

Relevant Extract from syllabus

- 5.1 Design of capital structure: theories and practices; Shareholder value creation: dividend policy, corporate financial policy and strategy, management of corporate distress and restructuring strategy
- 5.2 Capital and money markets: institutions and instruments; Leasing, hire purchase and venture capital; Regulation of capital market; Risk and return: portfolio theory; CAPM; APT; Financial derivatives: option, futures, swap;
- 5.3 Recent reforms in financial sector.

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## PRINCIPLES AND PRACTICE OF INVESTMENT

1. All aspects of portfolio investment : fundamental principles, investment practice, and cutting edge thinking
  - a) Financial markets
  - b) Investing strategies
  - c) Valuation of portfolio
  - d) Portfolio management
  - e) Global investing
  
2. Equities and Bonds
  - a) Hedge fund
  - b) Investment behaviour

### WHAT IS TRADING?<sup>1</sup>

What does the trading industry supply?

1. The trading function comprises of three sub functions:-
  - a) First, the **brokerage function** delivers an order with the specified terms of a stock exchange or the specified trading venue
  - b) Second, **the buy and exchange** function to execute an order at the stock exchange or the trading venue specified
  - c) Third, **the clearing function** that ensures that both sides honour their commitment – that the buyer delivers cash and the seller delivers the securities.

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<sup>1</sup> Based on “The past, present and future of trading stocks” by Lawrence Glosten and Charles Jones pages 5 to 7 in Business Standard, Part One on Mastering Investment Friday 30<sup>th</sup> August 2002

2. Outputs from the trading functions include
  - (i) Transactions
  - (ii) Prices are created due to transactions
  - (iii) Insurance policy that guarantees the transaction
  
3. Costs involved:

Payments to be made by an investor include

  - (a) Brokerage commission that covers order delivery and clearance charges that are paid indirectly to the exchange through the broker
  - (b) Bid-ask spread payment which is the difference between the price at which the dealers are prepared to sell a share and the price at which they are prepared to buy a share.

#### Kinds of Stock Exchanges:

4. The oldest form of exchange is a pure dealer market where designated individuals called dealers or market-makers are counter-parties to every trade. Dealers quote bids and offer prices for buying and selling. Buyers use a broker to locate the dealer with the lowest offer, while sellers locate the dealer with the highest offer. This system is followed in Nasdaq, London Stock Exchange, and the Nouveau March exchange in Paris for new and smaller companies.
  
5. The second form is the [Electronic Open Limit Order Book \(OLOB\)](#). This Exchange has [no designated dealers](#) or market makers. The quotes come from limit orders submitted to the Limit Order Book. The limit order of the investor specifies the buy and sell, number of shares and a price. The highest limit buy order becomes the market bid and the lowest limit sell order forms the market offer. Individual who wish to trade immediately submit market orders that trade with the limit orders.

6. Tokyo, Paris, Toronto, Frankfurt, and Stockholm, and Instinet and Island are examples of such exchanges.

7. New York Stock Exchange is a hybrid of the two systems and has an active LOB. Floor traders and Specialists who some act as brokers and sometime as dealers for buying and selling for their own account. The LOB provides for cheap exchange for small orders while the dealers / brokers handle larger institutional orders

## 2. CONSOLIDATED LIMITED ORDER BOOK: FUTURE PERFECT OR FUTURE SHOCK?

Kenneth Kavajecz arguments in the debate on whether to standardize the consolidated limited order book system.  
*Mastering Investment Part Two 6<sup>th</sup> September 2002*

1. The global equity market is dotted with different trading systems such as the specialized systems such as the New York Stock Exchange, Competitive dealer systems such as Nasdaq and Seaq, and the Pure Limited Order Markets such as Electronic Communication Networks, the Paris Bourse, and the Toronto Stock Exchange.
2. The debate is on which system is the best for the investor and how to define 'best'? The debate began with a [call for research](#) on the possibility of [creating a Consolidated Limited Order Book \(CLOB\) System](#)
3. Under CLOB the limited orders would be collected in to a central electronic system and displayed according to price time priority. This would be in contrast to the existing system of maintain the limited order book by separate exchanges and dealers.

