Commodity Derivatives & Risk Management
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Lecture 01
Introduction to Commodity Derivatives

Welcome to the first session of the Commodity Derivatives & Risk Management. Before we go into more details of what exactly what are Commodity Derivatives and how this Commodity Derivatives contracts can be used to manage price risks, let us understand, what is a Commodity? How do we define a particular asset to be a Commodity?

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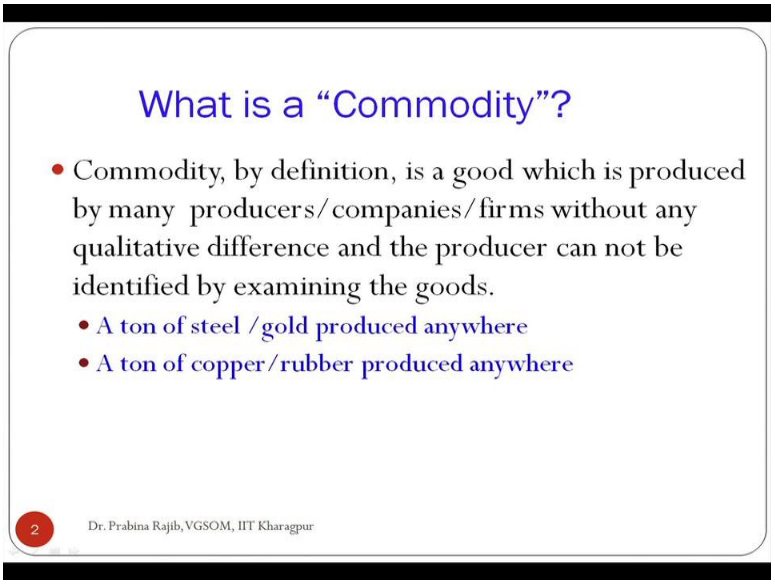

Let us go to the definition which is normally given in textbook that is Commodity, by definition, is a good which is produced by many producers, companies and firms without any qualitative difference and the producer cannot be identified by examining the goods.

Here I would like to stress upon the set of words that is without any qualitative difference. Let me project question to you, let us see you go to your neighborhood grocer, and ask for a packet of or 1 kg of sugar. And when the grocer delivers you the packet of sugar, merely examining the packet, would you be able to tell; which sugar miller in India has produced this particular packet of sugar? According to ISMA that is your Indian Sugar Mills Association, India has 211 sugar millers, and this particular packet which you are holding in your hand could have been produced by any one of the miller. So, that is where you know a commodity you know derives its definition, that it is a good which is produced by many producers and companies and firms and

we cannot distinguish the produce by merely examining that particular product or the underlined underlined asset which you are holding in your hand or which you know which we are examining.
similarly you know the same thing is applicable to you know Moong Dal, may be rice, may be almonds, cashewnuts, (()) (02:51), many many things which we buy from the you know from the neighborhood shops. We would not be able to say which is who is the producer of that particular commodity by merely examining that you know product which we are holding in our hand.
Taking that example to further, a ton of steel or gold produced anywhere in the India or World can be treated as a commodity or a ton of copper or rubber produced anywhere in the world can be treated as a commodity.
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Let us you know let us let me ask some a question to you. There are 6 pictures of different commodities or different items given here, a picture of a car, different you know different sizes of diamond different shapes of diamond and you have a steel rod here, you have a bar of two bars of gold, you have a bar of copper and you have a gold jewelry. If I ask a question, can you identify which set of commodities which set of items can be grouped as commodities? Will you be able to do so?

Okay! Let us go to the answer a car can never be treated as a commodity; similarly, the necklace or a jewelry piece can never be treated as a commodity , because this jewelry piece will always be you know marked with the names of with the name of the jeweler who have manufactured this particular jewelry. Besides these two others can be treated as a others can be treated as commodity. Because by physically examining these you know assets you will not be able to tell who is the producer of this particular this commodity.

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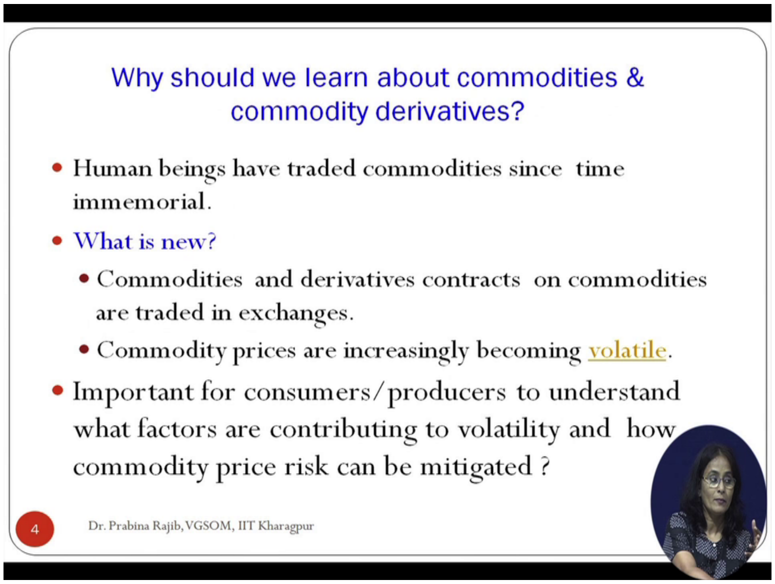

