

# [Academic Script]

**Derivatives in the International Finance Market** 

Subject:

**Course:** 

Paper No. & Title:

**Business Economics** 

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Paper – 611 International Finance

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Unit – 2 Derivatives in the International Finance Market

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Lecture – 1 Derivatives in the International Finance Market

## **Academic Script**

## 1. Introduction

Hello friends. Welcome to this session on Derivatives in International finance. Before we proceed to see the use of derivatives in international finance, let us first understand the meaning of derivatives.

Derivatives are such types of contacts where the value of the asset is derived from the value of another asset. The asset on which the value of the derivative is derived is known as an underlying asset.



Such an underlying asset can be share, stock market index, interest rate, commodity or currency. As the value of the underlying asset changes, the value of the derivative also changes. So it means that the derivative by itself, does not have any value. It derives its value from the underlying asset.



2. Importance of Derivatives

### Why Derivatives?

The financial derivatives provide protection to the participants in the financial markets against the adverse movements in the prices of the underlying asset. They allow the participants to "lock-in" a particular price for the financial asset which is to be exchanged in future.

Such a contract also specifies the rights and obligations between the issuer of the derivative security and the holder to receive or deliver cash or security based on some future event.

## 3. Features of Derivatives

- They are a type of financial instrument which give rise to rights and obligations in monetary terms.
- They are to be executed on a future date.
- The value of the derivative is dependent on other asset.
- The value of the derivative is the gain or loss to the buyer on the due date as compared to the prevailing rate on that date.

## 4. Major Types of Derivatives

The major types of derivatives are:

1. Forwards; 2. Futures; 3. Options





Forward contracts are agreements made by two parties to exchange a specific amount of money for a particular asset at a predetermined future date. One of the parties under the agreement agrees to buy the underlying asset at a pre decided price. Such a party is known to assume a long position. On the other hand, another party agrees to sell the underlying asset at a pre decided price. Such a party is known to assume a short position. The pre decided price is known as a delivery price.

### Features of forwards contract:

- 1. There is a high level of customization in case of a forward contact as the terms of the contract are decided after considering the needs of both the parties involved. They are also known as Over-the-Counter Contracts.
- 2. There is risk of counterparty default.
- 3. The forward contracts are undertaken in unregulated markets.

- 4. Underlying assets can be stocks, bonds, interest rates, foreign currencies, commodities or some combination thereof.
- 5. The forward contacts are generally held till maturity. As a result the secondary market for these contracts is under developed.
- 6. Any commitment between two parties to trade an asset in the future is a forward contract.

## Advantages:

- i. A forward contract offers protection to the buyer against increase in the price of the underlying asset.
- ii. They are tailor made as per the requirements of both the parties. As a result, greater flexibility is available to both the parties involved.

### **Disadvantages:**

- i. There is a high possibility of default as there is always a risk of non fulfilment of obligation by one of the parties involved.
- ii. A forward contract has to be cancelled with the consent of both the parties involved. Moreover, the parties involved cannot transfer their obligation to any third party. As a result, such contracts are neither negotiable nor marketable.

### Pay off in case of a forward contract:

The value of a forwards contact on the maturity is dependent on the delivery price and the value of the underlying asset at the time of maturity.

Let us understand this with the help of an example:

Suppose X who is an exporter in India enters into a contract with Y who is in New York to sell a machine at \$10,000. The spot exchange rate on that day was \$1=Rs. 50. As a result, he expects to gain Rs. 5,00,000 from this contract. By the time the

contract materialized and he is able to realize his proceeds, there may be a lapse of 2 to 3 months. As a result, he is exposed to exchange rate fluctuations during this time.

So to minimize his risk, he enters into a forward contact with a bank at the exchange rate of \$1=Rs.50 which safeguards him against the risk of adverse foreign exchange fluctuations.

So if the rupee to become stronger after three months and exchange rate prevalent at that point is \$1=Rs. 45, then the payoff for the buyer, in our example would be calculated as under:

Pay off of the exporter =  $($10,000 \times 50)-($10,000 \times 45)$ (Long Position) =(5,00,000)-(4,50,000)=Rs. 50,000.





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- 1. Futures contract: (all images with 10 are to be included here)

Agreement between two Which is standardised and parties traded on the stock exchange





Futures are similar to the forward contacts in a way that actual delivery of the asset which takes place at a future date. The futures contracts are standardised agreements where exchange of a specific type of asset for a specific amount is undertaken at a specified future date.

There are two major types of futures contracts namely, commodity futures and financial futures.



In commodity futures, the underlying asset will be any commodity such as wheat, cotton, or any other such asset.

On the other hand in case of financial futures, the underlying asset can be currency, bond, stock or any other financial asset.