4. Nature of limited orders and the pure limited order book: Traders can choose between (1) A Market Order (2) A Limited Order.
5. The limited order specifies the side of the market whether to buy or to sell- the quantity to be traded, the length of time the order is active, and the worst price the trader is willing to accept. Here the investor runs the additional risk of delayed execution and the risk that the order is never executed. This is because active limited order stand ready to trade at the discretion of other market participants, as they are viewed as supplying liquidity to the market. This view is similar to the view of market makers on the floor of the exchange who stand ready to buy or sell.
6. In contrast a market order specifies only the first two components of buy or sell and quantity with out specifying the time and price. This implies an agreement to transact at the best available price when the order arrives at the trading venue. The need to trade immediately requires the liquidity from the market. As such market orders can be seen as demanding liquidity.
7. The Limited Order Book is **the current set of active limit orders** that is sent to and maintained by an exchange or a dealer. These orders are **first arranged by price** and then **by time** in which the low priced sell orders and high priced buy order have the highest priority. In it 'Good until cancelled' is indicated as 'GTC' and orders expiring at close of trading are shown as 'Day'.
8. The cumulative depth form of the limit order book provides its descriptive view. This measures the number of

shares at a given limit price available at or below that limit for sell and buy.

9. In the USA the Securities and Exchange Act of 1934 was amended in 1975 to create a National Market System for integration of trading activities. This established the system of the Pure Limited Order Book that is currently in existence. Yet this platform only displays best prices and corresponding depths at each of the trading venues rather than the entire limit order book.

10. The CLOB debating is raging against the backdrop of the various facts and structure and linkages between these trading venues.

- a) the order flow and liquidity provision are fragmented among these competing exchanges.
- b) It does not maintain price/time priority with in each trading venue and across trading venues as it only reports the best prices and depths
- c) Existence of not fully electronic trading floors as in the New York Stock Exchange, the American Stock Exchange and the regional exchanges, means that all available liquidity is not displayed with in a venue's quotes.

11. Arguments for creation of a Consolidated Limited Order Book (CLOB):

- a) The current system fails on two counts of (i) not affording equal treatment for all liquidity providers (ii) fragmenting the liquidity among competing

exchanges that makes trading of large number of shares at a single venue costly.

- b) Equal treatment is not possible because the order books are not integrated with respect to time. As such orders sent to regional exchanges do not receive the same exposure as order in the larger trading venues. Often the new order get a priority over older orders as the internal consistency of a single limit order book ensures that all limit orders and all liquidity providers are treated in the same way.
- c) A CLOB would eliminate the possibility that newer orders could be executed in advance of or instead of the older orders with the same limit price.
- d) The CLOB will also alleviate un-displayed liquidity as all liquidity providers will themselves post their trading interests through electronic limit order instead of through the floor brokers, their by providing a full exposure to the entire set of liquidity supplied at the time for a given security.
- e) The theoretical basis for CLOB is the stylized model created in 1994 by Professor Lawrence Glosten in which various trading systems compete to supply liquidity. He argued that an open CLOB would provide at least as much liquidity as any competing system with the normal and the extreme trading environments.

12. Arguments against CLOB:

- a) CLOB would stifle competition to supply liquidity , making it difficult to innovate