Now the next question is that you know why should we learn about commodities or commodity derivatives at this point of time? Human beings have traded commodity since you know since the beginning of the mankind. What is so new about you know commodity trading or commodities or commodity trading? the new dimensions which you know which has prompted us to learn more about commodities are that commodity derivative contracts have started getting traded in exchanges.

Commodities are traded in the local market in the spot market from from time immemorial as mentioned. However, commodity derivative contracts are started getting traded in commodity exchanges and commodity prices are increasingly becoming volatile.

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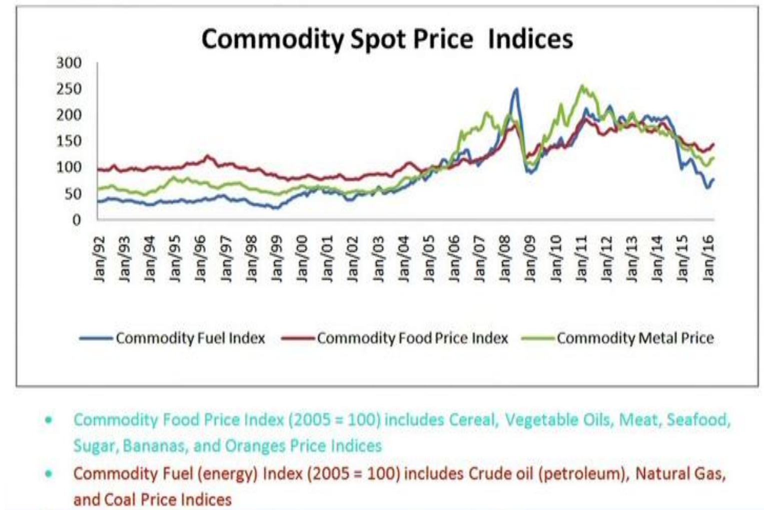

So let us let us go to this particular link. This link indicates commodity spot price indices for three you know underlined commodities 1. Commodity fuel index 2. Commodity food price index 3.Commodity Metal price. All these indices you know has been have been benchmarked to the value of 100 in the year 2005 that is the base year has been equated to 100 value and the base year is 2005. And analysis of this particular figure or picture we can you know it is very clearly visible that the commodity prices has remained almost you know stable since 1992 till probably may be in January 2004 2005 but subsequently you can see volatility in all these three indices

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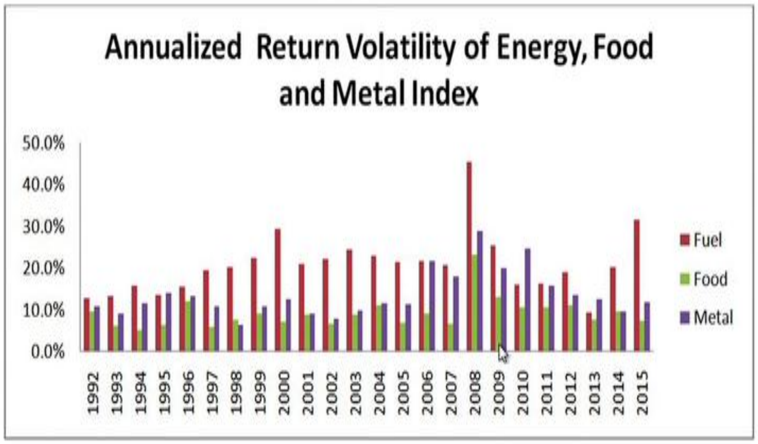

DATA SOURCE: INETRNATIONAL MONETARY FUND

http://www.imf.org/external/np/res/commod/index.aspx

The second picture or the second graph presents the annualized return volatility of these three indices. And as can be seen that the volatility of these return volatility of these three indices has increased as the years have gone by and from here I have collected this data, the data source is from International Monetary Fund and the link to International Monetary Fund is you know it's given here.

