# 1 Introduction to Financial Derivatives and Risk Management

We are exposed to many risks in our day-to-day life. Nobody can predict what will happen in the next moment. There may be an accident, calamity, theft, loss due to some other causes etc. Similarly, business is exposed to many kinds of risks at all times. Risks may arise due to unexpected change in demand for a product. Similarly, prices of raw materials may increase, labour rates may go up, govt. may impose certain restrictions on the business. Besides, there may be natural calamity like earthquake, floods etc. Risk also arises due to change in interest rates, inflation level, general economic conditions, foreign exchange rates etc. Thus, life is full of unexpected events. It is true for individuals and business organisations. Our business ventures encounter many risks that can affect their survival and growth. For certain risks we have insurance. But there are certain risks which cannot be insured. For example, risk arising out of change in the value of an asset or liability due to change in the market conditions, is not insurable. Similarly, if the demand of a product falls due to any reason, a businessman suffers a loss. Such type of loss is not insurable. It may be noted that managers cannot eliminate these risks altogether. However, they can take certain actions to minimise the effect of such risks. Here, arises the relevance of risk management.

**Meaning of Risk**

The word 'Risk' is derived from the Latin word 'Rescum'. It means 'danger at sea' or 'that which cuts'. Managing business in a highly volatile environment is like navigating a ship on stormy seas.

Risk can be defined as the effect of uncertainty on objectives. It is the possibility that an event will occur that adversely affects the achievement of an objective. Taking a decision on an uncertain event may or may not be successful. This is called risk. ISO 31000 defines risk as the "effect of uncertainty on objectives". Risk is the change to either make a gain or a loss. A risk exists where there is an opportunity for a profit or a loss. Risk is the uncertainty of future events that might influence the achievement of objectives of an organisation.

John J. Hampton defined risk as, "the chance of future that can be foreseen". Thus risk refers to the chance that some unfavourable event will occur. If we engage in skydiving we are taking a chance with our life, i.e., sky diving is risky. If we bet on horses, we are risking our money. If we invest in securities we are taking a risk in the expectation of getting more return.

According to Roman, "Risk is the probability of failure to accomplish an objective". Buttrick defines risk as, "Any potential threat or occurrence which may prevent you from achieving your defined business objectives". Change defines risk as uncertainty surrounding an event. Warren Buffett said, 'Risk comes from not knowing what you are doing" In short, risk is a situation where the outcome is uncertain.

Risk generally means possibility of loss. An investor expects some return from the investment in the future. But future is uncertain. Hence return is also uncertain. If the return on an investment can be predicted precisely, we say that the return is certain or that the asset is risk-less. But in the case of majority of assets, this is not possible. If the rate of return cannot be predicted with certainty and if the investment's value fluctuates we say that volatility exists. This volatility gives rise to risk. Mostly, the actual return he or she receives from security may vary from the expected return. This variability of return is known as risk. The greater the variability in the possible outcome, the greater will be the risk.

The extent of a risk can be expressed as follows :

Risk = Probability x Severity

Probability is the likelihood of an event occurring, and severity is the extent and cost of the resulting loss.

**Risk Management**

In the financial market, individuals and organisations deal in financial assets. Financial assets include shares, bonds, loans, foreign currencies etc. The prices of these financial assets fluctuate on a continuous basis. These fluctuations create uncertainty in the financial market. The uncertainty is with regard to future prices of these financial assets. This uncertainty gives rise to risk. The risk has wide economic implications. Due to the risk of price fluctuations, it is difficult for the businesses to estimate their future production costs and revenues. Risk creates problems to the individuals as well. Let us take an example. Suppose you have purchased some shares in the stock market. Your intention might be selling them at a higher price later. But there is considerable uncertainty regarding the future movement of share price in the stock market. If the share price falls, you will incur a loss. Let us take another example. Suppose a firm wants to import some goods from the UK. The payment is due after three months. The firm has to buy necessary UK pounds from the authorized foreign exchange dealer. Foreign exchange rates fluctuate continuously in the currency market. As a result, the firm may pay more after three months, if the pound-rupee exchange rate increases during this period. The importing firm is exposed to risk. It may incur loss on account of uncertainty regarding future movement of exchange rates. Hence, individuals would like to eliminate this risk altogether. How to eliminate this risk? The fact remains that it is impossible to eliminate the risk completely. However, certain steps can be taken to minimize risk to a considerable extent. This means that we can manage risks.

The firm may have excellent technology. It may have skilled labour. It may have market domination. Still the firm may be out of business in the future if it fails to manage the risks. So every individual and every organisation wants to cover the risk involved in their financial transactions. It is essential for the firms to manage the risks efficiently. Risk management is a must for the survival of the business. In short, risk is all-pervasive. No one can escape it. The best way is to try to manage the risk.

**Meaning of Risk Management**

Risk management is one of the specialised functions of management. Risk management simply refers to management of risk. It does not mean risk reduction ; it refers to maintenance of risk at a desired level. Risk management is defined as the process of planning, organising, directing and controlling the resources and activities of an organisation in order to minimise the adverse effect of potential losses at the least possible cost. It is the process of making and carrying out decisions that will minimise the adverse effects of risks on an organisation. In short, risk management is an important business practice that helps businesses identify, evaluate, track, and minimise the risks present in the business environment.

**Need for Risk Management**

Today business firms are confronted with financial and marketing risks. Such risks are more varied and challenging than ever before. Interest rates, currency values and commodity prices became more volatile. Risks make it very difficult for managers to forecast future cash flows. Forecasting future cash flows is essential for making appropriate financial decisions such as when to finance new investments, how to finance the investments, whether to pay dividends and so on. Therefore, risk management is very essential to manage the business operations successfully. The need for risk management arises due to the following factors :

1. **Dynamic environment** : Business firms are operating in a changing environment. Changes bring opportunities and threats. If the risk is not properly managed, opportunities cannot be exploited. In the meantime, threats cannot be eliminated.
2. **The objective of maximisation of shareholders' wealth** : The primary objective of any company is to maximise shareholders' wealth. The shareholders appoint agents (managers) who take various financing and investing decisions to achieve the firm's objectives. Maximisation of shareholders' wealth is possible only by minimisation of risks. Thus, risk management is needed to attain the objective of maximisation of shareholders' wealth.
3. **Survival and growth**: All businesses are surrounded by uncertainties. These uncertainties give rise to risks. Thus, businesses involve risk. If the risks are not managed, the businesses cannot survive and grow. Thus, risk management is essential for the survival and growth of a business.

4. **Uncontrollable factors affecting business** : There are a large number of external factors that affect the performance of a business. Business has no control over such external factors. Business is exposed to risk on account of uncontrollable external factors. For example, deregulation creates volatility. The volatility causes risk. It is not possible to eliminate the risk altogether. But a firm can manage it to reduce its adverse effects. Here arises the need for risk management.

5. **Increased competition** : Every firm is operating in a competitive environment. Each firm tries to outperform other firms. To tackle competition, firms are required to formulate and implement strategies. Along with this, it is necessary to devise risk management programmes. Thus, risk management is an integral part of managing a business. Without proper risk management, a company cannot carry on its business successfully.

**Importance of Risk Management**

The presence of risk element adversely affects a business. It affects its future profits and values. Hence, without minimising the impact of risk, a business organisation cannot move forward. Every business unit is operating in a pressure cooker environment. It has to face risks at every moment and at every stage of business. Risk cannot be eliminated altogether. But its evil effects can be reduced. Here arises the importance of risk management. Almost all big companies maintain a risk management team. This team prepares risk management programmes. Risk management has now become an important function of management like planning, organising, controlling etc. The importance of risk management can be understood from the following points :

1. **Attainment of objectives :** Risk management plays a very important role in attaining the objectives of a firm. The main objective of a firm is to maximise its value. The value of a firm depends on expected future net cash flows and the risk associated with these cash flows. Risk management is all about minimising the impact of risk events and to ensure a steady net cash flow stream for the firm.

2. **Increased debt capacity :** Firm with better risk management system can be benefited by its increased debt capacity. It can raise more debt capital in the capital market at competitive interest rates. Increased use of debt capital directly contributes for the increased firm value. This is because interest payments are deductible while calculating taxable income.

3. **More internally generated funds :** If there is efficient risk management, investments will not be missed away for want of capital. This is because there will be a steady cash flow in future. The firm will always have sufficient internally generated cash flows to invest in new projects. In the meantime, this provides an easy access to the capital market. The overall benefit is that the profitability of the firm will increase.

4. **Relief to management :** Risk is always a headache to the management. If there is an efficient risk management system, the management will be relieved of the task of 'fire fighting' every time an adverse event takes place.
5. **Minimisation of the impact of external factors :** Inflation, technological developments, social forces such as rising crime rates and claim consciousness, mergers and acquisitions, legislations such as Consumer Protection Act etc. have increased the magnitude of risk. Through proper risk management, it is possible to minimise the impact of external factors on the business. Proper risk management will reduce not only the likelihood of an event occurring but also the magnitude of its impact.
6. **Strategy formulation and implementation:** Recently many companies have added risk management departments to their team. The role of this team is to identify risk, come up with strategies to guard against these risks, to execute these strategies, and to motivate all members of the company to co-operate in these strategies.
7. **Better decisions :** The ability to manage risk will help managers act more confidently on future business decisions. Their knowledge of the risks they are facing, will give them various options on how to deal with potential problems.
8. **It is crucial for successful planning :** Success in business rarely arrives by chance. Success is a product of meticulous planning and diligent execution. Unforeseen events can affect the success of your business if you do not have built-in counter measures in your plans.
9. **It helps improve business reputation :** Having a proper risk management strategy in place help to convey a positive message about business. Internally, it instills confidence among your employees about the capabilities of leadership; after all, having a safe workplace also helps to boost morale.

Thus, risk management is important in an organisation because without it, a firm cannot possibly define its objectives for the future. In the absence of risk management, businesses would face heavy losses. Risk management is necessary to protect the company's resources. In short, without risk management, a firm cannot ensure survival, growth and prosperity.

**Risk Management Issues in Business (Problems or Challenges of Risk Management)**

These days there are a number of risk management issues in business. These issues can threaten corporate strategy if they are not identified quickly and managed properly. Hence, the Chief Risk Officers (CROs) must focus their attention on these issues. The key risk management issues may be briefly discussed as below :

1. **Technology risk management :** The increase in technology risk has caused many IT organizations to establish information technology risk management functions (ITRM). ITRM functions manage and monitor technology risks so that companies can anticipate and avoid problems rather than react to them. But technology risk management is not easy.