- b) Creation of CLOB pre-supposes that all orders and all market participants have the same implicit goals. This 'one-size-fits all' structure of CLOB is against the process of specialization within the market to provide liquidity. For example day traders require speed of execution, while fund managers need to trade large blocks of stock.
- c) CLOB may have other costs associated with behaviour of limit order traders, such as minimum price variation through the tick size that ranged from  $1/8^{\text{th}}$  to  $1/16^{\text{th}}$  in 1997. By reducing the tick size the depth of liquidity / order book was reduced by one fourth to half. This was because a small minimum price variation makes it less costly for limit order traders to compete on price. This allows competing limit orders to step in front of less aggressive limit order with only a small price concession.
- d) A limit order trader gives away the right to determine when an order is executed. In this sense limit orders are like options. Reducing the minimum tick size effectively reduces the premium that the traders are able to extract from their option, thereby making them less willing to give their option away by displaying liquidity through posting a limit order.
- e) CLOB may make prices more volatile. Unlike market makers the limit order traders have no obligation to constantly supply liquidity. Therefore, they are more sensitive to the cost of supplying liquidity than designated market makers. This sensitivity could manifest itself in more volatile CLOB prices. It could also find expression in the



extreme lower liquidity due to the scarcity of, or even, absence of limit order.

f) A study has also shown that in NYSE prices on limit order book tend to be more volatile than quoted or transaction prices

13. **Conclusion:** CLOB finds acceptance with both sides due to its fundamental principle of equal treatment of all participants and need for unfettered competition. CLOB would undoubtedly provide a level playing field, but it is not clear that the limit order traders would care to ‘play’ to the same extent after the field is level. Markets are designed to bring buyers and sellers, liquidity demanders and liquidity suppliers together. A successful market demands that both sides of a trade be willing to participate. Therefore the markets must be designed to weigh the needs of liquidity demanders and suppliers properly, but a proper weight of these needs is difficult. As CLOB has both merits and costs it is difficult to determine an optimal structure given the speed with which circumstances change, and technology innovations / advances emerge. For the sake of technology critical process by which a market arrives at a particular structure cannot be bypassed.

Syllabus Topic 5.4 Shareholder Value Creation

3. VALUING OLD AND NEW COMPANIES<sup>2</sup> by Oren Furst and Nahum Melumad

The common ways of valuing businesses

1. There are many ways of valuing business. Warren Buffet's way: 'a bird in hand is better than two in the bush'.

2. Answer three questions in money terms: (a) How certain are you that there are indeed birds in the bush? (b) When will they emerge and how many will there be? (c) What is the risk free interest rate?

3. Investors face a variety of models and methods. Overview of methods of valuation and how to adjust them for technology companies?

- a) Avoid companies that do not have a long track record.
- b) Avoid industries in which you are not comfortable
- c) Avoid companies that one is not able to evaluate
- d) Through the method tools of evaluation ensure that the risks investments are offset by potential rewards

4. Components needed for valuation:

(a) A thorough analysis of a company's business model to understand the interaction among the various components of the model. These include direct and indirect effects of technology, pricing model, management team, company's intellectual property, its production and service costs

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<sup>2</sup> - from part three page 2 of Mastering Investment

(b) To maximize its valuation a company must optimize its competitive position and retain a high level of profitability or attractiveness to potential / strategic buyers.

(c) Understand the company's life cycle is crucial, particularly in the valuation of technology companies, and has a dramatic effect. It is important for forecasting net cash flows of companies, in estimating their value, and in judging the relative importance of the options companies have.

5. Methods:

- (a) **Multiples method:** First identify a set of companies that are comparable on various dimensions such as size, maturity, and area of operation
- (b) Then look for a set of appropriate variables for comparison
- (c) Apply the ratios to the parameter values of a specific company. The most common ratio is the **earnings multiple**, expressed as the market price per share divided by the earning per share = price / earnings = P/E ratio. Revenue multiple is a new ratio being applied.
- (d) **The valuation using multiples** is meaningful only if the variables used for comparison reflects the ability of a company to create value for its shareholders.
- (e) The analysis based on this multiples method relies on the peer group's current results and forecasts made by market participants, such as equity research analysts.
- (f) Selecting parameters in sectors that do not have any history is difficult. As such mostly

parameters meant for other companies are used. Therefore, this method is not to be made a central mechanism for valuation.

