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CONCEPTUAL FRAMEWORK

History & Evolution of Stock Exchanges

3.1: Introduction:

The oldest Stock Exchange in the world is the Amsterdam Stock Exchange. It was established in 1602 by the Dutch East India Company for dealings in its printed stocks and bonds. The Amsterdam Stock Exchange is the former name for the stock exchange based in Amsterdam. It merged on 22 September 2000 with the Brussels Stock Exchange and the Paris Stock Exchange to form Euronext, and is now known as Euronext Amsterdam.


Before we study the history of NSE, let us first know what are: a) Stock exchanges

a) **Stock Exchanges:** Stock Exchanges are an organized marketplace, either corporation or mutual organization, where members of the organization gather to trade company stocks or other securities. The members may act either as agents for their customers or as principals for their own accounts. Stock exchanges also facilitates for the issue and redemption of securities and other financial instruments including the payment of income and dividends. The record keeping is central but trade is linked to such physical place because modern markets are computerized. The trade on an exchange is only by members and stock broker do have a seat on the exchange.

**Capital Market:** The capital market is divided into two segments viz:

a) Primary Market

b) Secondary Market
a) **Primary Market**: Most companies are usually started privately by their promoters. However, the promoters’ capital and the borrowed capital from banks or financial institutions might not be sufficient for running the business over the long term. That is when corporate and the government look at the primary market to raise long term funds by issuing securities such as debt or equity. These securities may be issued at face value, at premium or at discount.

b) **Secondary Market**: The secondary market provides liquidity to the investors in the primary market. Today we would not invest in any instrument if there was no medium to liquidate our position. The secondary markets provide an efficient platform for trading of those securities initially offered in the primary market. Also, those investors who have applied for shares in an IPO may or may not get allotment. If they don’t then they can always buy the shares (some times at a discount or at a premium) in the secondary market. Trading in the secondary market is done through stock exchange. The Stock exchange is a place where the buyers and sellers meet to trade in shares in an organized manner. The stock exchange performs the following functions:

1. Provide trading platform to investors and provide liquidity
2. Facilitate Listing of securities
3. Registers members - Stock Brokers, sub brokers
4. Make and enforce by-laws
5. Manage risk in securities transactions
6. Provides Indices

There are two leading stock exchanges in India which help us trade are:

**3.2: The Bombay Stock Exchange (BSE)** is an Indian stock exchange located at Dalal Street, Kala Ghoda, Mumbai, Maharashtra, India. Established in 1875, the BSE is considered to be one of Asia’s fastest stock exchanges, with a speed of 200 micro seconds and one of India’s leading exchange groups and the oldest stock exchange in the South Asia region. Bombay Stock Exchange is the world's 11th largest stock market by market capitalization at $1.7 trillion as of 23 January 2015. More than 5,000 companies are listed on BSE.
The Bombay Stock Exchange is the oldest exchange in Asia. It traces its history to 1855, when four Gujarati and one Parsi stockbroker would gather under banyan trees in front of Mumbai's Town Hall. The location of these meetings changed many times as the number of brokers constantly increased. The group eventually moved to Dalal Street in 1874 and in 1875 became an official organization known as "The Native Share & Stock Brokers Association".

On 31 August 1957, the BSE became the first stock exchange to be recognized by the Indian Government under the Securities Contracts Regulation Act. In 1980, the exchange moved to the Phiroze Jeejeebhoy Towers at Dalal Street, Fort area. In 1986, it developed the BSE SENSEX index, giving the BSE a means to measure overall performance of the exchange. In 2000, the BSE used this index to open its derivatives market, trading SENSEX futures contracts. The development of SENSEX options along with equity derivatives followed in 2001 and 2002, expanding the BSE's trading platform.

Historically an open outcry floor trading exchange, the Bombay Stock Exchange switched to an electronic trading system developed by CMC Ltd in 1995. It took the exchange only fifty days to make this transition. This automated, screen-based trading platform called BSE On-line trading (BOLT) had a capacity of 8 million orders per day. The BSE has also introduced a centralized exchange-based internet trading system, BSEWEBx.co.in to enable investors anywhere in the world to trade on the BSE platform. The BSE is also a Partner Exchange of the United Nations Sustainable Stock Exchange initiative joining in September 2012.

3.3: National Stock Exchange of India

NSE

The National Stock Exchange (NSE) is India's leading stock exchange covering various cities and towns across the country. NSE was set up by leading institutions to provide a modern, fully automated screen-based trading system with national reach. The Exchange has brought about unparalleled transparency, speed & efficiency, safety and market integrity. It has set up facilities that serve as a model for the securities industry in terms of systems, practices and procedures.
Purpose of NSE

Committed to improve the financial well-being of people.

Vision

To continue to be a leader, establish global presence, facilitate the financial well being of people.

VALUES

NSE is committed to the following core values:

- Integrity
- Customer focussed culture
- Trust, respect and care for the individual
- Passion for excellence
- Teamwork

The National Stock Exchange of India Limited (NSE) is the leading stock exchange of India, located in Mumbai. NSE was established in 1992 as the first dematerialized electronic exchange in the country. NSE was the first exchange in the country to provide a modern fully automated screen-based electronic trading system which offered easy trading facility to the investors spread across the length and breadth of the country.

NSE has a market capitalization of more than US$1.65 trillion, making it the world’s 12th-largest stock exchange as of 23 January 2015. NSE’s flagship index, the CNX Nifty the 50 stock index is used extensively by investors in India and around the world as a barometer of the Indian capital markets. Though a number of other exchanges exist, NSE and the Bombay Stock Exchange are the two most significant stock exchanges in India, and between them are responsible for the vast majority of share transactions. The NSE’s key index is the S&P CNX Nifty, known as the NSE NIFTY (National Stock Exchange Fifty), an index of fifty major stocks weighted by market capitalisation.
NSE is mutually owned by a set of leading financial institutions, banks, insurance companies and other financial intermediaries in India but its ownership and management operate as separate entities. There are at least 2 foreign investors NYSE Euronext and Goldman Sachs who have taken a stake in the NSE. As of 2006, the NSE VSAT terminals, 2799 in total, cover more than 1500 cities across India. In 2011, NSE was the third largest stock exchange in the world in terms of the number of contracts (1221 million) traded in equity derivatives. It is the second fastest growing stock exchange in the world with a recorded growth of 16.6%.

Origins

The National Stock Exchange of India was set up by Government of India on the recommendation of Pherwani Committee in 1991. Promoted by leading Financial institutions essentially led by IDBI at the behest of the Government of India, it was incorporated in November 1992 as a tax-paying company. In April 1993, it was recognized as a stock exchange under the Securities Contracts (Regulation) Act, 1956. NSE commenced operations in the Wholesale Debt Market (WDM) segment in June 1994. The Capital market (Equities) segment of the NSE commenced operations in November 1994, while operations in the Derivatives segment commenced in June 2000.

Objectives

1. Establishing nation wide trading facilities for all types of securities.
2. Ensuring equal access to investors all-over the country through an appropriate communication network.
3. Meeting international benchmarks and standards.

Markets

Currently, NSE has the following major segments of the capital market:
Equities

- Equities
- Indices
- Mutual Funds
- Exchange Traded Funds
- Initial Public Offerings
- Security Lending and Borrowing Scheme

Derivatives

- Equity Derivatives (including Global Indices like S&P 500, Dow Jones and FTSE)
- Currency Derivatives
- Interest Rate Futures

Debt

- Retail Debt Market
- Wholesale Debt Market
- Corporate Bonds

**Equity Derivatives** The National Stock Exchange of India Limited (NSE) commenced trading in derivatives with the launch of index futures on June 12, 2000. The futures and options segment of NSE has made a mark for itself globally. In the Futures and Options segment, trading in S&P CNX Nifty Index, CNX IT index, Bank Nifty Index, Nifty Midcap 50 index and single stocks are available. Trading in Mini Nifty Futures & Options and Long term Options on S&P CNX Nifty are also available. The average daily turnover in the F&O Segment of the Exchange during 2009-10 was 72,392 crore (US $ 16,097 million)

On August 29, 2011, National Stock exchange launched derivative contracts on the world’s most followed equity indices, the S&P 500 and the Dow Jones Industrial Average. This was the first time that derivative contracts on global indices are available in India. This is the also the first time in the world that futures contracts...
on the S&P 500 index were introduced and listed on an exchange outside of their home country, USA. The new contracts include futures on both the DJIA and the S&P 500, and options on the S&P 500. The first day volumes at the close of trading on August 29, 2011 at 3.30 pm, on the 2 indices in futures and options contracts was nearly Rs 122 crores (1220 million).

On May 3, 2012, the National Stock exchange launched derivative contracts (futures and options) on FTSE 100, the widely tracked index of the UK equity stock market. This was the first of its kind for an index of the UK equity stock market to be launched in India. FTSE 100 includes 100 largest UK listed blue chip companies and has given returns of 17.8 per cent on investment over three years. The index constitutes 85.6 per cent of UK’s equity market cap. NSE recorded a volume of 500 crores (5000 million) on the 1st day of trading.

Currency Derivatives In August 2008 currency derivatives were introduced in India with the launch of Currency Futures in USD INR by NSE. It also added currency futures in euros, pounds and yen. Interest Rate Futures were introduced for the first time in India by NSE on 31 August 2009, exactly one year after the launch of Currency Futures.

Debt Market NSE became the first stock exchange to get approval for interest rate futures, As recommended by SEBI-RBI committee, on 31 August 2009, a futures contract based on 7% 10 Year Government of India (Notional) was launched with quarterly maturities.

Trading schedule

Trading takes place on all days of the week except Saturdays & Sundays. The market timings are as follows:

- (1) Pre-open session (Regular)
  - Order entry & modification Open: **09:00 hrs**
  - Order entry & modification Close: **09:08 hrs***

* with random closure in last one minute. Pre-open order matching starts immediately after close of pre-open order entry.
(2) Pre-open Session for IPO and Relist Securities

- Order entry & modification Open: **09:00 hrs**
- Order entry & modification Close: **09:45 hrs**

* with random closure in last one minute. Pre-open order matching starts immediately after close of pre-open order entry.

(3) Regular trading session

- Normal Market Open: **09:15 hrs**
- Normal Market Close: **15:30 hrs**

Block deal session is held between **09:15 hrs** and **09:50 hrs**.

(4) The Closing Session is held between **15.40 hrs** and **16.00 hrs**.

The Exchange may also extend, advance or reduce trading hours when its deems fit and necessary.


About IISL

India Index Services & Products Limited (IISL), a joint venture between NSE and CRISIL Ltd. (formerly the Credit Rating Information Services of India Limited), was setup in May 1998 to provide a variety of indices and index related services and
products for the Indian capital markets. It has a licensing and marketing agreement with Standard and Poor’s (S&P), the world’s leading provider of investible equity indices, for co-branding equity indices.

These indices are broad-market indices, consisting of the large, liquid stocks listed on the Exchange. They serve as a benchmark for measuring the performance of the stocks or portfolios such as mutual fund investments.

- S&P CNX Nifty
- CNX Nifty Junior
- CNX 100
- CNX 200
- S&P CNX 500
- CNX Midcap $
- Nifty Midcap 50
- CNX Smallcap Index
- S&P CNX Defty
- S&P CNX Nifty Dividend
- CNX Midcap 200 $$
- India Vix

$ CNX Midcap - Introduced from July 18, 2005 $$ CNX Midcap 200 - Discontinued from July 18, 2005

**Exchange Traded Funds on NSE**

**ETF's launched on NSE** Exchange Traded Funds are essentially Index Funds that are listed and traded on exchanges like stocks. An ETF is a basket of stocks that reflects the composition of an Index, like S&P CNX Nifty. The ETFs trading value is based on the net asset value of the underlying stocks that it represents.
ETF's Scheme launched on NSE

- Equity
- Gold
- Debt
- World Indices

S&P CNX NIFTY

The S&P CNX Nifty, also called the Nifty 50 or simply the Nifty, is a stock market index and benchmark index for Indian equity market. Nifty is owned and managed by India Index Services and Products Ltd. (IISL), which is a joint venture between NSE and CRISIL (Credit Rating and Information Services of India Ltd). IISL is India's first specialized company focused upon the index as a core product. IISL has a marketing and licensing agreement with Standard & Poor's for co-branding equity indices. 'CNX' in its name stands for 'CRISIL NSE Index'.

S&P CNX Nifty has shaped up as the largest single financial product in India, with an ecosystem comprising: exchange traded funds (onshore and offshore), exchange-traded futures and options (at NSE in India and at SGX and CME abroad), other index funds and OTC derivatives (mostly offshore).

The S&P CNX Nifty covers 22 sectors of the Indian economy and offers investment managers exposure to the Indian market in one portfolio. The S&P CNX Nifty stocks represents about 67.27% of the free float market capitalization of the stocks listed at National Stock Exchange (NSE) as on September 30, 2012.

The S&P CNX Nifty index is a free float market capitalisation weighted index. The index was initially calculated on full market capitalisation methodology. From June 26, 2009, the computation was changed to free float methodology. The base period for the S&P CNX Nifty index is November 3, 1995, which marked the completion of one year of operations of NSE's Capital Market Segment. The base value of the index has been set at 1000, and a base capital of Rs 2.06 trillion. The S&P CNX Nifty Index was developed by Ajay Shah and Susan Thomas.
3.4: FOREIGN DIRECT INVESTMENT

**Foreign direct investment (FDI)** is direct investment into production or business in a country by a company in another country, either by buying a company in the target country or by expanding operations of an existing business in that country. Foreign direct investment is in contrast to portfolio investment which is a passive investment in the securities of another country such as stocks and bonds.

The national accounts of a country, and in regard to the national income equation \( Y = C + I + G + (X-M) \), \( I \) is investment plus foreign investment, FDI refers to the net inflows of investment (inflow minus outflow) to acquire a lasting management interest (10 percent or more of voting stock) in an enterprise operating in an economy other than that of the investor. It is the sum of equity capital, other long-term capital, and short-term capital as shown the balance of payments. It usually involves participation in management, joint-venture, transfer of technology and expertise. There are two types of FDI: inward and outward, resulting in a net FDI inflow (positive or negative) and "stock of foreign direct investment", which is the cumulative number for a given period. Direct investment excludes investment through purchase of shares. FDI is one example of international factor movements.

**Types**

1. **Horizon FDI** arises when a firm duplicates its home country-based activities at the same value chain stage in a host country through FDI.

2. **Platform FDI**

3. **Vertical FDI** takes place when a firm through FDI moves upstream or downstream in different value chains i.e., when firms perform value-adding activities stage by stage in a vertical fashion in a host country.

Horizontal FDI decreases international trade as the product of them is usually aimed at host country; the two other types generally act as a stimulus for it.

**Methods**

The foreign direct investor may acquire voting power of an enterprise in an economy through any of the following methods:
• By incorporating a wholly owned subsidiary or company anywhere
• By acquiring shares in an associated enterprise
• Through a merger or an acquisition of an unrelated enterprise
• Participating in an equity joint venture with another investor or enterprise

Foreign direct investment incentives may take the following forms:

• Low corporate tax and individual income tax rates
• Tax holidays
• Other types of tax concessions
• Preferential tariffs
• Special economic zones
• EPZ – Export Processing Zones
• Bonded Warehouses
• Maquiladoras
• Investment financial subsidies
• Soft loan or loan guarantees
• Free land or land subsidies
• Relocation & expatriation
• Infrastructure subsidies
• R&D support
• Derogation from regulations (usually for very large projects)

**Importance and barriers to FDI**

The rapid growth of world population since 1950 has occurred mostly in developing countries. This growth has not been matched by similar increases in per-capita income and access to the basics of modern life, like education, health care, or - for too many - even sanitary water and waste disposal.
FDI has proven when skillfully applied to be one of the fastest means of, with the highest impact on, development. However, given its many benefits for both investing firms and hosting countries, and the large jumps in development were best practices followed, eking out advances with even moderate long-term impacts often has been a struggle. Recently, research and practice are finding ways to make FDI more assured and beneficial by continually engaging with local realities, adjusting contracts and reconfiguring policies as blockages and openings emerge.

**Foreign direct investment and the developing world**

A recent meta-analysis of the effects of foreign direct investment on local firms in developing and transition countries suggests that foreign investment robustly increases local productivity growth. The Commitment to Development Index ranks the "development-friendliness" of rich country investment policies.

**Difficulties limiting FDI**

Foreign direct investment may be politically controversial or difficult because it partly reverses previous policies intended to protect the growth of local investment or of infant industries. When these kinds of barriers against outside investment seem to have not worked sufficiently, it can be politically expedient for a host country to open a small "tunnel" as a focus for FDI.

The nature of the FDI tunnel depends on the country's or jurisdiction's needs and policies. FDI is not restricted to developing countries. For example, lagging regions in the France, Germany, Ireland, and USA have for a half century maintained offices to recruit and incentivize FDI primarily to create jobs. China, starting in 1979, promoted FDI primarily to import modernizing technology, and also to leverage and uplift its huge pool of rural workers.

To secure greater benefits for lesser costs, this tunnel need be focused on a particular industry and on a closely negotiated specific terms. These terms define the trade-offs of certain levels and types of investment by a firm, and specified concessions by the host jurisdiction.

The investing firm needs sufficient cooperation and concessions to justify their business case in terms of lower labor costs, and the opening of the country's or even
regional markets at a distinct advantage over (global) competitors. The hosting country needs sufficient contractual promises to politically sell uncertain benefits versus the better-known costs of concessions or damage to local interests.

The benefits to the host may be creation of a large number of more stable and higher-paying jobs; establishing in lagging areas centers of new economic development that will support attracting or strengthening of many other firms without so costly concessions; hastening the transfer of premium-paying skills to the host country's work force; and encouraging technology transfer to local suppliers.

Concessions commonly offered include: tax exemptions or reductions; construction or cheap lease-back of site improvements or of new building facilities; and large local infrastructures such as roads or rail lines; More politically difficult (certainly for less-developed regions) are concessions which change policies for: reduced taxes and tariffs; curbing protections for smaller-business from the large or global; and laxer administration of regulations on labor safety and environmental preservation. Often these un-politick "cooperations" are covert and subject to corruption.

The lead-up for a big FDI can be risky, fraught with reverses, and subject to unexplained delays for years. Completion of the first phase remains unpredictable - even after the contract ceremonies are over and construction has started. So, lenders and investors expect high risk premiums similar to those of junk bonds. These costs and frustration have been major barriers for FDI in many countries.

The value of FDI with some industries, some companies, and some countries much greater than with others; like most markets, valuations can be mostly perceptual. It is in the interest of both investors and recipients to dissemble the value of deals to their constituents, so the market on what's hot and what's not has frequent bubbles and crashes. Because local circumstances and the global economy vary so rapidly, because valuations can shift dramatically in short times, negotiating and planning FDI is often quite irrational.
Foreign direct investment by country

There are multiple factors determining host country attractiveness in the eyes of large foreign direct institutional investors, notably pension funds and sovereign wealth funds. Research conducted by the World Pensions Council (WPC) suggests that perceived legal/political stability over time and medium-term economic growth dynamics constitute the two main determinants.

