Commodity Derivatives and Risk Management

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Commodity Derivatives Market: Value Proposition

Good afternoon to all of you and today we are going to discuss the 29th lecture on Commodity Derivatives and Risk Management. Please recall that in the previous 8 to 9 sessions, we have discussed extensively related to different kinds of a derivative contracts which are traded and offered in a commodity exchanges. And today's session we are going to discuss what are the different other value proposition provided by the commodity derivative exchanges. The prime objective of commodity derivative exchange is to offer a hedging platform there is no doubt about it, but other than that do these commodity derivative exchanges provide some other value proposition which is probably not discussed so much in the popular discourse in the textbooks. So, today we are going to focus more on the value proposition other than the hedging opportunity provided by the commodity derivative exchanges. As I mentioned earlier, the primary objective of the commodity exchange is to provide a platform for hedgers to mitigate price risk and for doing so commodity exchanges offer various kinds of derivative contracts such as futures and options. And commodity exchanges have also started offering very innovative products other than the plain vanilla futures and option products. Commodity exchanges have also started offering very innovative products to help commodity producers and commodity consumers to mitigate the price risk. I am just for the sake of discussing I am just giving examples of couple of innovative products, but as we go forward, we will be understanding more about these products in a specific commodity related discussion. Now, coming to this innovative product let us take an example of cross spread. So, cross spread is a spread contract, and this particular futures contract is used by a crusher or a refiner who buys a soybean and sells soy oil and soy meal. And this particular crusher or a refiner is exposed to both input price risk as well as the output price risk. Now, how this particular crusher can mitigate the price risk? If only plain vanilla future contract would have been available, this particular party would have to enter into two futures contracts. But in case of a cross spread future because the exchange is making available the cross-spread future, this particular contract is helping this crusher to mitigate the price risk using a single contract. Similarly, let us take the example of weather based derivative contracts. Now, there are futures and option contracts where the payoff is based on the variation of temperature, rainfall, snowfall etcetera are available for trading. Similarly, commodity exchanges are offering derivative contracts on electricity, carbon, water, payroll, cryptocurrencies etcetera. As I said just now that we will be discussing in detail about these types of commodity derivative contracts in greater detail as we go forward.

So, why am I discussing all this at this point in time? Just to highlight that the commodity exchanges are not only offering plain vanilla derivative products, but commodity exchanges are also offering derivative products very different kinds of innovative derivative products to help you know commodity producers, consumers to mitigate various kinds of price risk. Please also note that these products or even more

innovative products can be offered in the OTC market. It is not that only commodity exchange will be able to offer these products. Even bilateral OTC contract this kind of a derivative product can also be made available, but what is so difficult about the OTC market is that negotiating the contract terms bilaterally could be a difficult proposition. Hence, many commodity producers, consumers etcetera approach commodity derivative exchanges to mitigate the price risk. Now, in addition to offering very innovative products, exchange contracts also are more flexible than OTC contract. So, what do we mean by flexible? In the case of a flexible contract a party can square off the contract any time before the maturity. Please note that in the case of an OTC contract this flexibility is not there. A party, one party cannot square off or close the contract unless and other party agrees. In the case of an exchange traded contract that condition is not required. If a particular party has taken a long futures or short future position today, if it wishes to square off the position, it can do it within the next 1 minute not even it has to wait for a day or so. So, exchange traded contracts are more flexible and a party can square off the contract any time before the maturity. And as we also have discussed many a times the contracts offered in commodity exchanges take away the counterparty risk which is in a very inherent component associated with the OTC or a bilateral contract. And in fact, to make their exchange more of hybrid exchange commodity exchanges also put considerable effort to attract hedgers to the platform. And in this context, I would like to highlight the effort of national commodity derivative exchange which is an Indian exchange. This particular exchange is putting or doing a commendable service by educating former producer organizations. So, these are popularly known as FPOs and NCDEX is educating these former producer organizations and helping them come to the NCDEX platform to mitigate or hedge the price risk associated with various Agri commodities. This particular block which I have taken from the NCDEX.com website as you can see on in the month of April 2023 about 14 to 15 former producer organizations representing about 10 to 15,000 total farmers, they have entered into or they have come to the NCDEX platform to mitigate the price risk associated with Dhania, turmeric, castor, jeera and different other Agri commodity products. And I am sure all of you will agree with me that Indian farmers face significant amount of a price risk and as of now they do not have anywhere else to go to mitigate the price risk. And exchanges like national commodity derivative exchange and multi commodity exchange of India is doing a commendable service by offering various kinds of derivative contracts where former producer organizations are able to come to this platform to mitigate the price risk. Now, coming to the other aspect of benefit provided by commodity exchanges, one of the very important benefits which commodity exchanges offer is something called a price discovery. So, what do we mean by price discovery? So, price discovery is a process through which a common price of a specific asset is discovered or arrived. Let me repeat this what do we mean by price discovery. Price discovery is a process through which the common price of a specific asset is discovered or arrived. And how does price discovery happen? The price discovery happens when many buyers and sellers interact with each other. The price determined or discovered by this process reflects the underlying asset value. Let me give some examples of a price discovery process. Please recall during the initial public offer during the IPO process, a