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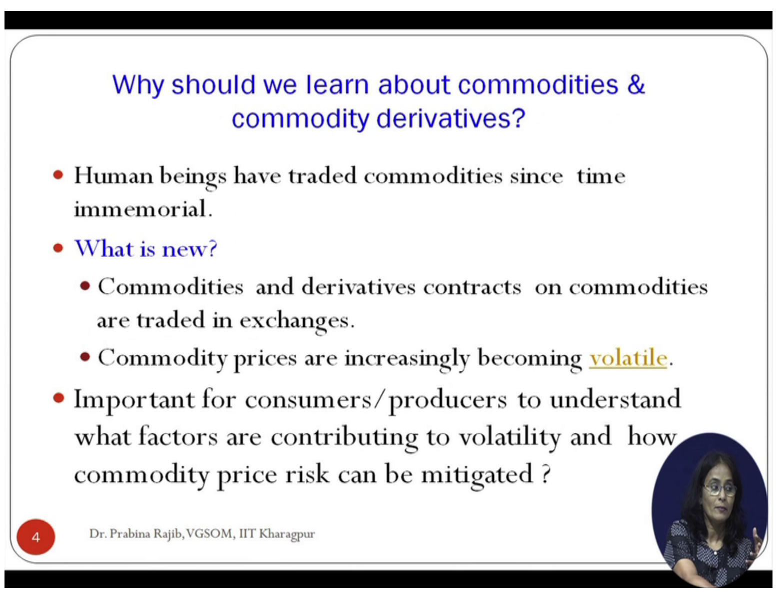

So why we need to understand about commodities or commodity derivatives is that commodities prices are increasingly getting volatile and to mitigate the price risk associated with this commodities, commodity contracts, commodity derivative contracts are getting available in commodity exchanges. In fact earlier many countries did not have a commodity derivative exchange, organized commodity derivative exchanges with you know progress of time with you know volatility of commodity prices increasing you know day by day, almost all major commodity producers of the world have started their own commodity exchanges.

So, that is a reason why it becomes you know it is quite important for us even for consumers and producers of commodity to understand what factors are contributing to the volatility and how commodity price risk can be mitigated?

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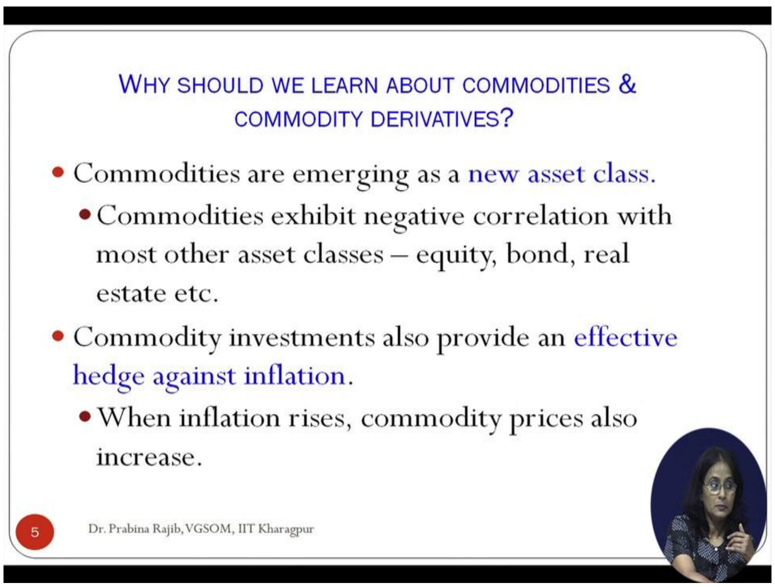

The second aspect which or the second state of aspect which has made it made commodities more you know more interesting affair is that commodities are emerging as a new asset class. Many investors are interested to hold commodities in their portfolio because commodities tend to exhibit negative correlation with most other asset classes like you know which we normally hold in our portfolio like equity, bond and real estate. So, almost all these financial asset classes tend to have a negative correlation and there are many research studies which are corroborating to this negative correlation.

And, commodity investment also provide an effective hedge against inflation, that is whenever inflation rises commodity prices also increase. So, these two combination you know these two facts that is commodities exhibit negative correlation with most other asset classes as well as commodities are hedge an effective hedge against inflation are contributing towards many investors getting interested in commodities or adding commodities to their portfolio.

However commodities in a in a in its actual form that is real underlined assets cannot be held directly by investors so normally investors have started investing in commodity derivative contracts that is your commodity futures and options to benefits from the diversification of portfolio and they are adding these commodity derivatives to their portfolio.

