INSTITUTE OF ACTUARIAL & QUANTITATIVE STUDIES

Class: SY BSc

Subject : Introduction to Derivatives and Financial Markets

Chapter: Unit 3 Chapter 1

Chapter Name: Mechanics of futures market

Today's Agenda

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1 Forwards vs Futures

Forwards	Basis of Difference	Futures
• Customized contracts • Over the Counter • Lower liquidity • High risk • Through delivery • No margins	• Nature • Trading Place • Liquidity • Counter-party Risk • Settlement • Margin	• Standardized contracts • Exchange traded • Highly liquid • Negligible risk • Offset or Delivery • Compulsory margins by both the parties

2 Futures Market

We saw that both futures and forward contracts are agreements to buy or sell an asset at a future time for a certain price.

Futures contracts are traded on an organized exchange, and the contract terms are standardized by that exchange. By contrast, forward contracts are private agreements between two parties.

We now cover the details of how futures markets work

Question 1

What advantage do over-the-counter derivatives have over exchange-traded derivatives?

A. OTC contracts are more flexible
B. There is less risk of default on OTC contracts
C. OTC contracts are more readily tradable
D. OTC contracts are always for longer periods

Ans. A

2 Futures Market

2.1 Closing out Positions

The vast majority of futures contracts do not lead to delivery. The reason is that most traders choose to close out their positions prior to the delivery period specified in the contract.
Closing out a position means entering into the opposite trade to the original one.

Example: The Kansas investor who sold (i.e., shorted) a July contract on March 5 can close out the position by buying one July contract on, say, May 25.

In such cases, the investor's total gain or loss is determined by the change in the futures price between the date when contract is entered and the day when the contract is closed out

3 Contract Specification

When developing a new contract, the exchange must specify in detail the exact nature of the agreement between the two parties.

In particular, it must specify the asset, the contract size (exactly how much of the asset will be delivered under one contract), where delivery will be made, and when delivery will be made.

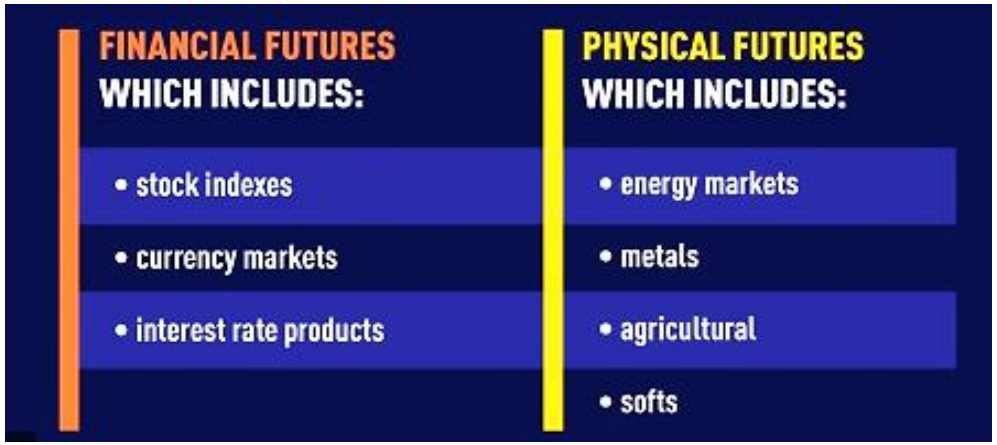
3.1 Contract Specification – The Asset

3.1.A Financial Assets

Specification about the asset depends of the it's type.

The financial assets in futures contracts are generally well defined and unambiguous.
For example, there is no need to specify the grade of a Japanese yen.

Where as there are quite a few specifications required in case of commodities.



3.1 Contract Specification – The Asset

3.1.B Commodities

- When the asset is a commodity, there may be quite variation in the quality of what is available in the marketplace. When the asset is specified, it is therefore important that the exchange stipulate the grade or grades of the commodity that are acceptable.

GRADES IN COMMODITIES

- Grade in commodity market refers to the purity or quality of the deliverable into the futures contract. Each exchange offer a range of products and according to the quality, the prices may vary.

- Grades are really critical in case of agricultural commodities such as rice, wheat, soybean etc. Similar to others, energy, precious metals and industrial metal commodities, futures contract clearly mentions the grade of the commodity to be delivered at maturity.

For instance, a grade in gold contract is described in the following way:
In fulfilment of each contract, the seller must deliver 100 troy ounces (±5%) of refined gold, assaying not less than .995 fineness, cast either in one bar or in three one-kilogram bars, and bearing a serial number and identifying stamp of a refiner approved and listed by the Exchange.