- (g) This method has an explanatory power for pricing at a specific time. The multiples are to be logically and economically related to future profitability of the company or to the way potential buyers of a company value it. History shows that periods of incorrect valuation can last for a long time. ( Relate to theory of wrong institutions getting created )
- (h) The **process of selecting** the set of comparable companies is **crucial**. Leading companies may receive a premium in a market place, or a company's increased profitability due to economies of scale. Financial leverages and equity risk differences that are associated with cost structures of companies may explain differences in multiples.
- (i) **When comparing** companies in different environments, multiples should be used carefully. Different growth rates, cost of providing services, ability to price services across different companies and countries need to be kept in view.
- (j) In most case **multiples should be based directly on profitability**, measured as a ratio of enterprise value, that is the market value of equity plus debt, to **earning before interest and income taxes** (ebit) and price to earning per share or price to sales =  $\text{equity plus debt} / \text{ebit}$  and price to earning per share
- (k) **Be wary of measures** that do not refer to **the cost of obtaining future profitability** such as ratios

based on simple earning before income tax, depreciation and amortization. Multiples that incorporate the cost of capital and required capital expenditures are useful in the case of new companies.

- (1) **Balance sheet multiples** can provide the supplementary information on financial stability and future prospects. Ratios such as enterprise value to total assets, or equity market value to equity, market to book ratio, can be used here, after taking care of value of intangible assets that may have been written off.

6. FORECASTING EARNINGS:

- a) **Free Cash Flows method**: Uses earnings adjusted for expenses and earnings and income that are not in cash such as depreciation, adjusted for required investments and changes in working capital. This series of forecasted free cash flows is then brought to current values by discounting it using the company's cost of equity or overall cost of capital.
- b) **Economic Value Added (EVA)** and Super profits and Abnormal earnings method is used for forecasting a **company's excess earning** which is the **net income after charging for cost of capital** used to achieving it. The series of forecast excess earnings is then brought to current value by discounting it using the company's cost of equity. Here, the intuition about company's **capacity to create wealth** for capital providers is taken into consideration.

- c) **The Adjusted Residual Income (ARI) model:** is for most situations and particularly for companies with intangible assets. It incorporates information reported by the company and market and the characteristics of the companies early in their development. Here, Income minus cost of capital = net value created for shareholders.
- d) The starting point is **adjusted net income**. **Research and Development** greatly affect future profitability. It should therefore for purposes of valuation this expenditure should be treated as an asset whose value will depreciate with time. Investors should therefore **determine the life cycle** and expected life of research and development.

The effectiveness of R & D can be measured through **productivity and profitability changes** in that industry or similar industries. Generally, R&D efforts life is taken to be from **three to five years**. This process affects income and balance sheet.

- e) Over a long period any capitalization and depreciation should yield the same valuation. However, most analysis is based on early years of rapid growth in which capitalization has a great effect.
- f) The equity for any period is **the sum of** previous year's equity and this year's net earnings, assuming that no dividends are paid and no new capital is issued.

- g) **Return on Equity (RoE)** adjusted for capitalizing R&D. This is the **amortized R&D asset** less **capitalized R&D** for any year. The net R&D charge has a large effect on net income in the early years of a company, while R&D capitalization has a greater impact in later years. Therefore, adjusted RoE is significantly higher than RoE in early years. As the company matures, the difference reduces as net R&D nears zero. Here amortization of R&D asset becomes similar to the capitalization of the year's R&D. **This pattern depends on** the parameters such as growth rate and R&D as a proportion of revenue.
- h) **The next step** for deriving the Adjusted Residual Income is to charge for the use of capital based on company's cost of equity, multiplied by adjusted equity for weighted cost of capital. This measure gives a series of forecasts that can be discounted to current values and then added to current equity or total asset base.
- i) Adjusted residual income measures can also be used for several analysis such comparing the ratios of market value to adjusted residual income or adjusted capital.
- j) Both ARI and Free Cash Flow methods are based on the **same formula** that states **that a company's value equals the sum of its discounted expected dividends**. As such, both should yield the same results, unless different sets of assumptions have been used.

