Commodity Derivatives and Risk Management
Prof. Prabina Rajib
Vinod Gupta School of Management
Indian Institute of Technology, Kharagpur
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Lecture 12
Measures of Speculation

Welcome to lecture 12 on Commodity Derivatives and Risk Management. And today we are going to discuss various aspects of speculation and the measures related to judge or quantify the speculative activity in any given commodity derivative market. As you recall in the previous session, we discussed that the presence of speculators are mandatory requirements for a futures market to perform or to operate. However, excess speculation has a destabilizing impact on the futures market. When there are too many speculators operating, the futures market become quite volatile and volatility in the futures market gets spilled over to the spot market and spot market becomes quite volatile. Hence exchange regulators as well as exchanges keep control on the number of speculators who will be operating at a given point in time.

And as we discussed in the previous session, exchanges set different kinds of open interest limit so that the number of speculative activities in a derivative market remains within a manageable limit. And there are certain measures of speculation which are popularly used to quantify the speculative activity in a given market. The first index or first measure is known as a scalping index. And this scalping index as you can see this is a ratio of trading volume to open interest and this proxies for short term speculation or intraday speculation.

Now let us understand what you mean by trading volume and open interest, though this aspect we have in greater detail discussed in one of the earlier sessions but let us spend may be a minute or two understand or re-visit the concept of trading volume and open interest. Now let us assume that a futures contract starts on a given day and the first two traders who have taken trading position are A and B. So, A takes 20 long futures, and the counter party takes 20 short futures, and the counterparty is B. In that situation if you can see the total trading volume is 20 and total open interest is 20. Let us say throughout the day these are the different set of people who have entered into long futures and short futures.

And the second set of you know traders to have entered into the contract is C and D and E A, A D, D E and X E respectively. Now as you can see A entered into the contract long futures contract for 20 at the beginning of the day and sometime around the middle of the day A squares of this position by taking short futures position. Similarly, E also entered

into the contract squared of the position, D entered into the short futures contract, D also squared up the position within a day. And as you can see that throughout the day the total amount of trading volume was 120, but by the end of the day the total amount of open interest is only 50 contracts. And please note that speculators are the people who enter and exit the market for making some smaller profit and the hedgers normally do not enter and exit. Let us take an example, in this case let us say Mr. X. Mr. X has taken a long futures position as a hedger because he is fearing that the price is going to go up. And his expectation related to the price increase is done not change within a day for him to close his contract. So, hedgers normally do not close their contract within a day, they keep their position open for a long period of time thus contributing to the open interest. While speculators may enter and exit into the contract very quickly and they contribute to the trading volume. And hence the scalping index is the ratio of trading volume to open interest at a any given point in time. And this particular you know second table shows the scalping index calculated for turmeric contract which we have been discussing for quite some time on a different day. So, the trading volume and open interest ratio ranges from 6.5 percent on a given day to 29.60 percent. And the higher the scalping index, the greater the number of speculative traders or a greater number of speculative traders are operating on that day. Now, coming to the next you know major of speculation. The second major of speculation is the speculative major, but before we go get into the understanding of this particular formula, let us understand what you mean by commercial traders and non-commercial traders. Commercial traders are hedgers who have commercial interest in the underlying asset. They are commodity producers, consumers, value chain partners, processor, refiners. So, they are commercial traders or hedgers. And non-commercial traders or speculators are those set of people or entities who have nothing to do with the underlying asset. They buy and sell the futures contract just because they want to make some financial gain of profit by trading.

With this what does the NCL stand for? NCL stands for non-commercial traders' long position. So, this is a speculative long position, NCS is your speculative short position, open interest is your total open interest. Now, let us take some small basic examples to understand what you mean by this speculative pressure. Let us take a situation E. Situation E is a market where we have total open interest as 20 and this out of this hedgers have taken 20 short position and speculators hedgers have taken 20 short position as well as hedgers also have taken long 20 long position and there is no speculator in the market.

In that case as you can see the numerator is 0, NCL and NCS is 0 and open interest is 20, hence you have the speculative pressure is 0. So, when there is no speculator in the market the speculative pressure value is going to be 0. Now, let us come to the next one where you have out of 20 open interest you have 20 open interest, you have 10 long position taken by hedgers and 10 long position taken by the speculators, 20 total open

interest. So, 20 long position out of which 10 are by hedgers and 10 are by speculators. Similarly, out of these 20 open interest for short position hedgers have 10 short position and speculators have 10 short position.

