Commodity Derivatives and Risk Management

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Week-02
Lecture 08
Futures contract Specification (Contd...)

Welcome to the 8th session 8th lecture of Commodity Derivatives and Risk Management. We will also continue with the different aspects of futures contract specification in this session. In addition to the various other parameters which we have discussed in the previous 3 sessions related to standardized futures contract specification, exchanges also spend considerable amount of effort in identifying what is going to be the final settlement price. The final settlement price is nothing, but the price which is going to be paid by which is going to be received by the short futures contract holder for delivering the commodity on the expiry date. Let me repeat final settlement price is the price which the short futures position holder receives for delivering the commodity on the contract expiry date for the basis quality at the basis location. And as we had mentioned in the previous, we had discussed in the previous session that there is a location premium and discount.

So, if any short future holder is delivering any commodity or in this case turmeric of different quality at a different location. And when I am using the word different means which is in allowed by the exchange a different variety and a different location as allowed by the exchange. So, the person may receive a premium or person the short futures position holder may receive a premium or may have to pay a or receive discount. So, this premium and discount with is respect to this particular final settlement price.

So, as if a short futures holder is delivering a better quality than basis quality and in a different center. And if it is let us see the premium is 4 percent let us say premium is 4 percent. Let us say on the on the contract expiry date if the exchange is reporting FSP that is final settlement price to be 100 rupees. Then the short futures position holder 100 rupees per let us say per quintile. Then the short futures position if he is or she is delivering one quintal of the underlying will get 104 rupees from the long futures position because this particular location and the variety is attracting 4 percent of 4 percent as premium.

So, the final settlement price is the price which short futures position holder receives from the long futures position holder for delivering a basis quality at a basis location. And please note that theoretically it should be the spot price prevailing on the contract expiry date at the basis location. But exchanges do not take the spot price exchanges,

exchanges do an averaging of the last 3 days price that is the price cold price prevailing on the contract expiry date and one day before the contract expiry date and the second day before the expiry date. So, if these 3 days average is taken to identify what is going to be the final settlement price. Here I would also like to draw your kind attention please remember at some I think 3 to 4 lecture session before we did discuss about the methodology based on which exchanges arrived at the spot price by polling the spot price from major market participants from major Centre.

So, the polled price itself is a average price and the final settlement price is the average price of the last 3 days polled price. Please note that these 3 days could be 5 days 3 days could be 4 days. So, this varies from contract to contract and from underlying varies from underlying to underlying. So, as I have you know said earlier if you are interested to trade in a specific commodity then you have to read through these contract specification in greater detail. Let us come to what is exactly something called a contract launch calendar.

This contract launch calendar will indicate what how many futures contract will be available at a given point in time. Let us say today is the 12th of May 2023, which is the spot date, on this date a trader anybody wishing to take a long futures position or a short futures position can enter into a contract which will be maturing on May 2023. Please note that this contract expires on 20th May 2023 contract expiry is on 20th May. So, on 12th May somebody will be able to enter into May 2023 contract. Similarly, somebody will be able to enter into June 2023 contract because this June 2023 contract has started in the month of December 2022.

Please note that on 1st December 2022 somebody will be able to enter into somebody will be able to take position or short or long futures position for contract maturing in June 2023. Hence, we are standing here on the spot date of 12th May 2023 so that means, somebody will be able to enter into contract of contract maturity for May 2023, June 2023 and August 2023 August 2023 contract started in February 2023. So, this contract is also available for buying and selling. Similarly, August 2023 October 2023 contract is available because this contract started in April 2023. But standing today suppose a farmer which says to take futures contract for November sorry for December 2023 contract that is not available because this contract will be available only in June 2023.

So, the contract launch calendar indicates how many futures contract how far into the futures in a futures month one would be able to take long or short futures position. Another very interesting dimension associated with Agri commodity is that please note that there is no futures contract for the month of July 2023, September 2023, November 2023 etcetera. Even if there is a contract available for June 2023, August 2023, but there is no contract available for July 2023 and the reason is this is the off-season months. So, in off season months normally there is no arrival of the commodity in the Mandis. There

is very little business actual buying or selling by commodity producer, value chain partner happens in those months.

And please recall that exchanges' prime responsibility is to provide a hedging platform to commodity producers, consumers and value chain partners. So, if there is no activity or very little activity happens in the physical market. So, that kind indicates that probably there is no requirement for hedging. So, that is the reason why exchanges also do not make futures contracts available for those months. Again, who will decide which months this contract will be available and which months contract will not be available.

The product advisory committee associated with the exchange for that committee will advise the exchange for this contract specification. So, with this we come to an end of the future contract specification with respect to an Agri commodity. Now, let us go to a futures contract specification with respect to an Agri commodity. Almost all parameters associated with the Agri non Agri commodity are same as Agri commodity. In the next couple of slides I will be sharing certain specifications which are different.