Some development economists believe that a sizeable part of Western Europe has now fallen behind the most dynamic amongst Asia’s emerging nations, notably because the latter adopted policies more propitious to long-term investments: “Successful countries such as Singapore, Indonesia and South Korea still remember the harsh adjustment mechanisms imposed abruptly upon them by the IMF and World Bank during the 1997-1998 ‘Asian Crisis’, what they have achieved in the past 10 years is all the more remarkable: they have quietly abandoned the “Washington consensus” [the dominant Neoclassical perspective] by investing massively in infrastructure projects, this pragmatic approach proved to be very successful.

The United Nations Conference on Trade and Development said that there was no significant growth of global FDI in 2010. In 2011 was $1,524 billion, in 2010 was $1,309 billion and in 2009 was $1,114 billion. The figure was 25 percent below the pre-crisis average between 2005 and 2007.

Foreign direct investment in India

Starting from a baseline of less than $1 billion in 1990, a recent UNCTAD survey projected India as the second most important FDI destination (after China) for transnational corporations during 2010–2012. As per the data, the sectors that attracted higher inflows were services, telecommunication, construction activities and computer software and hardware. Mauritius, Singapore, US and UK were among the leading sources of FDI. Based on UNCTAD data FDI flows were $10.4 billion, a drop of 43% from the first half of the last year.

India disallowed overseas corporate bodies (OCB) to invest in India.
2012 FDI reforms

On 14 September 2012, Government of India allowed FDI in aviation up to 49%, in the broadcast sector up to 74%, in multi-brand retail up to 51% and in single-brand retail up to 100%. The choice of allowing FDI in multi-brand retail up to 51% has been left to each state.

In its supply chain sector, the government of India had already approved 100% FDI for developing cold chain. This allows non-Indians to now invest with full ownership in India's burgeoning demand for efficient food supply systems. The need to reduce waste in fresh food and to feed the aspiring demand of India's fast developing population has made the cold supply chain a very exciting investment proposition.

3.5: INSTITUTIONAL INVESTOR

Institutional investors are organizations which pool large sums of money and invest those sums in securities, real property and other investment assets. They can also include operating companies which decide to invest their profits to some degree in these types of assets.

Types of typical investors include banks, insurance companies, retirement or pension funds, hedge funds, investment advisors and mutual funds. Their role in the economy is to act as highly specialized investors on behalf of others. For instance, an ordinary person will have a pension from his employer. The employer gives that person's pension contributions to a fund. The fund will buy shares in a company, or some other financial product. Funds are useful because they will hold a broad portfolio of investments in many companies. This spreads risk, so if one company fails, it will be only a small part of the whole fund's investment.

Institutional investors will have a lot of influence in the management of corporations because they will be entitled to exercise the voting rights in a company. They can actively engage in corporate governance. Furthermore, because institutional investors have the freedom to buy and sell shares, they can play a large part in which companies stay solvent, and which go under. Influencing the conduct of listed
companies, and providing them with capital are all part of the job of investment management.

**Economic theory**

By definition, institutional investors are opposed to individual actors on the financial markets. This specificity has major consequences in the eyes of economic theory.

**Institutional investors as financial intermediaries**

Numerous institutional investors act as intermediaries between lenders and borrowers. As such, they have a critical importance in the functioning of the financial markets. Economies of scale imply that they increase returns on investments and diminish the cost of capital for entrepreneurs. Acting as savings pools, they also play a critical role in guaranteeing a sufficient diversification of the investors' portfolios. Their greater ability to monitor corporate behaviour as well to select investors profiles implies that they help diminish agency costs.

"Doing God's work"

The expression "doing God's work", commonly used by employees of institutional investors to describe their job, refers to the claim that their supposed professionalism and greater computing abilities allow them to detect early – and benefit from – information affecting the markets. By doing so, institutional investors claim to make the markets more efficient.

**Life cycle**

Institutional investors differ among each other but they all have in common the fact of not sharing the same life cycle as human beings. Unlike individuals, they do not have a phase of accumulation (active work life) followed by one of consumption (retirement), and they do not die. Here insurance companies differ from the rest of the institutional investors; as they cannot guess when they will have to repay their clients, they need highly liquid assets which reduces their investment opportunities. Others like pension funds can predict long ahead when they will have to repay their investors allowing them to invest in much less liquid assets such as
private equities, hedge funds or commodities. Finally, other institutions have an investment horizon extremely vast allowing them to invest in highly illiquid assets since they are unlikely to be forced to sell them before term. A famous example of this type of investors are US universities endowment funds.

**Institutional-investor types**

- Endowment fund
- Hedge fund
- Insurance companies
- Investment banking
- Investment trust
- Mutual fund
- Pension fund
- Sovereign wealth fund
- Unit trust and unit investment trust

**Regional**

In various countries different types of institutional investors may be more important. In oil-exporting countries sovereign wealth funds are very important, while in developed countries, pension funds may be more important.

**3.6: FOREIGN-EXCHANGE RESERVES**

**Foreign-exchange reserves** (also called *forex reserves* or *FX reserves*) in a strict sense are 'only' the foreign currency deposits and bonds held by central banks and monetary authorities. However, the term in popular usage commonly includes foreign exchange and gold, special drawing rights (SDRs), and International Monetary Fund (IMF) reserve positions. This broader figure is more readily available, but it is more accurately termed official international reserves or international reserves. These are assets of the central bank held in different reserve currencies, mostly the United States dollar, and to a lesser extent the euro, the pound sterling, and the Japanese yen, and
used to back its liabilities, e.g., the local currency issued, and the various bank reserves deposited with the central bank, by the government or financial institutions.

Purpose

In a flexible exchange rate system, official international reserve assets allow a central bank to purchase the domestic currency, which is considered a liability for the central bank (since it prints the money or fiat currency as IOUs). This action can stabilize the value of the domestic currency.

Central banks throughout the world have sometimes cooperated in buying and selling official international reserves to attempt to influence exchange rates. This coordinated strategy was used to replace pound sterling with US dollar as the world reference currency during the 20th century. The lack of such international cooperation is also a big concern for the replacement of US Dollar in this role of reference currency in foreign exchange reserves.

Changes in reserves

The quantity of foreign exchange reserves can change as a central bank implements monetary policy. A central bank that implements a fixed exchange rate policy may face a situation where supply and demand would tend to push the value of the currency lower or higher (an increase in demand for the currency would tend to push its value higher, and a decrease lower). In a flexible exchange rate regime, these operations occur automatically, with the central bank clearing any excess demand or supply by purchasing or selling the foreign currency. Mixed exchange rate regimes ('dirty floats', target bands or similar variations) may require the use of foreign exchange operations (sterilized or unsterilized) to maintain the targeted exchange rate within the prescribed limits.

Foreign exchange operations that are unsterilized will cause an expansion or contraction in the amount of domestic currency in circulation, and hence directly affect monetary policy and inflation: An exchange rate target cannot be independent of an inflation target. Countries that do not target a specific exchange rate are said to have a floating exchange rate, and allow the market to set the exchange rate; for countries with floating exchange rates, other instruments of monetary policy are
generally preferred and they may limit the type and amount of foreign exchange interventions. Even those central banks that strictly limit foreign exchange interventions, however, often recognize that currency markets can be volatile and may intervene to counter disruptive short-term movements.

To maintain the same exchange rate if there is increased demand, the central bank can issue more of the domestic currency and purchase the foreign currency, which will increase the sum of foreign reserves. In this case, the currency's value is being held down; since (if there is no sterilization) the domestic money supply is increasing (money is being 'printed'), this may provoke domestic inflation (the value of the domestic currency falls relative to the value of goods and services).

Since the amount of foreign reserves available to defend a weak currency (a currency in low demand) is limited, a foreign exchange crisis or devaluation could be the end result. For a currency in very high and rising demand, foreign exchange reserves can theoretically be continuously accumulated, although eventually the increased domestic money supply will result in inflation and reduce the demand for the domestic currency (as its value relative to goods and services falls). In practice, some central banks, through open market operations aimed at preventing their currency from appreciating, can at the same time build substantial reserves.

In practice, few central banks or currency regimes operate on such a simplistic level, and numerous other factors (domestic demand, production and productivity, imports and exports, relative prices of goods and services, etc.) will affect the eventual outcome. As certain impacts (such as inflation) can take many months or even years to become evident, changes in foreign reserves and currency values in the short term may be quite large as different markets react to imperfect data.

**Costs, benefits, and criticisms**

Large reserves of foreign currency allow a government to manipulate exchange rates usually to stabilize the foreign exchange rates to provide a more favorable economic environment. In theory the manipulation of foreign currency exchange rates can provide the stability that a gold standard provides, but in practice this has not been the case. Also, the greater a country's foreign reserves, the better position it is in to defend itself from speculative attacks on the domestic currency.
There are costs in maintaining large currency reserves. Fluctuations in exchange markets result in gains and losses in the purchasing power of reserves. In addition to fluctuations in exchange rates, the purchasing power of fiat money decreases constantly due to devaluation through inflation. Therefore, a central bank must continually increase the amount of its reserves to maintain the same power to manipulate exchange rates. Reserves of foreign currency provide a small return in interest. However, this may be less than the reduction in purchasing power of that currency over the same period of time due to inflation, effectively resulting in a negative return known as the "quasi-fiscal cost". In addition, large currency reserves could have been invested in higher yielding assets.

**Excess reserves**

Foreign exchange reserves are important indicators of ability to repay foreign debt and for currency defense, and are used to determine credit ratings of nations, however, other government funds that are counted as liquid assets that can be applied to liabilities in times of crisis include stabilization funds, otherwise known as sovereign wealth funds. If those were included, Norway, Singapore and Persian Gulf States would rank higher on these lists, and United Arab Emirates' estimated $627 billion Abu Dhabi Investment Authority would be second after China. Apart from high foreign exchange reserves, Singapore also has significant government and sovereign wealth funds including Temasek Holdings, valued in excess of $145 billion and Government of Singapore Investment Corporation, valued in excess of $330 billion. India is also planning to create its own investment firm from its foreign exchange reserves.

On May 2011, an estimated that Asia has $3.5 trillion of foreign reserves or is around two-thirds of the world's reserves and a stark contrast to the indebtedness in many developed Western economies.

These few holders account for more than 60% of total world foreign currency reserves. The adequacy of the foreign exchange reserves is more often expressed not as an absolute level, but as a percentage of short-term foreign debt, money supply, or average monthly imports.
3.7: GROSS DOMESTIC PRODUCT

**Gross domestic product (GDP)** is the market value of all officially recognized final goods and services produced within a country in a given period of time. GDP per capita is often considered an indicator of a country's standard of living; GDP per capita is not a measure of personal income. Under economic theory, GDP per capita exactly equals the gross domestic income (GDI) per capita. GDP is related to national accounts, a subject in macroeconomics. GDP is not to be confused with gross national product (GNP) which allocates production based on ownership.

**History**

GDP was first developed by Simon Kuznets for a US Congress report in 1934. In this report, Kuznets warned against its use as a measure of welfare. After the Bretton Woods conference in 1944, GDP became the main tool for measuring a country's economy.

**Determining GDP**

GDP can be determined in three ways, all of which should, in principle, give the same result. They are the product (or output) approach, the income approach, and the expenditure approach.

The most direct of the three is the product approach, which sums the outputs of every class of enterprise to arrive at the total. The expenditure approach works on the principle that all of the product must be bought by somebody, therefore the value of the total product must be equal to people's total expenditures in buying things. The income approach works on the principle that the incomes of the productive factors ("producers," colloquially) must be equal to the value of their product, and determines GDP by finding the sum of all producers' incomes.

**THE EXPENDITURE METHOD:**

GDP = private consumption + gross investment + government spending + (exports − imports), or

\[ GDP = C + I + G + (X - M) \]
Note: "Gross" means that GDP measures production regardless of the various uses to which that production can be put. Production can be used for immediate consumption, for investment in new fixed assets or inventories, or for replacing depreciated fixed assets. "Domestic" means that GDP measures production that takes place within the country's borders. In the expenditure-method equation given above, the exports-minus-imports term is necessary in order to null out expenditures on things not produced in the country (imports) and add in things produced but not sold in the country (exports).

Production approach

"Market value of all final goods and services calculated during 1 year."

Symbolically,


Value of Output = Value of the total sales of goods and services + Value of changes in the inventories.

The sum of Net Value Added in various economic activities is known as GDP at factor cost.

GDP at factor cost plus indirect taxes less subsidies on products is GDP at Producer Price.

For measuring gross output of domestic product, economic activities (i.e. industries) are classified into various sectors. After classifying economic activities, the gross output of each sector is calculated by any of the following two methods:

1. By multiplying the output of each sector by their respective market price and adding them together and

2. By collecting data on gross sales and inventories from the records of companies and adding them together

Subtracting each sector's intermediate consumption from gross output, we get sectoral Gross Value Added (GVA) at factor cost. We, then add gross value of all
sectors to get **GDP at factor cost**. Adding indirect tax minus subsidies in GDP at factor cost, we get **GDP at Producer Prices**.

**Income approach**

"Sum total of incomes of individuals living in a country during 1 year."

\[
\text{GDP} = \text{compensation of employees} + \text{gross operating surplus} + \text{gross mixed income} + \text{taxes less subsidies on production and imports}
\]

\[
\text{GDP} = \text{COE} + \text{GOS} + \text{GMI} + \text{T}\_\text{P} & \text{M} - \text{S}\_\text{P} & \text{M}
\]

- **Compensation of employees** (COE) measures the total remuneration to employees for work done. It includes wages and salaries, as well as employer contributions to social security and other such programs.

- **Gross operating surplus** (GOS) is the surplus due to owners of incorporated businesses. Often called profits, although only a subset of total costs are subtracted from gross output to calculate GOS.

- **Gross mixed income** (GMI) is the same measure as GOS, but for unincorporated businesses. This often includes most small businesses.

The sum of COE, GOS and GMI is called total factor income; it is the income of all of the factors of production in society. It measures the value of GDP at factor (basic) prices. The difference between basic prices and final prices (those used in the expenditure calculation) is the total taxes and subsidies that the government has levied or paid on that production. So adding taxes less subsidies on production and imports converts GDP at factor cost to GDP(I).

Total factor income is also sometimes expressed as:

\[
\text{Total factor income} = \text{Employee compensation} + \text{Corporate profits} + \text{Proprietor's income} + \text{Rental income} + \text{Net interest}.
\]

Yet another formula for GDP by the income method is:

\[
GDP = R + I + P + SA + W
\]
where

R : rents
I : interests
P : profits
SA : statistical adjustments (corporate income taxes, dividends, undistributed corporate profits)
W : wages

Expenditure approach

"All expenditure incurred by individuals during 1 year."

GDP (Y) is a sum of Consumption (C), Investment (I), Government Spending (G) and Net Exports (X − M).

\[ Y = C + I + G + (X − M) \]

Here is a description of each GDP component:

- **C (consumption)** is normally the largest GDP component in the economy, consisting of private (household final consumption expenditure) in the economy. These personal expenditures fall under one of the following categories: durable goods, non-durable goods, and services. Examples include food, rent, jewelry, gasoline, and medical expenses but does not include the purchase of new housing.

- **I (investment)** includes, for instance, business investment in equipment, but does not include exchanges of existing assets. Examples include construction of a new mine, purchase of software, or purchase of machinery and equipment for a factory. Spending by households (not government) on new houses is also included in Investment. In contrast to its colloquial meaning, 'Investment' in GDP does not mean purchases of financial products. Buying financial products is classed as 'saving', as opposed to investment. This avoids double-counting: if one buys shares in a company, and the company uses the money received to buy plant, equipment, etc., the amount will be counted toward GDP when the company spends the money on those things; to also count it
when one gives it to the company would be to count two times an amount that only corresponds to one group of products. Buying bonds or stocks is a swapping of deeds, a transfer of claims on future production, not directly an expenditure on products.

- **G (government spending)** is the sum of government expenditures on final goods and services. It includes salaries of public servants, purchase of weapons for the military, and any investment expenditure by a government. It does not include any transfer payments, such as social security or unemployment benefits.

- **X (exports)** represents gross exports. GDP captures the amount a country produces, including goods and services produced for other nations' consumption, therefore exports are added.

- **M (imports)** represents gross imports. Imports are subtracted since imported goods will be included in the terms G, I, or C, and must be deducted to avoid counting foreign supply as domestic.

A fully equivalent definition is that GDP (Y) is the sum of final consumption expenditure (FCE), gross capital formation (GCF), and net exports (X – M).

\[ Y = FCE + GCF + (X - M) \]

**National measurement**

Within each country GDP is normally measured by a national government statistical agency, as private sector organizations normally do not have access to the information required (especially information on expenditure and production by governments).

The changes in living standards are readily detected through changes in GDP.

**Limitations and Criticisms**

The GDP framework cannot tell us whether final goods and services that were produced during a particular period of time are a reflection of real wealth expansion, or a reflection of capital consumption. For instance, if a government embarks on the building of a pyramid, which adds absolutely nothing to the well-being of individuals,
the GDP framework will regard this as economic growth. In reality, however, the building of the pyramid will divert real funding from wealth-generating activities, thereby stifling the production of wealth. So what are we to make out of the periodical pronouncements that the economy, as depicted by real GDP, grew by a particular percentage? All we can say is that this percentage has nothing to do with real economic growth and that it most likely mirrors the pace of monetary pumping. We can thus conclude that the GDP framework is an empty abstraction devoid of any link to the real world. Many environmentalists argue that GDP is a poor measure of social progress because it does not take into account harm to the environment.

3.8: INDEX OF INDUSTRIAL PRODUCTION

Index of Industrial Production (IIP) in simplest terms is an index which details out the growth of various sectors in an economy. In India IIP will focus on sectors like mining, electricity and manufacturing. Also base year needs to be decided on the basis of which all the index figures would be arrived at. In case of India the base year has been fixed at 1993-94 hence the same would be equivalent to 100 Points but now it changed its based year to 2004-2005.

Index of Industrial Production (IIP) is an abstract number, the magnitude of which represents the status of production in the industrial sector for a given period of time as compared to a reference period of time.

The all India IIP is a composite indicator that measures the short-term changes in the volume of production of a basket of industrial products during a given period with respect to that in a chosen base period. It is compiled and published monthly by the Central Statistics Office (CSO) with the time lag of six weeks from the reference month.

The beginning

In India, the first official attempt to compute the IIP was made much earlier than even the recommendations on the subject at the international level. The Office of the Economic Advisor, Ministry of Commerce and Industry made the first attempt of compilation and release of IIP with base year 1937, covering 15 important industries, accounting for more than 90% of the total production of the selected industries. The all-India IIP is being released as a monthly series since 1950. With the inception of
the Central Statistical Organization in 1951, the responsibility for compilation and publication of IIP was vested with this office.

**Successive Revisions**

As the structure of the industrial sector changes over time, it became necessary to revise the base year of the IIP periodically to capture the changing composition of industrial production and emergence of new products and services so as to measure the real growth of industrial sector (UNSO recommends quinquennial revision of the base year of IIP). After 1937, the successive revised base years were 1946, 1951, 1956, 1960, 1970, 1980–81 and 1993-94. Initially it was covering 15 industries comprising three broad categories: mining, manufacturing and electricity. The scope of the index was restricted to mining and manufacturing sectors consisting of 20 industries with 35 items, when the base year was shifted to 1946 by Economic Adviser, Ministry of Commerce & Industry and it was called Interim Index of Industrial Production. This index was discontinued in April 1956 due to certain shortcomings and was replaced by the revised index with 1951 as the base year covering 88 items, broadly categorised as mining & quarrying (2), manufacturing (17) and electricity (1) compiled by CSO. The items in this index were classified according to the International Standard Industrial Classification (ISIC) 1948 of all economic activities.