2. **Third party risk management :** Organizations today have thousands of third-party intermediaries. As the role of third parties in companies' interaction with governments has grown and supply chains become more stretched, companies' monitoring of their third parties has become critically important. Companies are challenged to identify which of these numerous third parties are putting them at risk.
3. **Fraud and misconduct :** Companies should continue to monitor the activities of employees, vendors and third parties to detect and, wherever possible, prevent financial fraud or employee misconduct, that can result in financial losses and damaged reputations.
4. **Crisis management :** CROs should ensure that their companies place a strong emphasis on scenario planning – holding workshops and developing documented plans to prepare for and respond to potential crises such as cyber intrusions, regulatory scrutiny or investigations, compliance challenges, litigation, or workplace violence.
5. **Achieving compliance programme effectiveness :** The growing number of regulations affect every facet of a company's operations and are implemented and enforced by an array of agencies worldwide. In this environment, companies need to anticipate regulations before they are implemented and plan for them under the leadership of the CRO and the chief compliance officer.
6. **Lack of meaningful risk assessment process :** Many organizations don't have the right skills to develop a meaningful risk assessment process. This is a serious issue.
7. **Lack of an open, risk-ware culture :** In order to build a culture where business managers are willing to be transparent to their executives, the executives have to be careful to craft the kind of culture that fosters this transparency. Open dialogs about concerns, risks, and trade-offs necessary are often missing in organizations that lack effective risk management.
8. **Many risk analysis techniques :** There are several risk management techniques. These techniques require gathering large amounts of data. This extensive data collection can be expensive and is not guaranteed to be reliable.
9. **Poor outcomes :** The use of data in decision making processes may have poor outcomes if simple indicators are used to reflect the much more complex realities of the situation. Similarly, adopting a decision throughout the whole project that was intended for one small aspect can lead to unexpected results.
10. **Lack of analysis expertise and time :** Computer software programmes have been developed to simulate events that might have a negative impact on the company. While cost effective, these complex programmes require trained personnel with comprehensive skills and knowledge in order to accurately understand the generated results. Analyzing historical data to identify risks also requires highly trained personnel.

11. **The illusion of control :** Risk models can give organsations the false belief that they can quantify and regulate every potential risk. This may cause an organisation to neglect the possibility of novel or unexpected risk.

12. **Issues in identification of risks :** All the risks will never be identifying. Similarly, when a fault is identified it is not usually possible to identify all causes.

To conclude, managers do not like risks. They are willing to pay a price to avoid it. But risk element can be minimised by judicious use of insurance products and hedging with derivatives. To ensure this, management needs to find solutions for the above mentioned issues.

**Risks Management Process (Functions of Risk Management)**

Risk management is a continuous process. It involves the following steps :

**Step 1 : Identify the Risk :** The first step is to identify the risks that the business is exposed to in its operating environment.

**Step 2 : Analyze the Risk :** Once a risk has been identified it needs to be analyzed. The scope of the risk must be determined. It is also important to understand the link between the risk and different factors within the organisations.

**Step 3 : Evaluate or Rank the Risk :** Risk need to be ranked and prioritized. A risk that may cause some inconvenience is rated lowly, risks that can result in catastrophic loss are rated the highest. It is important to rank risks because it allows the organisation to gain a holistic view of the risk exposure of the whole organisation.

**Step 4 : Treat the Risk :** Every risk needs to be eliminated or contained as much as possible. This is done by connecting with the experts of the field to which the risk belongs to. In a manual environment, this entails contacting each and every stakeholder and then setting up meetings so everyone can talk and discuss the issues.

**Step 5 : Monitor and Review the Risk :** Not all risks can be eliminated - some risks are always present. Market risks and environmental risks are just two examples of risks that always need to be monitored.

**Market Risks**

The market risk arises because of uncertainties in the economy, political environment, natural or human-made disasters, or recession. It exists because of changes in market prices. Change in market price causes change in return from investment. As a result, market value of investment decreases. This is known as market risk. Thus, market risk refers to variability in return due to change in market price of investment or assets. It is the risk based on the unfavourable movements in asset prices that will lower the value of the asset. It is the risk that the value of assets will decrease due to a change in the value of external factors. In short, market risk refers to the uncertainty associated with any investment decision. Market risk is also called *systematic risk*. Since the market risk affects the entire market, it cannot be avoided through portfolio diversification. It can only be hedged.

**Types of Market Risk**

Following are the different types of market risks :

1. **Equity price risk** : The prices of equity shares are highly volatile. The price of a security (shares or stocks) may change very quickly. It causes falling in value of security. This is known as equity price risk. Thus, equity price risk arises out of the changes in the price of shares or stock in the financial markets.
2. **Interest rate risk:** When the interest rate changes, the value of security is likely to change. This risk is called interest rate risk. Thus, interest rate risk is the risk that arises from unanticipated fluctuations in the interest rates due to monetary policy measures undertaken by the Central Bank.
3. **Currency or exchange rate risk:** This is associated with the exchange rate fluctuation of foreign exchange on international transactions. It refers to the potential loss arising out of changes in exchange rate of rupee against foreign currencies. In short, it is the risk that arises because of the fluctuations in the exchange rates.
4. **Commodity price risk :** Commodity price risk refers to the risk of unexpected changes in a commodity price. These commodities may be grains, gold, silver, gas, electricity, oil etc. Commodity price risk affects not only the multinational companies but also ordinary people like farmers, small business enterprises, commercial traders, exporters and Government.
5. **Reputation risk :** Reputation is the most important intangible asset possessed by the business. It represents the extent to which the firm is meeting the expectation of its stakeholders. Reputation risk arises when negative publicity triggered by certain business events reduces the firm's reputation. This results in loss of value. This is known as reputation risk.

## DERIVATIVES

In financial markets and foreign exchange markets, there are fluctuations. Fluctuations expose the parties to risk. Hence, parties would like to hedge their risks. For hedging the risks,

some financial instruments have been developed recently. These financial instruments are known as *derivatives*. When the firm reduces its risk exposure by using the derivatives, it is known as hedging. Hedging offsets the firm's risk.

The underlying principle behind derivatives is that a risk-averse individual is willing to pay a price to transfer the risk and an individual with higher risk taking ability is willing to bear the risk for a price.

**Meaning and Definition of Derivatives**

Mark Rubinstein was perhaps the earliest author to use the word 'derivative' in finance. He used it in an Article published in 1976 in the Journal of Economics. The word 'derivatives' was originated in mathematics. It refers to a variable that has been derived from another variable. In science, a derivative is a substance made from another.

Derivatives are instruments for hedging risk. They are risk transferring instruments. They are called as derivatives because they derive their value from the value of some other assets. The other assets are called *underlying assets* or simply *underlyings* or *bases.* The underlying assets may be interest rate, foreign exchange, commodity or share or any security. To understand the meaning of derivative, let us take the example of a commodity, say, wheat. The wheat farmer expects to sell his produce in three months time. He is uncertain about the price of wheat at the time of sale in future. Suppose the current market price of wheat is ₹ 20 per kg. The price of wheat may increase or decrease in future. If the price falls in the future, he may incur a loss. Thus, he is exposed to risk due to price fluctuations. To avoid this risk, the farmer enters into an agreement to sell wheat after three months at a price of ₹ 20 per kg. This agreement is an example of a derivative. Suppose the wheat price falls to ₹ 16 per kg. after three months. Still the wheat farmer will be able to sell the wheat at the price already agreed upon (i.e., ₹ 20). Thus, he has eliminated the possibility of incurring a loss (i.e., ₹ 4 per kg.) on account of fall in wheat price. He has protected himself from the risk through a derivative. If he had not entered into the derivative contract, he would have been forced to sell the produce at a price of ₹ 16 per kg. (incurring a loss of ₹ 4 per kg.). Suppose the wheat price increases to ₹ 23 per kg. after three months. Now the farmer sells the produce at ₹ 20 per kg. If he had not entered into the derivative contract he would have been able to sell the produce at ₹ 23 per kg. In this case he would lose ₹ 3 per kg. But he avoided the uncertainty of price change and he slept well for three months through the derivative contract. Thus, derivatives are basically instruments used for eliminating the risk involved in buying, holding, and selling assets whose prices fluctuate.

The value of 'wheat derivative' will be derived from the current price of wheat. Thus, the derivative derives its value from the performance of something else. That "something else" is the underlying asset. In the above example, the underlying asset is wheat. This implies that derivatives have no independent value of their own.

The word 'derivative' comes from the verb 'to derive'. It indicates that it has no independent value. The term derivative may be defined in ordinary language as well as in

financial language. In ordinary language, derivatives mean derived values. The Merriem Webster Dictionary defines derivatives as, "A substance that can be derived from another substance". In the financial language, a derivative is a financial product that has been derived from a market for another product. It is a financial product which has been derived from another financial product or commodity. According to Robert L. Mconald, "A derivative is simply a financial instrument (or even more simply an agreement between two parties) which has a value determined by the price of something else".

In normal trading, an asset is bought and sold. In derivative trading, the asset itself is not traded, but the right to buy or sell is traded. Thus, a derivative instrument does not directly result in a trade. It gives a right to a person. This right may ultimately result in trade. A buyer of a derivative gets a right over the asset. This right may result in the buying or selling of the asset after or during a specified period. The price at which the transaction is to be carried out is determined in the beginning itself.

Thus, derivatives are financial instruments or contracts whose values are derived from some other assets which are called underlying assets. In short, derivatives are contracts which are written between two parties for easily marketable assets. Derivatives are also known as *deferred delivery instruments* or *deferred payment instruments.*

A very simple example of derivatives is curd. It is a derivative of milk. Milk is the underlying asset. The price of curd depends upon the price of milk. The price of milk in turn depends upon the demand and supply of milk.

**Characteristics of Derivatives**

Derivatives are innovative financial products. The essential features of derivatives may be outlined as below:

1. **Underlying asset :** Each derivative product has an underlying asset.
2. **No independent value :** The value of derivative is derived from the value of underlying asset, such as an equity, foreign currency, bond or commodity. Thus the value of derivative depends on their underlying asset price movements.
3. **Predefined period :** All derivative instruments have a predetermined finite life. At the end of this fixed period, they expire or are closed out and involve an exchange of payments (difference in price).
4. **Contract fulfillment :** A derivative contract is a contract between two parties. The contract is to be fulfilled in future.
5. **Instruments for hedging risk :** Derivatives are instruments for hedging risk. They help to transfer price risks by locking in asset prices.
6. **Minimal initial investment :** Derivatives require very low or no initial investment. This is because there is no investment in actual asset or liability.

7. **Off-balance sheet instrument :** Derivatives are off-balance sheet instruments. They are not shown in the balance sheet. The size of the derivative depends upon its notional amount. The notional amount is the amount used to calculate the pay-off.
8. **Secondary market instruments :** Derivatives are mostly secondary market instruments. Hence, derivatives are not useful in mobilising fresh capital by the companies.

**History and Evolution of Derivatives**

Derivatives are not a modern invention. They were used from ancient times. Let us go back to the Bible. In Genesis Chapter 29, believed to be about the year 1700 B.C., Jacob purchased an option costing him seven years of labour that granted him the right to marry Laban's daughter Rachel. His prospective father-in-law, however, reneged, perhaps making this not only the first derivative but the first default on a derivative. Laban required Jacob to marry his older daughter Leah. Jacob married Leah, but because he preferred Rachel, he purchased another option, requiring seven more years of labour, and finally married Rachel.

A subsequent trace of derivatives in history can be found in Aristotle's Politics. Aristotle tells the story of Thales, another philosopher but also mathematician, who lived from around 625 to 550 BC in Miletus, which was one of the major cities of Ancient Greece. During wintertime, Thales predicted an unusually large olive harvest. Therefore, he entered into agreements with olive press owners before autumn for the exclusive use of their presses. For this, he paid the deposits in advance with an agreement that he will not demand his money if the harvest is not good. When the harvest time came, there was plenty of demand for the presses. Since he had the rights to use them, he hired them out at high prices and made huge money. Though Thales was not interested in making money, all he wanted was to prove that philosophers can make money if they so desire. Thales knew well in advance that his maximum losses will be the advance he paid while his profits depended on what he demanded. This is a primitive form of derivative.

In the olden days commodities' prices were almost the sole concern of the business community. Therefore, it was natural that commodity derivatives were the first to emerge. Traders were entering into firm price contracts for future delivery to remove the uncertainty of price. Commodity derivatives naturally were the first amongst all classes of derivatives.

