiration, expressed as a percentage of a year (t)
5. Price volatility of the related stock i.e. Standard Deviation of the Short-Term return over one year (v)

The formula for calculating the theoretical option price (OP) is as follows:

$= SN(d_1) - Xe^{-rt} N(d_2)$

Where $d_1 = \frac{\ln\left(\frac{S}{N}\right) + \left(r + \frac{v^2}{2}\right)t}{v\sqrt{t}}$ and $d_2 = d_1 - v\sqrt{t}$

Greeks and its Types

The Greeks are a collection of statistical values (expressed as percentages) that give the investor a better overall view of how a stock has been performing. In other words it measures the sensitivity of option value or price consequent upon change in the factor on which its value depends.

Delta
It is the degree to which an option price will move given a small change in the underlying stock price.

Gamma
It measures how fast the delta changes for small changes in the underlying stock price. It is the delta of the delta.

Theta
The change in option price given a one day decrease in time to expiration. It is a measure of time decay.

Rho
The change in option price given a one percentage point change in the risk-free interest rate.

Vega
Sensitivity of option value to change in volatility.

Commodity Derivatives

Trading in commodity derivatives first started to protect farmers from the risk of the value of their crop going below the cost price of their produce. Derivative contracts were offered on various agricultural products like cotton, rice, coffee, wheat, pepper etc.

The first organized exchange, the Chicago Board of Trade (CBOT) -- with standardized contracts on various commodities -- was established in 1848. In 1874, the Chicago Produce Exchange - which is now known as Chicago Mercantile Exchange (CME) was formed.

CBOT and CME are two of the largest commodity derivatives exchanges in the world.

Conditions (Attributes) to Introduce Commodity Derivatives

The following attributes are considered crucial for qualifying for the derivatives trade.

Durability and storability	The commodity derivatives market is an integral part of this storage scenario because it provides a hedge against price risk for the carrier of stocks.
Homogeneous	The commodity derivatives contract corresponds with the commodity traded in the cash market. This allows for actual delivery in the commodity derivatives market.
Fluctuating Price	The third attribute, a fluctuating price, is of great importance since firms will feel little incentive to insure themselves against price risk if price changes are small.
Breaking in an existing pattern of forward trading	The last crucial attribute, breakdowns in an existing pattern of forward trading, indicates that cash market risk will have to be present for a commodity derivatives market to come into existence.

Embedded derivative

Embedded derivative is a derivative instrument that is embedded in another contract - the host contract. The host contract might be a debt or equity instrument, a lease, an insurance contract or a sale or purchase contract.

Derivatives require being marked-to-market through the income statement, other than qualifying hedging instruments.

This requirement on embedded derivatives are designed to ensure that mark-to-market through the income statement cannot be avoided by including - embedding - a derivative in another contract or financial instrument that is not marked-to market through the income statement.

CHAPTER 10: FOREIGN EXCHANGE EXPOSURE AND RISK MANAGEMENT

Chapter Overview

Types of Current Account → Exchange Rate Quotation → Exchange Rate Forecasting → Exchange Rate Theories → Foreign Exchange Exposure → Hedging Currency Risk → Strategies for Exposure Management

Types of Account maintained by Banks

Nostro Account is the bank's foreign currency account maintained by the bank in a foreign country and in the home currency of that country or "our account with you".

Vostro Account is the local currency account maintained by a foreign bank/branch or "your account with us".

Loro Accounts is an account wherein a bank remits funds in foreign currency to another bank for credit to an account of a third bank.

Exchange Rate Quotation

American Term Quotes in *American* terms are the rates quoted in amounts of U.S. dollar per unit of foreign currency. ↔ **European term** While rates quoted in amounts of foreign currency per U.S. dollar are known as quotes in European terms.

Direct Quote A direct quote is the home currency price of one unit foreign currency. For example, the quote $1 =₹48.00 is a direct-quote for an Indian. ↔ **Indirect quote** is the foreign currency price of one unit of the home currency. The quote Re.1 =$0.0208 is an indirect quote for an Indian. ($1/₹ 48.00 =$0.0208 approximately)

Bid is the price at which the dealer is willing to buy another currency. ↔ **Offer** is the rate at which he is willing to sell another currency. ↔ **Spread** The difference between the bid and the offer is called the spread.

Exchange Rate Forecasting

Corporates need to do the exchange rate forecasting for taking decisions regarding hedging, short-term financing, short-term investment, capital budgeting, earnings assessments and long-term financing.

Techniques of Exchange rate forecasting

Technical Forecasting
It involves the use of historical data to predict future values. For example time series models.

Mixed Forecasting
It refers to the use of a combination of forecasting techniques. The actual forecast is a weighted average of the various forecasts developed.

Market Based Forecasting
It uses market indicators to develop forecasts. The current spot/forward rates are often used, since speculators will ensure that the current rates reflect the market expectation of the future exchange rate.

Fundamental Forecasting
It is based on the fundamental relationships between economic variables and exchange rates. For example subjective assessments, quantitative measurements based on regression models and sensitivity analyses .