The index was further revised in July 1962 to the base year 1956 as per the recommendations of a working group constituted by the CSO for the purpose and it had covered 201 items, classified according to the Standard Industrial and Occupational Classification of All Economic Activities published by the CSO in 1962. The index with 1960 as the base year was based on regular monthly series for 312 items and annual series for 436 items. Hence, though the published index was based on regular monthly series for 312 items, weights had been assigned for 436 items with a view to using the same set of weights for the regular monthly index as well as the annual index covering the additional items. However, the mineral index prepared by the IBM excluded gold, salt, petroleum and natural gas.

The next revised series of index numbers with 1970 as the base year, had taken into account of the structural changes occurred in industrial activity of the
country since 1960 and this index was released in March 1975 covering 352 items comprising mining (61), manufacturing (290) and electricity (1). The working group (set up in 1978) under the Chairmanship of the then Director General of CSO, decided to shift the base to 1980-81, to reflect the changes that had taken place in the industrial structure and to accommodate the items from small-scale sector.

A notable feature of the revised 1980 index number series was the inclusion of 18 items from the SSI sector, for which the office of the Development Commissioner of Small-Scale Industries (DCSSI) could ensure regular supply of data. The production data for the small-scale sector were included only from the month of July 1984 onwards; prior to this the production data from the directorate general of technical development (DGTD) for large and medium industries alone had been utilised. For the period April 1981 to June 1984 in respect of these 18 items, average base year (1980–81) production as obtained from DGTD was utilized. From July 1984 onwards, combined average base year production both for DGTD and DCSSI products was utilised. The weights for these items were based on ASI 1980-1981 results and no separate weights for DGTD and DCSSI items were allocated in the 1980-81 series.

The next revision of IIP with 1993-94 as the base year containing 543 items (with the addition of 3 items for mining sector and 188 for the manufacturing sector) has come into existence on 27 May 1998 and ever since, the quick estimates of IIP are being released as per the norms set out for the IMF’s SDDS2, with a time lag of six weeks from the reference month. These quick estimates for a given month are revised twice in the subsequent months. To retain the distinctive character and enable the collection of data, the source agencies proposed clubbing of 478 items of the manufacturing sector into 285 item groups and thus making a total of 287 item groups together with one each of electricity and mining & quarrying. The revised series has followed the National Industrial Classification NIC-1987. Another important feature of the latest series is the inclusion of unorganised manufacturing sector (That is, the same 18 SSI products) along with organised sector for the first time in the weighting diagram.

Recent revision of IIP released by CSO with 2004-05 as the base year comprises 682 items. As per chief statistician T C A Anant, this index shall give a better picture of growth in various sectors of the economy, because it is broader and
includes technologically advanced goods such as cell phones and ipods. The previous base year (1993-94) was not usable as the list contained an array of outdated items such as typewriters and tape recorders.

Weighted Arithmetic Mean of quantity relatives with weights being allotted to various items in proportion to value added by manufacture in the base year by using Laspeyre's formula:

\[ I = \frac{\sum (W_i R_i)}{\sum W_i}. \]

Where \( I \) is the index, \( R_i \) is the production relative of the \( i \)th item for the month in question and \( W_i \) is the weight allotted to it.

**3.9: INFLATION**

In economics, **inflation** is a rise in the general level of prices of goods and services in an economy over a period of time. When the general price level rises, each unit of currency buys fewer goods and services. Consequently, inflation also reflects an erosion in the purchasing power of money – a loss of real value in the internal medium of exchange and unit of account in the economy. A chief measure of price inflation is the inflation rate, the annualized percentage change in a general price index (normally the Consumer Price Index) over time.

Inflation's effects on an economy are various and can be simultaneously positive and negative. Negative effects of inflation include an increase in the opportunity cost of holding money, uncertainty over future inflation which may discourage investment and savings, and if inflation is rapid enough, shortages of goods as consumers begin hoarding out of concern that prices will increase in the future. Positive effects include ensuring that central banks can adjust real interest rates (intended to mitigate recessions), and encouraging investment in non-monetary capital projects.

Economists generally agree that high rates of inflation and hyperinflation are caused by an excessive growth of the money supply. Views on which factors determine low to moderate rates of inflation are more varied. Low or moderate inflation may be attributed to fluctuations in real demand for goods and services, or
changes in available supplies such as during scarcities, as well as to growth in the money supply. However, the consensus view is that a long sustained period of inflation is caused by money supply growing faster than the rate of economic growth.

Today, most economists favor a low and steady rate of inflation. Low (as opposed to zero or negative) inflation reduces the severity of economic recessions by enabling the labor market to adjust more quickly in a downturn, and reduces the risk that a liquidity trap prevents monetary policy from stabilizing the economy. The task of keeping the rate of inflation low and stable is usually given to monetary authorities. Generally, these monetary authorities are the central banks that control monetary policy through the setting of interest rates, through open market operations, and through the setting of banking reserve requirements.

Effects

General

An increase in the general level of prices implies a decrease in the purchasing power of the currency. That is, when the general level of prices rises, each monetary unit buys fewer goods and services. The effect of inflation is not distributed evenly in the economy, and as a consequence there are hidden costs to some and benefits to others from this decrease in the purchasing power of money. For example, with inflation, lenders or depositors who are paid a fixed rate of interest on loans or deposits will lose purchasing power from their interest earnings, while their borrowers benefit. Individuals or institutions with cash assets will experience a decline in the purchasing power of their holdings. Increases in payments to workers and pensioners often lag behind inflation, especially for those with fixed payments. Increases in the price level (inflation) erode the real value of money (the functional currency) and other items with an underlying monetary nature.

Debtors who have debts with a fixed nominal rate of interest will see a reduction in the "real" interest rate as the inflation rate rises. The real interest on a loan is the nominal rate minus the inflation rate. The formula $R = N - I$ approximates the correct answer as long as both the nominal interest rate and the inflation rate are small. The correct equation is $r = n - i$ where $r$, $n$ and $i$ are expressed as ratios (e.g. 1.2 for +20%, 0.8 for −20%). As an example, when the inflation rate is 3%, a loan with a
nominal interest rate of 5% would have a real interest rate of approximately 2%. Any unexpected increase in the inflation rate would decrease the real interest rate. Banks and other lenders adjust for this inflation risk either by including an inflation risk premium to fixed interest rate loans, or lending at an adjustable rate.

Negative

High or unpredictable inflation rates are regarded as harmful to an overall economy. They add inefficiencies in the market, and make it difficult for companies to budget or plan long-term. Inflation can act as a drag on productivity as companies are forced to shift resources away from products and services in order to focus on profit and losses from currency inflation. Uncertainty about the future purchasing power of money discourages investment and saving. And inflation can impose hidden tax increases, as inflated earnings push taxpayers into higher income tax rates unless the tax brackets are indexed to inflation.

With high inflation, purchasing power is redistributed from those on fixed nominal incomes, such as some pensioners whose pensions are not indexed to the price level, towards those with variable incomes whose earnings may better keep pace with the inflation. This redistribution of purchasing power will also occur between international trading partners. Where fixed exchange rates are imposed, higher inflation in one economy than another will cause the first economy's exports to become more expensive and affect the balance of trade. There can also be negative impacts to trade from an increased instability in currency exchange prices caused by unpredictable inflation.

Cost-push inflation

High inflation can prompt employees to demand rapid wage increases, to keep up with consumer prices. In the cost-push theory of inflation, rising wages in turn can help fuel inflation. In the case of collective bargaining, wage growth will be set as a function of inflationary expectations, which will be higher when inflation is high. This can cause a wage spiral. In a sense, inflation begets further inflationary expectations, which beget further inflation.
Hoardings

People buy durable and/or non-perishable commodities and other goods as stores of wealth, to avoid the losses expected from the declining purchasing power of money, creating shortages of the hoarded goods.

Social unrest and revolts

Inflation can lead to massive demonstrations and revolutions. For example, inflation and in particular food inflation is considered as one of the main reasons that caused the 2010–2011 Tunisian revolution and the 2011 Egyptian revolution, according to many observators including Robert Zoellick, president of the World Bank. Tunisian president Zine El Abidine Ben Ali was ousted, Egyptian President Hosni Mubarak was also ousted after only 18 days of demonstrations, and protests soon spread in many countries of North Africa and Middle East.

Hyperinflation

If inflation gets totally out of control (in the upward direction), it can grossly interfere with the normal workings of the economy, hurting its ability to supply goods. Hyperinflation can lead to the abandonment of the use of the country's currency, leading to the inefficiencies of barter.

Allocative efficiency

A change in the supply or demand for a good will normally cause its relative price to change, signaling to buyers and sellers that they should re-allocate resources in response to the new market conditions. But when prices are constantly changing due to inflation, price changes due to genuine relative price signals are difficult to distinguish from price changes due to general inflation, so agents are slow to respond to them. The result is a loss of allocative efficiency.

Shoe leather cost

High inflation increases the opportunity cost of holding cash balances and can induce people to hold a greater portion of their assets in interest paying accounts. However, since cash is still needed in order to carry out transactions this means that
more "trips to the bank" are necessary in order to make withdrawals, proverbially wearing out the "shoe leather" with each trip.

**Menu costs**

With high inflation, firms must change their prices often in order to keep up with economy-wide changes. But often changing prices is itself a costly activity whether explicitly, as with the need to print new menus, or implicitly.

**Business cycles**

According to the Austrian Business Cycle Theory, inflation sets off the business cycle. Austrian economists hold this to be the most damaging effect of inflation. According to Austrian theory, artificially low interest rates and the associated increase in the money supply lead to reckless, speculative borrowing, resulting in clusters of malinvestments, which eventually have to be liquidated as they become unsustainable.

**Positive Labor-market adjustments**

Nominal wages are slow to adjust downwards. This can lead to prolonged disequilibrium and high unemployment in the labor market. Since inflation allows real wages to fall even if nominal wages are kept constant, moderate inflation enables labor markets to reach equilibrium faster.

**Room to maneuver**

The primary tools for controlling the money supply are the ability to set the discount rate, the rate at which banks can borrow from the central bank, and open market operations, which are the central bank's interventions into the bonds market with the aim of affecting the nominal interest rate. If an economy finds itself in a recession with already low, or even zero, nominal interest rates, then the bank cannot cut these rates further (since negative nominal interest rates are impossible) in order to stimulate the economy – this situation is known as a liquidity trap. A moderate level of inflation tends to ensure that nominal interest rates stay sufficiently above zero so that if the need arises the bank can cut the nominal interest rate.
Mundell–Tobin effect

The Nobel laureate Robert Mundell noted that moderate inflation would induce savers to substitute lending for some money holding as a means to finance future spending. That substitution would cause market clearing real interest rates to fall. The lower real rate of interest would induce more borrowing to finance investment. In a similar vein, Nobel laureate James Tobin noted that such inflation would cause businesses to substitute investment in physical capital (plant, equipment, and inventories) for money balances in their asset portfolios. That substitution would mean choosing the making of investments with lower rates of real return. (The rates of return are lower because the investments with higher rates of return were already being made before.) The two related effects are known as the Mundell–Tobin effect. Unless the economy is already overinvesting according to models of economic growth theory, that extra investment resulting from the effect would be seen as positive.

Instability with Deflation

Economist S.C. Tsaing noted that once substantial deflation is expected, two important effects will appear; both a result of money holding substituting for lending as a vehicle for saving. The first was that continually falling prices and the resulting incentive to hoard money will cause instability resulting from the likely increasing fear, while money hoards grow in value, that the value of those hoards are at risk, as people realize that a movement to trade those money hoards for real goods and assets will quickly drive those prices up. Any movement to spend those hoards "once started would become a tremendous avalanche, which could rampage for a long time before it would spend itself." Thus, a regime of long-term deflation is likely to be interrupted by periodic spikes of rapid inflation and consequent real economic disruptions. Moderate and stable inflation would avoid such a seesawing of price movements.

Financial Market Inefficiency with Deflation

The second effect noted by Tsaing is that when savers have substituted money holding for lending on financial markets, the role of those markets in channeling savings into investment is undermined. With nominal interest rates driven to zero, or near zero, from the competition with a high return money asset, there would be no price mechanism in whatever is left of those markets. With financial markets
effectively euthanized, the remaining goods and physical asset prices would move in perverse directions. For example, an increased desire to save could not push interest rates further down (and thereby stimulate investment) but would instead cause additional money hoarding, driving consumer prices further down and making investment in consumer goods production thereby less attractive. Moderate inflation, once its expectation is incorporated into nominal interest rates, would give those interest rates room to go both up and down in response to shifting investment opportunities, or savers' preferences, and thus allow financial markets to function in a more normal fashion.

Artificially low prices often cause rationing and shortages and discourage future investment, resulting in yet further shortages.

Inflation is a determinant in functioning of any economy. India is a country with a mixed economy model that comprises both capitalism and socialism hence the challenges faced are vital for its growth model. The recent rise in inflation has been found to consist of several political and economic crisis.

Issues

The challenges faced by a developing economy are many, especially when in context of the Monetary Policy with the Central Bank, the inflation and price stability phenomenon. There has been a universal argument these days when monetary policy is determined to be a key element in depicting and controlling inflation. The Central Bank works on the objective to control and have a stable price for commodities. A good environment of price stability happens to create saving mobilization and a sustained economic growth. The former Governor of RBI C. Rangarajan points out that there is a long-term tradeoff between output and inflation. He adds on that shortterm trade-off happens to only introduce uncertainty about the price level in future. There is an agreement that the central banks have aimed to introduce the target of price stability while an argument supports it for what that means in practice.

Money Supply and Inflation

The Quantitative Easing by the central banks with the effect of an increased money supply in an economy often helps to increase or moderate inflationary targets.
There is a puzzle formation between low-rate of inflation and a high growth of money supply. When the current rate of inflation is low, a high worth of money supply warrants the tightening of liquidity and an increased interest rate for a moderate aggregate demand and the avoidance of any potential problems. Further, in case of a low output a tightened monetary policy would affect the production in a much more severe manner. The supply shocks have known to play a dominant role in the regard of monetary policy. The bumper harvest in 1998-99 with a buffer yield in wheat, sugarcane, and pulses had led to an early supply condition further driving their prices from what were they in the last year. The increased import competition since 1991 with the trade liberalization in place have widely contributed to the reduced manufacturing competition with a cheaper agricultural raw materials and the fabric industry. These cost-saving driven technologies have often helped to drive a low-inflation rate. The normal growth cycles accompanied with the international price pressures has several times being characterized by domestic uncertainties.

**Global Trade**

Inflation in India generally occurs as a consequence of global traded commodities and the several efforts made by The Reserve Bank of India to weaken rupee against dollar. This has been regarded as the root cause of inflation crisis rather than the domestic inflation. When the US dollar has shrieked by a margin of 30%, RBI had made a massive injection of dollar in the economy make it highly liquid and this further triggered off inflation in non-traded goods. The RBI picture clearly portrays for subsidizing exports with a weak dollar-exchange rate. All these account for a dangerous inflationary policies being followed by the central bank of the country. Further, on account of cheap products being imported in the country which are made on a high technological and capital intensive techniques happen to either increase the price of domestic raw materials in the global market or are they forced to sell at a cheaper price, hence fetching heavy losses.

**Factors**

There are several factors which help to determine the inflationary impact in the country and further help in making a comparative analysis of the policies for the same. The major determinant of the inflation in regard to the employment generation and growth is depicted by the Phillips curve.
Demand Factors

It basically occurs in a situation when the aggregate demand in the economy has exceeded the aggregate supply. It could further be described as a situation where too much money chases just few goods. A country has a capacity of producing just 550 units of a commodity but the actual demand in the country is 700 units. Hence, as a result of which due to scarcity in demand the prices of the commodity rises. This has generally been seen in India in context with the agrarian society where due to droughts and floods or inadequate methods for the storage of grains leads to lesser or deteriorated output hence increasing the prices for the commodities as the demand remains the same.

Supply Factors

The supply side inflation is a key ingredient for the rising inflation in India. The agricultural scarcity or the damage in transit creates a scarcity causing high inflationary pressures. Similarly, the high cost of labor eventually increases the production cost and leads to a high price for the commodity. The energies issues regarding the cost of production often increases the value of the final output produced. These supply driven factors have basically have a fiscal tool for regulation and moderation. Further, the global level impacts of price rise often impacts inflation from the supply side of the economy.

Domestic Factors

The underdeveloped economies like India have generally a lesser developed financial market which creates a weak bonding between the interest rates and the aggregate demand. This accounts for the real money gap that could be determined as the potential determinant for the price rise and inflation in India. There is a gap in India for both the output and the real money gap. The supply of money grows rapidly while the supply of goods takes due time which causes increased inflation. Similarly Hoarding has been a problem of major concern in India where onions prices have shot high in the sky. There are several other stances for the gold and silver commodities and their price hike.
External Factors

The exchange rate determination is an important component for the inflationary pressures that arises in the India. The liberal economic perspective in India affects the domestic markets. As the prices in United States of America rises it impacts India where the commodities are now imported at a higher price impacting the price rise. Hence, the nominal exchange rate and the import inflation are a measures that depict the competitiveness and challenges for the economy.

3.10: EXCHANGE RATE

In finance, an exchange rate (also known as the foreign-exchange rate, forex rate or FX rate) between two currencies is the rate at which one currency will be exchanged for another. It is also regarded as the value of one country’s currency in terms of another currency. For example, an interbank exchange rate of 91 Japanese yen (JPY, ¥) to the United States dollar (US$) means that ¥91 will be exchanged for each US$1 or that US$1 will be exchanged for each ¥91. Exchange rates are determined in the foreign exchange market, which is open to a wide range of different types of buyers and sellers where currency trading is continuous: 24 hours a day except weekends, i.e. trading from 20:15 GMT on Sunday until 22:00 GMT Friday. The spot exchange rate refers to the current exchange rate. The forward exchange rate refers to an exchange rate that is quoted and traded today but for delivery and payment on a specific future date.

In the retail currency exchange market, a different buying rate and selling rate will be quoted by money dealers. Most trades are to or from the local currency. The buying rate is the rate at which money dealers will buy foreign currency, and the selling rate is the rate at which they will sell the currency. The quoted rates will incorporate an allowance for a dealer's margin (or profit) in trading, or else the margin may be recovered in the form of a "commission" or in some other way. Different rates may also be quoted for cash (usually notes only), a documentary form (such as traveller's cheques) or electronically (such as a credit card purchase). The higher rate on documentary transactions is due to the additional time and cost of clearing the document, while the cash is available for resale immediately. Some dealers on the other hand prefer documentary transactions because of the security concerns with cash.
Fluctuations in exchange rates

A market-based exchange rate will change whenever the values of either of the two component currencies change. A currency will tend to become more valuable whenever demand for it is greater than the available supply. It will become less valuable whenever demand is less than available supply (this does not mean people no longer want money, it just means they prefer holding their wealth in some other form, possibly another currency).