The first exchange for trading derivatives appeared to be the Royal Exchange in London. It permitted forward contracting. The first futures contracts are generally traced to the Yodoya rice market in Osaka, Japan around 1650. The farmers were afraid of rice prices falling in the future at the time of harvesting. To sell the rice at a predetermined fixed price in the future, the farmers entered into contracts with the buyers. In 1848, the Chicago Board of Trade was established to facilitate trading of forward contracts on various commodities. Due to its prime location on Lake Michigan, Chicago was developing as a major centre for the storage, sale, and distribution of Midwestern grain. It provided the initial platform for buyers and sellers to

enter forward contracts in 1864 and overcome the credit risk in the forward contracts. These exchange traded forward contracts became known as futures. In the year 1898, the butter and egg dealers of Chicago Produce Exchange joined hands to form Chicago Mercantile Exchange for trading futures to hedge their risks of price volatility. Gradually the exchange also provided the futures market for other commodities like pork bellies (1961), live cattle (1964), live hogs (1966) and feeder cattle (1971). This success in trading in the commodities paved its way in the trading of foreign currencies (1972), T-bond futures (1975) and equity index futures (1982). ...tures contracts were initially traded on agricultural commodities. Chicago Board of Trade merged with Chicago Mercantile Exchange remains the largest exchange in the world for financial derivatives, both in terms of volume and value of derivatives contracts. It handles more than 1 billion contracts in a year valued at around $1000 trillion.

**History of Derivatives in India**

Derivatives have a fairly long history in India. The first organised futures market came up in 1875 with the establishment of 'Bombay Cotton Trade Association Ltd'. Later in 1893, Bombay Cotton Exchange Ltd. was established. In 1900 with the establishment of the Gujrati Vypari Mandali, futures trading in groundnut, castor seed and cotton commenced. Futures trading in wheat have existed at several places in Punjab and UP. But the most notable futures exchange for wheat was the Chamber of Commerce at Hapur, set up in 1913. Futures trading in Bullion began in Mumbai in 1920. Calcutta Hessian Exchange Ltd. was established in 1913 for futures trading in raw jute and jute goods. But organised futures trading in raw jute began only in 1927 with the establishment of East Indian Jute Association Ltd. These two associations amalgamated in 1945 to form the East India Jute and Hessian Ltd. to conduct organised trading in both raw jute and jute goods.

Forward Contracts (Regulation) Act was enacted in 1952 and the Forwards Markets Commission was established in 1953. In due course, several other exchanges were set up in the country to trade in diverse commodities. Recently futures contracts in various commodities were allowed to trade on exchanges. For example, now cotton and oil futures trade in Mumbai, soyabean futures trade in Bhopal, pepper futures trade in Kochi, coffee futures trade in Bangalore etc. In June 2000, the National Stock Exchange and the Bombay Stock Exchange started trading in futures on Sensex and Nifty. Options trading on Sensex and Nifty commenced in June 2001. Very soon thereafter, trading began on options and futures in 31 prominent stocks in the month of July and November respectively. Currently, there are 41 stocks trading on NSE Derivative and the list keeps growing. Interest rate futures were introduced on NSE in 2003. Stock futures are the most highly traded contracts on NSE accounting for around 55% of the total turnover of derivatives at NSE, as on April 13, 2005. Stock options accounted for about 22% of total derivatives activity in terms of number of contracts and about 24% of turnover.

**Classification of Derivatives (Types of Derivatives)**

Derivatives can be classified in the following three ways:

A. On the basis of nature of payoff or nature of contract

B. On the basis of underlying assets

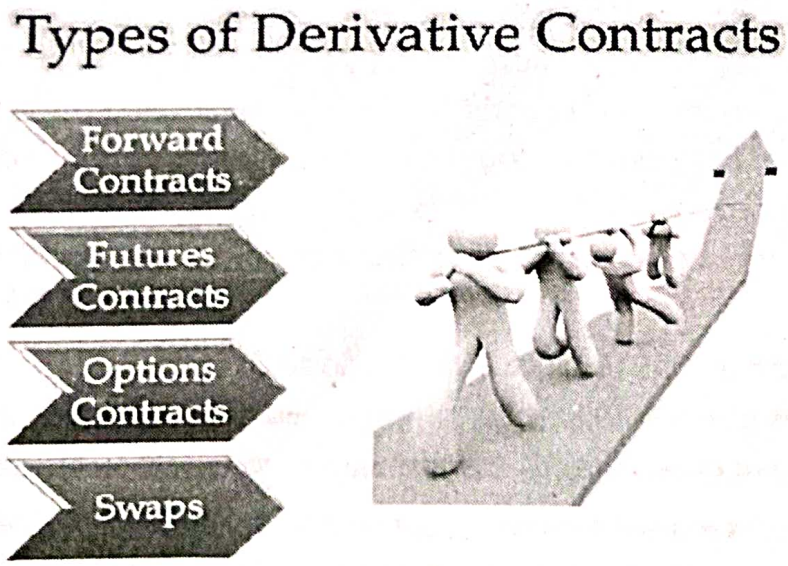
C. On the basis of trading mechanism

**A. On the basis of nature of payoff:** On the basis of nature of payoff, derivatives may be classified into forwards, futures, options, swaps etc. These may be briefly discussed as below:

**Forwards:** Forward is a contract in which the parties, i.e., buyer and seller, agree to exchange an asset on a future date at a price agreed at the time of entering into the contract. It is a bilateral agreement. It does not require an initial payment when signing the contract. Forward contracts are unstandardised. They are not traded on stock exchanges. They are generally traded on over the counter (OTC). Forward contract is generally closed with the delivery of the underlying asset.

**Futures:** A futures contract is an agreement between two parties to buy or sell an asset (or instrument) at a certain time in the future at a certain price. Futures contracts are traded on the stock exchanges. Thus, they are exchange-traded forward contracts. The exchange guarantees and ensures the execution of the contract by both the parties. The value of futures contracts are marked-to-market everyday. It means that the contract value is adjusted according to market movements till the expiration date. Futures often are settled in cash or cash equivalents.

**Options:** An option refers to the right (but not the obligation) to buy or sell a security or other assets during a given time for a specified price. The specified price is called strike price. Once the option is offered, it is the option writer's obligation to fulfill the contract. If one party has the right (option), the other party has an obligation. If the buyer does not exercise the option within the specified period, the option will get expired.




**Swaps:** Swaps are derivative contracts in which two parties exchange their financial obligations. The cash flows are based on a notional principal amount agreed between both the parties without exchanging principal amount. The amount of cash flows is based on a rate of interest. One cash flow is generally fixed and the other is variable. For example, a loan with

floating rate of interest may be exchanged with a loan with fixed rate of interest. Swaps are not traded on stock exchanges. They are over-the-counter contracts between businesses or financial institutions.

Forwards, futures, options and swaps are basic derivative products. These are generic or common derivatives.

B. **On the basis of underlying assets:** On the basis of underlying assets on which derivatives are traded, they can be broadly classified into two, namely, commodity derivatives and financial derivatives.

1. **Commodity Derivatives:** Commodity derivatives were the first to emerge. In the case of commodity derivatives, the underlying assets are commodities. The commodities may be agricultural products such as rice, wheat, cotton, oil, soya, tea, coffee, rubber etc. and metals such as copper, tin, gold, silver etc.
2. **Financial Derivatives:** In the case of financial derivatives, the underlying assets are financial instruments or products. In short, the financial derivatives derive their value from financial assets such as foreign exchange (currency), share or security, interest rate etc.

C. **On the basis of trading mechanism:** Another classification is based on the way the derivatives are traded. According to the markets or places the derivatives are traded, they can be classified into two- exchange traded derivatives and over the counter derivatives.

1. **Over the Counter Derivatives:** These are contracts that are traded outside the exchanges (i.e., over the counter market). These are traded between two traders that know each other personally. They are also traded through an intermediary, usually a large bank. These contracts are specific to the parties involved. These are not traded in the market or exchange. These are customized to the requirements of counter parties. This means that the terms of OTC contracts are individually agreed between two counter-parties. These are normally settled by delivery of underlying asset. These are private contracts. In short, contracts that are traded (and privately negotiated) directly between two parties, without going through an exchange are known as OTC derivatives.

Forward contract is an OTC product. Swap is also an OTC product. Another example is exotic options. OTC products give rise to another risk called counter-party risk. This risk is concerned with the failure of one of the parties to the contract to honour the obligations undertaken.

The OTC derivatives market is huge. According to the Bank for International Settlements (BIS), the total outstanding notional amount is US $298 trillion in 2005.

**Merits of the OTC Derivatives:** The merits of OTC derivatives are:

(a) There is limitless flexibility in contract design.

(b) These are customised to the requirements of contracting parties.

(c) The underlying asset can be anything, the size of the contract can be of any amount, and the delivery can be made at any time and at any location.

**Demerits of OTC Derivatives:** The important demerits of OTC products are:

(a) It is difficult to find matching parties.

(b) There is credit risk. It means that one of the parties to the contract may fail to honour the obligations.

(c) There is skewed pricing as two parties are not equally strong.

(d) Transaction cost is high.

2. **Exchange Traded Derivatives:** These are traded on the organised or regulated exchanges. The buyer and seller need not know each other. The exchange is the counter-party for both the buyer and seller. This means that the derivatives exchange acts as an intermediary to all transactions. It takes initial margin from both sides of the trade to act as a guarantee. Exchange-traded derivatives are standard products. This means that the parties to the contracts do not decide the terms of contracts. They merely accept terms of contracts standardized by the exchange. The specifications or terms are designed by the exchange authorities after taking into consideration the characteristics of the underlying assets. In short, derivatives that are traded through derivatives exchanges are known as exchange traded derivatives.

Futures are traded only on exchange. Options can be both exchange traded as well as OTC. Options on stocks and indices are mostly exchange traded while options on currencies are mostly OTC.

The world's largest derivatives exchanges are Korea Exchange (on the basis of number of transactions), Eurex, CME, and CBT. According to BIS, the combined turnover in the world's derivatives exchanges totalled US $344 trillion during the fourth quarter of 2005.

In 2017, 25 billion derivative contracts were traded. Trading activity in interest rate futures and options increased in North America and Europe. Trading in Asia declined due to a decrease in commodity futures in China. These contracts were worth around $570 trillion.

**Merits of Exchange Traded Derivatives:** The merits of exchange traded derivatives are:

(a) These are free from counter party risk.

(b) Transaction cost is transparent and nominal.

(c) Investors can enter and exit from derivative positions very conveniently as trading takes place continuously.