7. FORECASTING PERIOD: a perfect model need forecasting for every income flow and balance sheet item in perpetuity. As this is impractical the process is split into two components:
- a) first component to reflect the value of company over the forecasting period based on a stream of annual residual income, or free cash flows, based on detailed forecasting of revenue and expense items as well as balance sheet items.
  - b) second component is analyzed by assuming a permanent or decaying growth rate of the forecast item namely residual income or free cash flow, in the last detailed forecast year and capitalizing this item. Alternatively, an expected multiple is assumed for the main estimated parameter. Care is needed in determining growth rates beyond the forecasting horizon as it is subject to greater error.
  - c) As all these analysis rely on analysis of earlier periods, the second component forecast will depend on earlier estimate data.
8. THE DISCOUNTY RATE: Determining the proper interest rate for discounting the free cash flows or residual income to bring them to current value is important. This cost is the rate of return investors require for investment in a project with similar risk characteristics. That should be the cost of equity or the weighted average cost of capital as applicable.



Ways of estimating the cost of equity are many, but typically it is derived by using a combination of methods, depending on the stage of development of the company, the industry in which it operates, and the stage of development of the industry.

- a) **Capital Asset Pricing model (CAPM)** = Risk free interest rate + risk premium for market portfolio = cost of equity  $\times$  by company's beta that reflects relative sensitivity of the stock return to market return variability. The risk free interest rate could be bank interest rate or the rate on government bonds. The risk premium is the additional return for holding equity rather than risk free assets such as government bonds. Estimating the equity risk premium is difficult. Historically, it has been 6 percent in the USA, but some analysts suggest that the correct measure should be based on expected risk premium, as measured at each point in time, rather than on the actual, realized value. Using the historical rate of 6 percent the yield value is about 3 percent. This means a difference of 50 per cent in the estimated cost of equity for the average company. In addition the validity of this CAPM is also debated.
- b) **Arbitrage pricing theory**: includes more macroeconomic factors or company characteristics in the calculation of the cost of equity.
- c) Time varying discount rate of companies is another issue. Sensitivity of the company to market conditions changes over time due to changes in environment and also due to changing size and age of the company. Altering the discount rate can have dramatic effect, particularly in companies where most of their valuation stems from the distant future.

TRANSACTION COSTS OF TRADING<sup>3</sup> can be substantial to the extent of eliminating the notional return on an investment strategy. The key is to distinguish between the **major components**: namely the **explicit costs** and the **implicit costs**.

- a) Explicit costs are mainly **brokerage commission, fee, stamp duties**. Commissions vary from 0.20 percent of trade value overall and have been declining. They vary by price, market mechanism, and broker type. In electronic market it can be as low as 2 per cent a share and on difficult trade executed by specialized broker it can be between 10-15 per cent. Explicit costs can be higher in various exchanges.
- b) **Implicit costs** are difficult to measure and comprise of (a) bid ask spread, (b) price impacts and (c) opportunity costs.
- c) **Bid price and ask price** is the market-maker's compensation for providing liquidity, analogue to the broker's commission. The bid-ask spread varies and **depends on the stock's liquidity**. It could be less than 0.3 per cent for the most liquid stock with largest market capitalization and to 4 to 6 percent for the least liquid or the smallest market capitalization stocks.
- d) **Price impact**. The large scale trades by institutes demands increasing liquidity from markets. As such their trades move market price in the direction of trade, it results in 'market impact' or 'price impact'. The price impact of large trade varies with trade size and market capitalization. In the smallest 20 per cent of non- liquid market capitalization of smallest block it could be 3.04 per cent and rise to 6.21 per cent for largest blocks. In contrast liquid stock block trades have a very small price impact of 0.15 percent to 0.18 per cent.

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<sup>3</sup> Keim Donald and Ananth Madhavan " The role of equity trade costs in investment results' in Mastering Investments Part Three 13<sup>th</sup> September page 9- 10.