Increased demand for a currency can be due to either an increased transaction demand for money or an increased speculative demand for money. The transaction demand is highly correlated to a country's level of business activity, gross domestic product (GDP), and employment levels. The more people that are unemployed, the less the public as a whole will spend on goods and services. Central banks typically have little difficulty adjusting the available money supply to accommodate changes in the demand for money due to business transactions.

Speculative demand is much harder for central banks to accommodate, which they influence by adjusting interest rates. A speculator may buy a currency if the return (that is the interest rate) is high enough. In general, the higher a country's interest rates, the greater will be the demand for that currency. It has been argued that such speculation can undermine real economic growth, in particular since large currency speculators may deliberately create downward pressure on a currency by shorting in order to force that central bank to buy their own currency to keep it stable. (When that happens, the speculator can buy the currency back after it depreciates, close out their position, and thereby take a profit.)

Purchasing power of currency

The "real exchange rate" (RER) is the purchasing power of a currency relative to another. It is based on the GDP deflator measurement of the price level in the domestic and foreign countries \( (P, P_f) \), which is arbitrarily set equal to 1 in a given base year. Therefore, the level of the RER is arbitrarily set depending on which year is chosen as the base year for the GDP deflator of two countries. The changes of the RER are instead informative on the evolution over time of the relative price of a unit of GDP in the foreign country in terms of GDP units of the domestic country. If all
goods were freely tradable, and foreign and domestic residents purchased identical baskets of goods, purchasing power parity (PPP) would hold for the GDP deflators of the two countries, and the RER would be constant and equal to one.

**Bilateral vs. effective exchange rate**

Example of GNP-weighted nominal exchange rate history of a basket of 6 important currencies (US Dollar, Euro, Japanese Yen, Chinese Renmenbi, Swiss Franks, Pound Sterling)

Bilateral exchange rate involves a currency pair, while an effective exchange rate is a weighted average of a basket of foreign currencies, and it can be viewed as an overall measure of the country's external competitiveness. A nominal effective exchange rate (NEER) is weighted with the inverse of the asymptotic trade weights. A real effective exchange rate (REER) adjusts NEER by appropriate foreign price level and deflates by the home country price level. Compared to NEER, a GDP weighted effective exchange rate might be more appropriate considering the global investment phenomenon.

**Uncovered interest rate parity**

Uncovered interest rate parity (UIRP) states that an appreciation or depreciation of one currency against another currency might be neutralized by a change in the interest rate differential. If US interest rates increase while Japanese interest rates remain unchanged then the US dollar should depreciate against the Japanese yen by an amount that prevents arbitrage (in reality the opposite, appreciation, quite frequently happens in the short-term, as explained below). The future exchange rate is reflected into the forward exchange rate stated today. In our example, the forward exchange rate of the dollar is said to be at a discount because it buys fewer Japanese yen in the forward rate than it does in the spot rate. The yen is said to be at a premium.

UIRP showed no proof of working after the 1990s. Contrary to the theory, currencies with high interest rates characteristically appreciated rather than depreciated on the reward of the containment of inflation and a higher-yielding currency.
Balance of payments model

This model holds that a foreign exchange rate must be at its equilibrium level - the rate which produces a stable current account balance. A nation with a trade deficit will experience reduction in its foreign exchange reserves, which ultimately lowers (depreciates) the value of its currency. The cheaper currency renders the nation's goods (exports) more affordable in the global market place while making imports more expensive. After an intermediate period, imports are forced down and exports rise, thus stabilizing the trade balance and the currency towards equilibrium.

Like PPP, the balance of payments model focuses largely on trade-able goods and services, ignoring the increasing role of global capital flows. In other words, money is not only chasing goods and services, but to a larger extent, financial assets such as stocks and bonds. Their flows go into the capital account item of the balance of payments, thus balancing the deficit in the current account. The increase in capital flows has given rise to the asset market model.

Asset market model

The expansion in trading of financial assets (stocks and bonds) has reshaped the way analysts and traders look at currencies. Economic variables such as economic growth, inflation and productivity are no longer the only drivers of currency movements. The proportion of foreign exchange transactions stemming from cross border-trading of financial assets has dwarfed the extent of currency transactions generated from trading in goods and services.

The asset market approach views currencies as asset prices traded in an efficient financial market. Consequently, currencies are increasingly demonstrating a strong correlation with other markets, particularly equities.

Like the stock exchange, money can be made (or lost) on the foreign exchange market by investors and speculators buying and selling at the right (or wrong) times. Currencies can be traded at spot and foreign exchange options markets. The spot market represents current exchange rates, whereas options are derivatives of exchange rates.
Manipulation of exchange rates

Countries may gain an advantage in international trade if they manipulate the value of their currency by artificially keeping its value low, typically by the national central bank engaging in open market operations. It is argued that the People's Republic of China has succeeded in doing this over a long period of time.

In 2010, other nations, including Japan and Brazil, attempted to devalue their currency in the hopes of subsidizing cheap exports and bolstering their ailing economies. A low exchange rate lowers the price of a country's goods for consumers in other countries but raises the price of goods, especially imported goods, for consumers in the manipulating country.

3.11: INTEREST RATE

An interest rate is the rate at which interest is paid by borrowers for the use of money that they borrow from a lender. Specifically, the interest rate (I/m) is a percent of principal (P) paid at some rate (m). For example, a small company borrows capital from a bank to buy new assets for its business, and in return the lender receives interest at a predetermined interest rate for deferring the use of funds and instead lending it to the borrower. Interest rates are normally expressed as a percentage of the principal for a period of one year.

Interest-rate targets are a vital tool of monetary policy and are taken into account when dealing with variables like investment, inflation, and unemployment. The central banks or reserve banks of countries generally tend to reduce interest rates when they wish to increase investment and consumption in the country's economy. However, a low interest rate as a macro-economic policy can be risky and may lead to the creation of an economic bubble, in which large amounts of investments are poured into the real-estate market and stock market. This happened in Japan in the late 1980s and early 1990s, resulting in the large unpaid debts to the Japanese banks and the bankruptcy of these banks and causing stagflation in the Japanese economy (Japan being the world's second largest economy at the time), with exports becoming the last pillar for the growth of the Japanese economy throughout the rest of 1990s and early 2000s. The same scenario resulted from the United States' lowering of interest rate since late 1990s to the present (see 2007–2012 global financial crisis) substantially by
the decision of the Federal Reserve System. Under Margaret Thatcher, the United Kingdom's economy maintained stable growth by not allowing the Bank of England to reduce interest rates. In developed economies, interest-rate adjustments are thus made to keep inflation within a target range for the health of economic activities or cap the interest rate concurrently with economic growth to safeguard economic momentum.

**Reasons for interest rate change**

- **Political short-term gain**: Lowering interest rates can give the economy a short-run boost. Under normal conditions, most economists think a cut in interest rates will only give a short term gain in economic activity that will soon be offset by inflation. The quick boost can influence elections. Most economists advocate independent central banks to limit the influence of politics on interest rates.

- **Deferred consumption**: When money is loaned the lender delays spending the money on consumption goods. Since according to time preference theory people prefer goods now to goods later, in a free market there will be a positive interest rate.

- **Inflationary expectations**: Most economies generally exhibit inflation, meaning a given amount of money buys fewer goods in the future than it will now. The borrower needs to compensate the lender for this.

- **Alternative investments**: The lender has a choice between using his money in different investments. If he chooses one, he forgoes the returns from all the others. Different investments effectively compete for funds.

- **Risks of investment**: There is always a risk that the borrower will go bankrupt, abscond, die, or otherwise default on the loan. This means that a lender generally charges a risk premium to ensure that, across his investments, he is compensated for those that fail.

- **Liquidity preference**: People prefer to have their resources available in a form that can immediately be exchanged, rather than a form that takes time or money to realize.
• **Taxes**: Because some of the gains from interest may be subject to taxes, the lender may insist on a higher rate to make up for this loss.

**Real vs nominal interest rates**

The **nominal interest rate** is the amount, in percentage terms, of interest payable. The **real interest rate**, which measures the purchasing power of interest receipts, is calculated by adjusting the nominal rate charged to take inflation into account. After the fact, the 'realized' real interest rate, which has actually occurred, is given by the Fisher equation, and is

$$ r = \frac{1 + i}{1 + p} - 1 $$

where $p$ = the actual inflation rate over the year. The linear approximation

$$ r \approx i - p $$

is widely used.

The expected real returns on an investment, before it is made, are:

$$ \hat{i}_p = \hat{i}_n - P_e $$

where:

$\hat{i}_p$ = real interest rate

$\hat{i}_n$ = nominal interest rate

$P_e$ = expected or projected inflation over the year

**Market interest rates**

There is a market for investments which ultimately includes the money market, bond market, stock market and currency market as well as retail financial institutions like banks.

Exactly how these markets function are sometimes complicated. However, economists generally agree that the interest rates yielded by any investment take into account:

• The risk-free cost of capital
Inflationary expectations

The level of risk in the investment

The costs of the transaction

This rate incorporates the deferred consumption and alternative investments elements of interest.

Inflationary expectations

According to the theory of rational expectations, people form an expectation of what will happen to inflation in the future. They then ensure that they offer or ask a nominal interest rate that means they have the appropriate real interest rate on their investment.

This is given by the formula:

\[ i_n = i_r + p_e \]

where:

\( i_n \) = Offered nominal interest rate

\( i_r \) = Desired real interest rate

\( p_e \) = Inflationary expectations

Risk

The level of risk in investments is taken into consideration. This is why very volatile investments like shares and junk bonds have higher returns than safer ones like government bonds.

The extra interest charged on a risky investment is the risk premium. The required risk premium is dependent on the risk preferences of the lender. Evidence suggests that most lenders are in fact risk-averse. Generally speaking a longer-term investment carries a maturity risk premium, because long-term loans are exposed to more risk of default during their duration.
Liquidity preference

Most investors prefer their money to be in cash than in less fungible investments. Cash is on hand to be spent immediately if the need arises, but some investments require time or effort to transfer into spendable form. This is known as liquidity preference.

A market interest-rate model

A basic interest rate pricing model for an asset

\[ i_n = i_r + p_e + rp + lp \]

Assuming perfect information, \( p_e \) is the same for all participants in the market, and this is identical to:

\[ i_{rg} = i^{*}_m + rp + lp \]

where

\( i_n \) is the nominal interest rate on a given investment

\( i_r \) is the risk-free return to capital

\( i^{*}_n \) = the nominal interest rate on a short-term risk-free liquid bond (such as U.S. Treasury Bills).

\( rp \) = a risk premium reflecting the length of the investment and the likelihood the borrower will default

\( lp \) = liquidity premium (reflecting the perceived difficulty of converting the asset into money and thus into goods).

Interest rate notations

What is commonly referred to as the interest rate in the media is generally the rate offered on overnight deposits by the Central Bank or other authority, annualized.

The total interest on an investment depends on the timescale the interest is calculated on, because interest paid may be compounded.
In finance, the effective interest rate is often derived from the yield, a composite measure which takes into account all payments of interest and capital from the investment.

In retail finance, the annual percentage rate and effective annual rate concepts have been introduced to help consumers easily compare different products with different payment structures.

**Interest rates in macroeconomics**

**Elasticity of substitution**

The elasticity of substitution (full name should be the marginal rate of substitution of the relative allocation) affects the real interest rate. The larger the magnitude of the elasticity of substitution, the more the exchange, and the lower the real interest rate.

**Output and unemployment**

Interest rates are the main determinant of investment on a macroeconomic scale. The current thought is that if interest rates increase across the board, then investment decreases, causing a fall in national income. However, the Austrian School of Economics sees higher rates as leading to greater investment in order to earn the interest to pay the depositors. Higher rates encourage more saving and thus more investment and thus more jobs to increase production to increase profits. Higher rates also discourage economically unproductive lending such as consumer credit and mortgage lending. Also consumer credit tends to be used by consumers to buy imported products whereas business loans tend to be domestic and lead to more domestic job creation [and/or capital investment in machinery] in order to increase production to earn more profit.

A government institution, usually a central bank, can lend money to financial institutions to influence their interest rates as the main tool of monetary policy. Usually central bank interest rates are lower than commercial interest rates since banks borrow money from the central bank then lend the money at a higher rate to generate most of their profit.
By altering interest rates, the government institution is able to affect the interest rates faced by everyone who wants to borrow money for economic investment. Investment can change rapidly in response to changes in interest rates and the total output.

**Money and inflation**

Loans, bonds, and shares have some of the characteristics of money and are included in the broad money supply. By setting \( i^* \), the government institution can affect the markets to alter the total of loans, bonds and shares issued. Generally speaking, a higher real interest rate reduces the broad money supply. Through the quantity theory of money, increases in the money supply lead to inflation.

**Impact on savings and pensions**

Financial economists such as World Pensions Council (WPC) researchers have argued that durably low interest rates in most G20 countries will have an adverse impact on the funding positions of pension funds as “without returns that outstrip inflation, pension investors face the real value of their savings declining rather than ratcheting up over the next few years.”

From 1982 until 2012, most Western economies experienced a period of low inflation combined with relatively high returns on investments across all asset classes including government bonds. This brought a certain sense of complacency amongst some pension actuarial consultants and regulators, making it seem reasonable to use optimistic economic assumptions to calculate the present value of future pension liabilities.

This potentially long-lasting collapse in returns on government bonds is taking place against the backdrop of a protracted fall in returns for other core-assets such as blue chip stocks, and, more importantly, a silent demographic shock. Factoring in the corresponding "longevity risk", pension premiums could be raised significantly while disposable incomes stagnate and employees work longer years before retiring.
Negative interest rates

A much more simplistic method to ultimately achieve negative interest rate and provide disincentive to holding cash would be for governments to encourage inflationary monetary policy.

3.12: TAX

A tax (from the Latin taxa; "I estimate") is a financial charge or other levy imposed upon a taxpayer (an individual or legal entity) by a state or the functional equivalent of a state such that failure to pay is punishable by law. Taxes are also imposed by many administrative divisions. Taxes consist of direct or indirect taxes and may be paid in money or as its labour equivalent.

According to Black's Law Dictionary, a tax is a "pecuniary burden laid upon individuals or property owners to support the government, a payment exacted by legislative authority." It "is not a voluntary payment or donation, but an enforced contribution, exacted pursuant to legislative authority" and is "any contribution imposed by government, whether under the name of toll, tribute, tallage, gabel, impost, duty, custom, excise, subsidy, aid, supply, or other name."

Tax rates

Taxes are most often levied as a percentage, called the tax rate. An important distinction when talking about tax rates is to distinguish between the marginal rate and the effective (average) rate. The effective rate is the total tax paid divided by the total amount the tax is paid on, while the marginal rate is the rate paid on the next dollar of income earned.

Purposes and effects

Money provided by taxation has been used by states and their functional equivalents throughout history to carry out many functions. Some of these include expenditures on war, the enforcement of law and public order, protection of property, economic infrastructure (roads, legal tender, enforcement of contracts, etc.), public works, social engineering, subsidies, and the operation of government itself. Governments also use taxes to fund welfare and public services. A portion of taxes
also go to pay off the state's debt and the interest this debt accumulates. These services can include education systems, health care systems, pensions for the elderly, unemployment benefits, and public transportation. Energy, water and waste management systems are also common public utilities. Colonial and modernizing states have also used cash taxes to draw or force reluctant subsistence producers into cash economies.

Governments use different kinds of taxes and vary the tax rates. This is done to distribute the tax burden among individuals or classes of the population involved in taxable activities, such as business, or to redistribute resources between individuals or classes in the population. Historically, the nobility were supported by taxes on the poor; modern social security systems are intended to support the poor, the disabled, or the retired by taxes on those who are still working. In addition, taxes are applied to fund foreign aid and military ventures, to influence the macroeconomic performance of the economy (the government's strategy for doing this is called its fiscal policy), or to modify patterns of consumption or employment within an economy, by making some classes of transaction more or less attractive.

A nation's tax system is often a reflection of its communal values or/and the values of those in power. To create a system of taxation, a nation must make choices regarding the distribution of the tax burden—who will pay taxes and how much they will pay—and how the taxes collected will be spent. In democratic nations where the public elects those in charge of establishing the tax system, these choices reflect the type of community that the public wishes to create. In countries where the public does not have a significant amount of influence over the system of taxation, that system may be more of a reflection on the values of those in power.

Some economists, especially neo-classical economists, argue that all taxation creates market distortion and results in economic inefficiency. They have therefore sought to identify the kind of tax system that would minimize this distortion.

Since governments also resolve commercial disputes, especially in countries with common law, similar arguments are sometimes used to justify a sales tax or value added tax. Others (e.g. libertarians) argue that most or all forms of taxes are immoral due to their involuntary (and therefore eventually coercive/violent) nature.
The most extreme anti-tax view is anarcho-capitalism, in which the provision of all social services should be voluntarily bought by the person(s) using them.

**Proportional, progressive, regressive, and lump-sum**

- A progressive tax is a tax imposed so that the effective tax rate increases as the amount to which the rate is applied increases.
- The opposite of a progressive tax is a regressive tax, where the effective tax rate decreases as the amount to which the rate is applied increases. This effect is commonly produced where means testing is used to withdraw tax allowances or state benefits.
- In between is a proportional tax, where the effective tax rate is fixed, while the amount to which the rate is applied increases.
- A lump-sum tax is a tax that is a fixed amount, no matter the change in circumstance of the taxed entity. This in actuality is a regressive tax as those with lower income must use higher percentage of their income than those with higher income and therefore the effect of the tax reduces as a function of income.

**Direct and indirect**

Taxes are sometimes referred to as "direct taxes" or "indirect taxes". The meaning of these terms can vary in different contexts, which can sometimes lead to confusion. An economic definition, by Atkinson, states that "...direct taxes may be adjusted to the individual characteristics of the taxpayer, whereas indirect taxes are levied on transactions irrespective of the circumstances of buyer or seller." According to this definition, for example, income tax is "direct", and sales tax is "indirect". In law, the terms may have different meanings. In U.S. constitutional law, for instance, direct taxes refer to poll taxes and property taxes, which are based on simple existence or ownership. Indirect taxes are imposed on events, rights, privileges, and activities. Thus, a tax on the sale of property would be considered an indirect tax, whereas the tax on simply owning the property itself would be a direct tax.
Kinds of taxes

Taxes on income

Income tax

Many jurisdictions tax the income of individuals and business entities, including corporations. Generally the tax is imposed on net profits from business, net gains, and other income.

Negative income tax

In economics, a negative income tax (abbreviated NIT) is a progressive income tax system where people earning below a certain amount receive supplemental pay from the government instead of paying taxes to the government.

Capital gains tax

Capital gain is generally gain on sale of capital assets.

Corporate tax

Corporate tax refers to income, capital, net worth, or other taxes imposed on corporations. Rates of tax and the taxable base for corporations may differ from those for individuals or other taxable persons.

Social security contributions

Many countries provide publicly funded retirement or health care systems. In connection with these systems, the country typically requires employers and/or employees to make compulsory payments. These payments are often computed by reference to wages or earnings from self-employment. Tax rates are generally fixed, but a different rate may be imposed on employers than on employees. Some systems provide an upper limit on earnings subject to the tax. A few systems provide that the tax is payable only on wages above a particular amount. Such upper or lower limits may apply for retirement but not health care components of the tax.
Taxes on payroll or workforce

Unemployment and similar taxes are often imposed on employers based on total payroll. These taxes may be imposed in both the country and sub-country levels.

