COURSE OBJECTIVES

- To understand about the concept of Derivatives and its types
- To acquaint the knowledge on Options and Futures
- To know about Hedging and the development position of Derivatives in

SBAA3013-FINANCIAL DERIVATIVES

SYLLABUS

UNIT 1 INTRODUCTION **9 Hrs.**

Derivatives - History of Derivatives Markets - Uses of Derivatives - Critiques of Derivatives - Need for Derivatives - Evolution of Derivatives in India - Major Recommendations of Dr. L.C. Gupta Committee - Benefits of Derivatives in India - Types of Derivatives - Derivatives Trading at NSE/BSE

UNIT 2 FORWARD AND FUTURES **9 Hrs.**

Financial Derivatives - Features, Types - Forward: Pricing and Trading Mechanism - Forward Contract - Features of Forward Contract - Classification of Forward Contracts - Forward Trading Mechanism. Futures: Types of Financial Futures Contract - Evolution of Futures Market in India - Traders in Futures Market in India - Functions and Growth of Futures Markets - Futures Market Trading Mechanism - Forward Contract Vs. Futures Contracts.

UNIT 3 OPTIONS **9 Hrs.**

Concept of Options - Types - Option Valuation - Option Positions: Naked and Covered Option - Underlying Assets in Exchange-traded Options - Determinants of Option Prices - Basic Principles of Option Trading.

UNIT 4 SWAP **9 Hrs.**

Concept, Nature, Evolution and Features of Swap - Types of Financial Swaps - Interest Rate Swaps - Currency Swap - Debt Equity Swap - Commodity Swaps - Equity Index Swaps

UNIT 5 HEDGING **9 Hrs.**

Concepts - Model - Basic Long and Short Hedges - Cross Hedging - Basis Risk and Hedging - Basis Risk Vs Price Risk - Hedging Effectiveness - Devising a Hedging Strategy - Hedging Objectives - Management of Hedge.

COURSE OUTCOMES

On completion of the course, student will be able to

CO1 - Understand the emerging structure of derivatives market in India.
CO2 - Describe the concept of financial futures contracts.
CO3 - Compute call and put options payoffs.
CO4 - Distinguish between different types of interest rates and currency swaps.
CO5 - Comprehend the various steps involved in management of a hedge.
CO6 - Knowledge on strength and weaknesses of Indian Derivatives market.

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UNIT -1-FINANCIAL DERIVATIVES - SBAA3013

Definition of Derivative:

The term derivative refers to a type of financial contract whose value is dependent on an underlying asset, group of assets, or benchmark. A derivative is set between two or more parties that can trade on an exchange or over-the-counter (OTC). These contracts can be used to trade any number of assets and carry their own risks. Prices for derivatives derive from fluctuations in the underlying asset. These financial securities are commonly used to access certain markets and may be traded to hedge against risk.

A derivative is a complex type of financial security that is set between two or more parties. Traders use derivatives to access specific markets and trade different assets. The most common underlying assets for derivatives are stocks, bonds, commodities, currencies, interest rates, and market indexes. Contract values depend on changes in the prices of the underlying asset.

Derivatives can be used to hedge a position, speculate on the directional movement of an underlying asset, or give leverage to holdings. These assets are commonly traded on exchanges or over-the-counter (OTC) and are purchased through brokerages. The Chicago Mercantile Exchange (CME) is among the world's largest derivatives exchanges.

Types of Derivatives

Derivatives are now based on a wide variety of transactions and have many more uses. There are even derivatives based on weather data, such as the amount of rain or the number of sunny days in a region.

There are many different types of derivatives that can be used for risk management, speculation, and leveraging a position. The derivatives market is one that continues to grow, offering products to fit nearly any need or risk tolerance. The most common types of derivatives are futures, forwards, swaps, and options.

Futures

A futures contract, or simply futures, is an agreement between two parties for the purchase and delivery of an asset at an agreed-upon price at a future date. Futures are standardized contracts that trade on an exchange. Traders use a futures contract to hedge their risk or speculate on the

price of an underlying asset. The parties involved are obligated to fulfill a commitment to buy or sell the underlying asset.

For example, say that on Nov. 6, 2021, Company A buys a futures contract for oil at a price of $62.22 per barrel that expires Dec. 19, 2021. The company does this because it needs oil in December and is concerned that the price will rise before the company needs to buy. Buying an oil futures contract hedges the company's risk because the seller is obligated to deliver oil to Company A for $62.22 per barrel once the contract expires. Assume oil prices rise to $80 per barrel by Dec. 19, 2021. Company A can accept delivery of the oil from the seller of the futures contract, but if it no longer needs the oil, it can also sell the contract before expiration and keep the profits.

In this example, both the futures buyer and seller hedge their risk. Company A needed oil in the future and wanted to offset the risk that the price may rise in December with a long position in an oil futures contract. The seller could be an oil company concerned about falling oil prices and wanted to eliminate that risk by selling or shorting a futures contract that fixed the price it would get in December.

It is also possible that one or both of the parties are speculators with the opposite opinion about the direction of December oil. In that case, one might benefit from the contract, and one might not. Take, for example, the futures contract for West Texas Intermediate (WTI) oil that trades on the CME and represents 1,000 barrels of oil. If the price of oil rose from $62.22 to $80 per barrel, the trader with the long position—the buyer—in the futures contract would have profited $17,780 [($80 - $62.22) x 1,000 = $17,780].2 The trader with the short position—the seller—in the contract would have a loss of $17,780.

Cash Settlements of Futures

Not all futures contracts are settled at expiration by delivering the underlying asset. If both parties in a futures contract are speculating investors or traders, it is unlikely that either of them would want to make arrangements for the delivery of several barrels of crude oil. Speculators can end their obligation to purchase or deliver the underlying commodity by closing (unwinding) their contract before expiration with an offsetting contract.

Many derivatives are in fact cash-settled, which means that the gain or loss in the trade is simply an accounting cash flow to the trader's brokerage account. Futures contracts that are cash-settled include many interest rate futures, stock index futures, and more unusual instruments like volatility futures or weather futures.

Forwards

Forward contracts or forwards are similar to futures, but they do not trade on an exchange. These contracts only trade over-the-counter. When a forward contract is created, the buyer and seller may customize the terms, size, and settlement process. As OTC products, forward contracts carry a greater degree of counterparty risk for both parties.

Counterparty risks are a type of credit risk in that the parties may not be able to live up to the obligations outlined in the contract. If one party becomes insolvent, the other party may have no recourse and could lose the value of its position.

Once created, the parties in a forward contract can offset their position with other counterparties, which can increase the potential for counterparty risks as more traders become involved in the same contract.

Swaps

Swaps are another common type of derivative, often used to exchange one kind of cash flow with another. For example, a trader might use an interest rate swap to switch from a variable interest rate loan to a fixed interest rate loan, or vice versa.

Imagine that Company XYZ borrows $1,000,000 and pays a variable interest rate on the loan that is currently 6%. XYZ may be concerned about rising interest rates that will increase the costs of this loan or encounter a lender that is reluctant to extend more credit while the company has this variable rate risk.

Assume XYZ creates a swap with Company QRS, which is willing to exchange the payments owed on the variable-rate loan for the payments owed on a fixed-rate loan of 7%. That means

that XYZ will pay 7% to QRS on its $1,000,000 principal, and QRS will pay XYZ 6% interest on the same principal. At the beginning of the swap, XYZ will just pay QRS the 1% difference between the two swap rates.

If interest rates fall so that the variable rate on the original loan is now 5%, Company XYZ will have to pay Company QRS the 2% difference on the loan. If interest rates rise to 8%, then QRS would have to pay XYZ the 1% difference between the two swap rates. Regardless of how interest rates change, the swap has achieved XYZ's original objective of turning a variable-rate loan into a fixed-rate loan.

Swaps can also be constructed to exchange currency exchange rate risk or the risk of default on a loan or cash flows from other business activities. Swaps related to the cash flows and potential defaults of mortgage bonds are an extremely popular kind of derivative. In fact, they've been a bit too popular in the past. It was the counterparty risk of swaps like this that eventually spiraled into the credit crisis of 2008.

Options

An options contract is similar to a futures contract in that it is an agreement between two parties to buy or sell an asset at a predetermined future date for a specific price. The key difference between options and futures is that with an option, the buyer is not obliged to exercise their agreement to buy or sell. It is an opportunity only, not an obligation, as futures are. As with futures, options may be used to hedge or speculate on the price of the underlying asset.

Advantages and Disadvantages of Derivatives

Advantages

As the above examples illustrate, derivatives can be a useful tool for businesses and investors alike. They provide a way to do the following:

- Lock in prices
- Hedge against unfavorable movements in rates
- Mitigate risks
- These pluses can often come for a limited cost.

- Derivatives can also often be purchased on margin, which means traders use borrowed funds to purchase them. This makes them even less expensive.