**Demerits of Exchange Traded Derivatives:** The demerits of exchange traded derivatives are:

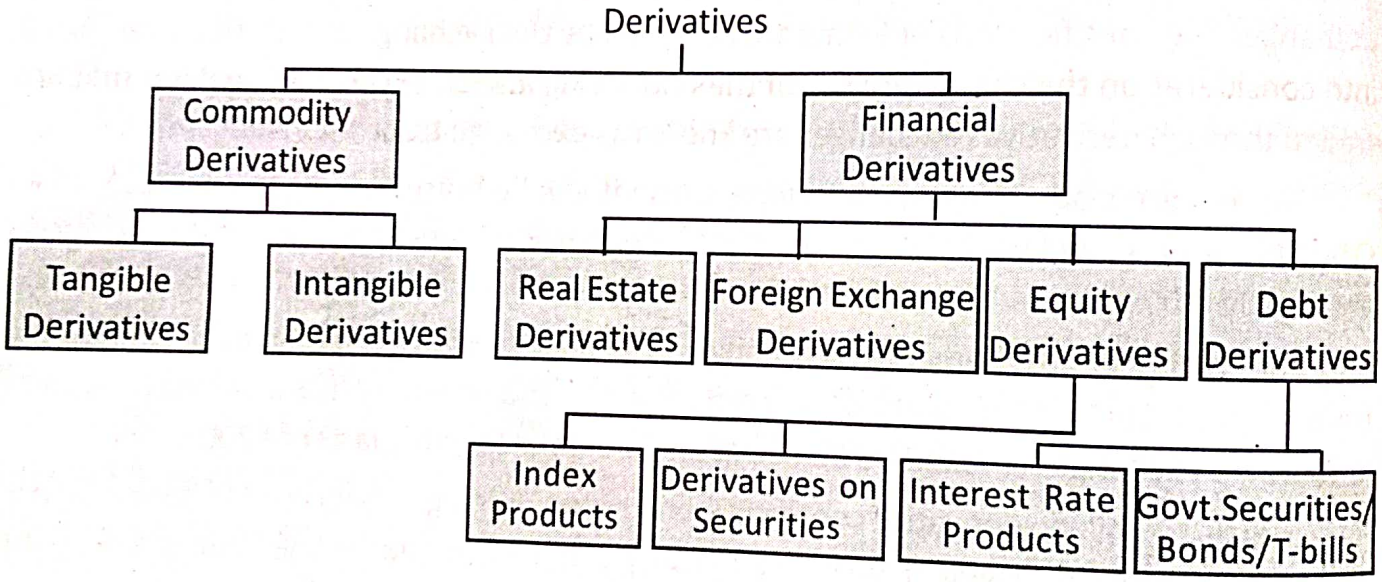
(a) They are less flexible.

(b) These are not customised to the requirements of the contracting parties. They have to accept the rules and regulations of the exchange.

**Difference between Exchange Traded and OTC Derivatives**

| Exchange Traded Derivatives | OTC Derivatives |
|---|---|
| 1. Exchange traded derivatives do not have any counter party risks. | 1. Counter-party risk is present in OTC derivatives. |
| 2. Exchange traded derivatives are contracts that trade on an organised exchange. | 2. Over the counter derivatives are traded outside an exchange. |
| 3. Transaction costs are less. | 3. Transaction costs are more. |
| 4. The contracts have standardised terms set by the exchange or the clearing house. | 4. Contracts are customised to the requirements of the counter party. |
| 5. Prices are publically available. | 5. Prices are not available (kept confidential). |
| 6. Market traders do not know each other. | 6. Market players are known to each other. |

The different types of derivatives may be shown in the following chart:




## FINANCIAL DERIVATIVES

Financial derivatives became popular only after the 1970s when there was increasing integration of the world economy. They came into spotlight due to growing instability in the financial markets. Today, financial derivatives constitute the largest segment in derivatives.

### Meaning of Financial Derivatives

A financial derivative is a financial contract that derives its value from an underlying financial asset. The underlying asset may be stocks or bonds or interest rates or currencies. The seller of the contract doesn't have to own the underlying asset. Financial derivatives are also known as *common derivatives.*

## Features of Financial Derivatives

The features of financial derivatives are as follows:

1. A financial derivative is a financial instrument or a financial contract.
2. A financial derivative is a future contract between two parties.
3. The value of the financial derivatives depends on the value of the financial instruments.
4. Financial derivatives can be undertaken directly between the two parties or through the particular exchange.
5. The trading results through financial derivatives are not shown in the financial statements, (i.e., financial derivatives are off-balance sheet in nature).
6. Usually in financial derivatives, the taking or making delivery of underlying assets is not involved (they are mostly settled by taking offsetting positions in the derivatives themselves).

## Types of Financial Derivatives

The following are the different types of financial derivatives:

(a) **Currency Derivatives**: Exchange rates between various currencies can form the basis of derivatives. The currencies can be US Dollar, Canadian Dollar, Singapore Dollar, Euro, Yen etc. All basic derivatives of forwards, futures, options and swaps based on exchange rates are actively traded. Currency derivatives came into existence only after 1972 when the fixed exchange rate regime under Bretton Woods System came to an end. The first derivative on financial asset was traded on currencies (currency futures) in the International Monetary Market of the Chicago Mercantile Exchange, USA in 1972.

(b) **Interest Rate Derivatives**: In the case of interest rate derivatives, the underlying asset is interest rates. Most common interest rates on which derivatives are traded are London Inter Bank Offer Rate (LIBOR). Interest rate derivatives are instruments whose value is dependent upon interest rates on T-bills, treasury bonds etc.

(c) **Equity Derivatives**: The most popular derivatives are equity derivatives. Here the underlying assets are equity stocks. Futures and options are very widely traded derivatives on equity stocks.

(d) **Stock Indices Derivatives**: Derivatives on various stock indices in the stock markets are more popular now-a-days. This is because of their ability to provide protection from market risks. Futures and options on stock indices exist all over the world in all major stock exchanges. In the case of stock index derivatives, delivery of the asset is not possible.

(e) **Credit Derivatives:** This is a recent innovation. These are derivatives that are based on the credit rating or credit risk of cash flows such as installment on loans or other forms of receivables. There are six credit derivatives commonly used. They are credit default swaps,

total return swaps, credit-linked notes, credit spread options, credit basket swaps and collateralised loan obligations. These products transfer credit risk without the transfer of ownership. Thus, credit derivatives include a range of products designed to manage credit risk or default risk.

**(f) Other Types of Financial Derivatives:** In addition to the above, there are some other types of financial derivatives. Some of them are as follows:

(i) **Warrants:** Options generally have lives of upto one year. The majority of options traded on options exchanges have a maximum maturity of nine months. But there are also long-dated options. Long-dated options are called warrants. Warrant is just like an option contract where the holder has the right to buy shares of a specified company at a certain price during the specified time period. In short, warrants are long term options with three to seven years of expiration.

(ii) **LEAPS:** LEAPS means Long term Equity Anticipation Securities. These are options having a maturity of upto three years.

(iii) **Baskets:** These are options on portfolios of underlying assets. The underlying asset is usually a moving average of a basket of assets. Equity index options are a form of basket options.

**Note :** Financial derivatives may also be classified into forwards, futures, options, swaps, warrants (already discussed), convertibles, swaptions etc.

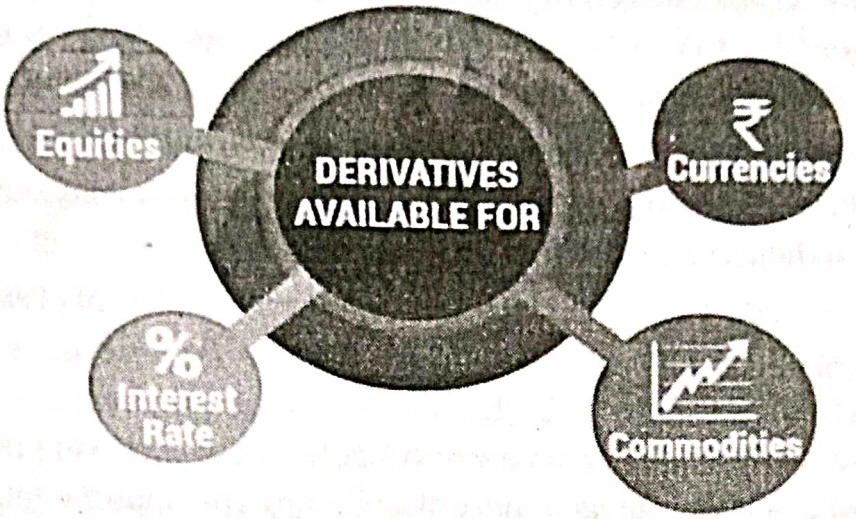
(iv) **Convertibles :** Convertibles are highbrid securities. They combine the basic attributes of fixed interest and variable return securities. Examples include convertible bonds, convertible debentures, convertible preference shares. These are also called equity derivative securities. They can be fully or partially converted into equity shares of the issuing company at predetermined terms.

**Difference between Commodity Derivatives and Financial Derivatives**

In the case of commodity derivatives, the underlying asset is a commodity. The commodity may be wheat, cotton, pepper, turmeric, corn, orange juice, crude oil, natural gas, gold and silver. In financial derivatives, the underlying asset is financial instruments such as bonds, stocks, stock indices and currencies.

A financial derivative is fairly standard. There are no quality issues. On the other land, in a commodity derivative, quality of the underlying asset can vary at times. Hence, quality of the underlying asset matters.

In the case of financial derivatives, most of the contracts are cash-settled. Even in the case of physical settlement, financial assets are not bulky. They do not need special facility for storage. But in the case of commodity derivatives, generally the underlying assets are bulky. Due to the bulky nature of the underlying assets, physical settlement in commodity derivatives creates the need for warehousing.




**Need and Importance of Derivatives (Uses of Derivatives)**

Businesses face risk. Some of the risks are acceptable. This means that a business must assume some type of risk or there is no reason to be in business. But other types of risks are unacceptable. If they cannot be eliminated, they should be managed. Business involves mainly three types of risks. They are price risk, exchange risk and interest rate risk. Derivatives have been emerged to manage these risks. Derivatives have arisen from the need to manage the risk arising from movements in markets beyond our control, such as commodities, securities, foreign exchange etc. These risks may severely affect the revenues and costs of firms. They may even threaten the viability of firms. Derivatives are therefore used as means to protect against key business risks which are beyond one's control.

Derivatives equip the firms with more effective tools to manage the exposure to interest rates, foreign exchange rates and commodity prices. When firms are free from these botherations, they can better focus on their core activities. They can improve the quality of products. Further, they can reduce the cost of production. This will help to increase the profitability. These will accelerate economic growth.

Derivatives are an important instrument for risk management. They can be used for minimizing risks. This means that derivatives can be used for hedging. Hedging through derivatives is cheaper and more convenient than what could be obtained by using cash instruments. It is so because, when we use derivatives for hedging, actual delivery of the underlying asset is not at all essential for settlement purpose. They can also be used to speculate on the movement of commodity or security prices, interest rates or the levels of financial indices.

All derivative instruments are simple to operate. Further, all derivative products are low cost products. They can be contracted easily. They offer high liquidity. In today's uncertain world, derivatives are increasingly being used to protect assets from drastic fluctuations. At the same time, they are being re-engineered to cover all kinds of risk.

The uses of derivatives may be briefly outlined as below :

1. **Risk management** : Risks are common and inherent in the financial markets and commodity markets. Derivatives help to control, avoid, shift and manage efficiently different types of risks. This is done through various strategies like hedging, arbitrating, spreading etc.

2. **Income generation** : The most common use of derivatives is to generate maximum income from trading or investment. Further, derivative trading enhances liquidity position by reducing transaction cost. This helps to generate maximum income.

3. **Trading efficiency** : Derivative trading encourages large number of players in the market. This increases trading volume. This facilitates dissemination of information relating to financial, commodity and derivative markets. Thus, derivatives serve as barometers of the future trends in prices. This results in the discovery of new prices both on the spot and future markets. This way competitive trading is encouraged, price fluctuations are smoothened out and market efficiency is improved.

4. **Achievement of investment goals** : Derivatives help the investors, traders and managers of large pools of funds to devise strategies so as to achieve investment goals.