### **Features of futures contract:**

- a. Futures are traded on futures exchange.
- b. The exchange on which such contracts are traded would be specifying the terms of contract which includes aspects such as quantity, type of the underlying asset which is to be delivered, date of delivery, as well as place and process of delivery.
- c. A clearing house is there which helps in effective settlement of the accounts. This is done by the clearing house by acting as a counter party. It ensures that both the parties meet their obligations by intervening in all the transactions that are undertaken.
- d. In case of futures contracts, margins are taken by the clearing house from both the parties. These margins are deposits that are taken from both the parties for entering in to a futures contract. Margins are of two different types namely initial margin and maintenance margin.

### Margin adjustment in case of futures contract:

The initial margin is to be paid by both the parties when the futures contact is executed. This margin is also known as performance margin. This is the minimum margin which has to be deposited by each of the parties to undertake a futures contract.

The value of the outstanding futures contact would be re-valued daily and it would be re-priced. When such a re-pricing is undertaken, one of the parties will be gaining and the other party will be losing. The effect of this gain or loss will be given by the clearing house on their respective margin accounts. This activity undertaken by the clearing house is known as marking to the market. The amount that is deposited in such a margin account can be withdrawn by the concerned party who has gained immediately.

11.



The amount in the margin account would keep on changing. So many times the amount in the margin account would be falling below the required level that has to be maintained. The minimum balance that has to be maintained in the margin account is known as maintenance margin. When the minimum balance drops below a certain the minimum level, then a margin call is made.

This means that additional amount has to be deposited by the concerned party in the margin account.

Pay off profile in case of currency futures contract:

Let us understand this with the help of an example:

Suppose Mr. X agrees to buy certain quantity of USD at a pre determined price and time. Here he assumes a long position. The seller Mr. Y promises to deliver the USD at the agreed price on the appointed date. Here, he assumes a short position. The value of the futures contract increases as the USD becomes stronger. So say if the agreed price of the contract was at say \$1=Rs.50 and now the Dollar becomes stronger in comparison to Rupee and stands at \$1=Rs. 55. Then the value of the futures contract also increases.

So when the value of the underlying asset increases above the settlement price, the value of the futures contract also tends to increase and vice-versa.



### 12.

The seller of the futures contact would face an exactly opposite situation wherein he would be gaining if the value of the underlying asset tends to fall below the strike price and losing in case if the value of the underlying asset increases beyond the strike price.



A forward contract is an agreement between two parties to buy or sell an asset at a future point in time at a pre determined price. Whereas futures contracts, are standardized contracts, which are traded on a futures exchange where a certain underlying instrument is either bought or sold at a certain date in future at a specified price.

Forwards contract	Futures contract
They are an agreement between	They are standardized contracts,
two parties to buy or sell an asset	which are traded on a futures
at a future point in time at a pre	exchange where a certain
determined price	underlying instrument is either
	bought or sold at a certain date in
	future at a specified price.

## 2. Structure:

Forward contracts are tailor made as per the needs of the users

where as the futures contracts are standardised.

Forwards contract	Futures contract			
They are tailor made as per the	They are standardized.			
needs of the users				
3. Intermediation:				
The forward contracts are over	The forward contracts are over the counter contracts which are			
undertaken between the buyers and the seller. On the other				
hand, in case of futures contracts, the clearing house acts as an				
intermediary.				
Forwards contract	Futures contract			
These are over the counter contracts which are undertaken between the buyers and the seller	In case of futures, the clearing house acts as an intermediary.			
4. Regulation:				
The forward contracts are not	regulated where as the futures			
contracts are regulated.				
Forwards contract	Futures contract			
The forward contracts are not regulated	Futures contracts are regulated			
5. Counter party risk:				
In case of forward contract, there is high counter party risk				
where as in case of the futures contracts, there is low counter				
party risk.	arty risk.			
Forwards contract	Futures contract			
There is a high counter party risk	There is a low counter party risk			

6. Maturity:

In case of the forward contract, it matures by delivering the underlying asset where as the in case of a futures contract, the contract not necessarily matures by delivery of the underlying asset.

Forwards contract			Futures contract						
The	contract	matures	by	The	con	tract	not	neces	sarily
deliver	ing the und	erlying asset		matuı under	res Iying	by asset	delivery	of	the

### **3. Currency Options:**

An option is such a type of derivative which gives the buyer a right to buy or sell the underlying asset at a predetermined rate on a future date without putting on him an obligation to do so. In case of a currency option, such an underlying asset is currency. On the due date the buyer can buy or sell the currency or he may let it go unused. The seller will have to accept the decision of the buyer.

There would be two parties in case of an option contract. One is the option buyer and the anther one is known as the option seller.

The option buyer has the right under the contract to buy or sell one specific currency against another specific currency.

The option seller is the one who is the writer of the contract and gives the right to the buyer. He has to accept or deliver the currency as decided by the option buyer. The option seller would be always in a disadvantageous position as he has to accept what the buyer does.

There are two types of option contract. The first one is known as a call option. Here, the buyer has a right to buy the underlying currency at a specified price and the seller or writer has the obligation to sell the Underlying currency (to the option holder) at the Specified price.