Disadvantages

Derivatives are difficult to value because they are based on the price of another asset. The risks for OTC derivatives include counterparty risks that are difficult to predict or value. Most derivatives are also sensitive to the following:

- Changes in the amount of time to expiration
- The cost of holding the underlying asset
- Interest rates
- These variables make it difficult to perfectly match the value of a derivative with the underlying asset.
- Since the derivative has no intrinsic value (its value comes only from the underlying asset), it is vulnerable to market sentiment and market risk. It is possible for supply and demand factors to cause a derivative's price and its liquidity to rise and fall, regardless of what is happening with the price of the underlying asset.
- Finally, derivatives are usually leveraged instruments, and using leverage cuts both ways. While it can increase the rate of return, it also makes losses mount more quickly.

Critiques of Derivative Markets

Speculation and Gambling

For hedging to work, there must be speculators on the other side of the trade. The more speculators the market attracts, the cheaper it becomes to hedge. Unfortunately, the perception of speculators is not a good one. They are thought to be short-term traders who seek to make a short-term profit and engage in price manipulation and trade at extreme prices. The profit from short-term trading is taxed more heavily than profit from long-term trading – a way of "punishing" these activities.

Many view derivatives trading as a form of legalized gambling; however, there are notable differences. For example, gambling benefits only a limited number of participants. Generally, it does not help society as a whole, while the derivatives market brings extensive benefits to the financial services industry.

Destabilization and Systemic Risk

Opponents of the derivatives market claim the operational benefits result in an excessive amount of speculative trading, bringing instability to the financial markets. They argue that as speculators use large amounts of leverage, they are subjecting themselves and their creditors to high risk if the market moves against them. Defaults by speculators can lead to defaults by their creditors, and these chain-reaction events can be systemic. Instability can, therefore, be spread through the market.

Another criticism of derivatives is their complexity. Although it is unclear why complex mathematics should create criticism, when the models on which derivative pricing is based break down due to sometimes irrational actions by financial market participants, the model builders are often blamed for failing to capture financial market reality accurately.

Need for Derivatives:

Derivatives are important because,

- They reduce financial risk involved in a transaction by making people commit to prices in the present for future dates.
- They also allow a person to transfer the risk to another person who is willing to take it.
- They are used to manage financial risk by allowing investors to take opposite positions in a single transaction, also known as hedging.
- They are used to speculate on the price of different assets.
- They matter because when a person trades, the more risk he undertakes, the more gains he will have.
- They can be used in both sides of the situation to either reduce risks or to take risks.

Derivative Markets in India

The National Stock Exchange (NSE) of India is stock exchange located in Mumbai. It functions in three market sections,

- Capital Market Section
- F&O (The Future and Options Market Section)
- Wholesale market debt Segment

The derivative trading at NSE started on 12th June 2000 with futures trading on Nifty 50 Index. Futures and Options on individual securities are available on 162 securities stipulated by SEBI. In India, derivative markets have shown positive results. According to the latest reports, the total turnover in equity derivatives at NSE and BSE increased by 75% from Rs944 Trillion in 2016-17 to Rs1,650 Trillion in 2017-18 (see here) .

L C Gupta Committee Recommendation:

Derivatives market in India is still at the initial stage of development and it is confined only to index numbers. India has a derivatives exchange and it is based on line screen based trading system. But the derivatives trading are a separate segment in the stock market. There should be a minimum of 50 trading members to start derivative trading. There are two types of members namely, members of a derivative exchange and clearing members. The net worth of a clearing member should be INR 3 corers. The minimum contract size for a derivatives contract should be INR 1 lakh. Both futures and options are required for introducing derivatives market.

Recommendations of Gupta Committee on derivatives market in India:

Gupta Committee was appointed in November 1996 to begin derivatives trading in stock index future by June 2000.

Gupta Committee recommended the following regarding the trading of derivatives contracts in the Indian stock market.

Rules regarding exchange operations:

Derivatives contracts can be traded in a screen based trading system with on line facilities. Existing stock exchanges can carry out derivatives trading as a separate segment.

Membership:

A minimum of 50 members are required to start derivatives trading exchange in India. The members involved in derivatives trading in India must have certain minimum net worth of Rs. 3 corers.

Products:

The derivatives products must be approved by SEBI which consist of securities which should protect the interests of investors.

Participants:

There should be no restrictions on investment institutions such as mutual funds and other companies in the derivatives market. Margin money will be collected from all the participants.

Trading regulations:

There should be a clear disclosure of risks on each security which should be supplied by the broker.

Contract note:

Contract note must be duly stamped and timed.

Clearing regulations:

For proper functioning of derivatives market in India, the rules pertaining to clearing arrangements with the clearing corporations should be made. Deposit should also be made with the clearing corporation.

Apart from the above recommendations of the Gupta committee, SEBI also has imposed certain eligibility criteria for derivatives market in India.

History of Derivatives Markets in India

Derivatives markets in India have been in existence in one form or the other for a long time. In the area of commodities, the Bombay Cotton Trade Association started futures trading way back in 1875. In 1952, the Government of India banned cash settlement and options trading. Derivatives trading shifted to informal forwards markets. In recent years, government policy has shifted in favour of an increased role of market-based pricing and less suspicious derivatives trading. The first step towards introduction of financial derivatives trading in India was the promulgation of the Securities Laws (Amendment) Ordinance, 1995. It provided for withdrawal of prohibition on options in securities. The last decade, beginning the year 2000, saw lifting of ban on futures trading in many commodities. Around the same period, national electronic commodity exchanges were also set up.

Derivatives trading commenced in India in June 2000 after SEBI granted the final approval to

This effect in May 2001 on the recommendation of L. C Gupta committee. Securities and Exchange Board of India (SEBI) permitted the derivative segments of two stock exchanges, NSE3 and BSE4 , and their clearing house/corporation to commence trading and settlement in approved derivatives contracts. Initially, SEBI approved trading in index futures contracts based on various stock market indices such

Regulation of Derivatives Trading in India

The regulatory framework in India is based on the L.C. Gupta Committee Report, and the J.R. Varma Committee Report. It is mostly consistent with the IOSCO5 principles and addresses the common concerns of investor protection, market efficiency and integrity and financial integrity. The L.C. Gupta Committee Report provides a perspective on division of regulatory responsibility between the exchange and the SEBI. It recommends that SEBI's role should be restricted to approving rules, bye laws and regulations of a derivatives exchange as also to approving the proposed derivatives contracts before commencement of their trading.

It emphasizes the supervisory and advisory role of SEBI with a view to permitting desirable

Flexibility, maximizing regulatory effectiveness and minimizing regulatory cost. Regulatory

requirements for authorization of derivatives brokers/dealers include relating to capital adequacy, net worth, certification requirement and initial registration with SEBI. It also suggests establishment of a separate clearing corporation, maximum exposure limits, mark to market margins, margin collection from clients and segregation of clients' funds, regulation of sales practice and accounting and disclosure requirements for derivatives trading. The J.R. Varma committee suggests a methodology for risk containment measures for index-based futures and options, stock options and single stock futures.

The risk containment measures include calculation of margins, position limits, exposure limits and reporting and disclosure.

Derivatives Market India

As mentioned in the preceding discussion, derivatives trading commenced in Indian market in 2000 with the introduction of Index futures at BSE, and subsequently, on National Stock Exchange (NSE). Since then, derivatives market in India has witnessed tremendous growth in terms of trading value and number of traded contracts. Here we may discuss the performance of derivatives products in India markets as follows.

Derivatives Products Traded in Derivatives Segment of BSE

The BSE created history on June 9, 2000 when it launched trading in Sensex based futures contract for the first time. It was followed by trading in index options on June 1, 2001; in stock options and single stock futures (31 stocks) on July 9, 2001 and November 9, 2002, respectively. Currently, the number of stocks under single futures and options is 1096 BSE achieved another milestone on September 13, 2004 when it launched Weekly Options, a unique product unparalleled worldwide in the derivatives markets. It permitted trading in the stocks of four leading companies namely; Satyam, State Bank of India, Reliance Industries and TISCO (renamed now Tata Steel). Chhota (mini) SENSEX7 was launched on January 1, 2008. With a small or 'mini' market lot of 5, it allows for comparatively lower capital outlay, lower trading costs, more precise hedging and flexible trading. Currency futures were introduced on October 1, 2008 to enable participants to hedge their currency risks through trading in the U.S. dollar-rupee

future platforms. Table 2 summarily specifies the derivative products and their date of introduction on the BSE.

Derivatives Products Traded in Derivatives Segment of NSE

NSE started trading in index futures, based on popular S&P CNX Index, on June 12, 2000 as its first derivatives product. Trading on index options was introduced on June 4, 2001. Futures on individual securities started on November 9, 2001. The futures contracts are available on 2338

securities stipulated by the Securities & Exchange Board of India (SEBI). Trading in options on individual securities commenced from July 2, 2001. The options contracts are American style and cash settled and are available on 233 securities. Trading in interest rate futures was introduced on 24 June 2003 but it was closed subsequently due to pricing problem. The NSE achieved another landmark in product introduction by launching Mini Index Futures & Options with a minimum contract size of Rs 1 lac.