3.2 Contract Size

- The contract size specifies the amount of the asset that has to be delivered under one contract. This is an important decision for the exchange.

- If the contract size is too large, many investors who wish to hedge relatively small exposures or who wish to take relatively small speculative positions will be unable to use the exchange. On the other hand, if the contract size is too small, trading may be expensive as there is a cost associated with each contract traded. The correct size for a contract clearly depends on the likely user.

- Whereas the value of what is delivered under a futures contract on an agricultural product might be $10,000 to $20,000, it is much higher for financial futures.

3.3 Delivery Place

- The place where delivery will be made must be specified by the exchange. This is particularly important for commodities that involve significant transportation costs.
- When alternative delivery locations are specified, the price received by the party with the short position is sometimes adjusted according to the location chosen by that party. The price tends to be higher for delivery locations that are relatively far from the main sources of the commodity.
- For example, costs. In the case of the ICE frozen concentrate orange juice contract, delivery is made to exchange-licensed warehouses in Florida, New Jersey, or Delaware.

3.3 Delivery Month

- A futures contract is referred to by its delivery month. The exchange must specify the precise period during the month when delivery can be made. For many futures contracts, the delivery period is the whole month.
- The delivery months vary from contract to contract and are chosen by the exchange to meet the needs of market participants. The exchange specifies when trading in a particular month's contract will begin.
- The exchange also specifies the last day on which trading can take place for a given contract

3.4 Price Quotes and Price Limits

Price Quotes – The exchange defines how prices will be quoted.
For instance, in the US Treasury bond and Treasury note futures prices are quoted in dollars and thirty-seconds of a dollar.

Price Limits – For most contracts, daily price movement limits are specified by the exchange. If in a day the price moves down from the previous day's close by an amount equal to the daily price limit, the contract is said to be limit down. If it moves up by the limit, it is said to be limit up. The purpose of daily price limits is to prevent large price movements from occurring because of speculative excesses. Normally, trading ceases for the day once the contract is limit up or limit down. However, in some instances the exchange has the authority to step in and change the limits.

Position limits – It is the maximum number of contracts that a speculator may hold. The purpose of these limits is to prevent speculators from exercising undue influence on the market.

Question 2

Futures contracts seldom lead to the delivery of the underlying asset because:

A. Sellers of contract frequently default.
B. Buyers of contract frequently default.
C. Holders of contracts reverse the contract before delivery date.
D. Clearing house charges a penalty if contracts lead in delivery.

Ans. C

4 Margins

- Margin is the amount of funds required to enter into a futures position—typically a fraction of the total value of the contract.
- Both parties of the future contract (buyer of a future/ seller of a future) need to deposit margins with the exchange.

Why do we need margins?

4.1 Why do we need Margins?

If two investors get in touch with each other directly and agree to trade an asset in the future for a certain price, there are obvious risks. One of the investors may regret the deal and try to back out. Alternatively, the investor simply may not have the financial resources to honour the agreement. One of the key roles of the exchange is to organize trading so that contract defaults are avoided.
This is where margins come in.

Margin is a good faith deposit that a buyer posts with the exchange clearinghouse.

Two of the major benefits of margin for market participants are; it guarantees anonymity (the exchange is always your counterparty), and it eliminates counterparty credit risk from the transaction.

4.2 Initial Margin

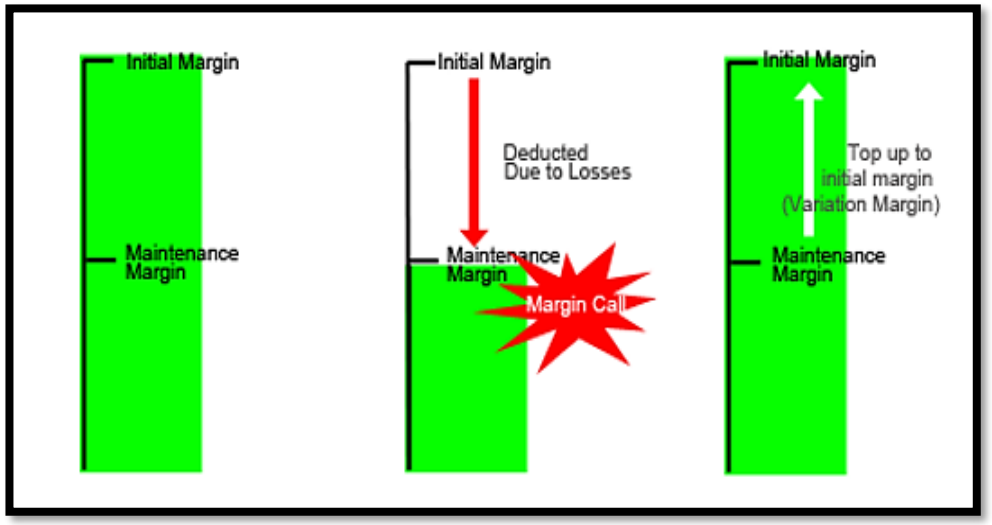
- The amount that must be deposited at the time the contract is entered into is known as the initial margin. Initial Futures Margin is the amount of money that is required to open a buy or sell position on a futures contract.