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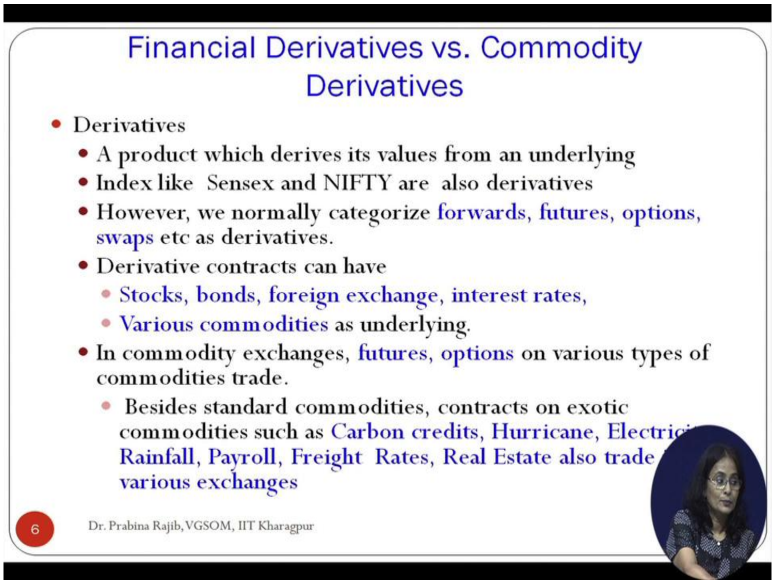

Now let us spend some time in understanding what exactly is a derivative? I am sure all of you must be knowing what is a derivative? Because this particular subject should (()) (11:18) a prerequisite of understanding of financial derivatives such as options futures and options.

However, at this point of time I would like to briefly take you through what is the difference between Financial Derivatives and Commodity Derivatives. Let us understand what is a derivative? A derivative is a contract which derives its value from underlying and to be very very simplistically if we can put it in an index popular index, indices like Sensex and Nifty can also be treated as derivatives because they derive their value from the share prices of the underlying companies which constitute these two indices.

However, we normally do not categorize these indices as derivatives. We categorize derivative contract or financial derivative contract as we normally categorize future, options, swaps etc. as derivative contracts. And, when we are talking about financial derivative contracts those derivative contracts have stocks, bonds, foreign exchange and interest rates as underlying. And Commodity derivative contracts as we have discussed earlier Commodity derivative contracts have commodities as the underlying.

And what we mean by, what are the different types of commodities on which we have commodity derivatives contracts available that we will discuss little later. in commodity exchanges futures and options on various times various types of commodity contract trading such as gold, silver, agricultural commodities and many other different types of commodities which are available for trading in many commodity exchanges all over the world. Besides standard commodities, commodity contracts on exotic commodity such as Carbon credits, Hurricane, Electricity, Rainfall, Payroll, Freight rates, Real estate etc. also have started trading in various exchanges and giving giving different opportunity to diversify their portfolio so lot of investors , lot of traders are entering into these trading in these commodity contracts to you know earn some extra return which helps them in a getting a better return from their portfolio.

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Having discussed what is the difference between commodity commodity commodity derivative and financial derivative I would like to spend some time in understanding what is the difference between Commodity spot exchange and Commodity exchange. So when we use the word commodity exchange we normally mean itsa exchange for derivative contracts such as futures and options on commodities trade. In India we have two well known commodity exchanges that is your MCX and NCDEX India globally as I mentioned earlier almost all country has now have now commodity exchanges. Some of the important or popular commodity exchanges are CME that is Chicago Mercantile Exchange, TOCOMO Tokyo Commodity exchange, and Intercontinental exchange and Shanghai futures exchange. And one thing I would lie to point out here is that in Chicago Mercantile exchange not only commodity contracts trade also financial contracts are trade in this particular exchange.

Now let us focus our attention towards understanding what is what is a spot exchange or a spot market? In a spot market buyers and sellers exchange goods for delivery which does not happen in case of a commodity exchange in which buyers and sellers enter into a contract where the underlying asset or underlying commodity is supposed to be deliver at a future point of time. In a spot exchange buyers and seller exchange goods for immediate delivery.

Let us say buying 2 kilograms of potato from our neighborhood shop also can be treated as a spot market. And a farmer which is selling probably 200 quintals of potato to wholesaler in a mandi is also treated as a spot market transaction.

Earlier in India this spot market or wholesale market transactions were pre dominantly turned on face to face basis where buyers and sellers use to congregate at a local mandi or local wholesale wholesaler wholesale market and the price were negotiated up and between the buyers and sellers and they were the commodities were exchanged commodities were exchanged as well as subsequently price exchange was happening between the buyers and sellers.

However advent of technology internet technology lot of these wholesale markets, mandis are using e auction platform and bringing in buyers and sellers from faraway places and in a buying and selling is happening between these buyers and sellers.

So, but these even if these markets have used or are using you know online trading facility they are still providing a platform for exchanging the underlying goods which are treated as a spot transaction. In this context, I would like to share the development happening at two spot exchanges online spot exchanges that is your NCDEX e market limited and Rashtriya Rashtriya e Market Services Private Limited.