NSE crated history by launching currency futures contract on US Dollar-Rupee on August 29, 2008 in Indian Derivatives market.

Growth of Derivatives Market in India

Equity derivatives market in India has registered an "explosive growth" (see Fig. 2) and is expected to continue the same in the years to come. Introduced in 2000, financial derivatives market in India has shown a remarkable growth both in terms of volumes and numbers of traded contracts. NSE alone accounts for 99 percent of the derivatives trading in Indian markets. The introduction of derivatives has been well received by stock market players. Trading in derivatives gained popularity soon after its introduction. In due course, the turnover of the NSE derivatives market exceeded the turnover of the NSE cash market. For example, in 2008, the value of the NSE derivatives markets was Rs. 130, 90,477.75 Cr. whereas the value of the NSE cash markets was only Rs. 3,551,038 Cr. (see Table 4 through Table 7). If we compare the trading figures of NSE and BSE, performance of BSE is not encouraging both in terms of volumes and numbers of contracts traded in all product categories.

PART-A

1. Define Financial Derivatives.

2. Write short note on future contract.

3. Explain the needs of Derivatives.

4. Write short note on Derivatives Products.

5. What is the general definition of a commodity futures contract

6. Where are commodity futures contracts traded?

7. Who can trade on commodity futures exchanges?

8. What is meant by opening (price), high, low and closing (price)?

9. What is opening position?

10. Differentiate NSE and BSE.

PART-B

1. Write short note on financial derivatives. Explain different types of financial derivatives.

2. Briefly discuss advantages and disadvantages of derivatives contract.

3. Describe the issues and critiques of derivative Market.

4. Briefly discuss the recommendation of L.C.Gupta committee of derivative Market.

5. Briefly discuss the history of Derivative Market in India.

6. Explain different types of Derivatives Products traded in Derivatives segment of NSE and BSE.

7. Explain origin and growth of Derivative Market in India.

Reference Books:

- John Hull's – Fundamentals of Futures and Options Market.
- Derivatives The Wild Beast of Finance.
- Merton Miller on Derivatives.
- Trading and Pricing Financial Derivatives.
- Brazilian Derivatives and Securities- Pricing and Risk Management of FX and Interest-Rate Portfolios for Local and Global Markets.

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UNIT -2 -FINANCIAL DERIVATIVES - SBAA3013

Forward Contracts:

The forward contract is an agreement between a buyer and seller to trade an asset at a future date. The price of the asset is set when the contract is drawn up. Forward contracts have one settlement date—they all settle at the end of the contract.

These contracts are private agreements between two parties, so they do not trade on an exchange. Because of the nature of the contract, they are not as rigid in their terms and conditions.

Many hedgers use forward contracts to cut down on the volatility of an asset's price. Since the terms of the agreement are set when the contract is executed, a forward contract is not subject to price fluctuations. So if two parties agree to the sale of 1,000 ears of corn at $1 each (for a total of $1,000), the terms cannot change even if the price of corn goes down to 50 cents per ear. It also ensures that delivery of the asset, or, if specified, cash settlement, will usually take place.

Because of the nature of these contracts, forwards are not readily available to retail investors. The market for forward contracts is often hard to predict. That's because the agreements and their details are generally kept between the buyer and seller, and are not made public. Because they are private agreements, there is a high counterparty risk. This means there may be a chance that one party will default.

Futures Contracts

Like forward contracts, futures contracts involve the agreement to buy and sell an asset at a specific price at a future date. The futures contract, however, has some differences from the forward contract.

First, futures contracts—also known as futures—are marked-to-market daily, which means that daily changes are settled day by day until the end of the contract. Furthermore, a settlement for futures contracts can occur over a range of dates.

Because they are traded on an exchange, they have clearing houses that guarantee the transactions. This drastically lowers the probability of default to almost never. Contracts are available on stock exchange indexes, commodities, and currencies. The most popular assets for futures contracts include crops like wheat and corn, and oil and gas.

The market for futures contracts is highly liquid, giving investors the ability to enter and exit whenever they choose to do so.

These contracts are frequently used by speculators, who bet on the direction in which an asset's price will move, they are usually closed out prior to maturity and delivery usually never happens. In this case, a cash settlement usually takes place.

Types of Forward Contracts

Since currencies account for the bulk of forward contracts, most types of forward contracts are specific to currencies. Following are the types of forward contracts:

Window Forwards

Such forward contracts allow investors to buy the currencies within a range of settlement dates. Basically, such contracts allow investors to get a more favorable and convenient exchange rate than what they would get by using a standard forward contract.

Long-Dated Forwards

As the name suggests, the settlement period of such contracts is much more than the usual forward contracts. A standard forward contract usually has an expiry date of up to 12 months. In contrast, long-dated forwards can have a maturity date of up to 10 yrs. Except for a longer settlement date, all other features of long-dated forwards are the same as standard forward contracts.

Non-Deliverable Forwards (NDFs)

Non-deliverable forwards are types of forward contracts that are very different from standard forward contracts. As in such contracts, physical delivery of the security/asset of funds does not take place. Rather, at the time of the settlement, the parties just exchange the difference amount. The difference amount is on the basis of the contract rate and the market rate at the time of the settlement. Generally, investors who do not have enough funds or do not want to commit funds or block huge funds, go for such types of forward contracts.

Flexible Forward

Such type of forward contract gives investors flexibility in exchanging the funds. Or, we can say that investors using such a contract have an option to exchange the funds prior to the settlement date. Using this contact, parties can either exchange the funds outright or choose to make several payments prior to the settlement date.

Assume that Mr. X imports goods in India worth $500,000 from a US-based exporter. Being aware of exchange rate fluctuation, he enters into a flexible forward contract. This will help him to make payments at different points of time during the period of the contract, whenever the exchange rates are favorable to him.

Closed Outright Forward

This is the simplest type of forward contract. We can also call such forward contracts European contracts or Standard Forward Contracts. Such types of contracts allow investors to exchange the underlying asset at a specific future date.

Say, for example, you have entered into a trade with a foreign exporter. And, the date of payment is the 24th of next month. You can lock in the exchange rate by entering into a closed outright forward contract for the 24th of next month.

Fixed Date Forward Contracts

In this type of forward contract, the parties exchange the underlying asset only at a specific maturity date. Or, we can say, such contracts have a fixed maturity date. Most forward contracts are fixed-date forward contracts only.

Option Forward Contract

These types of forward contracts are similar to flexible forward contracts. An option forward contract allows parties to exchange the underlying security on any date during a specific period.

The main features of forward contracts are:

* They are bilateral contracts and hence exposed to counter-party risk.

* Each contract is custom designed, and hence is unique in terms of contract size, expiration date and the asset type and quality.

* The contract price is generally not available in public domain.

* The contract has to be settled by delivery of the asset on expiration date.

* In case the party wishes to reverse the contract, it has to compulsorily go to the same counter party, which being in a monopoly situation can command the price it wants.

Difference between futures and forwards:

Both futures and forwards offer a contractual agreement to buy and sell a financial asset at a set price in the future. However, while there are many similarities between the two trading contracts, there are some notable differences.

Structure of forward and future markets

Futures contracts trade on a centralized public exchange and are standardized, meaning that their terms cannot be changed once a contract is made. On the other hand, forward contracts are more flexible in this respect. Their terms can instead vary from one contract to another. Cash settlement occurs at the end of a full forward contract, whereas changes are settled on a daily basis when trading futures until you reach the end of a contract.

Difference between forward and future prices

Hedgers tend to trade forwards in order to avoid the volatility of an asset's price, as the terms of agreement are set at the beginning of the contract. Any price fluctuations, therefore, will not influence the price at the end of the forward contract and traders can be confident with their starting agreed price. However, within the futures market, traders are able to take advantage of asset price fluctuations in the hope of making profit from their asset increasing in value. As these contracts are settled each day, both parties must ensure that they have the funds available to withstand the fluctuations in price throughout the duration of the agreement. As a result, traders will often close out the trade early and delivery will rarely happen, in the place of a cash settlement instead.

As futures are traded on an exchange, a clearinghouse involved guarantees the performance of a transaction, which is not available for forward trading. This means that a forward contract will be much more susceptible to credit risk and may default a transaction. The probability of default for a futures contract is almost never. This is why forward contract prices often include a premium charge for the extra credit risk.

Trading Mechanism forward contracts:

Open a live trading account to start forwards trading on our financial markets. You will be granted access to a free demo account, where you can practice forward trading with virtual funds.

Decide which individual asset you would like to explore by visiting our instruments page.

Browse our news and insights page to take advantage of our market commentaries, key economic announcements and to stay up to date with news analysts. This is particularly useful for markets impacted by global events and resulting price movements.

We recommend that you build an effective trading strategy prior to placing your trades.

Familiarize yourself with the risks associated with forward contracts and trading on leverage. Apply any subsequent risk management efforts in order to minimize losses as much as possible. For this reason, most traders choose to use stop-loss and take-profit orders.