- Exchanges set margin levels and constantly review them when market volatility changes; margins can go up or down at any time.

- The investor is entitled to withdraw any balance in the margin account in excess of the initial margin.

4.3 Maintenance and Variation Margin

- To ensure that the balance in the margin account never becomes negative a maintenance margin, which is somewhat lower than the initial margin, is set.
- If the balance in the margin account falls below the maintenance margin, the investor receives a margin call and is expected to top up the margin account to the initial margin level by the end of the next day.
- The extra funds deposited are known as a variation margin. If the investor does not provide the variation margin, the broker closes out the position.



4.3 Question

Suppose that you enter into a short futures contract to sell July silver for $10.20 per ounce. The size of the contract is 5,000 ounces. The initial margin is $4,000, and the maintenance margin is $3,000.

1. What change in the futures price will lead to a margin call?

1. What happens if you do not meet the margin call?

Solution

There will be a margin call when \$1,000 has been lost from the margin account. This will occur when the price of silver increases by 1,000/5,000 = \$0.20. The price of silver must therefore rise to \$10.40 per ounce for there to be a margin call. If the margin call is not met, your broker closes out your position.

4.4 Clearing House

- A clearing house acts as an intermediary in futures transactions. It guarantees the performance of the parties to each transaction.
- The clearing house has a number of members, who must post funds with the clearing house. Brokers who are not members themselves must channel their business through a member.
- The main task of the clearing house is to keep track of all the transactions that take place during a day, so that it can calculate the net position of each of its members.

4.4 Clearing Margins

- Just as an investor is required to maintain a margin account with a broker, the broker is required to maintain a margin account with a clearing house member and the clearing house member is required to maintain a margin account with the clearing house. The latter is known as a clearing margin.

- The margin accounts for clearing house members are adjusted for gains and losses at the end of each trading day in the same way as are the margin accounts of investors. However, in the case of the clearing house member, there is an original margin, but no maintenance margin.

- Every day the account balance for each contract must be maintained at an amount equal to the original margin times the number of contracts outstanding.

Question 3

When a contract is marked-to-market:

A. The holder engages in arbitrage between underlying market and futures market.
B. The contract is reversed.
C. Delivery of the contract occurs.
D. The margins account of the contract holder is adjusted to reflect changes in prices in the underlying market.

Ans. D

Question 4

From the point of view of the speculator in futures markets, the important relationship is that between:

A. The price of the underlying instrument and the cost of holding it from the date of purchase to the delivery date.
B. The futures price and the future cash price of the underlying instrument at the point of delivery specified in the futures contract.
C. The current price of the underlying instrument and its future price at the point of delivery specified in the contract.
D. The futures price and the price of holding the underlying instrument from the date of purchase to the delivery date.

Ans. B

Quick Recap

- Futures are standardized, exchange-traded contract to buy and sell an asset at a future time for a certain price.
- A futures contract has various specifications which include the asset, the contract size, delivery place, delivery month and price limits.
- Margins are good faith deposit made with exchange while striking a contract. There is Initial, maintenance and variation margins involved.
- Clearing house ensures the performance of each parties.

Question

It is July 2011. A mining company has just discovered a small deposit of gold. It will take 6 months to construct the mine. The gold will then be extracted on a more or less continuous basis for 1 year. Futures contracts on gold are available with delivery months every 2 months from August 2011 to December 2012. Each contract is for the delivery of 100 ounces.

Discuss how the mining company might use futures markets for hedging.

Solution

The mining company can estimate its production on a month by month basis. It can then short futures contracts to lock in the price received for the gold. For example, if a total of 3,000 ounces are expected to be produced in January 2009 and February 2009, the price received for this production can be hedged by shorting a total of 30 February 2009 contracts.