These are the two exchanges spot exchanges which are using online technology e auction platforms to bring buyers and sellers and providing a better facility to buyers and sellers so that each buyer has a access to most number of sellers and vice versa.

And those who are interested to learn more about these two spot exchanges and how these two spot exchanges are using technology to you know bring more buyers and sellers to this common platform they can spend some time the links are available in this two, I have given the links to the respective websites as a hyperlink to these bullet points.

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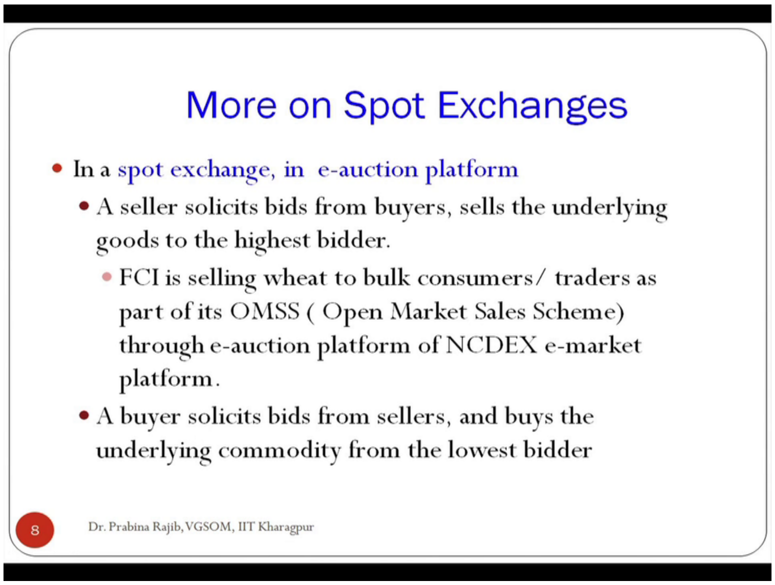

In a (())(19:19) I would like to share about these spot these spot exchanges. You know spot exchanges are providing an e auction platform. In this e auction platform a seller solicits bids from the buyers and sells the underlying goods to the highest bidder. And similarly a buyer solicits bids from the seller and buys the buys the underlying commodity from the lowest bidder.

So it is nothing new you know traditionally these wholesale markets or mandis used to do the same thing but probably the participation was limited to the local local buyers and local people, local traders. With the facility online trading facility now this spot exchanges are reaching out to more buyers and sellers.

In this context I would like to mention one interesting aspect how Food Corporation of India is using the NCEDEX e market platform to to undertake its open market sales scheme. Food Corporation of India sells wheat sells wheat to bulk consumer and traders as part of its open market sales scheme through e auction platform of the NCEDEX and using this platform Food Corporation India announces that it it intends to sell let us say externs of wheat from a specific godown on such and such date and the panels and the buyers who have been in a who had been approved by the NCEDEX can bid for those those whatever in a amount of wheat Food Corporation India has announced and accordingly Food Corporation India sells the wheat to highest bidder.

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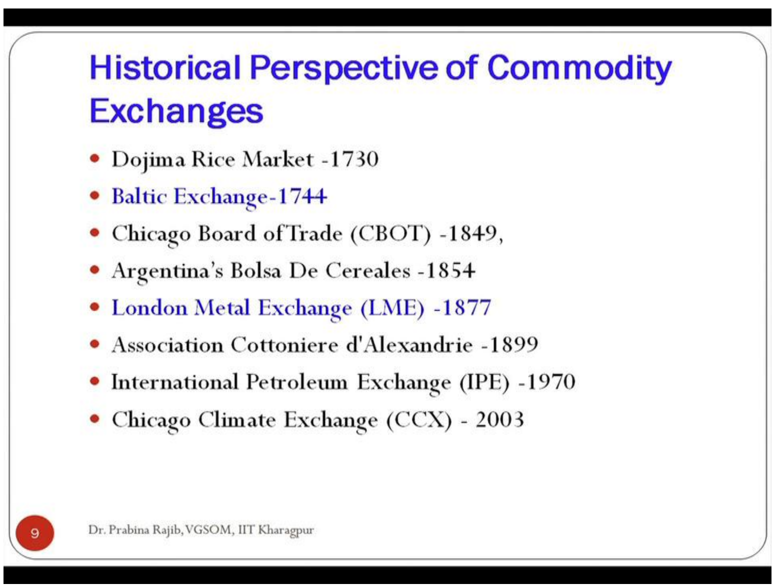

So, to summarize what we discussed till now, to summarize what we have discussed till now is that spot exchanges are exchanges where or markets where buyers and sellers meet or buyers and sellers come to unlined e auctioned platform for trading the commodity for immediate delivery. However commodity exchanges for derivative contracts on futures and options where buyers and sellers can use this contracts for delivering the goods or buying or selling the goods at a later point of time.