5. **Reduced transaction cost :** Sometimes derivatives provide a lower-cost way to undertake a particular financial transaction. For example, the manager of a mutual fund may wish to sell stocks and buy bonds. Using the derivatives may result in lower transaction costs than actually selling stocks and buying bonds.

6. **Financial engineering** : Now-a-days, business environment is changing fast. Hence, today's business world is very complex. To manage the complexity, financial engineers develop new exotic (hybrid) derivatives. This is done by combining two or more derivatives to find a better financial solution.

**Economic Functions of Derivative Contracts**

Derivative contracts perform a number of economic functions. Important functions may be outlined as below :

1. **Risk management function :** This is the primary function of derivatives. Derivatives shift the risk from the buyer of the derivative products to the seller. Thus, derivatives are very effective risk management tools. Most of the world's 500 largest companies use derivatives to lower risks.

2. **Price discovery function :** This refers to the ability to achieve and disseminate price information. Without price information, investors, consumers, and producers cannot make informed decisions. They cannot direct their capital to efficient uses. Derivatives are exceptionally well suited for providing price information. They are the tools that assist everyone in the marketplace to determine value. The wider the use of derivatives, the wider the distribution of price information.

3. **Liquidity function :** Derivatives contract improve the liquidity of the underlying instruments. They provide better avenues for raising money. They contribute substantially to

increasing the depth of the markets. Derivative markets often have greater liquidity than the spot markets. This higher liquidity is at least partly due to the smaller amount of capital required for participation in derivative markets. Since the capital required is less, more participants will operate in the market. This leads to increased volume of trade and liquidity.

4. **Efficiency function :** Derivatives significantly increase market liquidity. As a result, transactional costs are lowered, the efficiency in doing business is increased, the cost of raising capital investment is expanded.

5. **Portfolio management function :** Derivatives help in efficient portfolio management. With a smaller fund at disposal, better diversification can be achieved. Derivatives provide much wider menu to portfolio managers who constantly seek better risk-return trade-off.

6. **Economic development function :** Bright, creative, well-educated people with an entrepreneurial attitude will be attracted towards the derivative markets. Derivative markets energise others to create new businesses, new products and new employment opportunities. Derivative markets help increase savings and investment in the long run.

**Criticisms and Misuses (Limitations) of Derivatives**

Derivatives act like a double-edged sword. When used properly and conservatively, they are highly effective. When they are not used properly or used with indiscretion, they may cause miseries. In the poem 'Fire and Ice' Robert Frost wrote, "Some say the world will end in fire, some say in ice". This is very true in the case of derivatives. Following are the demerits of derivatives:

1. **Increased volatility:** A large number of participants are attracted towards the market with nominal capital available with them. Derivatives give rise to speculative tendencies. They cause extreme volatilities in the prices.

2. **Increased bankruptcies:** The use of derivatives may result in large losses because of the use of financial leverage or borrowing. Derivatives allow investors to earn large returns from small movements in the prices of the underlying assets. At the same time, investors may lose large amounts if the price of the underlying moves against them significantly. Inherent leverage in derivatives may very easily cause bankruptcies. In short, derivatives are highly leveraged instruments.

3. **Increased regulatory burden :** As pointed out earlier that the derivatives create instability in the financial system. As a result, there will be more burden on the government or regulatory authorities to control the activities of the traders in financial derivatives.

4. **Enhancement of risk :** Empirical studies on derivatives show that derivatives increase financial risk in many cases instead of hedging the same. Without a clearly defined risk management strategy, use of derivatives can be dangerous. It can threaten the accomplishment of a firm's long term goals.

5. **Speculative and gambling motives :** One of the most important arguments against the derivatives is that they promote speculative activities in the market. It is observed that the primary purpose of derivative is speculation and gambling. In fact, derivative is the fancy name for gambling.

6. **Instability of the financial system** : It is argued that derivatives would increase risk not only for their users but also for the whole financial system. The malpractices, desperate behaviour (due to heavy losses) and fraud by the users of derivatives would affect the stability of the financial markets and the financial system.

7. **Contract life :** The main problem with the derivatives is their limited life. As the time passes, the value of the derivative will decline and so on. Someone may have chances of losing completely within that agreed time frame.

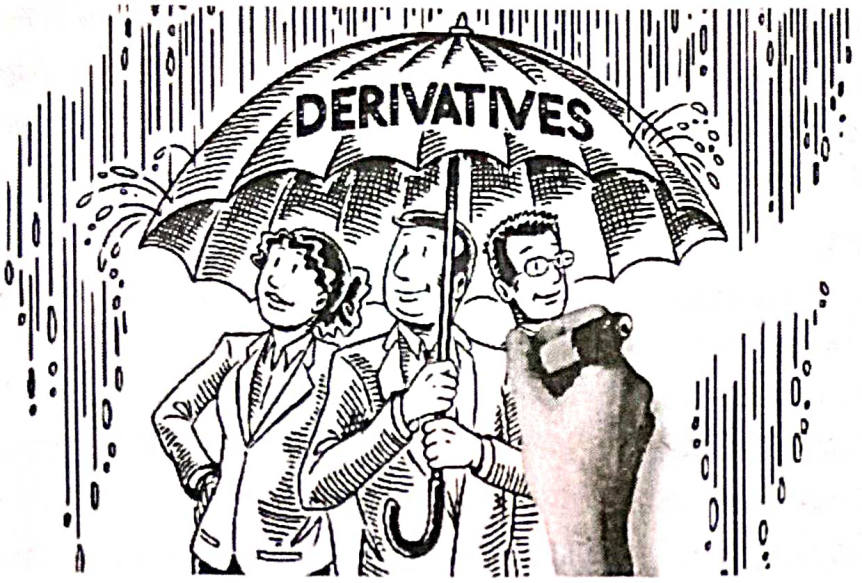
Derivatives are the key part of the financial system. They provide a means of managing risks. However, there are certain contrary views on derivatives. In the words of Warren Buffet, "Derivatives are financial weapons of mass destructions". According to R. Viswanathan, "Derivatives can be highly complex contracts and used with a little or no knowledge of the implications, can prove extremely destructive".

In fact, derivatives are like nuclear materials that can be used for making a bomb that can destruct many cities or can be used positively to generate electricity that lights up entire cities. Walter D. Hops said, "Derivatives are nothing more than a set of tools. And just as a saw can build your home, it can cut off your arm if it is not used properly".

**Risks involved with Derivatives**

The following are the five sets of risks posed by derivatives:

1. **Counter party risk:** This is the risk which arises when one of the parties involved in a derivative trade (buyer or seller or dealer) makes default on the contract. It is also called credit risk or default risk.
2. **Market risk:** This risk arises due to adverse movements in the price of a financial asset or commodity. In short, market risk refers to the general risk in any investment.
3. **Basis risk :** Basis risk is a type of market risk. It refers to the difference between the spot market price of the asset being hedged and the derivative's price.
4. **Inter connection risk:** One market can greatly affect what happens to another market, and that market affects another market, and so on. If an investor is in this situation, it is possible for him to lose his whole investment.
5. **Operations risk:** This risk arises when internal systems are not capable of managing the transaction.
6. **Liquidity risk:** Most derivatives are customised instruments. Hence, investors may not be able to close out (or finish) a trade prior to maturity.




*Derivatives give protection against business risks*

## DERIVATIVE MARKETS

The derivatives are most modern financial instruments for hedging risk. The individuals and firms who wish to avoid or reduce risk can deal with the others who are willing to accept the risk for a price. A common place where such transactions take place is called the derivative market.

### Meaning and Definition of Derivative Markets

Initially, derivatives started in an unorganised market. But now, there exists an organised market as well. Unorganised market does not mean undeveloped market. It refers to Over-the-Counter Market (OTC), in which the buyers and sellers come in contact directly with each other or through an intermediary. They mutually decide about all the terms and conditions of the contract and both commit to fulfil and abide by the set of terms. Thus derivative market is a market in which derivatives are traded. In short, it is a market for derivatives. The traders in the derivative markets are hedgers, speculators and arbitrageurs.

### Importance of Derivative Markets

Following are advantages of derivative markets:

1. It increases the volume of transactions.
2. In derivative markets, the transaction costs are lower.
3. The risk of holding underlying assets is lower.
4. It gives increased liquidity for investors.
5. It leads to faster execution of transactions.
6. It enhances the price discovery process.
7. It facilitates the transfer of risk from risk-averse investors (hedgers) to risk takers (speculators).
8. It increases the savings and investments in the economy.

**Hedging**

It has already been stated that commodity prices, security prices and foreign exchange rates fluctuate frequently. This means that prices are uncertain. This leads to risk. How is the financial risk avoided or minimised? This is achieved through the process of hedging.

**Meaning of Hedging**

To hedge something is to construct a protective fence around it. In the context of financial markets, hedging means eliminating the risk in an asset or liability. It is a technique of managing the risk attached to assets including foreign exchanges. In short, hedging means covering or eliminating or reducing the risk. Hedging is done with derivatives.

**Major Players or Participants in the Derivative Markets**

The participants or players in the derivative markets can be banks, foreign institutional investors, corporates, brokers, individuals etc. All of them can be classified into four depending upon their motives. They are: hedgers, speculators, arbitrageurs and spreaders. They have different motives.

1. **Hedgers:** As already stated, hedging (covering against losses) is the prime reason which led to the emergence of derivatives. Hedgers are those who enter into a derivative contract with the objective of covering risk. The motive of hedgers is not to make profit, but to reduce or eliminate risk. Thus, hedgers use derivatives to reduce or eliminate the risk associated with price of an asset in the market. Take an example. A farmer growing wheat faces uncertainty about the price of his produce at the time of the harvest. Similarly, a flour mill needing wheat also faces uncertainty of price of wheat. Both the farmer and flour mill owner can enter into a forward contract. In this contract, the farmer agrees to sell his produce when harvested at predetermined price to the flour mill. The farmer fears price fall while the flour mill owner fears price rise. Both the parties face price risk. A forward contract would eliminate price risk for both the parties. A forward contract is entered into with the objective of hedging against the price risk being faced by the farmer as well as the flour mill owner. Such participants in the derivative markets are called hedgers. In the example, the contract would be settled by the farmer delivering the wheat to the flour mill on the agreed date at an agreed price.

**Functions of Hedgers:** Important functions of hedgers may be outlined as below:

(a) To eliminate the price risk of contracting parties.

(b) To help to increase the trading volume.

(c) To attract more people into the derivatives market.

2. **Speculators:** Speculators are those who are willing to take risk. They take risk to make profit from price fluctuations. Thus their main motive is to make money out of the risks assumed. They accept risks in the expectation of a return. They forecast the future economic conditions. After this, they decide the position (long or short) to be taken that will yield profit

if the forecast is realised. They make forecast about the prices and put their money in these forecasts. By taking positions, they are betting that a price would go up or they are betting that it would go down. Depending on their perceptions they may take long or short positions (this will be discussed later). Thus, their objective is to gain when the prices move as per their expectation. Let us take an example. The forward price in US dollar for a contract maturing in three months is ₹ 70. If one believes that three months later the price of US dollar would be ₹ 72, one would buy forward today and sell later. From such a contract one can make a profit of ₹ 2 per dollar. On the contrary, if one believes US dollar would depreciate to ₹ 68 in three months, he would sell now and buy later. Here, the actual delivery of the underlying asset (i.e., actual buying and selling) does not take place. Instead, the speculator gains from the differential in price. Speculation is a double-edged sword. It means that there is a possibility of making a profit (if prediction is correct) or incurring a loss (if prediction is incorrect).