Types of Future contract:

Stock Futures

Index futures first appeared in India in the year 2000. These were followed by individual stock futures a couple of years later. There are several advantages of trading in stock futures. The biggest one is leverage. Before trading in stock futures, you need to deposit an initial margin with the broker. If the initial margin is, say, 10 per cent, you can trade in Rs 50 lakhs worth of futures by paying just Rs 5 lakhs to the broker. The larger the volume of transactions, the higher your profit. But the risks are also more significant. You can trade stock futures on stock exchanges like the BSE and NSE. However, they are available only for a specified list of stocks.

Index Futures

Index futures can be used to speculate on the movements of indices, like the Sensex or Nifty, in the future. Let's say you buy BSE Sensex futures at Rs 40,000 with an expiry date of the month. If the Sensex rises to 45,000, you stand to make a profit of Rs 5,000. If it goes down to Rs 30,000, your losses, in that case, would be Rs 5,000. Index futures are used by portfolio managers to hedge their equity positions should share prices fall. Some of the index futures in India include Sensex, Nifty 50, Nifty Bank, Nifty IT etc.

Currency Futures

One of the different types of financial futures is currency futures. This futures contract allows you to buy or sell a currency at a specific rate vis-à-vis another currency (Euro vs USD, etc.) at a predetermined date in the future. These are used by those who want to hedge risks, and by speculators. For example, an importer in India may purchase USD futures to guard against any appreciation in the currency against the rupee.

Commodity Futures

Commodity futures allow hedging against price changes in the future of various commodities, including agricultural products, gold, silver, petroleum etc. Speculators also use them to bet on price movements. Currency markets are highly volatile and are generally the domain of large institutional players, including private companies and governments. Since initial margins are low in commodities, players in commodity futures can take significant positions. Of course, the profit potential is enormous, but the risks tend to be high. In India, these futures are traded on commodity exchanges like the Multi Commodity Exchange (MCX) and the National Commodity and Derivatives Exchange.

Interest rate futures

An interest rate future is one of the different types of futures. It's a contract to buy or sell a debt instrument at a specified price on a predetermined date. The underlying assets are government bonds or treasury bills. You can trade these on the NSE and the BSE.

Evolution of future contract in India:

In the 1840s, Chicago had become a commercial center with railroad and telegraph lines connecting it with the East. Around this same time, the McCormick reaper was invented which eventually lead to higher wheat production. Midwest farmers came to Chicago to sell their wheat to dealers who, in turn, shipped it all over the country.

He brought his wheat to Chicago hoping to sell it at a good price. The city had few storage facilities and no established procedures either for weighing the grain or for grading it. In short, the farmer was often at the mercy of the dealer.

1848 saw the opening of a central place where farmers and dealers could meet to deal in "spot" grain - that is, to exchange cash for immediate delivery of wheat.

The futures contract, as we know it today, evolved as farmers (sellers) and dealers (buyers) began to commit to future exchanges of grain for cash. For instance, the farmer would agree with the dealer on a price to deliver to him 5,000 bushels of wheat at the end of June. The bargain suited both parties. The farmer knew how much he would be paid for his wheat, and the dealer knew his costs in advance. The two parties may have exchanged a written contract to this effect and even a small amount of money representing a "guarantee."

Such contracts became common and were even used as collateral for bank loans. They also began to change hands before the delivery date. If the dealer decided he didn't want the wheat, he would sell the contract to someone who did. Or, the farmer who didn't want to deliver his wheat might pass his obligation on to another farmer The price would go up and down depending on what was happening in the wheat market. If bad weather had come, the people who had contracted to sell wheat would hold more valuable contracts because the supply would be lower; if the harvest were bigger than expected, the seller's contract would become less valuable. It wasn't long before people who had no intention of ever buying or selling wheat began trading the contracts. They were speculators, hoping to buy low and sell high or sell high and buy low.

Function of Future Contract:

To support a futures market, a cash market must have certain characteristics: sufficient price volatility and continuous price risk exposure to affect all levels of the marketing chain; enough

market participants with competing price goals; and a quantifiable underlying basic commodity with grade or common characteristics that can be standardized.

The futures exchange is an organized marketplace that:

- Provides and operates the facilities for trading;
- Establishes, monitors and enforces the rules for trading; and
- Keeps and disseminates trading data.

The exchange does not set the price! It does not even participate in coffee price determination. The exchange market supports five basic pricing functions:

- Price discovery;
- Price risk transfer;
- Price dissemination;
- Price quality;
- Arbitration.

The exchange establishes a visible, free market setting for the trading of futures and options which helps the underlying industry find a market price (price discovery) for the product and allows the transfer of risk associated with cash price volatility. As price discovery takes place, the exchange provides price dissemination worldwide.

Forward Contracts vs. Futures Contracts: An Overview

Forward and futures contracts are similar in many ways: both involve the agreement to buy and sell assets at a future date and both have prices that are derived from some underlying asset. A forward contract, though, is an arrangement made over-the-counter (OTC) between two counterparties that negotiate and arrive on the exact terms of the contract—such as its expiration date, how many units of the underlying asset are represented in the contract, and what exactly the underlying asset to be delivered is, among other factors. Forwards settle just once at the end of the contract. Futures, on the other hand, are standardized contracts with fixed maturity dates and uniform underlying. These are traded on exchanges and settled on a daily basis.

Forward Contracts

The forward contract is an agreement between a buyer and seller to trade an asset at a future date. The price of the asset is set when the contract is drawn up. Forward contracts have one settlement date—they all settle at the end of the contract.

These contracts are private agreements between two parties, so they do not trade on an exchange. Because of the nature of the contract, they are not as rigid in their terms and conditions.

Many hedgers use forward contracts to cut down on the volatility of an asset's price. Since the terms of the agreement are set when the contract is executed, a forward contract is not subject to price fluctuations. So if two parties agree to the sale of 1,000 ears of corn at $1 each (for a total of $1,000), the terms cannot change even if the price of corn goes down to 50 cents per ear. It also ensures that delivery of the asset, or, if specified, cash settlement, will usually take place.

Futures Contracts

Like forward contracts, futures contracts involve the agreement to buy and sell an asset at a specific price at a future date. The futures contract, however, has some differences from the forward contract.

First, futures contracts—also known as futures—are marked-to-market daily, which means that daily changes are settled day by day until the end of the contract. Furthermore, a settlement for futures contracts can occur over a range of dates.

Because they are traded on an exchange, they have clearing houses that guarantee the transactions. This drastically lowers the probability of default to almost never. Contracts are available on stock exchange indexes, commodities, and currencies. The most popular assets for futures contracts include crops like wheat and corn, and oil and gas.

The market for futures contracts is highly liquid, giving investors the ability to enter and exit whenever they choose to do so.

These contracts are frequently used by speculators, who bet on the direction in which an asset's price will move, they are usually closed out prior to maturity and delivery usually never happens. In this case, a cash settlement usually takes place.

PART-A

1. Define forward contract

2. What is Future Contract?

3. Short note on window forward.

4. Explain stock future.

5. Write short note on Index Future.

6. Write short note on Index Future.

7. What is Commodity future?

8. Write short note on Interest rate future.

9. What is Arbitration in Derivatives Market?

10. What is Price dissemination?

PART-B

1. What Is The Structure Of Derivatives Markets In India?

2. Briefly discuss different types of forward contract.

3. Descrobe the important features of forward contract.

4. Explain the structure of forward and future market in India.

5. Distinguish between forward and future price in Derivatives Market.

6. Briefly explain the trading Mechanism in forward contract.

7. State and explain the factors influencing spot price in derivatives market.

8. Enumerate the merits and demerits of Commodity future.

9. Explain the function of future contract in derivative market.

Reference Books:

- John Hull's – Fundamentals of Futures and Options Market.
- Derivatives The Wild Beast of Finance.
- Merton Miller on Derivatives.
- Trading and Pricing Financial Derivatives.
- Brazilian Derivatives and Securities- Pricing and Risk Management of FX and Interest-Rate Portfolios for Local and Global Markets.

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UNIT -3- FINANCIAL DERIVATIVES - SBAA3013

Meaning of option Trading:

Options trading are the trading of instruments that give you the right to buy or sell a specific security on a specific date at a specific price.

An option is a contract that's linked to an underlying asset, e.g., a stock or another security. Options contracts are good for a set time period, which could be as short as a day or as long as a couple of years.

When you buy an option, you have the right to trade the underlying asset but you're not obligated to. If you decide to do so, that's called exercising the option.

If you're a DIY investor diving into options with a self-directed account, you're in full control of your trading decisions and transactions. But that doesn't mean you're alone either.

Plenty of communities bring traders together to discuss things like current market outlook and options trading strategies.

Different Types of Options

To form your knowledge base in options trading, start by getting familiar with the different types of options you can trade. The two basic categories of options to choose from are calls and puts.