Now, let us go for the Historical Perspective of Commodity Exchanges. Are the commodity exchanges new? Commodity exchanges are fairly new what we are seeing in terms of in a MCX, NCEDEX etc. commodity exchanges are fairly new. However, globally commodity exchanges are there for you know substantial period of time as this particular you know slide indicates, the earliest recorded futures exchange is Dojima Rice Market of Japan which is which started in the year 1730, which offered future contract on rice. You have Baltic exchange started from 1744, you have Chicago board of Trade starting from 1849, you have Argentina's Bolsa De Cereals starting from 1854, you have London Metal Exchange which started its operation in 1877, so and so forth other exchanges are also mentioned.

And one interesting aspect is that the name of these exchanges may not be available in in by the same name because other exchanges have acquired them. However Baltic exchange and London Metal Exchange are still operational offering futures and option contracts on different types of underlying and they still operate in their own name.

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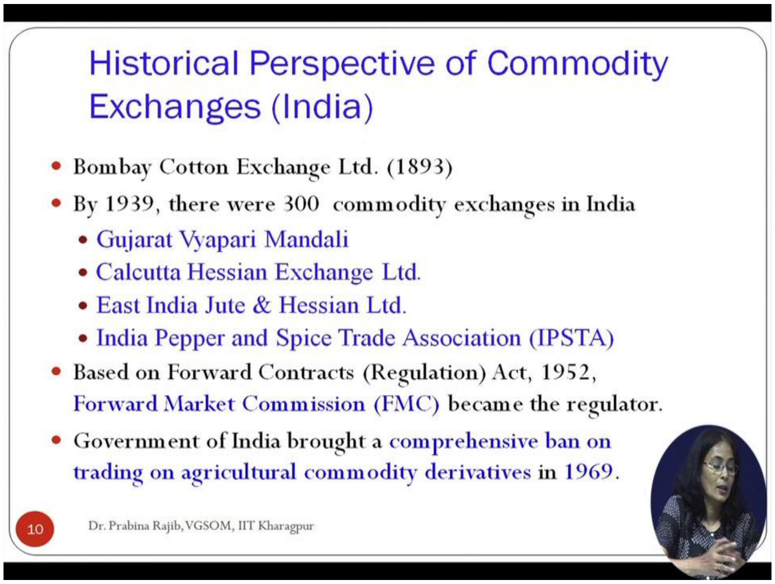

Historical Perspective of Commodity Exchanges in India and though we are talking about multi commodity exchange and NCEDEX very recently India had a very very long history of commodity that get its ready Bombay Cotton exchange started in 1893 and it offered futures contract on cotton its seems by 1939 there were around 300 commodity exchanges in India some of the you know some of the important ones I have just listed here, these are Gujarat Vyapari Mandali, Calcutta Hessian Exchange Limited, East India Jute and Hessian Limited, India and Pepper and Spice trade Association. So, all these 300 commodity exchanges were operating in isolation they had their own rules and regulations pertaining to contract specifications, margining system, trading and settlement rules.

So, Government of India felt the necessity of harmonizing the rules and regulations of commodity derivative trading. And in the year 1952 Government of India enacted a forward contract regulation act of 1952 and it instituted a regulatory body called Forward Market Commission. And this commission became the regulator of the all commodity exchanges operating in India at that point of time.

However, because of various reasons historical various reasons prevailing at that point of time Government of India brought in a comprehensive ban on trading of all agricultural commodity derivatives in the year 1969. The predominant reason which are cited in research papers and websites are that commodity derivatives were perceived to be increasing the volatility in agri commodity prices so Government of India decided to put a comprehensive ban on commodity derivative trading.

However, it did not scrapped forward contracts regulation act of 1952 or it did not do away with the forward market commission. Forward market commission remained as a regulator of commodity derivatives market. Whatever derivative's trading was happening in whichever exchanges from 1969 till you know till forward market commission got merged with Securities and Exchange Board of India in 2015.

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During you know this post independence Government of India has Government of India appointed many committees to look into various aspects of commodity derivatives trading. Some of these committees are Shroff committee, Dantwala committee, Khusro committee, Kabra committee, Expert committee on National Agricultural Policy.

At this point of time I would like to mention that Kabra committee and Expert committee on National Agricultural Policies gave recommendation regarding restarting of commodity derivatives trading in India. And, based on these recommendations Government of India brought in regulations to create National Level multi commodity exchanges. Based on those regulations in the year 2003 NMCE and NCEDEX and Multi commodity exchanges came into picture and subsequently Indian commodity exchange limited was came into operation in the year 2009.

However, as of today majority of market shares are owned by majority of market share in commodity derivative trading are is with multi commodity exchange and national commodity derivative exchange. As I mentioned earlier, for your market commission merged with SEBI that is Securities Exchange Board of India in during September 2015. And from September 2015 Securities Exchange Board of India has become the regulator of India's commodity derivative market.