Exchange Rate Theories

There are three theories of exchange rate determination- Interest rate parity, Purchasing power parity and International Fisher effect.

Interest Rate Parity

Interest rate parity is a theory which states that 'the size of the forward premium (or discount) should be equal to the interest rate differential between the two countries of concern.

Purchasing Power Parity (PPP) - There are two forms of PPP:

- **The ABSOLUTE FORM,** also called the 'Law of One Price' suggests that "prices of similar products of two different countries should be equal when measured in a common currency".
- **The RELATIVE FORM** of the Purchasing Power Parity tries to overcome the problems of market imperfections and consumption patterns between different countries.

International Fischer Effect (IFE)

According to IFE, if investors of all countries require the same real return, interest rate differentials between countries may be the result of differential in expected inflation.

Interest Rate Parity (IRP)

This theory which states that "the size of the forward premium (or discount) should be equal to the interest rate differential between the two countries of concern". When interest rate parity exists, covered interest arbitrage (means foreign exchange risk is covered) is not feasible, because any interest rate advantage in the foreign country will be offset by the discount on the forward rate.

As per Interest Rate Parity the forward rate can be found as follows:

$$F = \frac{S(1+r_D)}{(1+r_F)}$$

Where,

F = Expected forward rate

S = Spot Rate

r_D = Interest Rate of Domestic Country

r_F = Interest Rate of Foreign Country

Purchasing Power Parity (PPP)

This theory focuses on the 'inflation-exchange rate' relationship. There are two forms of PPP theory:

- **Absolute Form**- Also called the 'Law of One Price' suggests that "prices of similar products of two different countries should be equal when measured in a common currency". If a discrepancy in prices as measured by a common currency exists, the demand should shift so that these prices should converge.
- **Relative Form** – An alternative version that accounts for the possibility of market imperfections such as transportation costs, tariffs, and quotas. It suggests that 'because of these market imperfections, prices of similar products of different countries will not necessarily be the same when measured in a common currency.'

As per Purchasing Power Parity the forward rate can be found as follows:

$$F = \frac{S(1+i_D)}{(1+i_F)}$$

Where,

F = Expected forward rate

S = Spot Rate

i_D = Anticipated Inflation Rate of Domestic Country

r_F = Anticipated Inflation Rate of Foreign Country

International Fisher Effect (IFE)

According to this theory, 'nominal risk-free interest rates contain a real rate of return and anticipated inflation.' This means if investors of all countries require the same real return, interest rate differentials between countries may be the result of differential in expected inflation.

Accordingly, the Nominal Risk- Free Rate of Interest can be computed as follows:

(1 + Nominal Rate) = (1 + Real Rate) (1 + Anticipated Inflation Rate)

Comparison of PPP, IRP and IFE Theories

Theory	Key	Variables	Summary
Interest Rate Parity (IRP)	Forward rate premium (or discount)	Interest rate differential	The forward rate of one currency will contain a premium (or discount) that is determined by the differential in interest rates between the two countries.
Purchasing Power Parity (PPP)	Percentage change in spot exchange rate	Inflation rate differential	The spot rate of one currency with respect to another will change in reaction to the differential in inflation rates between two countries.
International Fisher Effect (IFE)	Percentage change in spot exchange rate	Interest rate differential	The spot rate of one currency with respect to another will change in accordance with the differential in interest rates between the two countries.

Foreign Exchange Exposure

The foreign exchange exposure may be classified under three broad categories:

Transaction Exposure
It measures the effect of an exchange rate change on outstanding obligations that existed before exchange rates changed but were settled after the exchange rate changes. Thus, it deals with cash flows that result from existing contractual obligations.

Translation Exposure
Translation exposure occurs because of the need to "translate" foreign currency financial statements of foreign subsidiaries into a single reporting currency to prepare worldwide consolidated financial statements.

Economic Exposure
It refers to the extent to which the economic value of a company can decline due to changes in exchange rate. It is the overall impact of exchange rate changes on the value of the firm.

Hedging Currency Risk

There are a range of hedging instruments that can be used to reduce risk. Broadly these techniques can be divided into **Internal Techniques** and **External Techniques**:

Internal Techniques

Invoicing in Domestic Currency
Sellers usually wish to sell in their own currency or the currency in which they incur cost. This avoids foreign exchange exposure. For the buyer, the ideal currency is usually its own or one that is stable relative to it, or it may be a currency of which the purchaser has reserves.

Matching
Matching is a mechanism whereby a company matches its foreign currency inflows with its foreign currency outflows in respect of amount and approximate timing.

Price Variation
Price variation involves increasing selling prices to counter the adverse effects of exchange rate change.

Leading and Lagging
Leading means paying an obligation in advance of the due date. Lagging means delaying payment of an obligation beyond its due date.

Netting
Netting involves associated companies, which trade with each other. The technique is simple. Group companies merely settle inter affiliate indebtedness for the net amount owing. Gross intra-group trade, receivables and payables are netted out.