Taxes on property

Recurrent [property taxes] may be imposed on immovable property (real property) and some classes of movable property. In addition, recurrent taxes may be imposed on net wealth of individuals or corporations. Many jurisdictions impose estate tax, gift tax or other inheritance taxes on property at death or gift transfer. Some jurisdictions impose taxes on financial or capital transactions.

Property tax

A property tax (or millage tax) is an ad valorem tax levy on the value of property that the owner of the property is required to pay to a government in which the property is situated.

Inheritance tax

Inheritance tax, estate tax, and death tax or duty are the names given to various taxes which arise on the death of an individual. In United States tax law, there is a distinction between an estate tax and an inheritance tax: the former taxes the personal representatives of the deceased, while the latter taxes the beneficiaries of the estate.

Expatriation tax

An Expatriation Tax is a tax on individuals who renounce their citizenship or residence. The tax is often imposed based on a deemed disposition of all the individual's property.

Transfer tax

Historically, in many countries, a contract needed to have a stamp (stamp duty) affixed to make it valid. The charge for the stamp was either a fixed amount or a percentage of the value of the transaction.
Wealth (net worth) tax

Some countries' governments will require declaration of the tax payers' balance sheet (assets and liabilities), and from that exact a tax on net worth (assets minus liabilities), as a percentage of the net worth, or a percentage of the net worth exceeding a certain level. The tax may be levied on "natural" or legal "persons".

Taxes on goods and services

Value added tax (Goods and Services Tax)

A value added tax (VAT), also known as Goods and Services Tax (G.S.T), Single Business Tax, or Turnover Tax in some countries, applies the equivalent of a sales tax to every operation that creates value.

Sales taxes

Sales taxes are levied when a commodity is sold to its final consumer.

Excises

Excise taxes are based on the quantity, not the value, of product purchased.

Tariff

An import or export tariff (also called customs duty or impost) is a charge for the movement of goods through a political border.

Economic effects

In economic terms, taxation transfers wealth from households or businesses to the government of a nation. The side-effects of taxation and theories about how best to tax are an important subject in microeconomics. Taxation is almost never a simple transfer of wealth. Economic theories of taxation approach the question of how to maximize economic welfare through taxation.

Tax incidence

Law establishes from whom a tax is collected. In many countries, taxes are imposed on business (such as corporate taxes or portions of payroll taxes). However, who
ultimately pays the tax (the tax "burden") is determined by the marketplace as taxes become embedded into production costs. Economic theory suggests that the economic effect of tax does not necessarily fall at the point where it is legally levied. The greatest share of the tax burden tends to fall on the most inelastic factor involved—the part of the transaction which is affected least by a change in price. So, for instance, a tax on wages in a town will (at least in the long run) affect property-owners in that area.

Depending on how quantities supplied and demanded vary with price (the "elasticities" of supply and demand), a tax can be absorbed by the seller (in the form of lower pre-tax prices), or by the buyer (in the form of higher post-tax prices). If the elasticity of supply is low, more of the tax will be paid by the supplier. If the elasticity of demand is low, more will be paid by the customer; and, contrariwise for the cases where those elasticities are high. If the seller is a competitive firm, the tax burden is distributed over the factors of production depending on the elasticities thereof; this includes workers (in the form of lower wages), capital investors (in the form of loss to shareholders), landowners (in the form of lower rents), entrepreneurs (in the form of lower wages of superintendence) and customers (in the form of higher prices).

**Increased economic welfare**

**Government spending**

The purpose of taxation is to provide for government spending without inflation. The provision of public goods such as roads and other infrastructure, schools, a social safety net, health care for the indigent, national defense, law enforcement, and a courts system increases the economic welfare of society.

**Pigovian taxes**

The existence of a tax can increase economic efficiency in some cases. If there is a negative externality associated with a good, meaning that it has negative effects not felt by the consumer, then a free market will trade too much of that good. By taxing the good, the government can increase overall welfare as well as raising revenue. This type of tax is called a Pigovian tax, after economist Arthur Pigou.
Possible Pigovian taxes include those on polluting fuels (like petrol), taxes on goods which incur public healthcare costs (such as alcohol or tobacco), and charges for existing 'free' public goods (like congestion charging) are another possibility.

**Reduced inequality**

Progressive taxation may reduce economic inequality. This effect occurs even when the tax revenue isn't redistributed.

**Reduced economic welfare**

Most taxes have side effects that reduce economic welfare, either by mandating unproductive labor (compliance costs) or by creating distortions to economic incentives (deadweight loss and perverse incentives).

**Cost of compliance**

Although governments must spend money on tax collection activities, some of the costs, particularly for keeping records and filling out forms, are borne by businesses and by private individuals. These are collectively called costs of compliance. More complex tax systems tend to have higher compliance costs. This fact can be used as the basis for practical or moral arguments in favor of tax simplification (such as the FairTax or OneTax, and some flat tax proposals).

**Deadweight costs of taxation**

**Perverse incentives**

Complexity of the tax code in developed economies offer perverse tax incentives. The more details of tax policy there are, the more opportunities for legal tax avoidance and illegal tax evasion. These not only result in lost revenue, but involve additional costs: for instance, payments made for tax advice are essentially deadweight costs because they add no wealth to the economy. Perverse incentives also occur because of non-taxable 'hidden' transactions;
Reduced production

If a tax is paid on outsourced services that is not also charged on services performed for oneself, then it may be cheaper to perform the services oneself than to pay someone else—even considering losses in economic efficiency.

Opposition to taxation

Because payment of tax is compulsory and enforced by the legal system, some political philosophies view taxation as theft (or as slavery, or as a violation of property rights), or tyranny, accusing the government of levying taxes via force and coercive means. Voluntaryists, individualist anarchists, objectivists, anarcho-capitalists, and libertarians see taxation as government aggression (see zero aggression principle). The view that democracy legitimizes taxation is rejected by those who argue that all forms of government, including laws chosen by democratic means, are fundamentally oppressive. According to Ludwig von Mises, "society as a whole" should not make such decisions, due to methodological individualism. Libertarian opponents of taxation claim that governmental protection, such as police and defense forces might be replaced by market alternatives such as private defense agencies, arbitration agencies or voluntary contributions. Walter E. Williams, professor of economics at George Mason University, stated "Government income redistribution programs produce the same result as theft. In fact, that's what a thief does; he redistributes income. The difference between government and thievery is mostly a matter of legality."

Taxation has also been opposed by communists and socialists. Karl Marx assumed that taxation would be unnecessary after the advent of communism and looked forward to the "withering away of the state". In socialist economies such as that of China, taxation played a minor role, since most government income was derived from the ownership of enterprises, and it was argued by some that monetary taxation was not necessary. While the morality of taxation is sometimes questioned, most arguments about taxation revolve around the degree and method of taxation and associated government spending, not taxation itself.
FOREIGN TRADE OF INDIA

Foreign trade in India includes all imports and exports to and from India. At the level of Central Government it is administered by the Ministry of Commerce and Industry.

History

There are records throughout history of India's trade with foreign countries.

Around 100CE

The Periplus of the Erythraean Sea is a document written by an anonymous sailor from Alexandria about 100CE describing trade between countries, including India. Among other things it says that at the time India exported cotton, ivory, mallow cloth, muslin, precious and semi-precious gems (agate, carnelian, diamond, oryx, pearls, sapphires, sardonyx), silk, spices, and curatives like black pepper, nard, spikenard, bdellium, long pepper, and malabathrum. The same document says that India was an importer of wines from Italy, Arabia, and Laodicea, copper, tin, lead, coral, topaz, storax, sweet clover, flint, glass, realgar, antimony, gold and silver coins, and performers for kings.

Around 1500

In 1498 Portuguese explorer Vasco da Gama landed in Calicut (modern day Kozhikode in Kerala as the first European to ever sail to India. The tremendous profit made during this trip made the Portuguese eager for more trade with India and attracted other European navigators and tradesmen.

Pedro Alvares Cabral left for India in 1500 and established Portuguese trading posts at Calicut and Cochin (modern day Kochi), returning to Portugal in 1501 with pepper, ginger, cinnamon, cardamom, nutmeg, mace, and cloves. The profits made from this trip were huge.

1991 economic reform

Prior to the 1991 economic liberalisation, India was a closed economy due to the average tariffs exceeding 200 percent and the extensive quantitative restrictions on
imports. Foreign investment was strictly restricted to only allow Indian ownership of businesses. Since the liberalisation, India's economy has improved mainly due to increased foreign trade.

3.13.A: IMPORT

An import is a good brought into a jurisdiction, especially across a national border, from an external source. The party bringing in the good is called an importer. An import in the receiving country is an export from the sending country. Importation and exportation are the defining financial transactions of international trade.

In international trade, the importation and exportation of goods are limited by import quotas and mandates from the customs authority. The importing and exporting jurisdictions may impose a tariff (tax) on the goods. In addition, the importation and exportation of goods are subject to trade agreements between the importing and exporting jurisdictions.

Definition

"Imports" consist of transactions in goods and services (sales, barter, gifts or grants) from non-residents to residents.

Balance of trade

Balance of trade represents a difference in value for import and export for a country. A country has demand for an import when domestic quantity demanded exceeds domestic quantity supplied, or when the price of the good (or service) on the world market is less than the price on the domestic market.

The balance of trade, usually denoted $NX$, is the difference between the value of the goods (and services) a country exports and the value of the goods the country imports:

$$NX = X - I,$$

or equivalently

$$I = X - NX$$

A trade deficit occurs when imports are large relative to exports. Imports are impacted principally by a country's income and its productive resources. For example, the US imports oil from Canada even though the US has oil and Canada uses oil.
However, consumers in the US are willing to pay more for the marginal barrel of oil than Canadian consumers are, because there is more oil demanded in the US than there is oil produced.

In macroeconomic theory, the value of imports $I$ can be modeled as a function of the domestic absorption $A$ and the real exchange rate $\sigma$. These are the two largest factors of imports and they both affect imports positively:

$$I = I(A, \sigma)$$

**Types of import**

There are two basic types of import:

1. Industrial and consumer goods
2. Intermediate goods and services

Companies import goods and services to supply to the domestic market at a cheaper price and better quality than competing goods manufactured in the domestic market. Companies import products that are not available in the local market.

There are three broad types of importers:

1. Looking for any product around the world to import and sell.
2. Looking for foreign sourcing to get their products at the cheapest price.
3. Using foreign sourcing as part of their global supply chain.

Direct-import refers to a type of business importation involving a major retailer (e.g. Wal-Mart) and an overseas manufacturer. A retailer typically purchases products designed by local companies that can be manufactured overseas. In a direct-import program, the retailer bypasses the local supplier (colloquial middle-man) and buys the final product directly from the manufacturer, possibly saving in added cost.

Data on the value of imports and their quantities often broken down by detailed lists of products are available in statistical collections on international trade published by the statistical services of intergovernmental organisations (e.g. UNSTAT, FAOSTAT, OECD), supranational statistical institutes (e.g. Eurostat) and national statistical institutes. Industrial and consumer goods.
3.13.B: Export

The term export means shipping the goods and services out of the port of a country. The seller of such goods and services is referred to as an "exporter" who is based in the country of export whereas the overseas based buyer is referred to as an "importer". In International Trade, "exports" refers to selling goods and services produced in the home country to other markets.

Export of commercial quantities of goods normally requires involvement of the customs authorities in both the country of export and the country of import. The advent of small trades over the internet such as through Amazon and eBay have largely bypassed the involvement of Customs in many countries because of the low individual values of these trades. Nonetheless, these small exports are still subject to legal restrictions applied by the country of export. An export's counterpart is an import.

Definition

"Foreign demand for goods produced by home country" In national accounts "exports" consist of transactions in goods and services (sales, barter, gifts or grants) from residents to non-residents.

History

The theory of international trade and commercial policy is one of the oldest branches of economic thought. Exporting is a major component of international trade, and the macroeconomic risks and benefits of exporting are regularly discussed and disputed by economists and others. Two views concerning international trade present different perspectives. The first recognizes the benefits of international trade. The second concerns itself with the possibly that certain domestic industries (or laborers, or culture) could be harmed by foreign competition.

Process

Methods of export include a product or good or information being mailed, hand-delivered, shipped by air, shipped by vessel, uploaded to an internet site, or downloaded from an internet site. Exports also include the distribution of information
that can be sent in the form of an email, an email attachment, a fax or can be shared during a telephone conversation.

**Barriers**

Trade barriers are generally defined as government laws, regulations, policy, or practices that either protect domestic products from foreign competition or artificially stimulate exports of particular domestic products. While restrictive business practices sometimes have a similar effect, they are not usually regarded as trade barriers. The most common foreign trade barriers are government-imposed measures and policies that restrict, prevent, or impede the international exchange of goods and services.

**Strategic**

International agreements limit trade in, and the transfer of, certain types of goods and information e.g. goods associated with weapons of mass destruction, advanced telecommunications, arms and torture, and also some art and archaeological artefacts. Examples include Nuclear Suppliers Group - limiting trade in nuclear weapons and associated goods (currently only 45 countries participate), The Australia Group - limiting trade in chemical & biological weapons and associated goods (currently only 39 countries), Missile Technology Control Regime - limiting trade in the means of delivering weapons of mass destruction (currently only 34 countries) and The Wassenaar Arrangement - limiting trade in conventional arms and technological developments (currently only 40 countries).

**Tariffs**

A tariff is a tax placed on a specific good or set of goods exported from or imported to a country, creating an economic barrier to trade. Usually the tactic is used when a country's domestic output of the good is falling and imports from foreign competitors are rising, particularly if there exist strategic reasons for retaining a domestic production capability.

Some failing industries receive a protection with an effect similar to a subsidies in that by placing the tariff on the industry, the industry is less enticed to produce goods in a quicker, cheaper, and more productive fashion. The third reason
for a tariff involves addressing the issue of dumping. Dumping involves a country producing highly excessive amounts of goods and dumping the goods on another foreign country, producing the effect of prices that are "too low". Too low can refer to either pricing the good from the foreign market at a price lower than charged in the domestic market of the country of origin. The other reference to dumping relates or refers to the producer selling the product at a price in which there is no profit or a loss. The purpose (and expected outcome) of the tariff is to encourage spending on domestic goods and services. Protective tariffs sometimes protect what are known as **infant industries** that are in the phase of expansive growth. A tariff is used temporarily to allow the industry to succeed in spite of strong competition. Protective tariffs are considered valid if the resources are more productive in their new use than they would be if the industry had not been started. The infant industry eventually must incorporate itself into a market without the protection of government subsidies. Tariffs can create tension between countries. Examples include the United States steel tariff of 2002 and when China placed a 14% tariff on imported auto parts. Such tariffs usually lead to filing a complaint with the World Trade Organization (WTO) and, if that fails, could eventually head toward the country placing a tariff against the other nation in spite, to impress pressure to remove the tariff.

**Subsidies**

To subsidize an industry or company refers to, in this instance, a governmental providing supplemental financial support to manipulate the price below market value. Subsidies are generally used for failing industries that need a boost in domestic spending. Subsidizing encourages greater demand for a good or service because of the slashed price. The effect of subsidies deters other countries that are able to produce a specific product or service at a faster, cheaper, and more productive rate. With the lowered price, these efficient producers cannot compete. The life of a subsidy is generally short-lived, but sometimes can be implemented on a more permanent basis. The agricultural industry is commonly subsidized, both in the United States, and in other countries including Japan and nations located in the European Union (EU). Critics argue such subsidies cost developing nations $24 billion annually in lost income according to a study by the International Food Policy Research Institute, a D.C. group funded partly by the World Bank. However, other nations are not the only economic 'losers'. Subsidies in the U.S. heavily depend upon taxpayer dollars. In
2000, the U.S. spent an all-time record $32.3 billion for the agricultural industry. The EU spends about $50 billion annually, nearly half its annual budget on its common agricultural policy and rural development.

**Exports and free trade**

The theory of comparative advantage materialized during the first quarter of the 19th century in the writings of 'classical economists'. While David Ricardo is most credited with the development of the theory (in Chapter 7 of his Principles of Political Economy, 1817), James Mill and Robert Torrens produced similar ideas. The theory states that all parties maximize benefit in an environment of unrestricted trade, even if absolute advantages in production exist between the parties. In contrast to Mercantilism, the first systematic body of thought devoted to international trade, emerged during the 17th and 18th centuries in Europe. While most views surfacing from this school of thought differed, a commonly argued key objective of trade was to promote a "favorable" balance of trade, referring to a time when the value of domestic goods exported exceeds the value of foreign goods imported. The "favorable" balance in turn created a balance of trade surplus. Mercantilists advocated that government policy directly arrange the flow of commerce to conform to their beliefs. They sought a highly interventionist agenda, using taxes on trade to manipulate the balance of trade or commodity composition of trade in favor of the home country.

**Export strategy**

**Export strategy** is to ship commodities to other places or countries for sale or exchange. In economics, an export is any good or commodity, transported from one country to another country in a legitimate fashion, typically for use in trade.

The four key pillars of a successful export strategy:

Internal 1: Export readiness assessment of a company (and gap analysis with recommendations how to address the change required).

Internal 2: Export readiness assessment of a product (including benchmarking with similar products that are currently successfully traded on target markets; technical characteristics; packaging and labelling).
External 3: Research of 220 countries and the World’s major trade channels to find target markets.

External 4: Develop export strategy to enter the selected above target markets (that will include such considerations like transport, partnership, key distribution channels, pricing, volumes, advertising, etc).

**Advantages of exporting**

Ownership advantages are the firm's specific assets, international experience and the ability to develop either low-cost or differentiated products within the contacts of its value chain. The locational advantages of a particular market are a combination of market potential and investment risk. Internationalization advantages are the benefits of retaining a core competence within the company and threading it though the value chain rather than obtain to license, outsource or sell it. In relation to the Eclectic paradigm, companies that have low levels of ownership advantages either do not enter foreign markets. If the company and its products are equipped with ownership advantage and internalization advantage, they enter through low-risk modes such as exporting. Exporting requires significantly lower level of investment than other modes of international expansion, such as FDI. As you might expect, the lower risk of export typically results in a lower rate of return on sales than possible though other modes of international business. In other words, the usual return on export sales may not be tremendous, but neither is the risk. Exporting allows managers to exercise operation control but does not provide them the option to exercise as much marketing control. An exporter usually resides far from the end consumer and often enlists various intermediaries to manage marketing activities. After two straight months of contraction, exports from India rose a whopping 11.64% at $25.83 billion in July 2013 against $23.14 billion in the same month of the previous year.

**Disadvantages of exporting**

For Small-and-Medium Enterprises (SME) with less than 250 employees, selling goods and services to foreign markets seems to be more difficult than serving the domestic market. The lack of knowledge for trade regulations, cultural differences, different languages and foreign-exchange situations as well as the strain
of resources and staff interact like a block for exporting. Indeed there are some SME’s which are exporting, but nearly two-third of them sell in only to one foreign market. The following assumption shows the main disadvantages:

- Financial management effort: To minimize the risk of exchange-rate fluctuation and transactions processes of export activity the financial management needs more capacity to cope the major effort.