Costs also vary by time of the day and are the highest towards the end of the day when imbalances are often large and dealers are reluctant to carry inventories over night.

- e) **Opportunity costs**: are associated with missed trading opportunities. Trades are motivated by information whose value decays overtime. Opportunity cost is incurred when an order is partially executed or is not executed at all, or is executed with delay during which the price moves up against the trader. These costs are difficult to measure and depend on the discretion of the trader. However one estimate of it is the difference between the hypothetical portfolio and the actual trading called the “performance shortfall” Variability in implicit costs is related to factors that are difficult to quantify such as trader reputation.
- f) **Trade costs** are influenced by factors such trade difficulty, availability of a particular stock and investment styles. **Trade difficulty depends upon the liquidity** or market capitalization of the stock and trade costs of exchange listed shares ranges from 2.32 per cent for the largest trades and 0.64 per cent for the smallest.
- g) Trade costs are **inversely related to market capitalization**. For smallest market cap stocks it is 3.81 percent and for largest market caps it is 0.57 per cent. Trading costs tend to be larger for Nasdaq stocks than for exchange listed stocks.
- h) Difficulty of trade costs for non-liquid stocks may involve explicit costs of 0.9 per cent and implicit costs of 2 per cent. In contrast a discount broker dealing with highly liquid stock may incur explicit costs of 2 per cent and implicit costs of 0.4 per cent
- i) **Investments styles** could be active or passive, index or momentum and this effects trading costs because it proxies for unobservable factors such as the trader’s time horizon or aggressiveness.

Aggressive traders who chase short run price movements and some indexers have high expected costs because they demand and pay for immediacy. Less aggressive traders such as value managers, whose strategies are based on fundamental analysis, have lower turnover and lower costs because their longer investment horizon allows them to trade patiently. Value traders incur round trip costs of 0.45 per cent, index traders incur 1.09 percent and momentum traders incur 2.04 per cent.

- j) **Order submission strategy** and trader reputation also affect costs. Traders with a reputation for liquidity trading may be able to obtain better prices because the adverse selection costs associated with their trade are likely to be minimal, particularly for trades that are negotiated away from the exchange floor in the ‘upstairs market’ which is less anonymous and comprises of traders well known to each other.
- k) “Best execution” is trading at the most favourable price available. However it may be misleading if it is applied with out regard to the type and circumstances of specific orders.
- l) For small trades, explicit costs dominate, and price impact costs and opportunity costs are minimal. Institutional orders are more complex than retail orders, as they follow dynamic order placement strategy and break up the orders in to several component trades. As such the best price at the time of a trade needs be defined in the context of the overall order placement strategy especially because market movements make price impact costs difficult to measure in a dynamic environment. Measured price impact can also be affected by confidential information leaking in to the market through out the trading period.

- m) Secondly, there may be large difference between cost measured at the individual trade level and those measured at the total order level. This is because of ignoring opportunity costs and timing costs.
- n) Thirdly, institutions vary greatly in their ability to bear costs. “Best execution” for an informed trader is not identified solely by lower cost and high cost trades do not necessarily mean poor execution.

**Implications for investors:**

- a) Active managers try to exploit market inefficiencies and tend to trade more frequently demanding more immediate execution compared with passive managers. This results in higher trading costs for active managers. Therefore when transaction costs are considered passive index strategies might dominate active management strategies even if active managers can add value by identifying mispriced securities.

In view of difficulty in implementing an active portfolio strategy particularly in less liquid stocks, there is considerable value in devoting resources to understanding and reducing trade costs.

- b) **Constructing an indexed portfolio:** Most index funds attempt to hold all stocks in the underlying index. Fund inflows or outflows give rise to trades as the portfolio quickly adjusts to ‘track’ the benchmark.

In this, duplication minimizes tracking error but raises the transaction costs significantly. One way trade costs for index managers are 0.37 per cent for ‘buys’ and 0.38 per cent for ‘sell’. Instead of pure indexing some passive index funds perform better by allowing minor deviations from the underlying index there by reducing the volume of trading and corresponding trading costs.