So, I would want you to pay attention that is the futures contract specification for crude oil futures contract traded at multi commodity exchange. It is a non-Agri commodity contract and please note that unlike turmeric contract where some months you did not have a futures contract available, you can see you have the contract available for almost 12 months in a given year. So, the logic that at any point in time there are enough number of you know crude oil consumers crude oil producers and other value chain partners who would be interested to take position in the futures contract and that is the reason why we have futures contract throughout the year almost every month we have the futures contract. And this contract launch calendar indicates when a contract can start and when a contract can end. So, please note that the January 23 contract which will be expiring on 19th January 2023 starts at a contract launch date of 20th July 2022. That means, somebody standing on 20th July 2022 if is expecting crude oil price to go up or go down wishes to take long futures or short futures contract for contract maturing in 2023, he or she will be able to do so. So, this contract launch calendar indicates which contracts will be available at any given point in time. Now, let us come to another very interesting difference between the futures contract specification of an Agri commodity vis-a-vis a non-Agri commodity. Please note that the word due date rate which is mentioned in the crude oil MCX contract specification is nothing but the final settlement price or FSP of the NCDEX turmeric contract. NCDEX normally uses the word final settlement price or FSP and sorry NCDEX uses the FSP final settlement price and MCX uses the due date rate.

And here I would also like to pay your attention to the delivery mechanism or the settlement mechanism. Please note that this particular contract is cash settled, there is no

actual delivery of the crude oil happens. So, the short futures position long futures position will settle the contract with the price difference. We will be discussing this aspect in greater detail in the next session. Now, coming to the due date rate or the final settlement price. Please see how the due date rate or final settlement price is calculated or reported by the multi commodity exchange for crude oil contract. As you can see the final settlement price or due date price is nothing, but the future price traded at NYMEX crude oil future price which was in this example which let us say it is 40.54 into the RBI USD INR reference rate prevailing on the contract expiry date that these two numbers will be multiplied to arrive at the due date rate or final settlement price for crude oil futures contract. So, the logic or the rationale behind me highlighting these differences is that as a trader you have to go through the fine prints final you know complete understanding of the contract specification before you start taking futures position in a underlying contract. I would like to draw your attention to how RBI is used or how RBI USD INR reference rate is calculated. Again, USD INR reference rate is calculated by the actual transaction. USD INR spot transactions done by different banks and reported at the CCIL platform. And the CCIL collects this information from different banks and on a daily basis this is USD INR reference rate gets calculated. And as you can see the USD INR reference rate is calculated based on a randomly chosen 15-minute time interval between 11.

30 hours to 12.30 hours on every business day. And during this period of time different banks from India have entered into different kind of a USD INR spot rate transaction. During this 15-minute block all these transactions are extracted and those rates which are above 3 standard deviations and which rates which are below 3 standard deviations of all these rates are removed. And from the remaining rates based on the volume-weighted transaction volume-weighted basis a mean USD INR reference rate is calculated daily. And why this plus minus 3 standard deviation is data is removed as you know we know that the extreme values influence the average. So, if somebody wants to if some bank wants to change the average rate on a given day if they give a very high rate or a very low rate they will not be able to do so, because this rate in will be anyway thrown out of the calculation of the USD INR reference rate. And USD INR reference rate prevailing on the contract expiry date for crude oil contract into the price settlement price of the near month futures contract crude oil futures contract traded at 9 x. These two prices will be arrived to calculate the due date rate or final settlement price for the crude oil contract based on which long futures and short futures position holder will be settling their contract on the contract expiry date. Now, let us understand actual trading data related to a futures contract. So, this data I have downloaded from the NCDEX website, this is turmeric futures contract data which was traded on the 11th, If you can see 11th May 2023.

So, on 11th May 2023, there are 3 contracts available for turmeric. So, you had the near

month contract which is your 18th May contract and you had a mid-month contract which is your June contract and 20th August which is the far month contract trading at this point in time. And what is the opening price on 11th May, the near month contract opened at 7562. So, opening price means the first contract first order matching between long futures long futures holder and the short futures holder when the exchange opened. So, the opening price is the same, if any one of you have traded in equity market the same concept of opening price high price low price is applicable here. Open price is the price at which the first long futures and short futures position order matched on 11th May 2023. So, that is 7562. On the same day, 11th May, you have a different set of people and different traders entering into the June contract and August contract. So, the open prices are calculated open prices are reported in the same manner. Here I would like to discuss a little bit the closing price. The closing price is nothing, but your closing price is the same as your daily settlement price. This is of significant importance to the futures market and please note that this closing price is not the last traded price. The last traded price is the price which the last contract to get executed, but the closing price is not the same as the last traded price. The closing price which is known as your daily settlement price is the weighted average of the last half an hour all futures contract which have traded. So, daily settlement price is the average price of the last half an hour trades all futures contract which has traded let us say from 3 O'clock to 3.30. Suppose the exchange closes at 3.30 p.m. and all trades all long futures short futures position which have been traded in the exchange platform between 3 to 3.30 all that weighted average will be taken into consideration to arrive at the daily settlement price or the closing price. And why exchanges do and why daily settlement price is so important we will be discussing this aspect because this is related to a concept called it daily mark to market margin.