- Customer demand: International customers demand more services from their vendor like installation and startup of equipment, maintenance or more delivery services.

- Communication technologies improvement: The improvement of communication technologies in recent years enable the customer to interact with more suppliers while receiving more information and cheaper communications cost at the same time like 20 years ago. This leads to more transparency. The vendor is in duty to follow the real-time demand and to submit all transaction details.

- Management mistakes: The management might tap in some of the organizational pitfalls, like poor selection of oversea agents or distributors or chaotic global organization.

**Ways of exporting**

The company can decide to export directly or indirectly to a foreign country.

**Direct selling in export strategy**

Direct selling involves sales representatives, distributors, or retailers who are located outside the exporter’s home country. Direct exports are goods and services that are sold to an independent party outside of the exporter’s home country. Mainly the companies are pushed by core competencies and improving their performance of value chain.

**Direct selling through distributors**

It is considered to be the most popular option to companies, to develop their own international marketing capability. This is achieved by charging personnel from
the company to give them greater control over their operations. Direct selling also give the company greater control over the marketing function and the opportunity to earn more profits.

**Direct selling through foreign retailers and end users**

Exporters can also sell directly to foreign retailers. Usually, products are limited to consumer lines; it can also sell to direct end users. A good way to generate such sales is by printing catalogs or attending trade shows.

**Direct selling over the Internet**

Electronic commerce is an important mean to small and big companies all over the world, to trade internationally. We already can see how important E-commerce is for marketing growth among exporters companies in emerging economies, in order to overcome capital and infrastructure barriers.

E-commerce eased engagements, provided faster and cheaper delivery of information, generates quick feedback on new products, improves customer service, accesses a global audience, levels the field of companies, and support electronics data interchange with suppliers and customers.

**Indirect selling**

Indirect exports, is simply selling goods to or through an independent domestic intermediary in their own home county. Then intermediaries export the products to customers foreign markets.

**3.14: STOCK MARKET CRASHES ENCOUNTERED DURING THE PERIOD OF STUDY**:

The period of the study is from 1993/94 to 2014/15 which takes the actual data into consideration during the period of study twelve Stock Market crashes have took place they are

1. 2 July 1997 Asian Financial Crisis where investors deserted emerging Asian shares, including an overheated Hong Kong Stock Market. Crashes occurred in
Thailand, Indonesia, South Korea & Philippines and elsewhere reaching a climax in October 27, 1997 mini crash.

2. 27 October 1997 mini crash, due to Global Stock Market Crash that was caused by an economic crisis in Asia.

3. 17 August 1998 Russian Financial Crisis-The Russian Government devalues the Rubles, defaults on domestic debt and declares a moratorium on payment to foreign creditors.

4. 10 March 2000 Dot com Bubbles due to collapse of a technology bubbles in United States.

5. 11 September 2001 Economic effect arising from the September 11 attack caused global stock market to drop sharply. The attacks themselves caused approximately $40 billion in insurance losses, making it one of the largest insured events ever.

6. 9 October 2002 Stock Market downturn in stock prices during 2002 in stock exchange across the United States, Canada, Asia, and Europe.

7. 27 February 2007 Chinese Stock bubble of 2007. The SSE Composite Index of the Shanghai Stock Exchange tumble 9% from unexpected selloffs, the largest drop in 10 years triggering major drops in Worldwide Stock Markets.

8. 11 October 2007 United States bear market of 2007 till June 2009, the Dow Jones Industrial Average, Nasdaq Composite and S&P 500 all experienced declines of greater than 20% from their peaks in late 2007.

9. 16 September 2008 Financial Crisis 2007-08 failures of large financial institutions in the United States, due primarily to exposure of securities of packaged subprime loans and credit default swaps issued to insure these loans and their issuers, rapidly devolved into a global crisis resulting in a number of bank failures in Europe and sharp reductions in the value of equities (stock) and commodities worldwide. The failure of banks in Iceland resulted in a devaluation of the Icelandic krona and threatened the government with bankruptcy. Iceland was able to secure an emergency loan from the IMF in
November. Later on, U.S. President George W. Bush signs the Emergency Economic Stabilization Act into law, creating a Troubled Asset Relief Program (TARP) to purchase failing bank assets.

10. 27 November 2009 Dubai debt standstill United Arab Emirates Dubai requests a debt deferment following its massive renovation and development projects, as well as the Great Recession. The announcement causes global stock markets to drop.

11. 6 May 2010 Flash Crash United States The Dow Jones Industrial Average suffers its worst intra-day point loss, dropping nearly 1,000 points before partially recovering.

12. 1 August 2011 Stock Market fall- The Stock markets around the world plummet during late July and early August, and are volatile for the rest of the year.

3.15: VARIOUS MODEL OF STOCK VALUATION

In order to beat the market by large margins, you need to know how much a stock is worth. The Stock Valuation Model will calculate the value of a stock enabling you to know when to buy and sell a stock. The Stock Valuation Model incorporates the teachings of the master investors like Warren Buffet, Philip Fisher, Peter Lynch, Benjamin Graham, Charlie Munger and others.

Stock Valuation Models

The Valuation Tool consists of two Stock Valuation Models:

• DCF Stock Valuation Model

• PE Valuation Model

DCF Stock Valuation Model

The most theoretically sound stock valuation method, called income valuation or the discounted cash flow (DCF) method, involves discounting of the profits (dividends, earnings, or cash flows) the stock will bring to the stockholder in the foreseeable future, and a final value on disposition. The discounted rate normally includes a risk premium which is commonly based on the capital asset pricing model.
Approximate valuation approaches

Average growth approximation: Assuming that two stocks have the same earnings growth, the one with a lower P/E is a better value. The P/E method is perhaps the most commonly used valuation method in the stock brokerage industry. By using comparison firms, a target price/earnings (or P/E) ratio is selected for the company, and then the future earnings of the company are estimated. The valuation's fair price is simply estimated earnings times target P/E. This model is essentially the same model as Gordon's model, if k-g is estimated as the dividend payout ratio (D/E) divided by the target P/E ratio. Constant growth approximation: The Gordon model or Gordon's growth model is the best known of a class of discounted dividend models. It assumes that dividends will increase at a constant growth rate (less than the discount rate) forever.

Limited high-growth period approximation:

When a stock has a significantly higher growth rate than its peers, it is sometimes assumed that the earnings growth rate will be sustained for a short time (say, 5 years), and then the growth rate will revert to the mean. This is probably the most rigorous approximation that is practical. While these DCF models are commonly used, the uncertainty in these values is hardly ever discussed. Note that the models diverge for and hence are extremely sensitive to the difference of dividend growth to discount factor. One might argue that an analyst can justify any value (and that would usually be one close to the current price supporting his call) by fine-tuning the growth/discount assumptions.

Market criteria (potential price)

Some feel that if the stock is listed in a well organized stock market, with a large volume of transactions, the listed price will be close to the estimated fair value. This is called the efficient market hypothesis. On the other hand, studies made in the field of behavioral finance tend to show that deviations from the fair price are rather common, and sometimes quite large. Thus, in addition to fundamental economic criteria, market criteria also have to be taken into account market-based valuation. Valuing a stock is not only to estimate its fair value, but also to determine its potential price range, taking into account market behavior aspects. One of the
behavioral valuation tools is the stock image, a coefficient that bridges the theoretical fair value and the market price.

**PE Valuation Model**

The price-earning ratio (PE) is a widely watched measure of how much the market is willing to pay for $1 of earnings from a firm. A high PE has two interpretations: A higher than average PE may mean that the market expects earnings to rise in the future. A high PE may indicate that the market thinks the firm's earnings are very low risk and is therefore willing to pay a premium for them.

**Technical Analysis**

Rather than looking at the fundamentals of the economy or of a company, technical analysts look at the patterns of share prices and trading history to determine the appropriate strategy to adopt. A technical analyst, often known as a chartist, monitors share price behaviour – the patterns of share prices and relationships between prices and other market data – and then, using historic information of recurring patterns, endeavours to select money-making stocks. Through the use of charts, technical analysts develop patterns of market behaviour that they expect can be repeated over and over again. To some extent, these predictions may be self-fulfilling. If the charts predict that a share price will fall and investment managers sell this share, then supply and demand factors will force the price of that share down. The technique is based heavily on recognizing past patterns, the supply and demand for a stock, investor psychology (the behaviour of crowds), and the use of certain mechanical rules. These rules include:

1. The use of **moving averages** of share prices over time (often 20, 40 days or 200 days), trying to spot when a share has been over-sold and is due for an upwards price correction (or vice versa).
2. **Studying the number of daily price rises and falls** and the number of shares traded on that day – a rise in price and volume indicates increasing investor interest which should continue.
3. **Spotting support areas** (prices at which investors will buy more shares) and resistance zones (prices at which investors will sell). For example, if a
company issued shares at 100p a year ago and the price today is 90p, it is likely that a number of investors will sell once the price reaches 100p.

**Dow Theory**

Most approaches to technical analysis assume that financial prices follow a market cycle model, where overall prices tend to move through long trends of either rising or falling price levels. The founder of one of the original trend theories was Charles Dow (founder of the Dow Jones news service), whose method, designed in the early 1900s, of analysing and interpreting stock market movement bears his name – the Dow Theory. The essence of the Dow Theory is that there are always three forces working on the stock market:

1. A primary or major trend akin to the tides in the ocean.
2. A secondary reaction or intermediate trend that resembles waves.
3. Daily fluctuations or short-term movements that resemble ripples.

The Dow Theory asserts that a bull market is established when both the Dow Jones Industrial Average and the Dow Jones Transportation Average are moving upwards. A bear market occurs when the indices are moving down. If one of the indices departs from the trend and is followed by a departure of the other index from the trend, then this is viewed as confirmation that the primary trend has changed. The basic tenets of the theory also purport that no additional information is required about the stock market outside of data on stock indices and that, usually, a positive relationship exists between the trend and volume of shares traded. The Dow Theory has been extended and changed over the years. However, most technical analysis theories stem from the Dow Theory.

**Moving averages**

Technical analysts study moving average charts in order to identify short and long-term trends (as suggested by the Dow Theory). To construct a 30-day moving average chart, the arithmetic average of the prices from the previous 30 trading days would be taken. This calculation would be done every day by dropping the oldest day and adding the most recent day, thus creating a rolling or moving average. A technical analyst might compare the 200-day moving average to the 30-day moving average to
contrast a long term trend with a short term trend. If the 200-day moving average was rising while the 30-day average was falling, one interpretation could be that price declines are expected in the short term, but not in the long term. Moving averages can be used for market indices and for individual stocks. Technical analysts will look for moving average charts to cross each other to indicate a change in direction of a trend. Likewise, if prices of a stock or index reverse and break through or cross a moving average line from below on heavy volume, then this points to a strongly positive change. The indication is then that this break through signals a reversal of a declining trend. The opposite would be true if prices crossed the moving average line from above.

**Relative strength**

Relative strength charts assess the performance of one company, industry or market relative to another. Typically, the relationship between two historical series of data is expressed as a ratio of one security or index divided by another security or index. For example, a technical analyst may want to compare the performance of a particular share to overall market performance. The share price may have shown a trend of out performance compared to the index over a given period of time.

The relative strength indicator (RSI) measures the relative internal strength of a price pattern and is a percentage ranging from 0% to 100%. Typically, a reading of 30 or less indicates an oversold condition, while a reading of 70 or above points to an overbought situation. The actual numerical calculation for RSI is rather complex, and most data services, such as Bloomberg provide the calculations. The best signals are noted when the RSI enters overbought or oversold areas and begins to pull back. Here, it could be deduced that the price movement has reached an extreme and is likely to reverse soon. Alternatively, some technical analysts believe that high RSI figures signify an ongoing trend and consequently a buy signal (the trend is your friend). In this case, the analyst will only sell after the RSI has fallen significantly.

**Market breadth indicators**

Several technical indicators exist that are believed to be leading indicators of future direction in price movement of a security or index. These indicators can be classified into breadth or sentiment indicators. Breadth indicators highlight overall
market strength or weakness. The following are some examples of momentum indicators, or breadth indicators. The advance–decline line the advance–decline line is a cumulative measure of how many stocks are up for the day on an exchange relative to how many stocks are down for the day.

The cumulative advance–decline figures can then be plotted to create the advance–decline line. Most technical analysts view a falling advance–decline line in a rising market as a bearish warning signal, and a rising advance–decline line in a falling market as a bullish sign. 52-week new high/new low ratio this category of breadth indicator compares 52-week new highs and 52 week new lows, where the new high is expressed as a percentage of (new highs + new lows). The raw ratio can sometimes be volatile, but if a 10-day and 25-day moving average is applied, the change in trend indicator becomes more useful. When the 10-day moving average crosses over the 25-day moving average in a counter-swing fashion, particularly after sharp moves when the 10-day moving average greatly exceeds the 25-day moving average, the result is a fairly strong buy or sell signal.

**Sentiment indicators**

Sentiment indicators attempt to gauge the overall mood and prevailing psychology of the general marketplace. Sentiment indicators can confirm general trends, but can also determine when a trend is likely to reverse soon. As a result they become most indicative when they reach extreme levels, where the assumption is made that the market is about to exhaust itself and that the prevailing trend is likely to change. When sentiment indicators are used in this way, they are known as contrary indicators. The idea is that the crowd is usually wrong at significant market turning points.

There are many sentiment indicators, including:

- Put/call ratio
- Cash balances held by mutual funds or unit trusts
- Credit balances held by brokerage accounts
- Consensus estimates
- Short-selling data
• Odd-lot trading

• Directors’ dealings.

Put/call ratio

The put/call ratio is probably the most widely used sentiment indicator. The ratio is calculated by dividing the volume of put option trading by the volume of call option trading. Excessive put buying or a high ratio is viewed as a bearish signal, and excessive call buying or a low ratio is considered bullish. Investors buy put options (the right to sell stocks in the future) when they believe that the stock prices will fall, and call options (the right to buy stocks in the future) when they believe prices will rise. Typically, the volume for call options is greater than the volume for put options, and the indicator will usually be below 1.0 (or less than 100%). Put/call ratios may be calculated for most indices.

Consensus estimates

Various agencies conduct polls of the investment community asking for evaluations of various markets, including the stock market. These polls are usually conducted weekly and published the following week. The data obtained from these polls are used as contrary indicators. When the investment community becomes excessively bullish, technical analysts become more cautious. Conversely, when the investment community becomes more bearish, the technical analysts become more bullish. The same analysis could be performed by comparing the number of stock market newsletters that are positive to those newsletters that are negative.

Directors’ dealings

Corporate officers or main shareholders of a company that hold more than 5% of the total voting stock of a company are known as ‘insiders’. They are required to file with the Securities and Exchange Commission (SEC) or other local stock authorities, their sales and purchases. Generally, insiders are fairly accurate in their buying and selling decisions because of their intimate knowledge of the company. Also, they are in the best position to assess their company’s relative value in the marketplace. Thus company directors tend to sell before their stock hits the top and buy before their stock completes a bottoming phase. One caveat, though: insider
buying tends to be more accurate than insider selling. Sometimes a director may sell shares to raise cash for personal reasons, such as to fund a child’s education or to buy a new home. A strong positive signal is set when a number of insiders are buying significant volumes of their company stock. When insiders are selling considerable volumes of their company stock, this should be a cause for concern.

Charts

Technical analysts plot market data in charts, such as bar charts, point-and-figure charts, and candlestick charts, to make inferences about future prices. Bar charts show each day’s, week’s or month’s high, low and closing price movements for a designated time period. Point-and-figure charts distinguish reversals in the stock price direction. These charts comprise of a series of x’s and o’s positioned within a grid. The x’s represent price increases over a specified amount, and the o’s represent price decreases over a specified amount.

Candlestick charts were originally developed in Japan and are similar to bar charts, but also include opening and closing prices.

Some examples of often-used technical analysis charts are given below.

Trends

A trend is the direction in which a share price is heading. Three choices of trend exist:

1 Positive or advancing trend
2 Negative or declining trend
3 Neutral or sideways trading range.

Assessing prevailing trends is important, because positioning trades with the trend tends to make most money – i.e. buying in up trends and selling in down trends.

A positive trend is characterized by higher highs and higher lows.

Consolidation patterns

Prices do not usually continue straight up or straight down for very long. Corrections within the major trend usually occur, which will then carry prices either
sideways or slightly against the trend. These interruptions are known as consolidations, because share price patterns pause to consolidate the gains or losses. Consolidation patterns are generally known as continuation patterns because they usually indicate that prices will continue to move in the overall direction of the major trend, after a short pause. Often, there is a noticeable drop in volume during the pause.

**Triangles** are drawn from very short-term trend lines connecting the relevant tops and bottoms of very short-term price swings

**Reversal patterns**

Reversal patterns are transition areas in which market tendencies begin to shift from bullish to bearish or vice versa. The volume of shares being traded during this period usually helps to identify the phase of the reversal formation.

**Head and shoulders** – the most reliable reversal pattern – occurs as either a head and shoulders top or head and shoulders bottom.

**Efficient Market Hypothesis**

**Introduction**

In finance, the **efficient-market hypothesis (EMH)** asserts that financial markets are "informationally efficient", or that prices on traded assets, e.g., stocks, bonds, or property, already reflect all known information. The efficient-market hypothesis states that it is impossible to consistently outperform the market by using any information that the market already knows, except through luck. Information or **news** in the EMH is defined as anything that may affect prices that is unknowable in the present and thus appears randomly in the future.

The EMH was developed by Professor Eugene Fama at the University of Chicago Booth School Of Business as an academic concept of study through his published Ph.D. thesis in the early 1960s at the same school. It was widely accepted up until the 1990s, when behavioral finance economists, who were a fringe element, became mainstream. Empirical analyses have consistently found problems with the efficient markets hypothesis, the most consistent being that stocks with low price to earnings (and similarly, low price to cash-flow or book value) outperform other
stocks. Alternative theories have proposed that cognitive biases cause these inefficiencies, leading investors to purchase overpriced growth stocks rather than value stocks. Although the efficient markets hypothesis has become controversial because substantial and lasting inefficiencies are observed, it remains a worthwhile starting point.

**Historical background**

The efficient-market hypothesis was first expressed by Louis Bachelier, a French mathematician, in his 1900 dissertation, "The Theory of Speculation". His work was largely ignored until the 1950s; however beginning in the 30s scattered, independent work corroborated his thesis. A small number of studies indicated that US stock prices and related financial series followed a Random walk model.

Research by Alfred Cowles in the ’30s and ’40s suggested that professional investors were in general unable to outperform the market. The efficient-market hypothesis emerged as a prominent theoretic position in the mid-1960s. Paul Samuelson had begun to circulate Bachelier's work among economists. In 1964 Bachelier's dissertation along with the empirical studies mentioned above were published in an anthology edited by Paul Coonter. In 1965 Eugene Fama published his dissertation arguing for the random walk hypothesis and Samuelson published a proof for a version of the efficient-market hypothesis. In 1970 Fama published a review of both the theory and the evidence for the hypothesis. The paper extended and refined the theory, included the definitions for three forms of market efficiency: weak, semi-strong and strong. Further to this evidence that the UK stock market is weak-form efficient, other studies of capital markets have pointed toward their being semi-strong-form efficient. Studies by Firth (1976, 1979, and 1980) in the United Kingdom have compared the share prices existing after a takeover announcement with the bid offer. Firth found that the share prices were fully and instantaneously adjusted to their correct levels, thus concluding that the UK stock market was semi-strong-form efficient. The market's ability to efficiently respond to a short term and widely publicized event such as a takeover announcement, however, cannot necessarily be taken as indicative of a market efficient at pricing regarding more long term and amorphous factors. David Dreman has criticized the evidence provided by this instant "efficient" response, pointing out that an immediate response is not necessarily
efficient, and that the long-term performance of the stock in response to certain movements are better indications. A study on stocks response to dividend cuts or increases over three years found that after an announcement of a dividend cut, stocks underperformed the market by 15.3% for the three year period, while stocks outperformed 24.8% for the three years afterward after a dividend increase announcement.