Asset & Liability Management
Asset and liability management can involve aggressive or defensive postures. In the aggressive attitude, the firm simply increases exposed cash inflows denominated in currencies expected to be strong or increases exposed cash outflows denominated in weak currencies. By contrast, the defensive approach involves matching cash inflows and outflows according to their currency of denomination, irrespective of whether they are in strong or weak currencies.

External Techniques

Money Market Hedging
A Money Market Hedge is an agreement to exchange a certain amount of one currency for a fixed amount of another currency, at a particular date.

Derivative Instruments
A Derivatives transaction is a bilateral contract or payment exchange agreement whose value depends on - derives from - the value of an underlying asset, reference rate or index.

Derivatives in the Context of Foreign Exchange

Forward Contract: The simplest form of derivatives is the forward contract. It obliges one party to buy, and the other to sell, a specified quantity of foreign exchange at a specific price, on a specified date in the future.

Futures: It is like Forward Contract with difference on account of Quotation, Contract Size, Period and Cash Settlement etc.

Options: A currency option is a contract that gives the buyer the right, but not the obligation, to buy or sell a certain currency at a specified exchange rate on or before a specified date.

Swaps: A currency swap involves the exchange of interest and sometimes of principal in one currency for equivalent amount in another currency.

Forward Contract

Fate of Forward Contract

- Delivery
- Cancellation
- Extension

Delivery

Delivery on Due Date This situation does not pose any problem as rate applied for the transaction would be rate originally agreed upon. Exchange shall take place at this rate irrespective of the spot rate prevailing on due date.

Early Delivery The bank may accept the request of customer of delivery before the due date of forward contract provided the customer is ready to bear the loss, if any, that may accrue to the bank as a result of this.

Late Delivery Before this delivery (execution) takes place the provisions of FEDAI Rule 8 for Automatic Cancellation (discussed later on) shall be applied.

Cancellation

Cancellation on Due Date In case of cancellation on due date in addition of flat charges (if any) the difference between contracted rate and the cancellation rate (reverse action of original contract) is charged from/ paid to the customer.

Early Cancellation If a forward is required to be cancelled earlier than the due date of forward contract same shall be cancelled at opposite rate of original contract of the date that synchronizes with the date of original forward contract.

Late Cancellation Before this cancellation takes place the provisions of FEDAI Rule 8 for Automatic Cancellation (discussed later on) shall be applied.

Extension

Extension on Due Date In case extension of due date, first original contract shall be cancelled at spot rate like cancellation on due date (discussed earlier) and new contract shall be rebooked at the forward rate for the new delivery period.

Extension before Due Date In this case first the original contract would be cancelled at the relevant forward rate as in case of cancellation of contract before due date and shall be rebooked at the current forward rate of the forward period.

Late Extension Before this Extension takes place the provisions of FEDAI Rule 8 for Automatic Cancellation (discussed later on) shall be applied.

Automatic Cancellation in case of Forward Contract

As per FEDAI Rule 8, a forward contract which remains overdue without any instructions from the customers on or before due date shall stand automatically cancelled on 15th day from the date of maturity. Though, customer is liable to pay the exchange difference arising therefrom but not entitled for the profit resulting from this cancellation.

Swaps

STAGES OF CURRENCY SWAPS

A spot exchange of principal → **Continuing exchange of interest payments during the term of the swap** → **Re-exchange of principal on maturity.**

Benefits of Currency Swaps

Treasurers can hedge currency risk. → It can provide considerable cost savings. → The swap market permits funds to be accessed in currencies, which may otherwise command a high premium. Further, it offers diversification of borrowings.

Strategies for Exposure Management

A company's attitude towards risk, financial strength, nature of business, vulnerability to adverse movements, etc. shapes its exposure management strategies. There can be no single strategy which is appropriate to all businesses. Four separate strategy options are feasible for exposure management.

CHAPTER 12 – INTEREST RATE RISK MANAGEMENT

How interest rate is determined

The factors affecting interest rates are largely macro-economic in nature:

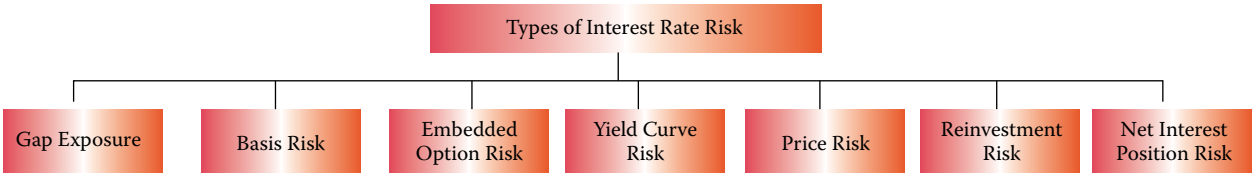
(a) Supply and Demand: Demand/supply of money- When economic growth is high, demand for money increases, pushing the interest rates up and vice versa.

(b) Inflation - The higher the inflation rate, the more interest rates are likely to rise.