Call option in stocks

A call option gives you the right to buy an underlying security at a designated price within a certain time period (think of it as calling the underlying security to you.) The price you pay is called the strike price. The end date for exercising a call option is called the expiration date.

Call options can be American-style or European-style. With American-style options you can buy the underlying asset any time up to the expiration date. European-style options only allow you to buy the asset on the expiration date.

Put option in stocks

A put option is the opposite of a call option. Instead of having the right to buy an underlying security, a put option gives you the right to sell it at a set strike price (think of this as putting the underlying security away from you.

Put options also have expiration dates. The same style rules (i.e., American or European) apply for when you can exercise them.

Functions of options trading

Options trading is something you can do via an online brokerage account that allows self-directed trading. In terms of the mechanics of how to trade options, here are a few key points to know.

When you buy a put, you're buying a contract that gives you an option to sell a security by a certain expiration date at a certain price. Before buying a put, a few things to consider include:

- How much you want to invest
- What kind of time frame you want to invest for
- Anticipated price movements for the underlying asset
- Buying put options can make sense if you think the price of the underlying asset is going to go down before the expiration date. If you buy put options at one strike price, then the asset's price drops, you can exercise your option at the original strike price.

For example, say you buy a put option for 100 shares of ABC stock at $50 per share. Prior to the option's expiration date, the stock's price drops to $25 per share. If you choose to exercise your option, you could still sell the 100 shares of stock at the higher $50 per share price.

Buying a call option:

Buying a call means you're buying a contract to purchase a particular stock or asset by a set expiration date. When buying call options, it's important to consider the same factors that you would when buying put options.

Buying call options can make sense if you think the price of the underlying asset is going to rise before the expiration date. For example, say you buy a call option for 100 shares of ABC stock, only this time you're hoping for a price increase.

Your call option contract gives you the right to buy shares at $50 each. Meanwhile, the stock's price climbs to $100 apiece. You could effectively use a call option contract to buy that stock at a discount.

Stock Option Quote creation:

Options based on equities, more commonly known as "stock options," typically are a natural lead for traders new to options. Stock options are listed on exchanges like the New York Stock Exchange in the form of a quote. It is important to understand the details of a stock option quote before you make a move.

- There are five parts of a standard stock options quote:
- Stock symbol refers to what's used to identify the underlying asset attached to an options contract.
- Expiration date is the date on which the option will expire.
- Strike price is the price at which you're able to exercise the option.
- Type refers to the type of option involved, i.e., call or put.
- Premium is the cost to buy the option's contract itself.

Option contract evaluation Method

Before venturing into the world of trading options, investors should have a good understanding of the factors determining the value of an option. These include the current stock price, the intrinsic value, time to expiration or the time value, volatility, interest rates, and cash dividends paid.

There are several options pricing models that use these parameters to determine the fair market value of an option. Of these, the Black-Scholes model is the most widely known.1 In many ways, options are just like any other investment—you need to understand what determines their price to use them effectively. Other models are also commonly used, such as the binomial model and trinomial model.

Let's start with the primary drivers of the price of an option: current stock price, intrinsic value, time to expiration or time value, and volatility. The current stock price is fairly straightforward. The movement of the price of the stock up or down has a direct, though not equal, effect on the price of the option. As the price of a stock rises, the more likely it is that the price of a call option will rise and the price of a put option will fall. If the stock price goes down, the reverse will most likely happen to the price of the calls and puts.

Intrinsic Value Method:

Intrinsic value is the value any given option would have if it were exercised today. Basically, the intrinsic value is the amount by which the strike price of an option is profitable or in-the-money as compared to the stock's price in the market. If the strike price of the option is not profitable as compared to the price of the stock, the option is said to be out-of-the-money. If the strike price is equal to the stock's price in the market, the option is said to be "at-the-money."

Although intrinsic value includes the relationship between the strike price and the stock's price in the market, it doesn't account for how much (or how little) time is remaining until the option's expiration—called the expiry. The amount of time remaining on an option impacts the premium or value of an option, which we'll explore in the next section. In other words, intrinsic value is the portion of an option's price not lost or impacted due to the passage of time.

COVERED AND NAKED OPTIONS

Simply put, covered options are contracts sold by traders who actually own the underlying shares. In contrast, naked options are those where the writer does not own the underlying assets. Writers of naked options are thus unprotected or ‘naked’ from an unlimited loss.

WHY CHOSE COVERED OPTIONS:

In the earlier sections, we understood the profit-loss potential of options for buyers and sellers. The buyers are not actually obligated to exercise the agreement. So, they have limited scope for losses, as they are only subject to lose the amount they paid as premium. Sellers, on the other hand, are obligated to uphold the contract if and when the buyer chooses. This increases his potential liability. Also, the sellers profit is largely limited to the premium he/she receives.

So, does this mean that an option seller must necessarily be a risk-taking speculator? Not really.

You could sell call options in order to reduce the cost of your investments or hedge your investments. The only requirement is that you must actually hold the underlying shares of the calls that you sell.

For example, IT companies benefit from an undervalued rupee as they earn money in dollars. On the other hand, importers benefit from a strong rupee as they spend in dollars. Thus, what is suitable to one investor may not be so for another.

Thus, covered options are largely opted by hedgers and risk-evaders. They are traders who are looking to safeguard their assets predominantly currencies from future fluctuations. They, thus, aim to transfer their risk.

WHY CHOSE NAKED OPTIONS:

When you sell a naked call or put option, you have no underlying assets or open position in the futures market to protect you from an unlimited loss, if the market goes against you. However, this does not necessarily mean that a naked option does not have its perks. It allows traders to participate in the derivatives market even if they have relatively small holdings in the cash segment.

Naked options are usually sold by speculators, who feel very strongly about the direction of an index or the price of a stock. And, if the market does go against them, they may try to salvage the situation by offsetting their options by purchasing identical but opposing options. They could also consider taking up a position in the futures market that will nullify the losses made through selling a naked call or put.

Types of Underlying Assets

There are different types, or classes, of underlying assets, and they come with unique characteristics that, in turn, affect the nature and structure of the derivatives associated with each type of underlying asset.

For example, different underlying asset classes are subject to different types of financial risk. Stocks and commodities are subject to market risk and general economic risk. Bonds and other

debt instruments are subject to default risk, interest rate risk, and counterparty risk. Currencies are subject to interest rate risk and political risk.

Underlying Asset – Examples

One of the most well-known and widely traded financial derivative securities are stock options. Stock options are derivatives, whose value is based on the underlying asset – namely, the actual stock. For example, a call option on a stock confers on the buyer the right to purchase the stock at a specified price (the strike price of the option) up to the point in time when the option expires.

Obviously, the value and price of an option depends upon the price of the actual stock. For a stock trading at $60 per share, a call option on the stock with a strike price of $50 will be worth a minimum of $10 per share, since the call option gives the option holder the right to purchase a $60 stock for only $50.

Stocks, bonds, commodities (such as gold, oil, or cotton), interest rates, market indexes, and currencies are underlying assets that influenced the creation of many financial derivatives. Among the most popular financial derivatives are – in addition to options – forward contracts, credit default swaps (CDS), and collateralized debt obligations (CDO).

Financial derivatives are commonly used as vehicles for risk management in investing. For example, an investor who owns a number of shares of a given stock may choose to hedge his investment in the underlying asset – the stock – with the use of derivative options on the stock.

The concept of underlying assets is important to investment speculators who may seek profits from arbitrage trading of underlying assets and derivatives – that is, making trades designed to generate a profit from temporary market discrepancies between the price of an underlying asset and the price of a derivative based on that asset.

Basic principles of option trading:

Equity or derivatives, first focus on managing risk

We have spoken of this factor umpteen times but it still remains the core of trading. After all, trading is all about managing risk. If you are trading on equity, you need to worry about your capital and your stop losses. If you are long on calls or puts then you need to worry about how best you can reduce your option sunk cost. If you have sold options then you need to focus on how much risk you are willing to take beyond your option premium. Focus on the risk aspect and the returns will be taken care of.

It is all in the mind, so never panic

Whether it is equities or derivatives, it is ultimately all in the mind. Are you able to keep your cool in the midst of a volatile market? Can you avoid panicking in a falling market and identify opportunities? Can you have the discipline to avoid the market at the peak of a bull rally and sit on cash? How do you avoid the herd mentality when the entire flock is chasing a particular line of thinking? All these are questions of how well you play the mental game. One of the golden rules of trading equities and derivatives is never to panic. The total quantum of returns in the market is fixed. When you panic you subsidize the other trader who does not panic.

Costs and taxes matter a lot in trading

Whether you are trading equities or derivatives always think like a miser not like a millionaire. Squeeze your costs to the bare minimum. Don't overtrade as it only adds to the brokerage costs. Get the best possible deal on the rates of brokerage. Keep an eye on taxes because each trading action of yours has a tax implication. When you are able to look at your trading performance in post-tax terms, you have truly arrived as a trader.