Theoretical background

Beyond the normal utility maximizing agents, the efficient-market hypothesis requires that agents have rational expectations; that on average the population is correct (even if no one person is) and whenever new relevant information appears, the agents update their expectations appropriately.

Note that it is not required that the agents be rational. EMH allows that when faced with new information, some investors may overreact and some may underreact. All that is required by the EMH is that investors' reactions be random and follow a normal distribution pattern so that the net effect on market prices cannot be reliably exploited to make an abnormal profit, especially when considering transaction costs (including commissions and spreads). Thus, any one person can be wrong about the market — indeed, everyone can be — but the market as a whole is always right.

Market Efficiency

There are three common forms in which the efficient-market hypothesis is commonly stated— weak-form efficiency, semi-strong-form efficiency and strong-form efficiency, each of which have different implications for how markets work.

Weak-form efficiency

- Excess returns can not be earned by using investment strategies based on historical share prices.
- Technical analysis techniques will not be able to consistently produce excess returns, though some forms of fundamental analysis may still provide excess returns.
• Share prices exhibit no serial dependencies, meaning that there are no "patterns" to asset prices. This implies that future price movements are determined entirely by information not contained in the price series. Hence, prices must follow a random walk.

**Semi-strong-form efficiency**

• Semi-strong-form efficiency implies that share prices adjust to publicly available new information very rapidly and in an unbiased fashion, such that no excess returns can be earned by trading on that information.

• Semi-strong-form efficiency implies that neither fundamental analysis nor technical analysis techniques will be able to reliably produce excess returns.

• To test for semi-strong-form efficiency, the adjustments to previously unknown news must be of a reasonable size and must be instantaneous. To test for this, consistent upward or downward adjustments after the initial change must be looked for. If there are any such adjustments it would suggest that investors had interpreted the information in a biased fashion and hence in an inefficient manner.

**Strong-form efficiency**

• Share prices reflect all information, public and private, and no one can earn excess returns.

• If there are legal barriers to private information becoming public, as with insider trading laws, strong-form efficiency is impossible, except in the case where the laws are universally ignored.

• To test for strong-form efficiency, a market needs to exist where investors cannot consistently earn excess returns over a long period of time. Even if some money managers are consistently observed to beat the market, no refutation even of strongform efficiency follows: with hundreds of thousands of fund managers worldwide, even a normal distribution of returns (as efficiency predicts) should be expected to produce a few dozen "star" performers.
Criticism and behavioral finance

Investors and researchers have disputed the efficient markets hypothesis empirically and theoretically. Behavioral economists attribute the imperfections in financial markets to a combination of cognitive biases such as overconfidence, overreaction, representative bias, information bias, an inability to use configurial rather than linear reasoning, and various other predictable human errors in reasoning and information processing. These have been researched by psychologists such as Daniel Kahneman, Amos Tversky, Richard Thaler, and Paul Slovic. These errors in reasoning lead most investors to avoid high-value stocks and buy growth stocks at expensive prices, which allow those who reason correctly to profit from bargains in neglected value stocks and the overreacted selling of growth stocks. Empirical evidence has been mixed, but has generally not supported strong forms of the efficient markets hypothesis; low P/E stocks have greater returns. In this paper he also refuted the assertion by Ray Ball that these higher returns could be attributed to higher beta, whose research had been accepted by efficient market theorists as explaining the anomaly in neat accordance with modern portfolio theory. Speculative economic bubbles are an obvious anomaly, in that the market often appears to be driven by buyers operating on irrational exuberance, who take little notice of underlying value. These bubbles are typically followed by an overreaction of frantic selling, allowing shrewd investors to buy stocks at bargain prices. Rational investors have difficulty profiting by shorting irrational bubbles because, as John Maynard Keynes commented, "Markets can remain irrational longer than you can remain solvent." Sudden market crashes as happened on Black Monday in 1987 are mysterious from the perspective of efficient markets. Burton Malkiel, a well-known proponent of the general validity of EMH, has warned that certain emerging markets such as China are not empirically efficient; that the Shanghai and Shenzhen markets, unlike markets in United States, exhibit considerable serial correlation (price trends), non-random walk, and evidence of manipulation.

Behavioral psychology approaches to stock market trading are among some of the more promising alternatives to EMH (and some investment strategies seek to exploit exactly such inefficiencies). But Nobel Laureate co-founder of the programme—Daniel Kahneman—announced his skepticism of investors beating the
market: "They're [investors] just not going to do it [beat the market]. It's just not going to happen." Richard Thaler has started a fun based on his research on cognitive biases. In a 2008 report he identified complexity and the herd behavior as central to the global financial crisis of 2008.

**The efficient frontier**

Given the following inputs – returns, standard deviations, and correlations – a minimum variance portfolio for any targeted expected return can be calculated. For example, assume that for the given level of returns, the best portfolio for each had been calculated:

![Table showing returns and risk of 'best' portfolio](image)

<table>
<thead>
<tr>
<th>Return</th>
<th>Risk of 'best' portfolio</th>
</tr>
</thead>
<tbody>
<tr>
<td>15%</td>
<td>0.22%</td>
</tr>
<tr>
<td>12%</td>
<td>0.19%</td>
</tr>
<tr>
<td>8%</td>
<td>0.23%</td>
</tr>
<tr>
<td>20%</td>
<td>0.40%</td>
</tr>
<tr>
<td>25%</td>
<td>0.55%</td>
</tr>
</tbody>
</table>

![Graph showing the efficient frontier](image)

The part of the curve between points B and C (i.e. above point B, which is the point of global minimum variance) represents the efficient frontier, as this part of the curve represents the highest return possible for a given level of risk. The points on the curve between A and B produce a lower return for a higher risk than point B. Drawing on the previous section regarding indifference curves and utility values, the investor would prefer that investment or portfolio that lay furthest through the indifference curve. In practice, it may be difficult to assess the various indifference curves and the efficient frontier for a particular investor. Fortunately, software programs known as quadratic optimization programs can help to calculate efficient sets of portfolios.
If a portfolio manager is dealing with \( n \) (i.e. 50) securities, he or she will need \( n \) estimates of expected return, \( n \) estimates of variances and \( (n^2 - n)/2 \) (i.e. 1225) covariances.

**The capital market line**

Following the development of the efficient frontier of presumably risky assets, it is possible to combine this portfolio with a risk-free asset with a return of \( R_f \) and a risk of 0. The line with the highest reward to variability ratio (steepest slope) can be drawn, giving the graph shown in Figure 2.5

The efficient frontier is arrived at by considering risky investments in the original curve calculated ABC, and by introducing the risk-free investments. The efficient frontier is now the straight line. The assumption is that borrowing and lending are allowed. Thus, the line RfM assumes that an investor invests a portion of his or her investment in the risk-free investment and the rest in the risky portfolio M. The other section of the curve MD assumes that the investor can borrow at the risk-free rate and invest more than 100% of his or her investment in the market portfolio M. The line RfMD is the capital market line (CML). The equation for the CML is:
where:

\[
E(R_p) = \frac{E(R_m) - R_f}{\sigma_m} \times \sigma_p
\]

Thus, for a portfolio on the CML, the expected rate of return in excess of the risk-free rate is proportional to the standard deviation of that portfolio. To use an example: if the market return is 8%, the market standard deviation is 15%, and the risk-free return is 4.5%, what is the expected return on an efficient portfolio with a risk of 12%?

\[
E(R_p) = 4.5 + \frac{8 - 4.5}{15} \times 12 = 7.3\
\]

**The capital asset pricing model**

According to the IIMR Investment Management Certificate Official Training Manual in the UK: The capital asset pricing model (CAPM) was developed in the early 1960s from modern portfolio theory by academic finance theorists. Although much maligned, the model remains perhaps the most popular tool for quantifying and measuring risk for equities in academic circles and in the investment industry in the USA, but is less popular with the UK investment community. The main attraction of the CAPM is the simplicity of its predictions. However, according to detractors of the model, the simplicity is achieved at the expense of a realistic view of how financial markets work.

The derivation of the model requires certain assumptions and simplifications about financial markets and investors. These assumptions are that:

1. Investors are risk averse and maximize expected utility.
2 Investors choose portfolios or investments on the basis of their expected mean and variance of returns.

3 Investors have a single-period time horizon that is the same for all investors.

4 Borrowing and lending at the risk-free rate are unrestricted.

5 Investor expectations regarding the means, variances and covariances of asset returns are homogeneous.

6 There are no taxes and no transaction costs.

**The security market line**

The conclusion of the CAPM is known as the security market line (SML), and can be expressed as follows:

\[ r_p = r_f + \beta (r_m - r_f) \]

where:

- \( r_p \) = the expected return on asset or portfolio \( p \).
- \( r_f \) = the return available from a risk-free asset (this could be the return on a government bill or bond).
- \( r_m \) = the expected return on the market, such as the return on the FT All Share Index = measure of the sensitivity of the asset to the market (see below for further discussion). \( r_m - r_f \) = the market risk premium, or the excess return over the risk-free rate received by investing in a portfolio of risky assets. This figure has been coming down over the last few years, and is predicted to be lower over the next 100 years compared to the past 100 years.

The CAPM provides the framework to determine the relationship between expected return and risk for individual securities as well as for portfolios. The security market line shows that the expected return on a share is the sum of the risk-free return and the market risk premium adjusted for the relative volatility of the share. One of the forecasts of the CAPM is that in equilibrium, all assets or portfolios lie on the security market line. If an investment lay above the SML it would be accepted by an investor as it is offering a return higher than that required for its level of risk.
(undervalued). If an investment lay below the SML, it would be rejected as its return is too low (undervalued).

**Beta coefficient**

The beta coefficient is a key factor of the CAPM, and can be written as:

$$\beta_p = \frac{\text{COV}(r_p, r_m)}{\text{VAR}(r_m)}$$

where

\[ \text{COV}(r_p, r_m) = \text{the covariance of the return on portfolio } p \text{ with the return on the market} \]
\[ \text{VAR}(r_m) = \text{the variance of the return on the market} \]

Beta determines the relative sensitivity of the investment to the market. Another way of looking at the beta of an investment is that it is a relative measure of the systematic risk of that investment.

For a situation where \( \beta > 1 \), the investment will produce returns in the same direction as the market’s, but to a larger extent.

When \( \beta = 1 \), the investment’s returns should move in the same direction as the market’s returns and by the same amount.

For situations where \( 0 < \beta < 1 \), the investment will deliver returns in the same direction as the market’s, but to a lesser degree. For example, a beta of 0.5 would mean that, on average, the investment’s returns move half as much as the market’s do (in the same direction), and could be considered less risky than investing in the market.

If \( \beta = 0 \), then the investment’s returns are not correlated with those of the market. This could occur if the investment is risk free, or when all of the investment’s risk is non-systematic. When the beta is a negative number, this means that the investment’s returns will move in the opposite direction to those of the market.

The following example illustrates CAPM:
Suppose the risk free rate of return is 5%, and the expected market return is 10%. What return will a diversified investor require from investments with betas of 0, 0.5, 1, and 1.5?

Again, the formula is: \( r_p = r_f + (r_m - r_f) \)

so:

\[
\begin{align*}
\text{if } \beta = 0, & \quad r_p = 5\% + 0 \times (10\% - 5\%) = 5\% \\
\text{if } \beta = 0.5, & \quad r_p = 5\% + 0.5 \times (10\% - 5\%) = 7.5\% \\
\text{if } \beta = 1, & \quad r_p = 5\% + 1 \times (10\% - 5\%) = 10.0\% \\
\text{if } \beta = 1.5, & \quad r_p = 5\% + 1.5 \times (10\% - 5\%) = 12.5\%
\end{align*}
\]

Where the beta = 1 the expected return of the investment is equal to the expected return on the market, and the higher the beta coefficient, the higher the expected return. CAPM can be used for the formation of portfolios where the portfolio manager has determined the degree of risk that the client is willing to bear. An individual seeking a high return would take on more risk and a portfolio constructed using a higher beta. A young pension fund, for example, with a longer term horizon, may employ an investment strategy that would invest in a portfolio with a beta greater than 1. This portfolio could be expected to give returns greater than those of the market, but at a correspondingly higher level of risk. Likewise, a mature pension fund is more likely to seek a safer portfolio and would probably prefer a portfolio with a beta of less than 1. As the proportion of risk-free investments is increased in the portfolio and the proportion of equities decreased, the portfolio beta reduces towards 0. Using another example, if an investor wanted to buy units in a unit trust with a beta of 0.75, but no such fund existed, the investor could put 50% of the investment in a unit trust with a beta of 0.5 and the rest of the funds in a unit trust with a beta of 1.0. Holding both these funds replicates holding units in one unit trust with a beta of 0.75.

In a similar vein, if a new investment is added to a portfolio, the beta of the new portfolio will be the weighted average of the beta of the old portfolio and the new security. Thus:

\[
\beta = \sum w_i \beta_i
\]

where:
\[ wi = \text{market value weighting of portfolio component } i \]

\[ i = \text{the of the portfolio constituent } i. \]

For example, an existing portfolio of £50m has a beta of 0.75. A new investment of £5m with a beta of 1.2 is added to the portfolio. The new overall beta of the portfolio will therefore be:

\[
0.75 \times \frac{\text{£50m}}{\text{£55m}} + 1.2 \times \frac{\text{£5m}}{\text{£55m}} = 0.79
\]

Measuring returns

Once a portfolio has been established, it is important to monitor the fund’s performance. Measuring the performance of a portfolio involves calculating the returns achieved by the fund over a particular period of time, known as the evaluation period. The evaluation period used to monitor performance may be weekly, monthly, quarterly or annually. Various methods may be used to calculate returns, each giving a different result. Parties interested in evaluating performance use consistent and standard methods for calculating and presenting returns, several of which are reviewed below. Performance evaluation involves comparing the performance of a fund against a suitable yardstick or benchmark (usually a relevant index) after adjusting for risk in order to determine how the fund manager has performed and how the returns were actually achieved. Evaluation enables the investor to check that the agreed investment strategy has been followed, and to assess the skill of the fund manager. Calculating returns Clients, trustees of pension funds and unit trusts, board of directors of investment trust companies and managers of fund management departments are amongst the groups interested in monitoring the capabilities of the fund managers and analysts who contribute to the running of the funds. Although calculating returns is simple in theory, it is relatively more complex in practice. The methods considered are money return, time weighted return and money-weighted return.

**Total return or money return**

The first step in assessing performance is to measure the total return that a fund has produced. To calculate this return, the value of each share in the fund at the beginning of the evaluation period is multiplied by the number of shares held. The sum of these values is the market value of the portfolio at the beginning of the time
period. The same procedure is carried out using the market prices and amounts of the holdings at the end of the time period to calculate the market value of the portfolio at the end of the evaluation period. The total return (also known as money return) from the portfolio is calculated as follows:

\[
\text{Total return } r = \frac{V_{\text{end}} - V_{\text{beginning}}}{V_{\text{beginning}}}
\]

where:

- \( V_{\text{beginning}} \) = market value of the fund at the beginning of the period.
- \( V_{\text{end}} \) = market value of the fund at the end of the period (including reinvested dividends or coupon payments).

For example, if \( V_{\text{end}} = £5 \) million, \( V_{\text{beginning}} = £4 \) million, calculate the money return:

\[
r = \frac{£5 - £4}{£4} \times 100 = 25\%
\]

The next step to examine is what happens when clients add new money to the fund or withdraw money from the fund. Money may be added or withdrawn at any time during the examination period. If the money is added just before the end of the period, the above formula would have to be adjusted as follows:

\[
r = \frac{(V_{\text{end}} - D) - V_{\text{beginning}}}{V_{\text{beginning}}}
\]

where:

- \( V_{\text{end}} \) = the portfolio value at the end of the period.
- \( V_{\text{beginning}} \) = the portfolio value at the beginning of the period.
- \( D \) = deposits into the fund by the investor.

For example, if \( V_{\text{end}} = £5 \) million, \( V_{\text{beginning}} = £4 \) million and a cash input (\( D \)) of £250000 is made, the money return is calculated as:

\[
r = \frac{(£5 - £0.25) - £4}{£4} \times 100 = 12.5\%
\]
If the cash input had not been subtracted, the return quoted would have been 25% rather than 12.5%. This would have been misleading, since part of the increase was due to money coming into the fund and not to the fund manager’s skill. Withdrawals from a fund or distributions made from a fund to shareholders can also produce a distorting effect, and thus the timing of deposits into and withdrawals from a portfolio must be taken into account. The above example assumes distributions into and out of the fund are made at the end of the period. This is unlikely to be true in practice, and the following two methods overcome the problem by breaking the evaluation period into smaller sub-periods.

**Risk-adjusted portfolio performance measures**

Measuring the risk associated with a portfolio is one important aspect of measuring portfolio performance. Portfolio returns must be adjusted for risk before they can be compared meaningfully. The easiest way to adjust returns for portfolio risk is to compare rates of return amongst portfolios with similar risk profiles. This process may be misleading, however, for some managers may concentrate on particular subgroups, so that the portfolio profiles are not actually that comparable. More accurate measures of portfolio returns have come into vogue to calculate risk-adjusted returns using mean-variance criteria and measuring both risk and return. Risk adjusted returns are not necessarily perfect measurements, as they do not take into account transaction costs. They are, however, important tools for providing information about portfolios. Three of the most popular risk adjusted measures will now be examined. They differ from one another according to the risk measure used.

**The Sharpe measure**

The Sharpe ratio measures excess return per unit of risk, or, in other words, uses an estimate of total risk of a portfolio to calculate excess return to volatility (volatility being the standard deviation of the returns).

\[
\text{Sharpe measure} = \frac{R_p - R_f}{\sigma_p}
\]

Where

- \( R_p \) = the return achieved on the portfolio.
Rf = the return available from a risk-free asset.

\[ = \text{the standard deviation of the return on the portfolio.} \]

The higher the value of this measure the better value the portfolio represents, since as gets smaller the total risk of the portfolio gets smaller. If the Sharpe ratio is negative the portfolio’s performance is less than the risk-free rate and the negative figure itself cannot be compared to other negative figures.

**The Treynor measure**

The Treynor ratio uses the beta coefficient or the systematic risk of the portfolio as its measure of risk. It is a measure of the portfolio’s excess return with respect to its beta.

\[
\text{Treynor measure} = \frac{R_p - R_f}{\beta_p}
\]

where:

R\(p\) = the return achieved on the portfolio.

R\(f\) = the return from the risk-free asset.

\(\beta_p\) = the CAPM beta of the portfolio.