(c) Government- Government is the biggest borrower. The level of borrowing also determines the interest rates. Central bank i.e. RBI by either printing more notes or through its Open Market Operations (OMO) changes the key rates (CRR, SLR and bank rates) depending on the state of the economy or to combat inflation.

Interest Rate Risk

Interest risk is the change in prices of bonds that could occur because of change in interest rates. It also considers change in impact on interest income due to changes in the rate of interest. In other words, price as well as reinvestment risks require focus.



Detailed Explanation

Gap Exposure
A gap or mismatch risk arises from holding assets and liabilities and off-balance sheet items with different principal amounts, maturity dates or re-pricing dates, thereby creating exposure to unexpected changes in the level of market interest rates. This exposure is more important in relation to banking business.

Basis Risk
The risk that the interest rate of different assets, liabilities and off-balance sheet items may change in different magnitude.

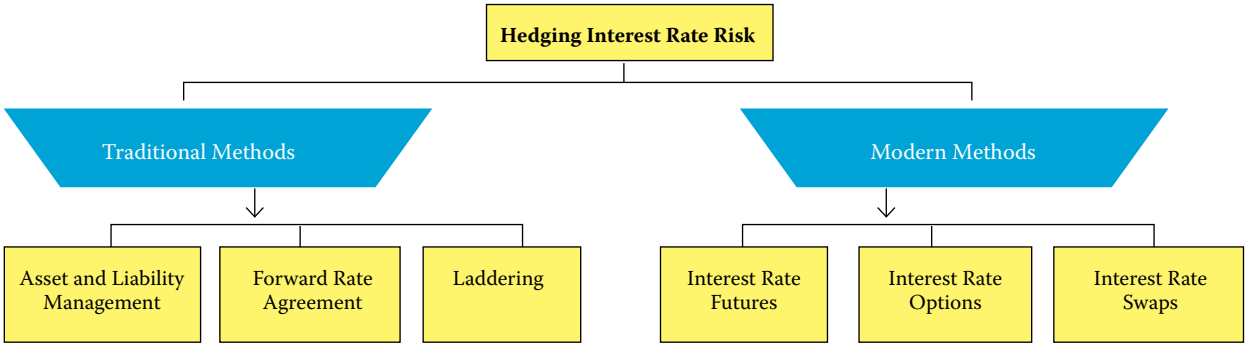
Embedded Option Risk
This risk arises on account of exercise of option for prepayment or premature withdrawal of instruments before their stated maturities on account of change in the interest rate.

Yield Curve Risk
Since there is an inverse relationship between yield and price of fixed income securities, price of these securities fall when yield i.e. Interest Rate rises and vice versa.

Price Risk
Price risk occurs when assets are sold before their stated maturities. In the financial market, bond prices and yields are inversely related. The price risk is closely associated with the trading book, which is created for making profit out of short-term movements in interest rates.

Reinvestment Risk
Uncertainty with regard to interest rate at which the future cash flows could be reinvested is called reinvestment risk.

Net Interest Position Risk
This risk depends on the net interest position. Thus, banks with positive net interest positions i.e. bank has more assets than liabilities then it will experience a reduction in Net Interest Income if market interest rate declines and increases when interest rate rises.



Traditional Methods

Asset and Liability Management (ALM)

Asset-Liability Management (ALM) is one of the important tools of risk management in commercial banks of India. It is the management of structure of balance sheet (liabilities and assets) in such a way that the net earnings from interest are maximized within the overall risk preference (present and future) of the institutions. It involves the proper use of discretionary element i.e. increase or decrease interest sensitive funds.

Forward Rate Agreements (FRAs)

A Forward Rate Agreement (FRA) is an agreement between two parties through which a borrower/ lender protects itself from the unfavourable changes to the interest rate in future. On settlement date the actual money (amount of loan) is not exchanged rather settlement is made on the basis of notional principal. Unlike futures FRAs are not traded on an exchange thus are called OTC product.

Laddering

This strategy is mainly used to avoid Re-investment risk. It involves the purchasing/ scheduling of multiple securities in a portfolio of different maturity periods. Accordingly, in case if due to rise in interest rate if the value of long term securities decreases then same shall be compensated by re-investing the sum out of redeemed short term investment at higher interest rate.

Modern Methods

Interest Rate Futures

An interest rate future is a contract between the buyer and seller agreeing to the future delivery of any interest-bearing asset. The interest rate future allows the buyer and seller to lock in the price of the interest-bearing asset for a future date. Interest rate futures are used to hedge against the risk that interest rates will move in an adverse direction, causing a cost to the company.

In IRF following are two important terms:

(a) **Conversion factor:** All the deliverable bonds have different maturities and coupon rates. To make them comparable to each other, Conversion factor for each deliverable bond and for each expiry at the time is used.

(Conversion Factor) x (Futures price) = Actual delivery price for a given deliverable bond.

(b) **Cheapest to Deliver (CTD):** The CTD is the bond that minimizes difference between the quoted Spot Price of bond and the Futures Settlement Price (adjusted by the conversion factor).