book building process is done to arrive or discover the price of a share. Please note that in case of an IPO an initial public offer before that a company share is not publicly available. So, this is the first-time general public is putting a price to the individual share and the price you know the book building process is used to arrive at the price of a particular share. Similarly, many auction houses conduct auctions to discover the price of an auction item. I am sure you will be able to recall that in the initial part of this particular lecture series we have extensively discussed different types of auction mechanism and this auction mechanism is used to discover the price of an auction item. Now, in this context I would like to share an example which clearly shows the process of price discovery. Now, this concept of price discovery can be visualized through the Christie's auction online auction of a non-fungible based token in NFT token which is a NFT is related to a digital art and this particular art was titled five thousand days by somebody is known as Bipple and this particular auction was done in the year of 2021 in the month of March. And please note that for this auction Christie's did not indicate any estimated price range, which is rather unusual. Normally whenever Christie is auctioning a piece of art or a piece of jewelry, they do mention what is going to be the price range for this particular auction item, but in this case because Mr. Bipple as I understand Mr. Bipple advised Christie's not to put any price range. This was rather unusual, and this particular online auction was done over a period of 10 days and during these 10 days online bidding period bid started at a low of 100 dollars and with the final bid reaching to USD 69.3 million dollar. Please note that during the period of 10 days the first bid started at 100 dollars and by the 10th day the final bid was at 69.3 million dollars. And as part of this bidding process 33 bidders competed in the bidding process and it is believed that about 22 million people turned into the auction website to witness the last few hours of the live auction. And more details about this particular auction process are available on this particular website. There are many other websites, YouTube videos are also available, in case you are interested to learn more about this particular auction process. Now, why are we discussing this particular auction process that is with respect to the process of price discovery. So, by inviting a large number of participants through online mode Christie's was able to arrive or discover what is going to be the price of this particular digital art. And please note that Christie did not indicate any estimated price range added to the price discovery process. So, this is a real-life example of what do we mean by price discovery or what is the concept of price discovery. And in this context, I would also like to highlight here that this is an example of a price discovery in a spot market. Now, please note that commodity exchanges help in price discovery in futures market. So, as I just mentioned, commodity derivative market helps in discovering the price of future price or help in discovering the futures price. And the futures price is nothing but the market's average opinion about the spot price of an asset which will be prevailing at a specific time in the future. So, the future price is nothing, but a collective opinion markets average opinion about the price of the underlying asset which is going to be prevailing at a later point in time. And as you can see these are the futures price data which I have downloaded from the ice intercontinental exchange of US. So, this is the Brent crude futures data, and this is coffee futures data, and this is the spot date on 6 June 2023. So, on 6 June 2023 there are different futures contracts available and as you can see this Brent futures contract trading August contract is trading at 76.45 and at has attracted a trading volume of 2,15,955. And as you can just glance at the price the August price is higher compared to let us say May 2024 price. So, this kind of information helps people to understand what the market's collective opinion about the future price or the spot price is, which is going to be prevailing at a later point in time. Similarly, the same thing is applicable to the coffee futures contract here. And as you can see when more and more participants trade in a derivative market let us say hedgers, speculators and arbitragers. Please note that we have discussed extensively about these three categories of traders in a commodity derivative market and when this greater number of participants who could be hedger, who could be a speculator or one could be an arbitrager, they come to a particular market, market becomes more liquid. And with higher liquidity the future price signal becomes more robust and thus giving a fair indication regarding the expected spot price. So, standing today on 6 June anybody anywhere in the world will be able to get a view related to the spot price which is likely to prevail in likely to prevail in let us say 8 to 9 months ahead. And please note that I do not have access to this data because I have a Bloomberg terminal access no. This data I have downloaded from the ICE US exchange, this data is available to anybody and everybody. Of course, there is much more detail to this particular data which I have kind of a curtailed for the sake of discussion. So, there are lot many other parameters related to these contracts which are available. And here in this context I would like to say that the future price is going to be the expected spot price only if there is enough liquidity. If the market is not liquid the price which is getting discovered, people are buying selling that price that may not be a true representation of the underlying asset market. In this in this context I would like to quote unquote Australian futures pioneer Mr. Les Hoskings view what he had mentioned is that price discovery is about liquidity. So, unless there is a lot of trading happening in a market the discovered price does not truly reflect the underlying asset price. And in the same line if a significant amount of trading volume is there for futures contract, this futures contract kind of indicates what is going to be the spot price which is going to prevail at a later point in time. In this context I would also like to share what other detailed information is being provided by the intercontinental exchange. So, not only do they provide the daily price for the underlying futures contract one can also get the intraday price pattern for a particular contract. So, this one shows the intraday price movement of coffee July 2023 futures. Please recall in the previous slide here I had only mentioned about the last price. So, in addition to informing this price, exchanges also inform how this particular price has moved on a daily basis. Again, this particular price is not private to me because I have access to some other data. This particular data you know chart in fact, I have exactly taken as it is from the Intercontinental US exchange website. So, the exchanges are