There are three type of speculators (based on duration) : (a) Scalpers (hold for very short time – in minutes, (b) Day traders (one trading day), and (c) Position traders (long period – week, month, a year).

Speculators perform an extremely important function. They provide liquidity to the market. Without speculators in the market, it would be difficult for the hedgers to find matching parties. Similarly, without speculators the hedge would not be efficient. Presence of speculators makes the market competitive, reduces transaction costs, and expands the market size. They assume risk and serve the needs of hedgers. In short, without speculators, the derivative market probably would never exist. However, some people think of speculators as gamblers; they earn too much money and provide no economic value.

**Functions of Speculators:** The functions of speculators are as follows:

(a) To contribute to market efficiency.

(b) To conduct fundamental analysis and/or technical analysis and collect information to predict price movements.

(c) To provide liquidity to the market.

(d) To find matching parties for the contract and help hedgers.

(e) To make the market competitive, and expand the market size.

(f) To reduce transaction cost.

(g) To expand market size.

3. **Arbitrageurs:** Arbitrage is the process of simultaneous purchase of securities or derivatives in one market at a low price and sale of the same in another market at a relatively higher price. The traders who are engaged in arbitrage are known as arbitrageurs. Thus, arbitrageurs purchase securities in one market where the price is low and sell them in another market where the price is comparatively higher. These are done when the same securities are

being quoted at different prices in two markets. The motive of arbitrageur is to make profit from difference in prices of securities prevailing in the two markets. They are constantly monitoring the prices of different assets to make profit that arise from mispricing of products. The most common example of arbitrage is the price difference that may be prevailing in different stock markets. For example, the share price of SBI is ₹ 650 in NSE and ₹ 640 in BSE. Then the arbitrageur will buy at BSE and sell at NSE simultaneously and pocket the difference of ₹ 10 per share. His aim is to make riskless profit by simultaneously entering into transactions in two or more market imperfections. These imperfections cannot exist for long time. These are extremely short-lived. The arbitrageur cashes upon these short-lived opportunities.

Arbitrageurs add competitiveness to the market. They help in the price discovery process. They provide a link between the derivative market and the cash market.

**Functions of Arbitrageurs:** The functions of arbitrageurs may be summarised as below:

(a) To provide a link between the derivative market and the cash market by synchronising the prices in the two.

(b) To make markets efficient by taking riskless positions in different markets.

(c) To restore the balance and consistency among different markets.

(d) To render competitiveness to the market and help in the price discovery process.

4. **Spreaders:** Spreaders are the fourth category of traders in the derivative market. Spreading is a specific trading activity in which offsetting position is involved (i.e., simultaneous long and short positions on the same derivative). A spreader is a person who believes in lower expected return at the reduced risk.

**Difference between Hedging and Speculation**

Hedging is different from speculation in the following ways :

| Hedging | Speculation |
|---|---|
| 1. Transferring the price risk faced by a person or organisation to others who are willing to bear the risk for windfall profit. | 1. Buying and selling of financial instruments and derivatives in the hope of a profit from anticipated changes in the price of instruments. |
| 2. The main aim is to cover or eliminate or minimise risk. | 2. The main aim is to make profit from short term fluctuations. |
| 3. Hedging may be long or short. | 3. Speculation may be constructive or distructive. |
| 4. Risk is less. | 4. Risk is high. |
| 5. Complicated process. | 5. Easy process. |

**Difference between Speculation and Arbitrage**

Following are the differences between speculation and arbitrage:

| Speculation | Arbitrage |
|---|---|
| 1. Buying and selling of financial instruments and derivatives in the hope of a profit from anticipated changes in the price of instruments. | 1. Simultaneous buying and selling of securities or commodities to make profit on the differences in the prices prevailing in the two markets. |
| 2. Profit is the differences between prices at different times. | 2. Profit is the difference between prices prevailing in two different markets. |
| 3. Risk is high. | 3. Risk is relatively less (if executed properly). |
| 4. It is a necessary evil. | 4. It is a legal way to make money. |
| 5. May or may not hold securities/commodities. | 5. Always hold securities/commodities. |

**Factors Contributing to the Growth of Derivatives / Derivatives Markets**

There are several factors that have contributed to the growth of derivatives and derivatives markets. These factors may be briefly explained as below:

1. **Price volatility:** Prices of commodities may change. Likewise, the prices of securities and currencies change frequently. Such changes in price are known as price volatility. Actually the price volatility is one of the major causes for the growth of derivatives market. The derivatives can be used as a hedge to protect against price changes in commodities, securities, foreign exchange etc.

2. **Globalisation of markets:** Globalisation has increased the size of the markets. It has enhanced competition. It has also exposed the modern business to risks. Hence, business people started using derivatives to guard against future losses.

3. **Technological development:** Technological development is another factor that has contributed to the growth of derivatives market. New technologies emerge. Technological advancement includes the development of high-speed processors, network systems, enhanced method of data entry etc. These technological advancements have been partially responsible for the growth of derivatives markets. In the meantime, derivatives can help a firm to manage the risks arising due to the technological advancement.

4. **Advancements in financial theories:** Advancements in financial theories gave birth to derivatives. Initially, forward contract in its traditional form was the only hedging tool available. Option pricing models developed by Black and Scholes in 1973 were used to determine prices of call and put options. In the late 1970s, the work of Lewis Edeington extended the earlier work of Johnson and started the hedging of financial price risks with financial futures.

5. **Development of sophisticated risk management tools** : In certain derivative tradings, a typical type of risk is emerged. To manage this, sophisticated tools have been developed. This "solution to derivative problems" adds further growth in derivative market.

**Growth and Development of Derivative Markets in India**

Derivative trades have had a long term presence in India. A commodity derivative market has been functioning in India from the 19th Century, with organised trading in cotton through the establishment of the Cotton Trade Association in 1875. However, such organised trades were operated in a localised market. The nationalised commodity derivative market began its operation only in 2003. Although India has a long history in security exchanges, derivative trading in the NSE and BSE started only in 2000.

Derivative markets in India are comparatively of recent origin. They cater to the investment risk management needs of the financial and product markets. Several committees have been set up to review the functioning of financial and derivative markets to ensure that investors' risk management needs are fulfilled by products offered by these exchanges.

At present the Indian market trades in both exchange traded and over-the-counter derivatives on various asset classes including securities (both debt and equity), commodities, currencies, stock indices etc. Today, the derivative markets in India are growing. The growth and development of financial derivatives in India may be studied for each asset class as follows:

1. **Growth of equity derivative markets :** India joined the league of exchange-traded equity derivatives in June 2000, when futures contracts were introduced at two major exchanges, namely, BSE and NSE. The BSE sensitive index, popularly known as the SENSEX (comprising 30 scrips), and S & P CNX Nifty Index (comprising 50 scrips) commenced trade in futures on June 9, 2000 and June 12, 2000 respectively. Index options and individual stock options on 31 selected stocks were subsequently added to the derivatives basket, in 2001. Single stock futures were introduced in the Indian market in November 2001. As on July 26, 2006, the NSE's Futures and Options Segment trade in futures and options on the 118 stocks and the Derivatives Segment of BSE, trades in 77 stocks. It may be noted that most of the derivatives business is concentrated in the NSE, which accounts for around 97% of the equity derivatives business. This means that BSE accounts for just about 3% of India's equity derivatives volume.

The growth of the equity derivatives business on Indian exchanges has been phenomenal. A modest start of an average daily volume of ₹ 10 crores has developed into a business opportunity of ₹ 30,000 crores per day.

Today, the most preferred product on the exchanges is single stock futures. This accounts for around 55% of total volumes. Nifty futures are the second most traded product. Its business share is around 35% business. It may be noted that OTC equity derivatives are not picking up in India.

2. **Growth of commodity derivative markets :** The Forward Contract Regulation Act (FCRA) governs commodity derivatives in India. The FCRA specifically prohibits OTC commodity derivatives. Further, FCRA does not even allow options on commodities.

It should be noted that the trading in commodity derivatives has been concentrated regionally. This is due to the regional exchanges offered only a single product. For example, pepper exchange in Kochi trades only pepper. Soya exchange in Indore trades only soya. Recently, trading in commodity derivatives began through two nation-wide, on-line commodity exchanges, - the National Commodities and Derivatives Exchange (NCDEX) and the Multi Commodity Exchange (MCX). They started functioning in the last quarter of 2003 with the introduction of futures contracts on various assets such as gold, silver, rubber, steel etc. These exchanges were promoted by the major banks and financial institutions in the country. Business on these exchanges has increased remarkably over the short period of time.

It may be noted that both exchanges are developing a niche for themselves. The primary source of business for MCX is bullion and energy products. The important source of business for NCDEX is agri-products. Further, both exchanges are now focusing their attention on addressing issues like collateral management, warehouse accreditation, quality and quantity certification of commodities, settlement price, methodology etc. Substantial progress has been made on these issues by these exchanges.

3. **Growth of currency derivative markets:** India has been trading forward contracts in currency for the last few years. Recently, the RBI has allowed options in the OTC market. The OTC currency market in the country is well-developed. However, the business is concentrated with a limited number of market participants, mainly, banks - both international and local. The business in currency derivatives is expected to grow in the near future.

4. **Growth of interest rate derivative markets:** There has been significant progress in interest rate derivatives in the Indian OTC market. The NSE introduced trading in cash settled interest rate futures in the year 2003. However, due to some structural issues, the product did not attract market participants. The trading in interest rate derivatives in India is now growing.

5. **Growth of other derivative markets:** Credit derivatives, weather derivatives etc. have been recently introduced in India. They are expected to grow in the coming years.

To conclude, the growth of derivatives trading in India is quite phenomenal. In a short span of time the turnover at NSE increased from a mere ₹ 2,365 crores in 2000-01 to ₹ 1,30,90,478 crores in 2007-08.

**Factors Responsible for the Growth of Financial Derivative Markets in India**

There are a large number of factors that contribute to the growth of financial derivative markets in India. All such factors may be classified into environmental factors and internal factors.

A. **Environmental or External Factors :** Environmental factors contribute to the growth of financial derivative markets in India. Following are the environmental factors:

1. **Price volatility :** Price volatility refers to rapid changes in the prices of assets in the financial markets over a short period of time. Price volatility has three dimensions. They

are : (a) the speed of price change, (b) the frequency of price change, and (c) the magnitude of price change. Increased volatility means increased risk. The need for meeting this challenge of increased risk contributed to the growth of financial derivative markets in India.

2. **Globalisation of markets :** Globalisation has increased the size of markets. This has exposed the modern businesses to greater risks. Increased size has also led to greater use of debt in capital structures. This has contributed to an increase in financial risks of firms. These risks must be hedged if a modern business is to successfully compete and prosper over the long run. Above all, globalisation has led to the integration of domestic financial markets with the international markets. This has also contributed to the growth of financial derivative markets in India.

3. **Technological advances :** Technological advances have also motivated the financial derivative markets. Technological advances involve computer and internet technologies. These developments encouraged not only the modeling and design of complex financial deals and instruments, but also facilitated trading in them on 24 x 7 time-frame.

4. **Regulatory changes :** Much of the financial derivative markets activity in recent years in India has been fostered by an atmosphere of deregulation of financial sector. Deregulation has increased the competition and forced industries to become competitive. Deregulation also cleared the atmosphere for emergence of investment banking. This has promoted the growth of financial derivative markets in India.