- c) **Conclusions** on findings on equity trading costs appear important:
1. Studies must measure both implicit and explicit costs at the level of the entire order
  2. **Implicit costs** are economically **significant** relative to explicit costs and relative to realized portfolio returns.
  3. Costs vary with trade difficulty and order placement strategy. Market design investment style, trading ability and reputation also play a part.
  4. **Best execution for institutional traders** is better left to **market competition** as these are difficult to measure and enforce.
  5. An investor should not rely solely on comparing explicit cost alone.
4. **Valuing Companies: Simulations, Options, and Partnerships**<sup>4</sup>  
by Oren Furst and Nahum Melumad

#### Special tools of valuing businesses

1. **Challenges in valuation** of businesses include :
  - a) selection of parameters to be used in the forecast such as the revenue growth rate or gross margin.
  - b) **Scenario planning** that is used to assess strategic risks, can provide an estimate of these values. Scenario planning involves **probing the company's structure and processes**, the wider market environment, a range of possibilities in future that may impact the company, and relation of the parameters with one another. Yet the

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<sup>4</sup> Mastering Investments Part Four 20<sup>th</sup> September 2002 pages 9-10

results may not be realistic as it does not incorporate statistical distributions or uncertainty between the parameters. Also changes in technology may create a more volatile scenario in the future than the one envisaged in the scenario planning. Therefore, a more sophisticated method called 'Simulation' is needed.

2. In Simulation in place of assuming specific values for the main parameters, more accurate statistical distributions are used. It also allows for input of assumptions about the variability of growth rate. For example growth rate may be the normal distribution with a mean of 5 per cent and standard deviation of 2 per cent. Uncertainty about the correlation between parameter values over time can also be incorporated in simulation. For example a decline in the price of PC will result in the decline of a range of other items such as computer servers, and PC related accessories. The level of correlation between such products can be calculated and incorporated in simulation model by making assumptions about the degree of variability. Thus, simulation tools provide a clearer picture of variability of parameters and their sensitivity to uncertainty. On its basis ranking of companies can change resulting in changes in investment decisions.
3. **REAL OPTIONS:** The common methods of valuation do not allow for subsequent information to be incorporated in to the calculations. The options method provides this facility. For example if a share valued at Rs 20 can fetch either a profit of Rs 10 or a loss of Rs 10 in two given environments. Assuming the likelihood of occurrence of either environment as equal the expected mean value of its outcome is zero. But if investment decision is delay till environment is known, the valuation will change or tend from zero towards the positive,

because the project is unlikely to be taken up in adverse conditions. Thus the value in this case is an option to receive an asset worth Rs 10 with a 50 per cent probability.

4. Therefore, a company can be analyzed as a set of options, all of which reflect the flexibility to make a decision when new information is received. This in effect is the application of the common method of valuation of financial options to real project options.
5. Certain options such as the company's ability to use the existing technology capacity for new or additional products can be more valuable than the company's current activities. As such, valuing a company includes valuation of many options and requires the use of elaborate models. Yet the value of most options depends on the same parameters of expected cash flow, required investments, length of time to exercise the option, the uncertainty of the environment and prevailing interest rates. The value of options increases under higher uncertainty. In contrast the static value of the underlying asset typically declines with higher uncertainty.
6. Care is needed in valuing options for technology related companies that involve significant and higher growth rates. The key with a successful investor is that he/ she is able to see value in options based on broad claims also, that are generally missed out by others.
7. **THE NETWORK EFFECT:** refers to the change in the value of a service to each user as a result of changes in the size of the user base. For example the value of telephone is higher when others are in its network of connectivity. In general, for



technology companies value can be attributed to its potential network effect.