Interest Rate Options

Also known as Interest Rate Guarantee (IRG) as option is a right not an obligation and acts as insurance by allowing businesses to protect themselves against adverse interest rate movements while allowing them to benefit from favourable movements. Some of the important types of Interest Rate Options are as follows:

- **Cap Option**
  The buyer of an interest rate cap pays the seller a premium in return for the right to receive the difference in the interest cost on some notional principal amount any time a specified index of market interest rates rises above a stipulated "cap rate."
- **Floor Option**
  It is an OTC instrument that protects the buyer of the floor from losses arising from a decrease in interest rates. The seller of the floor compensates the buyer with a pay off when the interest rate falls below the strike rate of the floor.
- **Interest Rate Collars**
  It is a combination of a Cap and Floor. The purchaser of a Collar buys a Cap and simultaneously sells a Floor. A Collar has the effect of locking its purchases into a floating rate of interest that is bounded on both high side and the low side.

Interest Rate Swap

In an interest rate swap, the parties to the agreement, termed the swap counterparties, agree to exchange payments indexed to two different interest rates. Total payments are determined by the specified notional principal amount of the swap, which is never actually exchanged.

Types of Swap

Plain Vanilla Swap	Also called Generic Swap and it involves the exchange of a fixed rate loan to a floating rate loan. Floating rate basis can be LIBOR, MIBOR, Prime Lending Rate etc.
Basis Rate Swap	Also, called Non-Generic Swap. Similar to plain vanilla swap with the difference payments based on the difference between two different variable rates. In other words two legs of swap are floating but measured against different benchmarks.
Asset Swap	Like plain vanilla swaps with the difference that it is the exchange fixed rate investments such as bonds which pay a guaranteed coupon rate with floating rate investments such as an index.
Amortising Swap	An interest rate swap in which the notional principal for the interest payments declines during the life of the swap. They are particularly useful for borrowers who have issued redeemable bonds or debentures. It enables them to interest rate hedging with redemption profile of bonds or debentures.

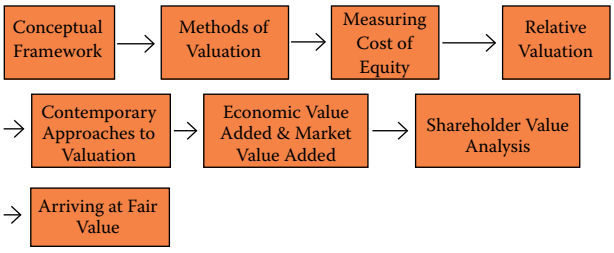
Swaptions

An interest rate swaption is simply an option on an interest rate swap. It gives the holder the right but not the obligation to enter into an interest rate swap at a specific date in the future, at a particular fixed rate and for a specified term.

- **A fixed rate payer swaption** gives the owner of the swaption the right but not the obligation to enter into a swap where they pay the fixed leg and receive the floating leg.
- **A fixed rate receiver swaption** gives the owner of the swaption the right but not the obligation to enter into a swap in which they will receive the fixed leg, and pay the floating leg.

CHAPTER 13: CORPORATE VALUATION

Chapter Overview

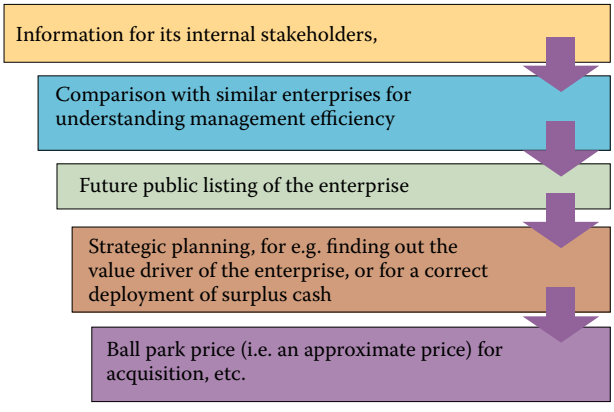


Conceptual Framework of Corporate Valuation

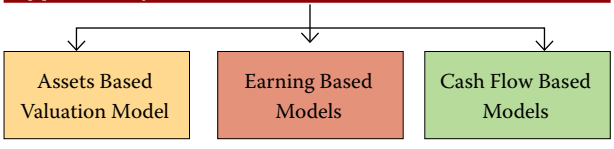
Corporate valuation tells us about the worth of a company. There are various ratios, tools and methods which are employed by financial analysts to calculate a corporations' worth. And, it helps in knowing whether the stock is undervalued or overvalued. Knowing this is very important because it is useful in making mergers and acquisition decision. It also helps in gauging out whether the company is in financial stress or the market is unstable.

Need of a proper assessment of an Enterprise's Value

The need of a proper assessment of an enterprise's value can be typically for:



Approaches/Methods of Valuation



Asset Based Approach

This approach is based on the estimation of Net Worth of a Business which is equivalent to Fixed Assets (including intangible assets) plus Net Working Capital. Book Value of Net Worth is equal to Share Capital plus Reserves and can also be depicted as follows:

Book Value = Total Assets minus Long Term Debt

However, the book value approach will not essentially represent the true price of the assets because:

a) Tangible assets may be undervalued or even overvalued
b) Intangible assets may no longer be of actual saleable worth in the market
c) Long term debt may have a terminal payout that needs to be catered to.