**B. Internal Factors :** Following are the internal factors that have contributed to the growth of financial derivative markets in India:

1. **Liquidity needs :** Business firms have liquidity needs. Many of the financial innovations pioneered in the recent past have targeted these needs.

2. **Risk aversion :** Most of the investors would like to avoid risks. Derivative instruments are useful for avoiding risks.

3. **Risk executives :** Increased risk perceptions of corporate organisations prompted to recruit personnel with risk management training. Most big and medium enterprises maintain risk management team. This team shall manage risks through derivatives. So naturally, this risk perceptions of management has encouraged the development of derivative markets in India.

**Exchange-Traded Financial Derivatives for Risk Management in India**

Exchange-traded financial derivatives are a recent phenomenon in India. Prior to their arrival, there was an indigenous mechanism of meeting the settlement requirements. In some sections it is also termed as forward trading (forward contracts are not exchange-traded derivatives). It prevailed mostly on the stock exchanges at Mumbai, Ahmedabad, and Kolkata and now on NSE in the name of ALBM (Automated Lending and Borrowing Mechanism).

Badla trading thrived during the days when the equity markets functioned in the account period settlement mode. In this system, all the trades done are grouped into predetermined

periods and are settled on a particular day. For instance, the account period on BSE was Monday to Friday, and on NSE, it was Wednesday to Tuesday. If investors think that the price of a particular share is expected to go up or down, he could participate in the possible fluctuation of the share, without giving or taking delivery. In a similar vein, if the investor feels the stock price will decline, he can go short without owning the security, enter into a badla deal and the stock lender would lend his stock for a charge. This charge is known as *badla*.

There is a general agreement on the fact that the leveraging effect inherent in badla imparts market liquidity. Hence there is a need for leveraged products in the market. Accordingly, SEBI appointed a Committee under the chairmanship of Dr. L.C.Gupta in 1996 to develop appropriate regulatory framework for the derivatives trading. The Committee had conducted a wide market survey of brokers, mutual funds, banks/FIs, FIIs and merchant banks. The Committee found that there is all-pervasive recognition of the need for derivatives products on equity, debt and currency. In March 1998, the Committee submitted its report. That report strongly favoured the introduction of financial derivatives. At the same time, the RBI appointed Committee on Capital Account Convertibility (Tarapore Committee). The Committee also expressed the view that "time is ripe for introduction of futures in currencies and interest rates to facilitate various users to have access to a wide spectrum of cost-efficient hedge mechanism than the existing system (of forward contracts). These committee reports set the stage for the introduction of exchange traded derivatives. Since most derivatives are cash settled, they could not commence trading immediately.

In India, the exchange-traded derivatives have been emerged with the enactment of Securities Laws (Amendment) Act 1999. According to this Act, the derivatives are defined as to include: (a) a security derived from a debt instrument, share, loan whether secured or unsecured, risk instrument or contract for differences or any other form of security, and (b) a contract which derives its values from the prices or index of prices of underlying securities. The Act also clarified that derivatives shall be legal and valid only if such contracts are traded on a recognised stock exchange in accordance with the rules and bye-laws of such stock exchange, thereby excluding OTC derivatives.

The first exchange to commence derivatives trading is BSE from June 9, 2000. NSE started operations in the derivatives segment on June 12, 2000. Initially, only futures contracts on market index were traded. Subsequently, other derivative products were also introduced. Now the contracts being traded on the exchanges are: (a) futures on indices, (b) options on indices, (c) futures on individual securities, (d) options on individual stocks, and (e) interest rate futures.

On NSE and BSE, only financial derivatives are traded. But recently three exchanges NCDEX, MCX and NDEX commenced trading in commodity futures. It may be noted that exchanges themselves do not trade in derivatives but they only facilitate trading. The respective exchanges will determine the stocks and indices on which futures and options contracts could be introduced for trading as per the eligibility criteria laid down by SEBI.

Trading of derivative contracts on both NSE and BSE is through an order-driven automated online system. For the trading of derivatives, NSE and BSE adopted various forms of computerized trading platforms such as NEAT (National Exchange for Automated Trading), F&O (Futures & Options) of NSE, and DTSS (Derivatives Trading and Settlement System) of BSE. These systems are actually electronic limit order book for recording and executing orders. As soon as a trader enters his order, the system will immediately search for an opposite but matching order. If a corresponding order is found the deal will be made and the completed order will be removed from the system. In case the order is not fully met, further matching orders will be searched and the process will be repeated till the order gets exhausted or no more matchable orders are found. If the order is not fully done, the system will retain the order in the pending order book. Order matching will be done on the basis of price and time.

In India, derivatives trading are dominated at NSE. It stands amongst the top ten exchanges in the world in terms of number of contracts traded.

**Stock Market Derivatives in India**

In India, derivatives are traded on organised exchanges as well as on OTC markets. Derivatives in financial securities were introduced in the National Stock Exchange (NSE) and the Bombay Stock Exchange (BSE) in 2000. Commodity derivatives were introduced in the year 2003 with the establishment of the Multi Commodity Exchange (MCX), the National Multi Commodity Exchange (NMCE) and the National Commodity & Derivatives Exchange Ltd (NCDEX).

In 1990, the Indian economy was liberalized and the stock market was reformed. This paved the way for derivatives market. In 1993, the Government started the NSE in collaboration with state financial institutions. Through a fully automated screen-based trading system and real-time price dissemination, the NSE was able to provide efficiency and transparency in the stock market. In 1995, the ban on trading options was removed. In 1996, the SEBI set up the L.C. Gupta Committee, to develop appropriate regulatory framework for derivatives trading in India. On 17th March, 1998, the committee submitted its export. The report prescribed necessary preconditions for introduction of derivatives trading in India. The committee recommended that derivatives should be declared as 'securities' so that regulatory framework applicable to trading of 'securities' could also govern trading of derivatives. This committee also recommended that derivatives trading should be allowed in a phased manner.

Let us examine the important stock market derivatives in India.

1. **Index Futures :** The first derivative product traded on the BSE and NSE was index futures. This was introduced in 2000.

(a) *Index futures at NSE* : NSE is now one of the prominent exchanges amongst all emerging markets, in terms of equity derivatives turnover. The index futures trading at NSE commenced on 12-06-2000 on S & P CNX Nifty Index. Over a period of time (2000-2012) many indices have

been made available for index futures trading. The index futures turnover at NSE has grown from ₹ 2365 crores to ₹ 35,77,998 crores in 2011-12. This shows that index futures have witnessed a compound annual growth rate (CAGR) of 83.62% in last 12 years in terms of turnover and a CAGR of 84.61% in terms of number of contracts traded.

(b) *Index futures at BSE* : The index futures trading at BSE commenced on 09-06-2000 on BSE sensex. Over a period of time (2000-2012) many indices have been made available for index futures trading. The index futures turnover at BSE has grown from ₹ 1673 crores to ₹ 1,78,449 crores in 2011-12. This shows that index futures have witnessed a CAGR of 74.55% in 12 years (2000-2012) in terms of turnover and a CAGR of 42.60% in terms of number of contracts traded.

2. **Stock Futures or Futures on Individual Securities** : Futures on individual securities (i.e., single stock futures) were introduced in November 2001. These are cash settled. These do not involve delivery of the underlying assets. Today, the most preferred product on the exchanges is single stock futures. This accounts for 55% of total volumes.

(a) *Single stock futures at NSE* : The trading in individual stock futures started on November 9, 2001. The growth of stock futures at NSE has been from ₹ 51516 crores to ₹ 40,74,671 crores in 2011-12. This shows that stock futures witnessed a CAGR of 48.78% in last 11 years (upto 2011-12) in terms of turnover and a CAGR of 49.08% in terms of number of contracts traded. As of March 2011, there were 223 stocks available for trading at NSE.

(b) *Single stock futures at BSE :* The trading in individual stock futures at BSE started in 2001. In 2001-02, the number of contracts traded was 17951 and in 2003-04 it was 128193. At BSE the stock futures witnessed a CAGR of 30.17% in terms of number of contracts traded and CAGR of 32.77% in terms of turnover from 2001-02 to 2011-12.

3. **Index Options** : Index options were introduced in June 2001. These are cash settled. This means that these do not involve physical delivery of the underlying assets. Index options and individual stock options on 31 selected stocks were added to the derivatives basket, in 2001. In India options account for approximately 10% of the total business with almost 2/3rd in index options and 1/3rd in single stock options.

(a) *Index options at NSE* : The index options were allowed for trading on S & P CNX Nifty Index on June 4,2001. Since its inception, index options at NSE has been growing in overall equity derivative market. The growth of Index options at NSE in terms of turnover has been from ₹ 3,766 crore to ₹ 2,27,20,032 crore in 2011-12. This shows that index options witnessed a CAGR of 120.62% (upto 2011-12) in trading volume and CAGR of 116.12% in terms of number of contracts traded. However, index options contributed only 4.19% in terms of number of contracts traded and 3.69% in terms of trading volume in total derivatives market in 2001-02. But in the year 2011-12, there was a tremendous growth in index options. The index options witnessed 70.21% in terms of number of contracts traded and 72.47% in terms of trading volume in total derivatives market.

(b) *Index options at BSE* : BSE commenced trading in Index option on Sensex on June 1, 2001. BSE launched the Chhota (mini) Sensex on January 1, 2008. With a small or 'mini' market lot of 5, it allows, for comparatively lower capital outlay, lower trading cost, more precise hedging and flexible trading. It is a step to encourage and enable small investors to minimise risk and enable easy access to India's most popular Index, Sensexm, through futures and options. BSE also introduced 'Long dated options' on its flagship index - Sensex on February 29, 2008. This enabled the members to trade in Sensex (in normal lot of 15 only and not 'mini' sensex) options contract with an expiry upto 3 years. These index options contributed only 2.3% in terms of number of contracts traded and 2.34% in terms of trading volume in total derivatives market in 2001-02. In the year 2004-05 the product contributed 5.13% in total volume. In 2005-06 almost 50% contributed in number of contracts traded but there was only ₹ 3 crore value of the contracts and which shows 33.33% proportion in total and in 2009-10 with 58% share in terms of number of contracts traded but 59 percent share in total.

4. **Stock Options or Options on Individual Securities** : Options on individual securities (i.e., stock options) were introduced in July 2001. These are cash settled. These do not involve physical delivery of the underlying asset.

(a) *Stock options at NSE* : The individual stock options at NSE were allowed for trading on July 2, 2001. Individual stock options were allowed for trading before individual stock futures. The growth of stock options at NSE has been from ₹ 25,163 crore to ₹ 9,77,031 crore in 2011-12. This indicates that stock options witnessed a CAGR of 39.46% (upto 2011-12) in terms of trading volume and a CAGR of 38.21% in terms of number of contracts traded. As of March 2011, there were 223 stock options available for trading at NSE.

(b) *Stock options at BSE* : Stock options were introduced at BSE on 31 stocks on July 9, 2001. Presently 120 stocks are being traded in equity derivatives on BSE. Individual stock options were allowed for trading before individual stock futures. During 2001-02, the number of contracts traded was 5105 and trading volume was amounted to ₹ 114 crores. In 2011-12, the number of contracts traded increased to 47,505 and trading volume was increased to ₹ 1469 crores.