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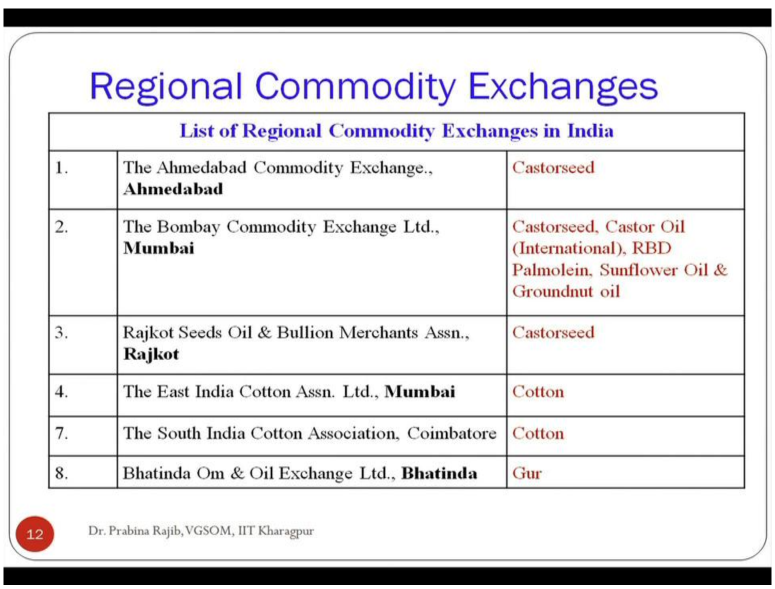

List of Regional Commodity Exchanges in India		
1.	The Ahmedabad Commodity Exchange., **Ahmedabad**	Castorseed
2.	The Bombay Commodity Exchange Ltd., **Mumbai**	Castorseed, Castor Oil (International), RBD Palmolein, Sunflower Oil & Groundnut oil
3.	Rajkot Seeds Oil & Bullion Merchants Assn., **Rajkot**	Castorseed
4.	The East India Cotton Assn. Ltd., **Mumbai**	Cotton
7.	The South India Cotton Association, Coimbatore	Cotton
8.	Bhatinda Om & Oil Exchange Ltd., **Bhatinda**	Gur

Besides this National commodity derivative exchanges India also has certain regional commodity exchanges, for example Ahmedabad commodity exchange offers contracts in castor seeds, you have Rajkot seeds and oil and Bullion Merchants Association Rajkot offers Castor seeds and the South Indian cotton Association Coimbatore offers a contract on cotton.

What is a major difference between a national level commodity exchange and regional commodity exchange is this; Regional commodity exchange is can offer contracts for which they have been permitted by the regulator. For example let us say a regulator has permitted commodity derivative contracts on 15 commodities in India National National commodity derivative exchanges like NCX, NCEDEX etc. will be able to offer contracts on contracts on all these 5 underlying, underlying commodities. However, regional commodities regional commodity exchanges have to give approval or license to offer contracts on each of the commodity in which they are interested to offer derivative contracts.

Also on thing I would like to highlight here, even though I am using the word using futures and options many times in the context of derivative commodity derivative trading in India. As of now commodity market regulator have not has not given sanctions to offer options contract on underlying on commodities. We have in India currently only futures contract available for trading

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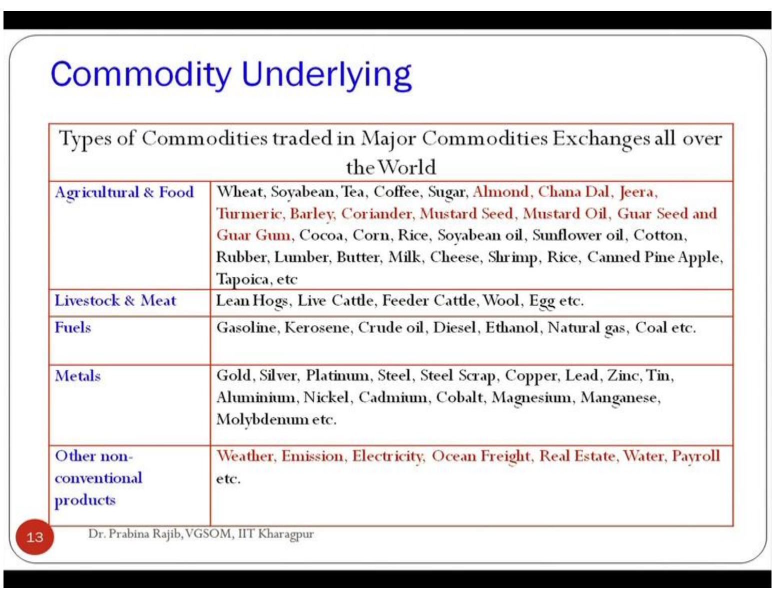