8. Investors should examine the company and the impact of acceptance of the specific technology. This may govern the value of its service to potential users and thereby their willingness to pay for it. Understand how the value per user increases, as the number of users grows. The impact should be reflected in the willingness of each customer to pay and in the growth rate of the customer base. This growth rate accelerates in certain circumstances, and is counter to the traditional view on economies of scale. Be wary of a company's ability to transform non-paying customers in to paying customers. When companies change prices for this reason most of them do badly. Only creative pricing schemes can build on the forces that underlie the success of the previous model. Finally, identity of the customer should be considered – can he /she affect the pricing decision? If not can he / she assume that the company's management will make the correct decision?
9. Initial low pricing can be understood through the network effect and the production learning curve. The more a product is accepted the more valuable it becomes. This strategy has been adopted by Sony and Microsoft when they sell their new consoles at low prices, which in turn expands user base and increases incentives for more content creation thereby enhancing royalties. In sum, in valuation forecasts, network effect is reflected in the growth rate of the users, and in their willingness to pay.
10. **COST STRUCTURE:** Many companies have similar operation processes and structures for prices, technology, and management, and yet greatly differ in their cost structures. For

example profitability is drastically altered through decisions on outsourcing a level of production. In the instance of two oil companies – one that buys oil to sell it through its petrol pumps and the other owns a refinery for its sales. The former will have a higher margin of profitability as the latter will have to bear a higher fixed cost of operating the refinery.

11. The principles are always the same and there are always many cost structure options to choose from. Each cost structure effects the sensitivity of the company to change in the environment in a different way.
12. Companies that increase fixed costs, to reduce the variable cost of production, are more sensitive to market conditions. This gives them an ‘**Operating Leverage**’ which means that in good times they increase their profitability quickly. But in bad conditions they also lose money more quickly than companies with a more flexible cost structure.
13. Cost structure decisions are also based on a company’s core competence and its competitive environment. For example Nike benefited by concentrating on design and distribution of its shoes thereby benefiting on two counts - from stiff competition among manufacturers for its designs, and reducing its capital spending for production. In sum, the impact of valuation depends on the assumptions made about the future market conditions.
14. **PARTNERS AND BUYERS:** Partnerships vary in the levels of their formality and their impact on the profitability needs to be examined carefully. Many companies, particularly technology sector one, rely heavily on strategic partnership.

Only a few of these are long term partnerships or outsourcing agreements. Currently, many partnerships involve equity-investor relationships and buyer-seller relationships of commercial transaction. For valuation purposes these are difficult to disentangle because they are often structured to provide the seller or the investor with much needed revenue. Moreover, difficulty is caused because in partnerships many transactions are not reported as per rules. This makes it difficult to extrapolate the potential of growth of partnership companies.

15. EXIT STRATEGIES: Impact of exit strategies should always be considered by an investor to know how easy or difficult it might be to extract their capital through the sale of its equity / securities in the stock market or as part of merger / acquisition.
16. Thus, when valuing a stock one needs to look at the fundamental of the company as a sole entity. Many investors rely only on market conditions for their exit strategy. Markets are often misaligned with the business fundamentals. For example many of the over valued stocks are purchased on the assumption that they will continue to be overvalued on a larger scale in the future.
17. Mergers and Acquisitions are an additional tool available to investors for valuing a company. The value of a potential deal adjusted for the probability of its materializing, should be incorporated in valuation. A successful deal in a technology company can more than double its value. Particularly for companies in their early stages of development, M&A are crucial. Often the early stage of development can itself be a long one.
18. The notion of value at its best use should be part of every valuation. This allows for considering a company as part of

another company in and benefiting from cost synergies, unique technology, a larger customer base, and better management skills. In sum, the valuation process should consider the exit options as available and estimate the likelihood of them being exercised. But they should not include them in the valuation process as ‘happening’, because the rights to exercise the exit options are owned by external parties. In other words, in the valuation models created through simulation exit options should not be included as actual events. The fact that valuations in simulations are in the imaginary mode should never be lost sight of, as they often clash with the reality of the actual world. Yet the same building blocks of valuation apply to all industries, companies, and their age of development to give a probability