**Other Derivatives in India**

Apart from the futures and options on stock indices and individual stocks, there are some other derivative in India. Such derivatives may be briefly discussed as below :

1. **Commodity derivatives** : The Forward Contract Regulation Act (FCRA) governs commodity derivatives in the country. The FCRA specifically prohibits OTC commodity derivatives. Therefore, at present, India trades only exchange-traded commodity futures. Though commodity derivatives in the country have existed for a long time, trading has been regionally concentrated due to the regional nature of the commodity exchanges. Further, all these exchanges offered only a single product. For example, pepper exchange in Cochin trades only pepper, Soya exchange in Indore trades only soya. Recently, however, India began trading in

commodity derivatives through two nation-wide, online commodity exchanges -the National Commodities and Derivatives Exchange (NCDEX) and the Multi Commodity Exchange (MCX). They started functioning in the last quarter of 2003 with the introduction of futures contracts on various assets such as gold, silver, rubber, steel, mustard seed, etc. Major banks and financial institutions in the country (SBI, ICICI, Canara Bank, NABARD, NSE, LIC, etc.) have promoted both these exchanges. Business on these exchanges has increased remarkably over the short period of time.

2. **Interest rate derivatives** : The NSE launched short-term and long-term interest rate futures in June 2003. However, the trading activity in interest rate futures was very thin. The major reason for this low volume of trading in interest rate futures is the existence of well-developed OTC markets for interest rate swaps and forward rate agreements. The NSE had suspended the interest rate futures contracts in 2006. But new interest rate futures were introduced in 2009. The new futures are long-term interest rate futures on 10-year government bonds, and they are settled through the delivery of these bonds.

3. **Currency derivatives** : India has been trading forward contracts in currency, for the last several years. Recently, the Reserve Bank of India (RBI) has also allowed options in the over-the-counter market. The OTC currency market in the country is considerably large and well-developed. However, the business is concentrated with a limited number of market participants, mainly banks - both international and local as the corporates deal with these banks for derivative contracts on various currencies.

Currency futures contracts were introduced in the BSE and NSE in August 2008 and in the Multi-Commodity Exchange in October 2008. The only available contract at that time was the U.S. dollar to rupee contract. In 2010, futures were also introduced on the Japanses Yen, British Pound, and Euro.

4. **Credit derivatives** : Since 2003, the RBI has been looking into the introduction of credit derivatives, and on May 17, 2007, it allowed banks to enter into single-entity credit default swaps.

Credit derivatives allow lenders to buy protection against default by borrowers. It is the transfer of the credit risk from one party to another without transferring the underlying. Credit derivatives are presently not traded on any of the organised exchange in India.

5. **Weather derivatives** : SEBI is planning to allow trading in weather derivatives. It is a financial instrument to reduce risk associated with adverse or unexpected weather conditions, e.g., in agricultural sector. Weather derivative was pioneered by Enron in US in 1997.

Apart from these exchange-traded derivatives, a number of derivatives are traded on OTC markets. The Reserve Bank of India (RBI) allowed the trading of interest rate swaps, currency swaps, and forward rate agreements on July 7, 1999. Originally, these were allowed only for resident Indians. But their scope has later been widened to include non-resident Indians and non-resident financial institutions.

## Regulatory Framework for Derivatives Trading in India

The first step towards introduction of derivatives trading in India was the promulgation of the Securities Laws (Amendment) Ordinance 1995. This withdrew the prohibition on options in securities. The market for derivatives, however, did not take off. This is because there was no regulatory framework to govern trading of derivatives. SEBI set up a 24-member committee under the chairmanship of Dr. L.C. Gupta on November 18, 1996 to develop appropriate regulatory framework for derivatives trading in India. The committee submitted its report on March 17, 1998. The report prescribed necessary pre-conditions for introduction of derivatives trading. The committee recommended that derivatives should be declared as 'securities' so that regulatory framework applicable to trading of 'securities' could also govern trading of derivatives. SEBI also set up a group in June 1998 under the chairmanship of Prof. J.R. Varma, to recommend measures for risk containment in derivatives market in India. The group submitted its report in October 1998. This report worked out the operational details of margin system, methodology for charging initial margins, broker networth, deposit requirement and real-time monitoring requirements.

The Securities Contracts Regulation Act was amended in December 1999 to include derivatives as securities. In this way the regulatory framework was developed for governing derivatives trading. The Act also made it clear that derivatives shall be legal and valid only if such contracts are traded on a recognised stock exchange, thus preventing OTC derivatives. The Govt. also rescinded in March 2000, the three-decade old notification, which prohibited forward trading in securities.

Derivatives trading commenced in India in June 2000 after SEBI granted the final approval to this effect in May 2000. SEBI permitted the derivative segments of two stock exchanges, NSE and BSE, and their clearing house/corporation to commence trading and settlement in approved derivatives contracts. To begin with, SEBI approved trading in index futures contracts based on S&P CNX Nifty and BSE-30 (Sensex) index. This was followed by approval for trading in options based on these two indexes and options on individual securities. The trading in index options commenced in June 2001. The trading in options on individual securities began in July 2001. Futures contracts on individual stocks were introduced in November 2001.

Trading and settlement in derivative contracts is done in accordance with the rules, bye-laws, and regulations of the respective exchanges and their clearing house/corporation duly approved by SEBI and notified in the official gazette.

In India, following are the major regulations for trading of derivatives:

1. Any exchange fulfilling the eligibility criteria as prescribed in the L.C. Gupta Committee report may apply to SEBI for grant of recognition under Section 4 of the SC(R) Act, 1956 to start trading in derivatives. The derivatives exchange/segment should have a separate governing council and representation of trading/clearing members shall be limited to a

maximum of 40% of the total members of the governing council. The exchange shall regulate the sales practices of its members and will obtain prior approval of SEBI before start of trading in any derivative contract.

2. The exchange shall have minimum 50 members.
3. The members of an existing segment of the exchange will not automatically become the members of derivative segment. The members of the derivative segment need to fulfil the eligibility conditions as laid down by the L.C. Gupta Committee.
4. The clearing and settlement of derivative trade shall be through a SEBI approved clearing corporation/house.
5. Derivative brokers/dealers and clearing members are required to seek registration from SEBI. This is in addition to their registration as brokers of existing stock exchanges. The minimum networth for clearing members of the derivatives clearing corporation/house shall be ₹ 3 crores. The net worth of the member shall be computed as follows:

   Capital + Free reserves – non-allowable assets. The non-allowable assets include : (a) fixed assets, (b) pledged securities, (c) member's card, (d) unlisted securities, (e) bad deliveries, (f) doubtful debts and advances, (g) prepaid expenses, (h) intangible assets, and (i) 30% marketable securities.
6. The minimum contract value shall not be less than ₹ 2 lakhs. Besides the minimum contract size, there is a stipulation for the lot size of a derivative contract. The lot size refers to number of underlying securities in one contract. The lot size of the underlying individual security should be in multiples of 100 and fractions, if any, should be rounded of to the next higher multiple of 100.
7. The initial margin requirement, exposure limits linked to capital adequacy and margin demands related to the risk of loss on the position shall be prescribed by SEBI/Exchange from time to time.
8. The L.C. Gupta Committee report requires strict enforcement of "Know your customer" rule and requires that every client shall be registered with the derivative broker. The members of the derivatives segment are also required to make their clients aware of the risks involved in derivatives trading by issuing to the client the Risk Disclosure Document and obtain a copy of the same duly signed by the client.

A stock can be included for derivatives trading as soon as it becomes eligible. The eligibility criteria are as follows:

1. The stocks should figure in the top 500 stocks in terms of average daily market capitaslisation and average daily traded value in the previous six months on a rolling basis.
2. For a stock to be eligible, the median quarter sigma order size over the last six months should not be less than ₹ 1 lakh. For this purpose, a stock's quarter sigma order size shall

mean the order size (in value terms) required to cause a change in the stock price equal to the one-quarter of the standard deviation.

3. There are market wide limits also. The market wide position limit in the stock should not be less than ₹ 50 crores. Since the market wide position limit in terms of number of shares is computed at the end of every month, the Exchange shall ensure that the stocks comply with this criterion before the introduction of new contracts. The market wide position limit in terms of number of shares shall be valued taking the closing prices of the stocks in the underlying cash market on the date of expiry of contract in the month.
4. The futures and option contracts on an index can be issued only if 80% of the index constituents are individually eligible for derivatives trading. However, no single ineligible stock (i.e., stock not qualified for) in the index shall have a weightage of more than 5% in the index.

If the stock does not fulfil the eligibility criteria for 3 consecutive months after being admitted to derivatives trading, then derivative contracts on such a stock would be discontinued.

The SEBI has laid down some eligibility conditions for Derivative Exchange/Segments and its Clearing Corporation/House. They are as follows:

1. The Derivatives Exchange/Segment shall have online surveillance capability to monitor positions, prices, and volumes on a real-time basis so as to detect market manipulation.
2. The Derivatives Exchange/Segment should have arrangements for dissemination of information about trades, quantities and quotes on a real-time basis.
3. The Derivatives Exchange/Segment should have arbitration and investor grievances redressal mechanisms operative from all the four areas/regions of the country.
4. The Derivatives Exchange/Segment should have satisfactory system of monitoring investor complaints and preventing irregularities in trading.
5. The Derivative Segment of the Exchange would have a separate Investor Protection Fund.
6. The Clearing Corporation/House shall have the capacity to monitor the overall position of members across both derivatives market and the underlying securities market for those members who are participating in both.
7. The level of initial margin on Index Futures Contracts shall be related to the risk of loss on the position. The concept of value-at-risk shall be used in calculating required level of initial margins. The initial margins should be large enough to cover the one-day loss that can be encountered on the position on 99% of the days.
8. The Clearing Corporation/House shall establish facilities for Electronic Funds Transfer (EFT) for swift movement of margin payments.

9. When a member fails to meet its liabilities, the Clearing Corporation/House shall transfer client positions and assets to another solvent member or close-out all open positions.
10. The Clearing Corporation/House should have capabilities to segregate initial margins deposited by clearing members for trades on their own account and on account of their clients. The Clearing Corporation/House shall hold the clients' margin money in trust for the client purposes only and should not allow its diversion for any other purpose.
11. The Clearing Corporation/House shall have a separate Trade Guarantee Fund for the trades executed on Derivatives Exchange/Segment.

**Measures Taken by SEBI for the Protection of Investors in the Derivative Market**

The SEBI has taken the following measures to protect the money and interest of investors in the derivative market:

1. Investor's money has to be kept separate at all levels and is permitted to be used only against the liability of the investor and is not available to the trading member or clearing member or even any other investor.
2. The trading member is required to provide every investor with a Risk Disclosure Document. This document will disclose the risks associated with the derivative trading so that investors can take a conscious decision to trade in derivatives.
3. Investor would get the contract note duly stamped for receipt of the order and execution of the order. The order will be executed with the identity of the client and without client identity, order will not be accepted by the system. The investors could also demand the trade confirmation slip with his identity in support of the contract note. This will protect him from the risk of price favour, if any, extended by the member.
4. In the derivative markets, all money paid by the investor towards margins on all open positions is kept in trust with the Clearing House/Clearing Corporation. In the event of default of the trading or clearing member, the amounts paid by the client towards margins are segregated and not utilised towards the default of the member. However, in the event of a default of a member, losses suffered by the investor, if any, on settled or closed out position are compensated from the Investor Protection Fund.

## QUESTIONS FOR PRACTICE

**A. Short Answer Type (2 weightage)**

1. Define derivatives.
2. Define financial derivatives.
3. What are forward contracts?
4. What do you mean by credit derivatives?
5. What are weather derivatives?