also putting a significant amount of effort to increase the trading volume. Why are exchanges informing this so much of data? Because they want people to know what is happening to the underlying asset market and will be able to take a collective view and if required come to the exchange platform and mitigate the risk. In this context I would also like to share some of the historical facts related to future trading. Please note this is the picture which I have taken from the CME website. This is the CME Globex trading floor in Chicago in the year 2004. Please note that at point in time brokers trading members different types of trading members were physically going to the exchange platform to do the trading. Of course, by 2004 there was an online trading platform, but a significant amount of trading volume was also happening in the physical trading space which is known as pit trading. Pit means a specific location in the exchange in a buyer, seller and they are representative their brokers will be converging and to buy sell different commodities. So, you can see the number of people who are present in this particular snapshot and very interesting videos YouTube videos are available on the internet. And I have given the link to these two interesting videos of course, there are many other videos, but personally I like these two videos related to how exactly the physical market trading was happening at earlier time. Now, none of the exchanges in the world offer this physical trading facility. This pit trading facility is also known as open outcry trading means the buyers and sellers and their representative will be very vocal about it and make lot of hand gestures to buy sell the underlying commodity futures contract. However, we have moved a significant way from this open outcry trading system now all trading is happening online. And because of the online trading facility the trading volume for commodity derivative contracts has increased significantly. Somebody is sitting in some corner of the world, it could be a hedger, it could be a hedge, it could be a speculator, it could be a hedge fund, it could be a mutual fund. Somebody sitting in different parts of the world are able to enter into different kinds of derivative contracts through online mode. So, with that the fact that we have shifted from pit trading or open outcry method to an online trading has considerably increased the liquidity in the commodity futures. Now, coming to the other value proposition, the first value proposition what commodity exchanges offer is providing a trading facility for risk management for hedging. In addition to that commodity futures market or commodity derivative marks market help in discovering the future price. Besides these two benefit commodity exchanges also offer many other values proposition one such value proposition is that commodity exchanges on a daily basis report the commodity inventory level at exchange approved warehouses. So, please see this is again a snapshot which I have taken freely available from the LME (London Metal Exchange) website. The source is given here as you can see during the month of March 2023 starting from 1st March till 24th March the different kinds of base metal inventory what is available at different exchange approved warehouses the total inventory is given here in this slide. And when exchanges inform this kind of information or when exchanges relay this kind of information, they also provide another very important and very crucial piece of information to the market. In addition to providing this you know macro level data exchanges also provide more granular data with respect to the warehouse position. Let us understand what you mean by granular data. Please see on a daily basis the exchanges report not only the inventory level, but also the quantity delivered in and out details. So, this is the LME inventory data location wise for a given day. So, the previous slide I showed the total amount of let us say copper available at LME warehouses over a period of 30 days. Here on a given day which are the which country, which location in that country, what is the warehouse location, how much of the underlying commodity physical commodity is available in which location, how much is getting delivered, how much is getting going out of this exchange and what is the closing stock. So, this information is also made available freely by the exchanges. So, people will be able to take a view related to the underlying asset availability. In this context I would also like to share a similar kind of information detail which is being provided by the clearing houses associated with NCDEX and multi commodity exchange. So, I have just taken a snapshot of the NCDEX clearing corporation limited warehouse detail and this particular warehouse as you can see on a given date this particular warehouse shows what are the different kind of a commodities and what is the location of these warehouses, what is the underlying unit and what is the amount of stock available and different categories of stock available at a given date. And please also note here by no means I am saying that the exchange approved warehouses are the only warehouses available in a given economy or a given country. Commodities could also be stored in warehouses which are outside the purview of the exchange. So, the total available commodity which is represented by this exchange approved warehouse by no means represent the total amount of commodity available. However, when exchange clearing houses provide this kind of a information that gives a significant indication related to what is the quantum of the underlying as available at a given point in time and that is factored into commodity producers and commodity consumers and value chain partners to get a or to formulate the view related to the future direction of the prices. If more commodities are being delivered in a exchange approved warehouse one can safely assume that there is not going to be much of a you know constraint in terms of availability of the underlying commodity. So, all these factors will be analyzed by commodity producers, consumers and even speculators who will be using this information to make a view about the underlying commodity price and take an informed decision. So, with this we will be coming to the end of today's session. So, today we discussed how commodity exchanges are offering innovative products to help hedges to mitigate risk, commodity exchanges put significant amount of effort to improve the liquidity. So, that the price the future price which is discovered in the commodity exchanges reflects the underlying asset price in a significant way and in addition to the providing a providing a hedging platform as well as price discovery mechanism, exchanges also inform various other information such as the available inventory in the exchange approved warehouses. And these are some of the benefits we will be continuing with the remaining part of the discussion with respect to the value proposition related to the commodity exchanges in the next session. So, thank you all of you, I eagerly look forward to interacting with all of you in the next session.