So, in reality, the book value is always adjusted to such factors to assess the 'net realizable value' of the assets and hence is called as the 'Adjusted Book Value' approach.

Earning Based Approach

This approach looks to overcome the drawbacks of using the asset-backed valuation approach by referring to the earning potential and using a multiplier - 'Capitalization Rate'. Earnings can best be depicted by EBITDA (Earnings before interest, taxes, depreciation and amortization), and capitalization rate will be computed either using the CAPM or as multiples approach.

Cash Flow Based Approach

As opposed to the asset based and income based approaches, the cash flow approach takes into account the quantum of free cash that is available in future periods, and discounting the same appropriately to match to the flow's risk.

There are essentially five steps in performing DCF based valuation:

a) Arriving at the 'Free Cash Flow'
b) Forecasting of future cash flows (also called projected future cash flows)
c) Determining the discount rate based on the cost of capital
d) Finding out the Terminal Value (TV) of the enterprise
e) Finding out the present values of both the free cash flows and the TV, and interpretation of the results.

Measuring Cost of Equity

One of the key requirements for Valuation is Cost of Equity. Although Cost of Equity can be computed on the basis of Dividend but some of the other approaches taking into consideration the risk involved are as follows:

Capital Assets Pricing Model (CAPM)

The CAPM is represented by the below formula:

$R = R_f + \beta (r_m - r_f)$

Where R = expected rate of return or Cost of Equity

R_f = risk free rate of return

β = Beta value of the stock

R_m = market rate of return

Arbitrage Pricing Theory Model (APT)

While CAPM takes into consideration premium for single risk, the APT is a multi-factor model having a whole set of Beta Values – one for each factor. Further, it states that the expected return on an investment is dependent upon how that investment reacts to a set of individual macro-economic factors (degree of reaction measured by the Betas) and the risk premium associated with each of the macro – economic factors and represented by following formula:

$R = R_f + \beta_1(RP_1) + \beta_2(RP_2) + ...\beta_j(RP_n)$

Where R = expected rate of return or Cost of Equity.

R_f = risk free rate of return.

β_j = Measures of sensitivity of the security to each of the various factors.

RP_n = Average risk premium for each of the various factors.

R_m = market rate of return.

Estimating Beta and Valuation of Unlisted Companies

While the Betas of listed companies are easily available the biggest challenge is faced in calculation of 'beta' for the private and unlisted firms and hence problems are faced in valuation of these firms. Through the use of Industry Beta or Beta of similar type listed companies (called Proxy Beta), the Beta of privately held enterprise can be arrived at and then Cost of Equity. So, the various steps involved in estimating beta and valuation of unlisted companies are as follows:

Step I: Take the Proxy Beta and convert it into Unlevered Beta to remove the impact of debt by using the formula:
Unlevered beta = beta / 1 + (1 - tax rate) x (debt / equity)

→

Step II: Determine the correct earnings by making adjustment for gaps in accounting policies and accounting estimates.

↓

Step III: Find out the Cost of equity using the CAPM.

←

Step IV: Calculate the Weighted Average Cost of Capital taking into consideration the Debts of the company.

→

Step V: Since this is a private company, the owners will demand a return towards 'goodwill'. However, in some cases, the acquisition price may include sweeteners for the erstwhile, which will then exclude the need to perform this step.

←

Step VI: The future cash flows of will be discounted using the WACC. In case there are two stages of Growth expected in the expected Cash Flows then Terminal Value (TV) of the firm shall also be calculated.

→

Step VII: The sum of the PV of the above values will be the value of the firm.

Relative Valuation

Above mentioned three approaches that we saw to arriving at the value of an enterprise viz. the asset based, the earnings based, and the cash flow based are for arriving at the 'Intrinsic Value' of the firm or an enterprise.

Relative Valuation is the method to arrive at a 'relative' value using a 'comparative' analysis to its peers or similar enterprises. Also known as 'Valuation by Multiples' since it uses financial ratios to derive at the desired metric (referred to as the 'Multiple') and then compares the same to that of comparable firms i.e. ones having similar asset and risk dispositions and assumed to continue to do so over the comparison period.

In the process, there may be extrapolations set to the desired range to achieve the target set. Hence overall following steps are involved –

1. Find out the 'drivers' that will be the best representative for deriving at the multiple
2. Determine the results based on the chosen driver(s) through financial ratios
3. Find out the comparable firms, and perform the comparative analysis, and,
4. Iterate the value of the firm obtained to smoothen out the deviations.