The higher the value of the Treynor measure the better the value represented by the portfolio, since a higher beta represents higher systematic risk. The Treynor measure may be preferred by investors who are running highly diversified portfolios, as the measure does not consider unsystematic risk. A portfolio holding a large number of investments should see the unsystematic risk diversified away. The Sharpe measure, which considers total risk, may be preferred by investors with less diversified portfolios.

**The Jensen measure**

The Jensen ratio calculates the excess return that a portfolio generates over that predicted by CAPM based on the beta of the portfolio and the average market return. Jensen’s measure is the portfolio’s alpha value. CAPM can be used to construct a benchmark portfolio with a given amount of systematic risk and measure
the difference in return of this portfolio (benchmark) and the return achieved by the portfolio manager.

Jensen measure =

\[ R_p = R_f + \beta_b (R_m - R_f) \]

where:

- \( R_p \) = the return on the portfolio being evaluated.
- \( R_b \) = the return on the benchmark portfolio.
- \( \beta \) = the benchmark portfolio’s CAPM beta.

To summarize:

The Sharpe ratio looks at total risk.

The Treynor ratio takes into account systematic risk.

The Jensen measure looks at the performance of the portfolio over and above that of a benchmark.

If an investor has limited holdings, then standard deviation may provide a more accurate measure of risk. Likewise, if an investor holds a wide variety of holdings outside of one particular mutual fund, then beta may be a more accurate measure of risk.

For example, two fund managers are employed to manage two portfolios with identical objectives. Details of their portfolios are as follow:

<table>
<thead>
<tr>
<th>Fund</th>
<th>Return</th>
<th>Beta (( \beta_p ))</th>
<th>Total risk (( \sigma_p ))</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>10%</td>
<td>1.03</td>
<td>10%</td>
</tr>
<tr>
<td>B</td>
<td>14%</td>
<td>1.25</td>
<td>20%</td>
</tr>
</tbody>
</table>

Using the Sharpe measure,
where: it can be concluded that, on a risk-adjusted basis considering total risk, fund manager A has outperformed fund manager B.

\[
\text{Treynor measure} = \frac{R_p - R_f}{\beta_p}
\]

\[
\text{Fund A} = \frac{10 - 4.5}{1.03} = 5.34\%
\]

\[
\text{Fund B} = \frac{14 - 4.5}{1.25} = 7.6\%
\]

Using the Treynor measure, where:

It can be concluded that, on a risk-adjusted basis taking into account systematic risk, fund manager B has outperformed fund manager A.

**Using the Jensen measure, where:**

\[
\text{Jensen measure} = \alpha = R_p - \beta_p
\]

\[
R_b = R_f + \beta_b (R_m - R_f) \text{ (assume } R_m = 8\%) 
\]

\[
R_a = 4.5 + 1.03(8 - 4.5) = 8.1\%
\]

\[
R_b = 4.5 + 1.25(8 - 4.5) = 8.9\%
\]

\[
\alpha_a = R_a = 10.0 - 8.1 = 1.9\%
\]

\[
\alpha_b = R_b = 14.0 - 8.9 = 5.1\%
\]

It can be concluded that on a risk-adjusted basis (systematic risk), fund manager B has performed better than fund manager A. One more point to note is that returns will be affected by tax rates, inflation over time, and foreign exchange rates when applicable.

**Valuation: stock valuation**

How does an investor determine whether or not a share is fairly valued or represents a bargain investment? Many investors rely on values obtained from various valuation techniques to make investment decisions and to interpret financial information. Some theorists claim that stock prices cannot be predicted, particularly in the short term, and that no stock valuation model can accurately uncover under- or overpriced stocks. Nonetheless, it is important for fund managers and analysts to have some sort of consistent methodology with which to rank a universe of shares. Also, if
the market is using a particular valuation technique, the ‘herd mentality’ could affect
the prices of the underlying shares. Thus it is useful to be aware of some of the most
popular valuation methods currently utilized. Stock valuation methodologies can
either be based on the discounted cash flow (DCF) principle, which states that the
current value of an asset is the present value of all its future cash flows, or on
financial ratio analysis. Using discounted cash flows involves forecasting future cash
flows and estimating the appropriate discount rate to use for the calculation. With
DCF, it is possible to establish whether a stock is undervalued, fairly or overvalued:

If the PV > P0, investors would buy the stock.

If the PV < P0, investors would not buy the stock.

If the PV = P0, investors would be indifferent to buying or not where PV is the
present value of the expected cash flows and P0 is the current share price.

Price ratio analysis, however, is more widely used by financial analysts than
discounted cash flow models, and can be considered easier to calculate by the general
public.

**Dividend discount model**

One widely used method to value common stock is the dividend discount
model (DDM), which values a share as the sum of all its expected future dividend
payments, with the dividends adjusted for risk and the time value of money. The
formula is as follows:

\[ V_0 = \frac{D_1}{(1 + k)} + \frac{D_2}{(1 + k)^2} + \frac{D_3}{(1 + k)^3} + \ldots + \frac{D_t}{(1 + k)^t} \]

where:

- \( D_t \) = the dividend to be paid \( t \) years from now.
- \( V_0 \) = the present value of the future dividend to be paid \( t \) years from now.
- \( k \) = the appropriate risk-adjusted discount rate.
This formula assumes that the last dividend is paid \( t \) years from now and the value of \( t \) depends on the specific situation being considered.

For example, suppose that a stock pays three annual dividends of 100p per year and that the discount rate is \( k = 7\% \). What is the present value of the stock?

\[
V_0 = \frac{100p}{(1.07)} + \frac{100p}{(1.07)^2} + \frac{100p}{(1.07)^3} = 262.43p
\]

Thus, the stock price should be valued at about 262p per share.

**Constant dividend growth rate model**

The constant dividend growth rate model is another common valuation model utilized to determine a stock’s value as well as a firm’s cost of equity. This model assumes that dividends will grow at a constant growth rate. By letting a constant growth rate be denoted by \( g \), then successive annual dividends are stated as:

\[
D_{t+1} = D_t(1 + g)
\]

For example, if the first dividend \( D_1 = 100p \) and the dividend growth rate \( g = 10\% \), then the second dividend payment would be \( D_2 = 100p \times 1.10 = 110p \). The third dividend payment would equal \( D(3) = 100p \times 1.10 \times 1.10 = 100p \times (1.10)^2 = 121p \). Assuming the discount rate is \( k = 8\% \), the present value of the three dividend payments is the sum of their separate present values:

\[
V_0 = \frac{100p}{(1.08)} + \frac{110p}{(1.08)^2} + \frac{121p}{(1.08)^3} = 283p
\]

Usually the number of dividends to be paid is large and calculating the present value of each dividend separately is time consuming. However, if the growth rate is constant, some simplified formulas are available to handle certain special cases. If, for example, a stock pays annual dividends over the next \( t \) years and these dividends are expected to grow at the constant growth rate \( g \) and to be discounted at the rate \( k \), then the calculation is as follows:

Current dividend = \( D_0 \)
Dividend at time 1 = \( D_1 = D_0 (1 + g) \)
Dividend at time 2 = \( D_2 = D_1 (1 + g) \)

etc.

The present value of the next \( t \) dividends following \( D_0 \), can be calculated using the following formula:

\[
V_0 = \frac{D_0 (1 + g)}{k - g} \left[ 1 - \left( \frac{1 + g}{1 + k} \right)^t \right]
\]

Where: \( g \) does not equal \( k \).

For example, assume that the growth rate is 6\% and that the discount rate is 12\%. If the number of annual dividends is 10 and the current dividend is 10p, what is the present value calculation?

\[
V_0 = \frac{10p \times (1.06)}{0.12 - 0.06} \left[ 1 - \left( \frac{1.06}{1.12} \right)^{10} \right] = 74.8p
\]

Constant perpetual growth model

A simplified version of the constant dividend growth rate model occurs when dividends are expected to grow at the constant rate \( g \) in perpetuity. The constant perpetual growth model is calculated using the following formula:

\[
V_0 = \frac{D_0 (1 + g)}{k - g}
\]

Where: \( g < k \).

Since \( D_0 (1 + g) = D_1 \), the constant perpetual growth model can be written as:
\[ V_0 = \frac{D_1}{k - g} \]

Where: \( g < k \).

Thus the constant dividend growth model demonstrates that the value of a stock is the first year dividend per share, divided by the discount rate, minus the constant growth rate. The greater the growth rate, all other factors being equal, the larger the discounted future dividends will be, resulting in a higher share price. With this model, future dividends do not have to be estimated directly; only the growth rate has to be estimated. Also, this formula only holds true when the growth rate is lower than the discount rate. If the growth rate were higher than the discount factor, the dividends would grow faster than the discount rate. The discounted cash flow of an infinite stream of dividends would yield an infinite price which would not be viable. Also, another limitation of the model is that it should only be applied to companies that have stable earnings and dividend growth.

For example, a certain company’s dividends are projected to grow at 5% forever. If the discount rate is 12%, and the current dividend is $20, what is the value of the stock?

\[ V_0 = \frac{20 \times 1.05}{0.12 - 0.05} = 300 \]

Thus, the stock should be priced at $300.

**Estimating sustainable growth rates**

When using the constant perpetual growth model, it is essential to establish an estimate of the growth rate \( (g) \) in dividends. There are a few ways of estimating the \( g \) – such as using the company’s historical average growth rate, or using an industry median or average growth rate. In addition, a company’s earnings growth rate can be used to estimate \( g \), usually the earnings per share (EPS) and the dividends per share (DPS) grow concurrently. However, the EPS may increase or decrease over time, making it difficult to estimate accurately. The focus is on the growth rate of the dividends for the model, because they represent the cash flows that the investors actually receive. A company’s earnings can be paid out as dividends to its
shareholders or the earnings can be kept within the firm to finance future growth. The portion of the earnings paid out as dividends is known as the payout ratio and the portion of the earnings retained within the firm is known as the retention ratio. Firms grow by reinvesting the retained earnings. If a company pays fewer dividends and increases the amount invested in profitable projects, higher future earnings should ensue. Such a company will achieve growth in earnings and dividends. The lower the proportion of earnings paid out as dividends, the greater the company’s future growth rate.

The payout ratio is equal to

$$\frac{D}{EPS}$$

where \(D\) = dividends

and \(EPS\) = earnings per share.

What is not paid out is retained, and the retention rate $$= \frac{1 - D}{EPS}$$.

For example, if a company’s current dividend is 5p per share and its EPS is currently 12p, then the payout ratio is \(\frac{5\text{p}}{12\text{p}} = 42\%\). The retention ratio is \(1 - 0.40 = 0.58\), or 58%.

A company’s sustainable growth rate is equal to its return on equity (ROE) times its retention ratio:

Sustainable growth rate = ROE * Retention ratio

$$= \text{ROE} \times (1 - \text{Payout ratio})$$

The calculation for return on equity is as follows:

ROE = net income/Equity

Below are a couple of examples.
For example, Company A has a return on equity (ROE) = 6.8%, earnings per share (EPS) = $1.36 and a share dividend of D0 = $1.05. Assuming a 7.5% discount rate, what is the value of Company A’s stock?

Payout ratio = $1.05/$1.32

= 0.80, or 80%.

Retention ratio = 1 – 0.80 = 0.20, or 20%.

Company A’s sustainable growth rate = 0.20 * 6.8% = 0.0136, or 1.36%.

Using the constant growth model

\[ V_0 = \frac{D_0 (1 + g)}{k - g} \]

The value of the stock is calculated as:

\[ V_0 = \frac{1.05(1.0136)}{0.075 - 0.0136} \]

= $17.33.

This estimated value of the share can be compared to the actual price at which Company A’s shares are trading in the market. If the value determined by the constant growth model is lower than the market price, then it can be assumed that Company A’s stock may be overvalued, but it could also mean that a 1.36% growth rate underestimates the company’s future dividend growth.

Again for example, Company B has an ROE of 10%, EPS of $2.15, and a dividend per share D0 of $1.40. First calculate the retention ratio and the sustainable growth rate, then calculate the value of Company B’s stock using a discount rate of 8.00%.

The dividend payout = $1.40/$2.15

= 0.651, or 65.1%.

Retention ratio = 1 – 0.651 = 0.349, or 34.9%.

Company B’s sustainable growth rate = 0.349*10% = 3.49%.

Using this data in the perpetual growth model, the value for the share can be calculated.

\[ V_0 = \frac{1.40(1.0349)}{0.80 - 0.0349} \]
= $32.13.

This value can be compared to the actual share price to determine whether the stock is over or undervalued. The limitation with sustainable growth rates is that they are sensitive to fluctuations in earnings. Fund managers and analysts will usually adjust sustainable growth rate estimates to smooth out the effects of earning oscillations. However, there is no standard method of adjusting growth rates, and analysts and fund managers depend on personal experience and their own judgment to fine tune the growth rates within their models.

**The two-stage dividend growth model**

In reality, companies do not experience just one growth rate throughout their life cycle, but may experience temporary periods of unusually high or low growth. Also the company’s growth rate will probably eventually converge to an industry- or economy-wide average.

For example, firms involved in the research and development of a new pharmaceutical product can achieve higher than average growth or supergrowth for a limited period of time. If the company’s research is successful, the company can obtain a patent on the product for a limited number of years, during which the high growth prevails. For companies experiencing varied growth rates, the two-stage dividend growth model is utilized. To determine the proper value of the stock, dividends must be discounted by the applicable growth rate for the specified periods. The company will have one growth rate for one period and another growth rate after that. The two-stage dividend growth model (also known as the multi-stage dividend discount model) can be written as follows:

\[
V_0 = \frac{D_0 (1 + g_1)}{(1 + k)} + \frac{D_1 (1 + g_2)}{(1 + k)^2} + \frac{\left( \frac{D(2) (1 + g_2)}{(k - g_2)} \right)}{(1 + k)^2}
\]

where:

\(V_0\) = value of the stock

\(D1\) = next period’s estimated dividend based on the company’s growth rate in dividends
\( k = \text{required rate of return or discount rate} \)

\( g_1 = \text{company's growth rate in stage 1} \)

\( g_2 = \text{company's growth rate in stage 2}. \)

For example, Company C pays an annual dividend of $1.00 and has a dividend growth rate of 10% per annum. Assuming the growth rate in dividends is expected to drop to 6% per annum starting in year 3 and the required rate of return on the stock is 7%, calculate the value of the stock using the two-stage dividend growth model. At the end of year 2, the company’s following year growth rate becomes 8% and

\[
D_1 = (1.00 \times 1.10) = 1.10 \\
D_2 = (1.10 \times 1.10) = 1.21 \\
D_3 = (1.21 \times 1.06) = 1.28 \\
\]

* At the end of year 2, next year’s growth rate becomes 6% and \( D_3 = D_2 \times 1.06. \)

Using the formula, the value of the company’s stock is:

\[
V_o = \frac{1.10}{1.07} + \frac{1.21}{(1.07)^2} + \frac{1.28}{(0.07 - 0.06)(1.07)^2} \\
= \frac{1.03}{1.07} + \frac{1.06}{(1.07)^2} + \frac{1.11}{1.07} = 113.89
\]

The longer the number of years that a firm can enjoy extraordinary profits, the bigger the expected jump in the stock price due to the availability of these profitable projects. The original dividend growth formula can be adjusted for a stock with a higher growth rate for \( t \) years and normal growth thereafter, as follows:

\[
V_o = \frac{D_o(1 + g)}{k - g} \left[ 1 - \left( \frac{1 + g_1}{1 + k} \right)^t \right] + \frac{D_o(1 + g_2)}{k - g_2} \left( \frac{1 + g}{1 + k} \right)^t
\]

In this formula, the first part of the equation measures the present value of the dividends through time \( t \) and the second part of the equation measures the present value of the subsequent dividends. For example, suppose that a company has a current dividend of $2, and that dividends are expected to grow at the rate of \( g_1 = 10\% \) for \( t = 6 \) years and thereafter at the rate of \( g_2 = 5\% \). With a discount rate of \( k = 7\% \), what is the present value?
Requirement for the two-stage growth formula is that the second stage growth rate is strict less than the discount rate and that $g_2 < k$. However, the first stage growth rate $g_1$ can be greater than, smaller than, or equal to the discount rate.

**Estimating the discount rate or cost of equity capital**

The discount rates used in the examples above come from the Capital Asset Pricing Model (CAPM). To review, Discount rate = Risk-free rate + (stock beta _stock market risk premium) in actuality, the discount rate is the cost of equity capital required by the stockholders given the firm’s risk. The constant dividend growth model can be used to estimate the cost of equity. The assumption in this case is that the stock price is fairly valued and the formula solves for the discount rate $k$. The constant dividend growth model provide the following:

\[ V_0 = \frac{D_2}{k - g} \]

Which can be rewritten as

\[ k = \frac{D_1}{V_0 + g} \]

The values for $D_0$ and $V_0$ can be found in the market. If $g$ can be estimated, $D_1 = D_0 \times (1 + g)$ can be calculated and it is possible to solve for the required cost of equity. This represents the expected rate of profit on the equity. Using an example that relates to the constant growth model (not two-stage growth model), where:

$D_1 = $5

$V_0 = $100

$g = 5$

thus

\[ k = \frac{5}{100} + 0.05 = 0.05 + 0.05 = 0.10 \]

= 10%
The investors who determine the stock price in the market are requiring a return of 10% on their investment. If a particular investor’s required rate of return is more than 10%, then that investor should steer clear of buying or investing in that stock. If the investor’s rate of return is lower than 10%, than this stock provides an attractive investment.

**Free cash flow approach**

One assumption made with the dividend discount approach to share valuation is that retained earnings are the only source of financing of new equity investment in the firm. The result may be affected if external equity financing plus debt financing of new investments were allowed. The principle behind the free cash flow approach to valuing stocks is that the intrinsic value of the equity in a firm is the present value of the net cash flows to shareholders that can be created by the company’s existing asset base plus the net present value of investments that will be made in the future. The free cash flow model estimates the value of the firm as a whole, and derives the value of the equity by subtracting the market value of the non equity claims. The estimate of the value of the firm is found by calculated the present value of the cash flows, assuming the firm is financed only by equity, and then adding the present value of tax shields created by using debt if applicable In the model,

Free cash flow to equity (FCFE) = Net income + Depreciation expense – Capital expenditure requirements (CAPEX) – Change in working capital requirements – Principal debt repayments + New debt issued.

A reduced form of the dividend discount model can be used to determine the value of equity from the FCFE model:

\[
Ve = \frac{FCFE (1 + g)}{k_e + g}
\]

where:

Ve = value of equity.

FCFE= expected free cash flow to flow to equity in year 1.

\( g = \) expected growth rate.
ke = cost of equity capital.

For example, assuming that Company D has 1 million common shares outstanding and no preferred shares, that cost of equity is 8% and the growth rate is 3%, calculate the value of equity from the FCFE given the information in Table 8.1.

Using the formula described above:

\[ Ve = \frac{9\,000\,000 \times (1.03)}{0.10 - 0.03} \]

= 132,428,571, or $132.43 per share.

This is a simple example using the discounted cash flow approach. In corporate finance, this approach is expanded upon to determine the values of companies for merger and acquisition purposes. The discount rate or weighted average cost of capital (WACC) will equal the weighted average cost of equity plus the weighted average cost of debt. Some analysts also use the expanded DCF model to ascertain share value.