Apply the laws of motion to your trading activity

When we talk of motion we are talking of market momentum. Newton's law says that a body in motion continues to be in motion till an external force acts upon it. The same applies to markets. When you find a certain underlying motion driving the market, try to understand the motion rather than trying to bet against. As a trader, you are always better trading on the same side of momentum. It is not your job to predict when the momentum will shift or when the trend will change. That is for the market to tell you!

Think like an analyst but act like a trader

Many rookie traders erroneously believe that in-depth reading and grasp of news and events is the job of a fundamental analyst. A trader needs to be able to grasp the news and its implications to be able to really understand the trading ecosystem in the right perspective. The idea is to think like an analyst and act like a trader. But, there is really no substitute to doing your home work, keeping abreast of the news and events and an uncanny ability to interpret the data flows.

Focus more on factors within your control

When you are a trader what should you worry about? Should you worry about where the stock will trade at the end of 1 month? Should you worry about how the option price will turn out? Should you worry about whether the Fed will hike rates? Should you worry about whether the US will trigger a trade war with China? The answer to all these questions is "No", because you do not have control of any of these outcomes. Focus on what you can either control or influence. You cannot predict the price of the stock but you can manage your risk with stop losses. You cannot control the Fed rate decision but you can decide your strategy. You do not know how the trade war will pan out, but you can surely sectors and stocks that are likely to lose from a possible trade war. Focus on what you can control only!

As a trader, the buck stops with you

Whether you trade equities or derivatives, always remember that the buck stops with you. When you lose money, there is no point in blaming the monetary policy or the Budget. You may not control the outcome of the Budget or the monetary policy but you surely can influence your trading positions. You could have either closed positions or hedged with a put option. Don't blame losses on market volatility. That is the way markets have been always. Don't spend time on justifying your losses, rather focus on the learning's.

PART-A

1. What is Option Trading?

2. Write short note on call option.

3. Explain put option in derivative trading.

4. State and explain Intrinsic value Method

5. Describe the meaning of covered option.

6. Write short note on Underlying Assets.

7. How to manage the risk option trading?

8. Write short note on currency option trading.

9. Waht is commodity option?

10 State and explain Stock option.

PART-B

1. Briefly explain the different types of options in Derivatives Market.

2. State and explain the factors influencing in option trading.

3. Briefly explain the factors influencing in stock option quote creation.

4. Describe the various types of evaluation methods in option contract.

5. Differentiate Covered option and Naked option in Option Contract.

6. What is Underlying Assets? Explain different types of Underlying Assets.

7. Enumerate the merits and demerits of Option Trading.

Reference Books:

- John Hull's – Fundamentals of Futures and Options Market.
- Derivatives The Wild Beast of Finance.
- Merton Miller on Derivatives.
- Trading and Pricing Financial Derivatives.
- Brazilian Derivatives and Securities- Pricing and Risk Management of FX and Interest-Rate Portfolios for Local and Global Markets.

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UNIT -4- FINANCIAL DERIVATIVES - SBAA3013

Definition of Swap:

A swap is a derivative contract through which two parties exchange the cash flows or liabilities from two different financial instruments. Most swaps involve cash flows based on a notional principal amount such as a loan or bond, although the instrument can be almost anything. Usually, the principal does not change hands. Each cash flow comprises one leg of the swap. One cash flow is generally fixed, while the other is variable and based on a benchmark interest rate, floating currency exchange rate, or index price.

The most common kind of swap is an interest rate swap. Swaps do not trade on exchanges, and retail investors do not generally engage in swaps. Rather, swaps are over-the-counter (OTC) contracts primarily between businesses or financial institutions that are customized to the needs of both parties.

Critical features of swaps are listed below:

1. Barter:

Two counterparties with exactly of/setting exposures were introduced by a third party. If the credit risk were unequal, the third party – if a bank – might interpose itself or arrange for a bank to do so for a small fee.

2. Arbitrage driven:

The swap was driven by an arbitrage which gave some profit to, all three parties. Generally, this was a credit arbitrage or market-access arbitrage.

3. Liability driven:

Almost all swaps were driven by the need to manage a debt issue on both sides.

Different types swaps

Swaps are derivative instruments that represent an agreement between two parties to exchange a series of cash flows over a specific period of time. Swaps offer great flexibility in designing and structuring contracts based on mutual agreement. This flexibility generates many swap variations, with each serving a specific purpose.

- There are multiple reasons why parties agree to such an exchange:
- Investment objectives or repayment scenarios may have changed.
- There may be increased financial benefit in switching to newly available or alternative cash flow streams.
- The need may arise to hedge or mitigate risk associated with a floating rate loan repayment.

Interest Rate Swaps

The most popular types of swaps are plain vanilla interest rate swaps. They allow two parties to exchange fixed and floating cash flows on an interest-bearing investment or loan.

Businesses or individuals attempt to secure cost-effective loans but their selected markets may not offer preferred loan solutions. For instance, an investor may get a cheaper loan in a floating rate market, but they prefer a fixed rate. Interest rate swaps enable the investor to switch the cash flows, as desired.

Assume Paul prefers a fixed rate loan and has loans available at a floating rate (LIBOR+0.5%) or at a fixed rate (10.75%). Mary prefers a floating rate loan and has loans available at a floating rate (LIBOR+0.25%) or at a fixed rate (10%). Due to a better credit rating, Mary has the advantage over Paul in both the floating rate market (by 0.25%) and in the fixed rate market (by 0.75%). Her advantage is greater in the fixed rate market so she picks up the fixed rate loan. However, since she prefers the floating rate, she gets into a swap contract with a bank to pay LIBOR and receive a 10% fixed rate.

Currency Swaps

The transactional value of capital that changes hands in currency markets surpasses that of all other markets. Currency swaps offer efficient ways to hedge forex risk.

Assume an Australian company is setting up a business in the UK and needs GBP 10 million. Assuming the AUD/GBP exchange rate is at 0.5, the total comes to AUD 20 million. Similarly, a UK-based company wants to set up a plant in Australia and needs AUD 20 million. The cost of a loan in the UK is 10% for foreigners and 6% for locals, while in Australia it's 9% for foreigners and 5% for locals. Apart from the high loan cost for foreign companies, it might be difficult to get the loan easily due to procedural difficulties. Both companies have a competitive advantage

in their domestic loan markets. The Australian firm can take a low-cost loan of AUD 20 million in Australia, while the English firm can take a low-cost loan of GBP 10 million in the UK. Assume both loans need six monthly repayments.

Credit Default Swaps

The credit default swap offers insurance in case of default by a third-party borrower. Assume Peter bought a 15-year long bond issued by ABC, Inc. The bond is worth $1,000 and pays annual interest of $50 (i.e., 5% coupon rate). Peter worries that ABC, Inc. may default so he executes a credit default swap contract with Paul. Under the swap agreement, Peter (CDS buyer) agrees to pay $15 per year to Paul (CDS seller). Paul trusts ABC, Inc. and is ready to take the default risk on its behalf. For the $15 receipt per year, Paul will offer insurance to Peter for his investment and returns. If ABC, Inc. defaults, Paul will pay Peter $1,000 plus any remaining interest payments. If ABC, Inc. does not default during the 15-year long bond duration, Paul benefits by keeping the $15 per year without any payables to Peter.

Benefits: The CDS works as insurance to protect lenders and bondholders from borrowers' default risk.

Zero Coupon Swaps

Similar to the interest rate swap, the zero coupon swap offers flexibility to one of the parties in the swap transaction. In a fixed-to-floating zero coupon swap, the fixed rate cash flows are not paid periodically, but just once at the end of the maturity of the swap contract. The other party who pays floating rate keeps making regular periodic payments following the standard swap payment schedule.

A fixed-fixed zero coupon swap is also available, wherein one party does not make any interim payments, but the other party keeps paying fixed payments as per the schedule.

Benefits: The zero coupon swap (ZCS) is primarily used by businesses to hedge a loan in which interest is paid at maturity or by banks that issue bonds with end-of-maturity interest payments.

Total Return Swaps

A total return swap gives an investor the benefits of owning securities, without actual ownership. A TRS is a contract between a total return payer and total return receiver. The payer usually pays

the total return of agreed security to the receiver and receives a fixed/floating rate payment in exchange. The agreed (or referenced) security can be a bond, index, equity, loan, or commodity. The total return will include all generated income and capital appreciation.

Equity Index swaps:

An equity swap is similar to an interest rate swap, but rather than one leg being the "fixed" side, it is based on the return of an equity index. For example, one party will pay the floating leg (typically linked to LIBOR) and receive the returns on a pre-agreed-upon index of stocks relative to the notional amount of the contract. Equity swaps allow parties to potentially benefit from returns of an equity security or index without the need to own shares, an exchange-traded fund (ETF), or a mutual fund that tracks an index.

Most equity swaps are conducted between large financing firms such as auto financiers, investment banks, and lending institutions. Equity swaps are typically linked to the performance of an equity security or index and include payments linked to fixed rate or floating rate securities. LIBOR rates are a common benchmark for the fixed income portion of equity swaps, which tend to be held at intervals of one year or less, much like commercial paper.