Other approaches to Value Measurement

- Contemporary Approaches to Valuation
- Economic Value Added & Market Value Added
- Shareholder Value Analysis

Brief description of the above mentioned approaches to Value Measurement

Contemporary Approaches to Valuation: It is worth noting here that some of the traditional methods used in valuation have been borne out of the peculiarities of certain industries. For example an internet or app company would have virtually zero fixed assets – but a robust online presence and a huge brand recall value. This would give rise to a new method of valuation – price per page visited. Or an online play store can be valued now using 'price per subscriber'. Accordingly for this type of companies contemporary approach to valuation are used.

Economic Value Added: The core concept behind EVA is that a company generates 'value' only if there is a creation of wealth in terms of returns in excess of its cost of capital invested. So if a company's EVA is negative, it means the company is not generating value from the funds invested into the business. Conversely, a positive EVA shows a company is producing value from the funds invested in it.

Market Value Added: The 'MVA' (Market Value Added) would simply be the current market value of the firm minus invested capital. The MVA is also an alternative way to gauge performance efficiencies of an enterprise, albeit from a market capitalization point of view, the logic being that the market will discount the efforts taken by the management fairly.

Shareholder Value Analysis (SVA)
SVA take into its foray certain 'drivers' that can expand the horizon of value creation. The key drivers considered are of 'earnings potential in terms of sales, investment opportunities, and cost of incremental capital. The following are the steps involved in SVA computation:

a) Arrive at the Future Cash Flows (FCFs) by using a judicious mix of the 'value drivers'
b) Discount these FCFs using the WACC
c) Add the terminal value to the present values computed in step (b)
d) Add the market value of non-core assets
e) Reduce the value of debt from the result in step (d) to arrive at value of equity.

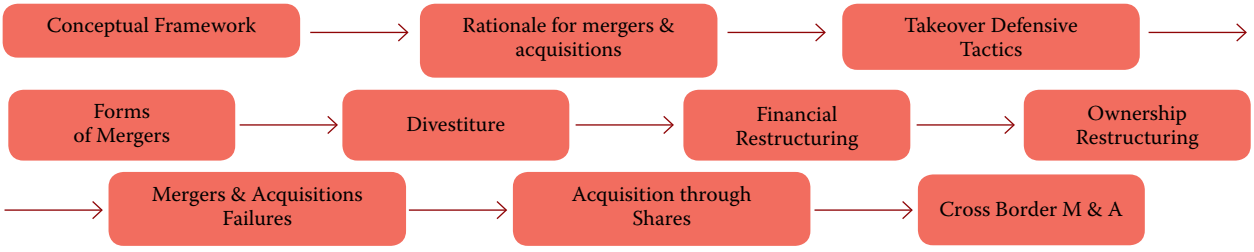
Arriving at Fair Value

Different stakeholders have distinct perspective to the concept of 'Fair Value'. While an accountant's perspective envisages a transaction to be measured at the arm's length, for a financial analyst it would be akin to the present value of an entity in cash terms, and for a speculative investor, the term would represent the arbitrage opportunities that open up among similar entities having dissimilar value numbers put to it.

Hence arriving at Fair Value of a firm or share to some extent is subject and depends upon the perspective of the user of Valuation Report.

CHAPTER 14: MERGERS, ACQUISITIONS AND CORPORATE RESTRUCTURING

Chapter Overview



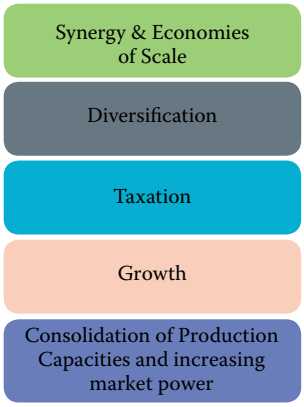
Conceptual Framework

The terms 'mergers, 'acquisitions' and 'takeovers' are often used interchangeably in common parlance. However, there are differences. While merger means unification of two entities into one, acquisition involves one entity buying out another and absorbing the same. In India, in legal sense merger is known as 'Amalgamation'.

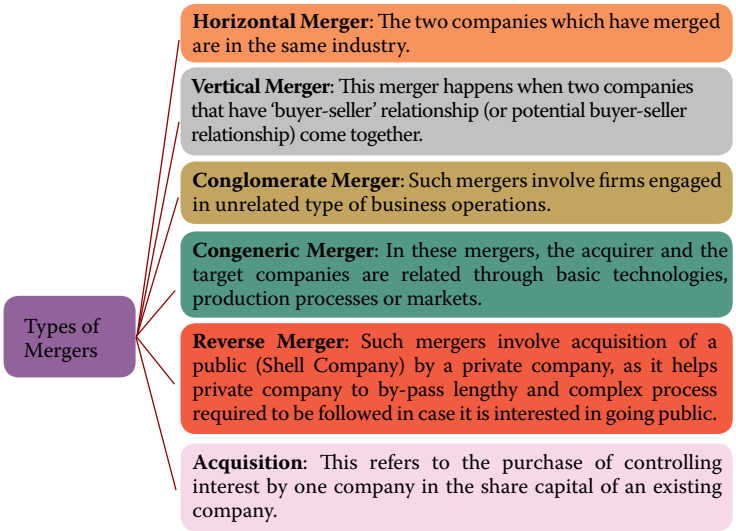
Restructuring usually involves major organizational changes such as shift in corporate strategies. Restructuring can be internally in the form of new investments in plant and machinery, Research and Development of products and processes, hiving off of non-core businesses, divestment, sell-offs, de-merger etc. Restructuring can also take place externally through mergers and acquisition (M&A) and by forming joint-ventures and having strategic alliances with other firms.