The second one is known as a put option. Here, the buyer has a right to sell the underlying currency at a specified price and the seller or writer has the obligation to buy the Underlying currency (from the option holder) at the Specified price.



The general currency in which the currency options are denominated is US dollar.

#### American option:

Under the American Option, the buyer of the contract can exercise his right to buy or sell at any point of time during the tenure of the contract. So it means that it is not compulsory that the right has to be executed on the date of maturity. The seller in this case is exposed to a higher amount of risk. So the premium charged in case of this type of contract is higher.

## **European Option:**

Under the European Option, the buyer of the contract can exercise his right to buy or sell only on the date of maturity. The seller in this case is exposed to a lesser amount of risk. So the premium charged in case of this type of contract is lower.

## Intrinsic value:

Intrinsic value is the difference between the price of the underlying asset and the strike price. For the call option, the intrinsic value would be price of the underlying asset and the strike price. On the other hand, the intrinsic value of the put option would be the difference between the strike price and the price of the underlying asset.

### Premium:

The consideration for the seller to offer the right to the buyer is known as the premium. So premium is the fee that is paid by the buyer to the seller at the time when they enter into the contract. The premium paid is non refundable even if the buyer does not execute the contract.

### In the money option:

	Call Option	Put Option			
	Spot price of the underlying	Spot price of the underlying			
	underlying asset	currency <strike price<="" td=""></strike>			
Any option which is in advantage of the buyer to exercise his					
right is known as in-the-money option. It so because, the spot					
ra	rate of the currency is higher than the strike price of the option				

contract. The difference between the spot rate of the currency and the strike price is present and this would be known as intrinsic value. A call option is considered in-the-money if the underlying currency price is higher than the strike price. Where as a put option is in-the-money if the strike price is higher than the value of the market price of the underlying currency.

## At the money option:

Call Option	Put Option
Spot price of the underlying currency =Strike Price of the underlying asset	Spot price of the underlying currency =Strike price

In case of such an option, the value of the underlying currency and the strike price is equal. As a result, even if the buyer exercises his option, there is no affect to both the parties.

## Out of the money option:

Call Option	Put Option
Spot price of the underlying	Spot price of the underlying
currency <strike of="" price="" td="" the<=""><td>currency &gt;Strike price</td></strike>	currency >Strike price
underlying asset	

Any option which is not in advantage of the buyer to exercise his right is known as out-of- the-money option. It so because, the spot rate of the currency is lower than the strike price of the option contract. Such an option does not have any intrinsic value. A call option is out-of-the-money when the strike price is higher than the market price of the underlying currency. A put option is out-of-the-money when the strike price is lower than the market price of the underlying currency.

Pay off profiles under options contract: Pay off for Call options:

Pay off to the buyer of the call option:

An investor would buy a call only when he expects that the price of the underlying asset will increase beyond the strike price. For this he pays non refundable fees known as premium to the writer of the call. If the buyer feels that buying the asset is favourable to him, then he would exercise his right and buy the particular asset at the strike price. He then sells that bought asset at the sport rate and would earn a profit.



#### Pay off to the seller/ writer of the call option:

On the other hand the investor would write a call only if he expects the price of the underlying asset to fall below the strike price. In order to write a call, the writer of the call receives a premium as profit. But if the buyer exercises his option to buy the asset, then the writer has an obligation to sell the underlying asset at the strike price. Generally, the writer does not own the asset so he has to purchase the asset at the spot rate from the open market to sell the asset to the buyer. The seller of the call will lose the difference between his purchase price of the underlying instrument and the strike price. This risk can be huge if the underlying instrument skyrockets unexpectedly in price.



### Pay off for put options:

### Pay off to the buyer of the put option:

The buyer of the put option assumes that the value of the underlying asset will decrease below the strike price.For this he pays non refundable fees known as premiumto seller or writer of the put option. If the buyer feels that selling the asset is favourable to him, then he would exercise his right and sell the particular asset at the strike price. He then buys that sold asset at the sport rate and would earn a profit.



## Pay off to the seller/ writer of the put option:

The seller or writer would write a put option only if he expects the price of the underlying asset to increase above the strike price. The seller or writer of the put option receives premium against the obligation to do as per the wishes of the buyer if he exercises his option. In case if the buyer exercises his option, he will have to buy the underlying asset at the strike price. If the buyer does not exercise his option, then the writers profit would be the premium received by him.



### 5. Summary

In this session on derivatives, we covered the meaning of the derivatives, the features of derivatives and the types of derivatives. Then we looked at the meaning of the forwards contact and how it is used in the currency trading. We also covered the futures contract and the difference between the forward contract and the futures contract. We saw the pay off profile of the different parties in both the types of derivatives. We also saw another type of derivative known as options and covered its types and pay off profile in each of the type. I hope that you were able to understand how the various aspects related to derivatives. Thank you for joining with us for this session.