Most equity swaps are conducted between large financing firms such as auto financiers, investment banks, and lending institutions. Equity swaps are typically linked to the performance of an equity security or index and include payments linked to fixed rate or floating rate securities. LIBOR rates are a common benchmark for the fixed income portion of equity swaps, which tend to be held at intervals of one year or less, much like commercial paper.

PART-A

1. What is Swap Trading?

2. Write short note on Financial Swap.

3. Explain Commodity swap.

4. State and explain Currency Swap.

5. Describe the meaning of Index Swap.

6. Write short note on Interest Rate Swap.

7. State the meaning of LIBOR in Swap Trading.

8. Write short note on Dept equity Swap.

9. Waht is Credit Default Swap?

10 State and explain Zero Coupon Swap.

PART-B

1. Briefly explain the different types of Swap in Derivatives Market.

2. State and explain the factors influencing in Swap Contract.

3. Briefly explain the factors influencing in price fixing in swap Trading.

4. Describe the various types of evaluation methods in Swap contract.

5. Differentiate Interest Rate Swap and Commodity Swap.

6. Differentiate Currency Swap and Dept equity Swap.

7. Enumerate the merits and demerits of Swap Trading.

Reference Books:

- John Hull's – Fundamentals of Futures and Options Market.
- Derivatives The Wild Beast of Finance.
- Merton Miller on Derivatives.
- Trading and Pricing Financial Derivatives.
- Brazilian Derivatives and Securities- Pricing and Risk Management of FX and Interest-Rate Portfolios for Local and Global Markets.

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UNIT -5- FINANCIAL DERIVATIVES - SBAA3013

Definition of Hedging

Hedging is a financial strategy that should be understood and used by investors because of the advantages it offers. As an investment, it protects an individual's finances from being exposed to a risky situation that may lead to loss of value. However, hedging doesn't necessarily mean that the investments won't lose value at all. Rather, in the event that happens, the losses will be mitigated by gains in another investment.

Examples of hedging strategies

There are various hedging strategies, and each one is unique. Investors are encouraged to use not just one strategy, but different ones for the best results. Below are some of the most common

Hedging strategies that investors should consider

1. Diversification

The adage that goes "don't put all your eggs in one basket" never gets old, and it actually makes sense even in finance. Diversification is when an investor puts his finances into investments that don't move in a uniform direction. Simply put, it is investing in a variety of assets that are not related to each other so that if one of these declines, the others may rise.

For example, a businessman buys stocks from a hotel, a private hospital, and a chain of malls. If the tourism industry where the hotel operates is impacted by a negative event, the other investments won't be affected because they are not related.

2. Arbitrage

The arbitrage strategy is very simple yet very clever. It involves buying a product and selling it immediately in another market for a higher price; thus, making small but steady profits. The strategy is most commonly used in the stock market.

Let's take a very simple example of a junior high school student buying a pair of Asics shoes from the outlet store that is near his home for only $45 and selling it to his schoolmate for $70. The schoolmate is happy to find a much cheaper price compared to the department store which sells it for $110.

3. Average down

The average down strategy involves buying more units of a particular product even though the cost or selling price of the product has declined. Stock investors often use this strategy of

hedging their investments. If the price of a stock they've previously purchased declines significantly, they buy more shares at the lower price. Then, if the price rises to point between their two buy prices, the profits from the second buy may offset losses in the first.

4. Staying in cash

This strategy is as simple as it sounds. The investor keeps part of his money in cash, hedging against potential losses in his investments.

Areas of hedging:

Hedging can be used in various areas such as commodities, which include things such as gas, oil, meat products, dairy, sugar, and others.

Another area is securities, which are most commonly found in the form of stocks and bonds. Investors can buy securities without taking possession of anything physical, making them an easily tradable property. Currencies can also be hedged, as well as interest rates and weather.

Meaning of Long Hedge:

A long hedge refers to a futures position that is entered into for the purpose of price stability on a purchase. Long hedges are often used by manufacturers and processors to remove price volatility from the purchase of required inputs. These input-dependent companies know they will require materials several times a year, so they enter futures positions to stabilize the purchase price throughout the year.

For this reason, a long hedge may also be referred to as an input hedge, a buyers hedge, a buy hedge, a purchasers hedge, or a purchasing hedge.

Understanding Long Hedges:

A long hedge represents a smart cost control strategy for a company that knows it needs to purchase a commodity in the future and wants to lock in the purchase price. The hedge itself is quite simple, with the purchaser of a commodity simply entering a long futures position. A long position means the buyer of the commodity is making a bet that the price of the commodity will rise in the future. If the good rises in price, the profit from the futures position helps to offset the greater cost of the commodity.

Example of a Long Hedge:

In a simplified example, we might assume that it is January, and an aluminum manufacturer needs 25,000 pounds of copper to manufacture aluminum and fulfill a contract in May. The

current spot price is $2.50 per pound, but the May futures price is $2.40 per pound. In January the aluminum manufacturer would take a long position in a May futures contract on copper.

This futures contract can be sized to cover part or all of the expected order. Sizing the position sets the hedge ratio. For example, if the purchaser hedges half the purchase order size, then the hedge ratio is 50%. If the May spot price of copper is over $2.40 per pound, then the manufacturer has benefited from taking a long position. This is because the overall profit from the futures contract helps offset the higher purchasing cost paid for copper in May.

If the May spot price of copper is below $2.40 per pound, the manufacturer takes a small loss on the futures position while saving overall, thanks to a lower-than-anticipated purchasing price.

Long Hedges vs. Short Hedges

Basis risk makes it very difficult to offset all pricing risk, but a high hedge ratio on a long hedge will remove a lot of it. The opposite of a long hedge is a short hedge, which protects the seller of a commodity or asset by locking in the sale price.

Hedges, both long and short, can be thought of as a form of insurance. There is a cost to setting them up, but they can save a company a large amount in an adverse situation.

What Is Cross Hedge?

Cross hedging refers to the practice of hedging risk using two distinct assets with positively correlated price movements. The investor takes opposing positions in each investment in an attempt to reduce the risk of holding just one of the securities.

Because cross hedging relies on assets that are not perfectly correlated, the investor assumes the risk that the assets will move in opposite directions (therefore causing the position to become unhedged).

Understanding Cross Hedge

Cross hedging is typically utilized by investors who purchase derivative products, such as commodity futures. By using commodity futures markets, traders can buy and sell contracts for the delivery of commodities at a specified future time. This market can be invaluable for companies that hold large amount of commodities in inventory, or who rely on commodities for their operations.

For these companies, one of the major risks facing their business is that the price of these commodities may fluctuate rapidly in a way that erodes their profit margin. To mitigate this risk, companies adopt hedging strategies that allow them to lock in a price for their commodities that still allows them to make a profit.

For example, jet fuel is a major expense for airline companies. If the price of jet fuel rises rapidly, an airline company may be unable to operate profitably given the higher prices. To mitigate this risk, airline companies can buy futures contracts for jet fuel. Futures contracts allow airlines to pay one price today for their future fuel needs and allows them to ensure that their margins will be maintained (regardless of what happens to fuel prices in the future).

Cross Hedge Example

Suppose you are the owner of a network of gold mines. Your company holds substantial amounts of gold in inventory, which will eventually be sold to generate revenue. As such, your company's profitability is directly tied to the price of gold.

By your calculations, you estimate that your company can maintain profitability as long as the spot price of gold does not dip below $1,300 per ounce. Currently, the spot price is hovering around $1,500. However, you have seen large swings in gold prices before and are eager to hedge the risk that prices decline in the future.

To accomplish this, you set out to sell a series of gold futures contracts sufficient to cover your existing inventory of gold, in addition to your next year's production. However, you are unable to find the gold futures contracts you need. Therefore, you are forced to initiate a cross hedge position by selling futures contracts in platinum, which is highly correlated with gold.

To create your cross hedge position, you sell a quantity of platinum futures contracts sufficient to match the value of the gold you are trying to hedge against. As the seller of the platinum futures contracts, you are committing to deliver a specified amount of platinum at the date when the contract matures. In exchange, you will receive a specified amount of money on that same maturity date.

The amount of money you will receive from your platinum contracts is roughly equal to the current value of your gold holdings. Therefore, as long as gold prices continue to be strongly correlated with platinum, you are effectively "locking in" today's price of gold and protecting your margin.

However, in adopting a cross hedge position, you are accepting the risk that gold and platinum prices might diverge before the maturity date of your contracts. If this happens, you will be forced to buy platinum at a higher price than you anticipated in order to fulfill your contracts.

Meaning of Basis Risk:

Basis risk is defined as the inherent risk a trader takes when hedging a position by taking a contrary position in a derivative of the asset, such as a futures contract. Basis risk is accepted in an attempt to hedge away price risk.