Rationale for Mergers and Acquistions

The most common reasons for Mergers and Acquisition (M&A) are:



Forms (Types of Mergers)



Takeover Defensive Tactics

Divestiture	In a divestiture, the target company divests or spins off some of its businesses in the form of an independent, subsidiary company. Thus, reducing the attractiveness of the existing business to the acquirer.
Crown jewels	It means company's most valuable assets. The target company may sell its crown jewels to make it unattractive for the acquirer to takeover the company.
Poison pill	The tactics used by the acquiring company to make it unattractive to a potential bidder is called poison pills.
Poison Put	In this case the target company issue bonds that encourage holder to cash in at higher prices. The resultant cash drainage would make the target unattractive.
Greenmail	Greenmail refers to an incentive offered by management of the target company to the potential bidder for not pursuing the takeover.
White knight	In this, a target company offers to be acquired by a friendly company to escape from a hostile takeover.
White squire	This strategy is essentially the same as white knight and involves sell out of shares to a company that is not interested in the takeover.
Pac-man	This strategy aims at the target company making a counter bid for the acquirer company.

Different Forms of Divestment or Demerger or Divestitures

Sell off / Partial Sell off	A sell off is the sale of an asset, factory, division, product line or subsidiary by one entity to another for a purchase consideration payable either in cash or in the form of securities. Partial Sell off, is a form of divestiture, wherein the firm sells its business unit or a subsidiary to another because it deemed to be unfit with the company's core business strategy.
Spin-off	In this case, a part of the business is separated and created as a separate firm.
Split-up	This involves breaking up of the entire firm into a series of spin off.
Equity Carve outs	This is like spin off, however, some shares of the new company are sold in the market by making a public offer, so this brings cash.

Financial Restructuring

Financial restructuring refers to a kind of internal changes made by the management in Assets and Liabilities of a company with the consent of its various stakeholders. This is a suitable mode of restructuring for corporate entities who have suffered from sizeable losses over a period of time.

It may be said that financial restructuring (also known as internal re-construction) is aimed at reducing the debt/payment burden of the corporate firm. This results into:

(i) Reduction/Waiver in the claims from various stakeholders;

↓

(ii) Real worth of various properties/assets by revaluing them timely;

↓

(iii) Utilizing profit accruing on account of appreciation of assets to write off accumulated losses and fictitious assets (such as preliminary expenses and cost of issue of shares and debentures) and creating provision for bad and doubtful debts.

Ownership Restructuring

Going Private – This refers to the situation wherein a listed company is converted into a private company by buying back all the outstanding shares from the markets.

Management Buy Outs – Buyouts initiated by the management team of a company are known as a management buyout. In this type of acquisition, the company is bought by its own management team.

Leveraged Buyout – An acquisition of a company or a division of another company which is financed entirely or partially (50% or more) using borrowed funds is termed as a leveraged buyout.

Equity buyback – This refers to the situation wherein a company buys back its own shares back from the market. This results in reduction in the equity capital of the company. This strengthens the promoter's position by increasing his stake in the equity of the company.

Steps in a Successful Merger and Acquisitions

1. Manage the pre-acquisition phase
2. Screen candidates
3. Eliminate those who do not meet the criteria and value the rest
4. Negotiate
5. Post-merger integration

Reasons for Merger Failures

Acquirers generally overpay.

↕

The value of synergy is over-estimated.

↕

Poor post-merger integration.

↕

Psychological barriers

Strategies to Make a Merger Successful

- Decide what tasks need to be accomplished in the post-merger period.
- Choose managers from both the companies (and from outside).
- Establish performance yardstick and evaluate the managers on that yardstick.
- Motivate them.

Acquisition through Shares

The acquirer can pay the target company in cash or exchange shares in consideration. The analysis of acquisition for shares is slightly different. The steps involved in the analysis are:

- Estimate the value of acquirer's equity.
- Estimate the value of target company's equity.
- Calculate the maximum number of shares that can be exchanged with the target company's shares.
- Conduct the analysis for pessimistic and optimistic scenarios.

Cross–Border Merger and Acquisitions

Cross-Border Merger and Acquisitions are deals between foreign companies and domestic companies which usually take place in the country where the target company has to be acquired. Major factors that motivate multinational companies to engage in cross-border merger and acquisitions in Asia include the following:

- Globalisation of production and distribution of products and services.
- Integration of global economies.
- Expansion of trade and investment relationships on international level.
- Many countries are reforming their economic and legal systems, and providing generous investment and tax incentives to attract foreign investment.
- Privatisation of state-owned enterprises and consolidation of the banking industry.

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