Daily Mark-to-Market or M-T-M, we will take real-life cases to understand what is this daily mark to market margin and why this is so important. And on that day quantity traded today. So, how many quantities of the underlying traded and this is the metric ton. Please recall that every contract is for 5 metric tons. So, from here you will be able to say how many contracts have traded. Now traded value in lakhs of rupees. So, that is not very important information, but what is important is open interest. Open interest, as we discussed, open interest is the max at any point in time how many long futures position or how many short futures positions are available in a market. So, let us understand what is the open interest and how open interest gets calculated on a daily basis. Now so, open interest is a very important parameter with respect to the futures market. So, let us take an example how open interest gets calculated and reported by the exchange.

As you can see for the near month contract, which is the contract expiring on 18th May 2023, open interest stands in 2005. For next month's contract expiring on the 20th June 2023, it is 14,345. So, how exactly does the open interest get calculated, let us understand

the logic. Let us say a contract is starting on 1st May 2023 for maturing on and with the expiry on let us say November 2023. So, 1st May 2023 when exchange opened at let us say 9 o clock let us say Mr. A, somebody will be taking long futures, and somebody has to take a short futures for the contract to be executed. So, let us say on 1st May so, you have at 9.30 AM when the exchange opened, Mr. A took long futures I am just writing LF, LF indicates long futures for let us say 5 contracts. And if A is taking long futures somebody has to take a short futures. So, let me do it, let us say B is taking short futures for 5 contracts. So, if this is case so, how much is going to be how many contracts got traded. So, trading volume so, I am just writing trading volume and open interest I am indicating OI as the open interest. So, the trading volume is 5 open interest is 5 let us say 10 AM. Mr. X is taking a long futures contract for 10 units, Mr. Y is taking short futures contract for 10 units, volume traded becomes 15 open interest becomes 15. Let us say 10.05 AM, Mr. P takes long futures position and for 20 units let us say, Q takes short futures position for 20 units. So, you will have 35 and 35. Now let us say around 12 noon Mr. X would like to square of the position. So, please recall X had taken a long futures position, now X would like to take short futures position for 10 units. Let us say if X is taking short futures position a new member enters into the position who is taking long futures position. So, he is taking 10 unit in that case please recall this Mr. X is no more in the system trading volume is 45, but open interest is 35. Open interest remains unchanged because open interest indicates the number of short futures position or the long futures position at any point in time. Now coming to let us say around 2 PM, let us say P also wants to square of the position, but P wants to square a position by only 10 units. So, P is taking a short futures position for 10 units and who is the counterparty? Please note that Y also would like to square a position. So, Y is taking a long futures position for 10 units. If that happens this is your 55 units, but this will be 25 units, open interest will be 25 units. How open interest will be 25 units? Y is completely out of the system. Now P will not be having 20 short futures unit, but P will not be having 20 long futures P will be having only 10 long futures unit. So, if you can see this by 2 PM Mr. A has 5 units, P has 10 units, M has 10 units. So, you have open interest as 25 units and corresponding to A you will have B has 5 short futures units, Q has 20 short futures units. So, if you can see either the long futures position or the short futures position is coming to your 25 units. So, open interest shows liquidity in the market liquidity in the sense that how many contracts are open at this point in time. If more number of contracts are open it indicates that somebody will be able to enter the market and exit the market with much more easier than a market having a lesser open interest. So, let me go to the logic of open interest as we discussed if 2 new traders take position of long futures and short futures open interest increases.

If one existing trader closes his or her position with a new trader, open interest remains unchanged. If 2 existing traders square up with each other open interest decreases. And as

you can see this is the actual journey of open interest for turmeric April 2023 contract. Please note that turmeric April 2023 contract started in the month of October 2020. Initial months there were lesser open interest and open interest started increasing means more new number more new traders started taking position. And after some point in time after plateauing at some point in time open interest started decreasing and the contract's expiry the open interest were very limited open interest were available in this. So, with this we will end our discussion on what is open interest and how open interest gets calculated. In the next session we will be discussing different aspects of futures trading by taking some real-life data from the exchange platform. So, thank you all of you. I look forward to interacting with all of you in the next session.