As an example, if the current spot price of gold is $1190 and the price of gold in the June gold futures contract is $1195, then the basis, the differential, is $5.00. Basis risk is the risk that the futures price might not move in normal, steady correlation with the price of the underlying asset, and that this fluctuation in the basis may negate the effectiveness of a hedging strategy employed to minimize a trader’s exposure to potential loss. The price spread (difference) between the cash price and the futures price may either widen or narrow.

Hedging Strategies

A hedging strategy is one where a trader adopts a second market position for the purpose of minimizing the risk exposure in the initial market position. The strategy may involve taking a futures position contrary to one’s market position in the underlying asset. For example, a trader might sell futures short to offset a long, buy position in the underlying asset. The idea behind the strategy is that at least part of any potential loss in the underlying asset position will be offset by profits in the hedge futures position.

When large investments are involved, basis risk can have a significant effect on eventual profits or losses realized. Even a modest change in the basis can make the difference between bagging a profit and suffering a loss. The inherently imperfect correlation between cash and futures prices

means there is potential for both excess gains and excess losses. This risk that is specifically associated with a futures hedging strategy is the basis risk.

Components of Basis Risk

Risk can never be altogether eliminated in investments. However, risk can be at least somewhat mitigated. Thus, when a trader enters into a futures contract to hedge against possible price fluctuations, they are at least partly changing the inherent "price risk" into another form of risk, known as "basis risk". Basis risk is considered a systematic, or market, risk. Systematic risk is the risk arising from the inherent uncertainty of the markets. Unsystematic, or non-systematic, risk, which is the risk associated with a specific investment. The risk of a general economic turndown, or depression, is an example of systematic risk. The risk that Apple may lose market share to a competitor is unsystematic risk.

Between the times a futures position is initiated and closed out, the spread between the futures price and the spot price may widen or narrow. As the visual representation below shows, the normal tendency is for the basis spread to narrow. As the futures contract nears expiration, the futures price usually converges toward the spot price. This logically happens as the futures contract becomes less and less "future" in nature. However, this common narrowing of the basis spread is not guaranteed to occur.

Different Types of Basis Risk:

Price basis risk: The risk that occurs when the prices of the asset and its futures contract do not move in tandem with each other.

Location basis risk: The risk that arises when the underlying asset is in a different location from the where the futures contract is traded. For example, the basis between actual crude oil sold in Mumbai and crude oil futures traded on a Dubai futures exchange may differ from the basis between Mumbai crude oil and Mumbai-traded crude oil futures.

Calendar basis risk: The selling date of the spot market position may be different from the expiry date of a futures market contract.

Product quality basis risk: When the properties or qualities of the asset are different from that of the asset as represented by the futures contract.

Understanding Price Risk

Price risk hinges on a number of factors, including earnings volatility, poor management, industry risk, and price changes. A poor business model that isn't sustainable, a misrepresentation of financial statements, inherent risks in the cycle of an industry, or reputation risk due to low confidence in business management are all areas that will affect the value of a security. Small startup companies generally have higher price risk than larger, well-established companies. This is mainly because in a larger company, the management, market capitalization, financial standing, and geographical location of operations are typically stronger and better equipped than smaller companies.

Certain commodity industries, such as the oil, gold, and silver markets, have higher volatility and higher price risk as well. The raw materials of these industries are susceptible to price fluctuations due to a variety of global factors, such as politics and war. Commodities also see a lot of price risk as they trade on the futures market that offers high levels of leverage.

Diversification to Minimize Price Risk

Unlike other types of risk, price risk can be reduced. The most common mitigation technique is diversification. For example, an investor owns stock in two competing restaurant chains. The price of one chain's stock plummets because of an outbreak of foodborne illness. As a result, the competitor realizes a surge in business and its stock price. The decline in the market price of one stock is compensated by the increase in the stock price of the other. To further lessen risk, an investor could purchase stocks of various companies within different industries or in different geographical locations.

Historic Effectiveness of Hedging Strategy The effectiveness of a hedging strategy is not known until the final outcome. We can, using our model, simulate what the distribution of this measure might be. Hedging Effectiveness is defined by the following formula: $Historic\ Hedging\ Effectiveness = [1 - |\ Hedged\ P\&L\ Unhedged\ P\&L\ |] +$ (A) Note that this is a somewhat different concept from that used in Figure 3. Figure 3 is a prospective statistical measure; it compares the CTE90 of the hedged strategy with the CTE90 of an unhedged strategy and is the concept most relevant in setting capital requirements. The historic hedge effectiveness is a measure of how much the P&L has been dampened by the effect of the hedging strategy; it

should be measured as the percentage change in the absolute levels of the respective P&Ls. A 100% effective hedging strategy would produce zero P&L.

Modern Portfolio Theory

One of the main tools is the modern portfolio theory (MPT), which uses diversification to create groups of assets that reduce volatility. MPT uses statistical measures to determine an efficient frontier for an expected amount of return for a defined amount of risk. The theory examines the correlation between different assets, as well as the volatility of assets, to create an optimal portfolio. Many financial institutions have used MPT in their risk management practices. The efficient frontier is a curved linear relationship between risk and return. Investors will have different risk tolerances, and MPT can assist in choosing a portfolio for that particular investor.

Options

Options are another powerful tool. Investors seeking to hedge an individual stock with reasonable liquidity can often buy put options to protect against the risk of a downside move. Puts gain value as the price of the underlying security goes down. The main drawback of this approach is the premium amount to purchase the put options. Bought options are subject to time decay and lose value as they move towards expiration. Vertical put spreads can reduce the premium amounts spent, but they limit the amount of protection. This strategy only protects an individual stock, and investors with diversified holdings cannot afford to hedge each individual position.

Investors who want to hedge a larger, diversified portfolio of stocks can use index options. Index options track larger stock market indexes, such as the S&P 500 and Nasdaq. These broad-based indexes cover many sectors and are good measures of the overall economy. Stocks have a tendency to be correlated; they generally move in the same direction, especially during times of higher volatility. Investors can hedge with put options on the indexes to minimize their risk. Bear put spreads are a possible strategy to minimize risk. Although this protection still costs the investor money, index put options provide protection over a larger number of sectors and companies.

Volatility Index Indicator

Investors can also hedge using the volatility index (VIX) indicator. The VIX measures the implied volatility of at the money calls and puts on the S&P 500 index. It is often called the fear gauge, as the VIX rises during periods of increased volatility. Generally, a level below 20

indicates low volatility, while a level of 30 is very volatile. There are exchange-traded funds (ETFs) that track the VIX. Investors can use ETF shares or options to go long on the VIX as a volatility-specific hedge.

Of course, while these tools are certainly powerful, they cannot reduce all market risk.

Management of Hedge:

The best way to understand hedging is to think of it as a form of insurance. When people decide to hedge, they are insuring themselves against a negative event's impact on their finances. This doesn't prevent all negative events from happening. However, if a negative event does happen and you're properly hedged, the impact of the event is reduced.

In practice, hedging occurs almost everywhere. For example, if you buy homeowner's insurance, you are hedging yourself against fires, break-ins, or other unforeseen disasters.

Portfolio managers, individual investors, and corporations use hedging techniques to reduce their exposure to various risks. In financial markets, however, hedging is not as simple as paying an insurance company a fee every year for coverage.

Hedging against investment risk means strategically using financial instruments or market strategies to offset the risk of any adverse price movements. Put another way, investor’s hedge one investment by making a trade in another.

Technically, to hedge requires you to make offsetting trades in securities with negative correlations. Of course, you still have to pay for this type of insurance in one form or another.

For instance, if you are long shares of XYZ corporation, you can buy a put option to protect your investment from large downside moves. However, to purchase an option you have to pay its premium.

A reduction in risk, therefore, always means a reduction in potential profits. So, hedging, for the most part, is a technique that is meant to reduce potential loss (and not maximize potential gain). If the investment you are hedging against makes money, you have also usually reduced your potential profit. However, if the investment loses money, and your hedge was successful, you will have reduced your loss.

PART-A

1. Define Hedging.
2. Write short note on Risk Diversification.
3. What is Arbitrage?
4. State and explain Cross Hedge.
5. Describe the meaning of Average down in Hedging.
6. Write short note on short Hedging.
7. State the meaning of Long Hedging.
8. Write short note on Spot Price in Hedging.
9. What is Areas of Hedging?
10 State and explain Investment.

PART-B

1. Briefly explain the different types of Hedge in Derivatives Market.
2. State and explain the factors influencing in Hedging.
3. Briefly explain the factors influencing in Hedge Trading.
4. Describe the various types of evaluation methods in Hedging.
5. Differentiate Risk Diversification and Arbitrage.
6. Differentiate Short Hedging and Long Hedging.
7. Enumerate the merits and demerits of Hedging.

Reference Books:

- John Hull's – Fundamentals of Futures and Options Market.
- Derivatives The Wild Beast of Finance.
- Merton Miller on Derivatives.
- Trading and Pricing Financial Derivatives.
- Brazilian Derivatives and Securities- Pricing and Risk Management of FX and Interest-Rate Portfolios for Local and Global Markets