Types of Commodities traded in Major Commodities Exchanges all over the World	
Agricultural & Food	Wheat, Soyabean, Tea, Coffee, Sugar, Almond, Chana Dal, Jeera, Turmeric, Barley, Coriander, Mustard Seed, Mustard Oil, Guar Seed and Guar Gum, Cocoa, Corn, Rice, Soyabean oil, Sunflower oil, Cotton, Rubber, Lumber, Butter, Milk, Cheese, Shrimp, Rice, Canned Pine Apple, Tapoica, etc
Livestock & Meat	Lean Hogs, Live Cattle, Feeder Cattle, Wool, Egg etc.
Fuels	Gasoline, Kerosene, Crude oil, Diesel, Ethanol, Natural gas, Coal etc.
Metals	Gold, Silver, Platinum, Steel, Steel Scrap, Copper, Lead, Zinc, Tin, Aluminium, Nickel, Cadmium, Cobalt, Magnesium, Manganese, Molybdenum etc.
Other non-conventional products	Weather, Emission, Electricity, Ocean Freight, Real Estate, Water, Payroll etc.

Now, let us focus on what are the different kinds of commodity underlying which are offered by various commodity exchanges all over the world. And, you know this one thing I would like to again stress upon these commodities are nothing (())(31:03) these are commodities which are not only these commodities are available in major commodity exchanges all over the world.

So, ina agricultural food category you have maximum number of contracts you have Livestock and Meat category. These contracts are predominantly available at Chicago Mercantile exchange with Wool Wool is available at Australian commodity exchanges.

Well there is Gasonline, Kersone, Crude oil, Diesel, Ethanol etc. available almost all commodity exchanges in in the world. Metals Gold, Silver, Platinum, Steel, Steel scrap, Copper, Lead, Zinc etc. are also traded in many commodity exchanges all over the world.

However, London Metal Exchange is predominantly known for you know base metals, commodity contracts on base metals. And, and other non conventional products like Weather, Emission, Electricity, Ocean Freight, Real Estate, Water, Payroll etc. are traded in many exchanges.

In the Agricultural Food category those you know commodities which are written in red font that is Almond, Chana dal, Zeera, Turmeric, Garlic, Coriander, etc. these are contracts which are very very specific to Indian market and I do not think any other commodity derivatives in commodity exchanges in the world offer commodity contracts on these underlying and this shows the vibrancy of our test and our food habit. This something that very very beautiful aspect of being in India or being Indian that it get to test or you you your food preferences are quite wide and quite vibrant.

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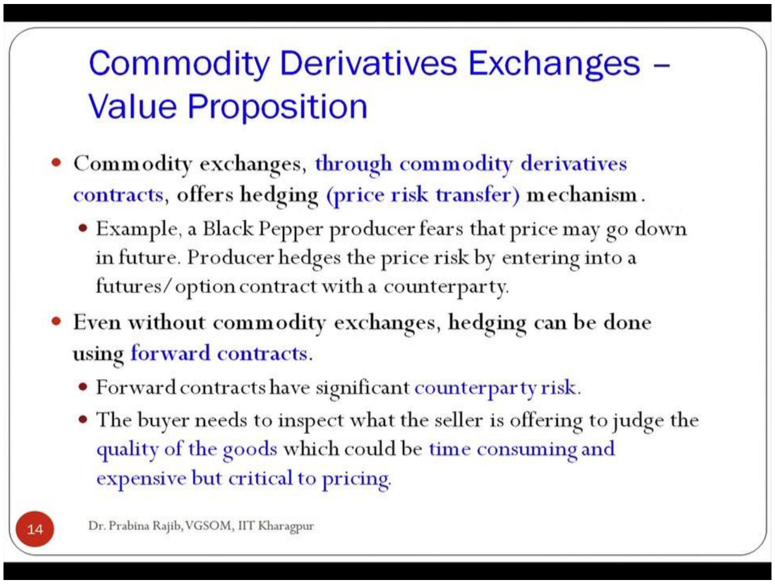

Now, in the next section we will start what are the value propositions provided by commodity derivative exchange. So, to sarize what we have discussed, for this particular session is that commodity derivative exchanges are different than commodity spot exchanges. Commodity spot exchanges in commodity spot exchanges buyers and sellers congregate or meet or come to online e auction platform where the price is a right for immediate delivery.

However, commodity derivatives commodity exchanges offers commodity contracts on futures and options. And, we also discussed historical development of India's commodity derivative market and also the difference between a national level commodity exchange and regional commodity exchanges.

As I mentioned, in our next section we next session we will discuss what are the value propositions what benefit commodity exchanges provide to traders.