In this case, as you can see the speculative pressure is 1. So, 1 indicates that the number of speculators who are able to fulfill the hedging needs of hedgers is the same. So, in that case you have a speculative pressure value of 1. Now, let us go to the next case where you have no hedger that means, there is no hedger who is coming to the derivative market, there are 20 you know long position been taken by speculators and the 20 short futures position also have been taken by the speculators. In that case as you can see the numerator is 40 and denominator is 20 thus leading to a situation of speculative pressure of 2. Similarly, other combinations are given and as we can see that the higher the number of speculators, the higher is going to be your speculative pressure value. And the same, based on this same logic we have calculated the speculative pressure for an actual market situation. And this particular data shows the aluminum you know open interest on a given day and this open interest of 2,30,670 is being held by different categories of traders. Multi commodity exchange informs this you know gives this information in its website and the first category of traders to have entered into the contract is your VCP and hedgers. In addition to them you also have proprietary traders, you have domestic financial institution investors, you have foreign participants, and you have others.

And please note that each of these speculative categories, they have taken different number of long positions and different number of short position. And as you can see if we calculate the total long position of all kinds of traders it will come to 2,30,670. Similarly, the total short futures position open interest is also 2,30,670. And going by the definition of non-commercial long, non-commercial long has 1,71,400 and non-commercial short has 153,510. And going by this calculation and when we are using this NCL plus NCS by open interest, so speculative pressure is coming to 1.41.

In a normal market situation where you have a right combination of hedgers and speculator, the speculative pressure value stands at 1 and 1.41 means there are 41 percent higher number of speculators as compared to the hedgers in a given market in this example. Now coming to this open interest disaggregated data. Please note that the market regulators require commodity exchange to share the disaggregated open interest data. So, what do we mean by disaggregated open interest data? Disaggregated open interest data indicates which kind of a traders whether they are speculators or hedgers and if speculator which kind of a speculator, whether they are proprietary traders, whether they are financial institutions or foreign participants or others.

So, this kind of information and what amount of long futures position and short futures position each of these categories of traders is taken that information is shared by the exchange to the regulator as well as the general public. Similarly, in addition to the

exchanges in India all over the world almost all commodity exchange shares this kind of an information. The US regulator CFTC requires exchanges to inform the disaggregated open interest data and this particular report is popularly known as COT report or commitment of traders report. This COT report is available at this particular website of CFTC if you are more interested to know about the you know commitment of trader report as published by the CFTC you can visit this link and get you know get more information. And here I would like to also very clearly highlight that the categorization of trade is done by the traders themselves.

They self-report whenever they are entering into any derivative contract, they categorize that particular trade whether it is a speculative trade, or it is a for hedging. This is not you know this is not completely controlled by any regulator. So, as the traders themselves are self-reporting this you know whether they are trading as a speculator or whether they are trading as a hedger. So, this data needs to be treated with lot of caution that whether really if somebody is saying that I am a hedger is it really a hedger or not. Now coming to the third measure of speculation, which is a working T index, it was given by Mr. Holbrook, working in the year 1960. And the way in the previous speculative measure index, we discussed commercial traders being hedgers while noncommercial traders as speculators. The same nomenclature is also applicable for this particular working T index. And this working T index measures the excess speculation. Now let us understand what you mean by this excess speculation.

Let us say at a given time in a in a particular derivative market you have 20 open interest. So, 20 open interest means there are going to be 20 long futures contracts as well as 20 short futures contract. Now let us take the base case where you have out of these 20 open interest you have 20 short futures position have been taken by the hedgers and 20 long futures position as counter party have been taken by the speculators. And is the CS greater than CL? Yes, as you can see this particular formula working T index has you know takes into consideration of commercial short being greater than commercial long or not. If commercial short is greater than commercial long, we use this formula.

If commercial short is less than commercial long, then this formula is used. Now in the base case as you can see commercial short is greater than commercial long hence, we will use this formula and you know based on this particular formula what is the working T index we have been able to calculate that the value is 100. So, what is the interpretation of this base case? The base case is interpreted as follows commercial hedge long position holders are 0 while the commercial short hedge position is 20. This leads to the non-commercial speculative long position to be 20 hence the working T index as 100. So, this indicates that speculation is just enough to upset the hedging needs.

That means, whatever hedgers would whatever position hedgers are interested to take that is being fulfilled by the equal number of speculators. And this is the best-case situation

where your number of hedgers is the same as your number of speculators. But depending on, as you can see, we if we are let us take the last situation. Situation E where you have number of long position taken by hedgers is 18. So, if hedgers are 18 long position that means, speculators have to be taking 2 long position.

Similarly, hedgers have taken 7 short futures position and speculators have taken 13 short futures position. Now based on this particular formula as you can see, is CS less than CL? Yes, commercial short is 7 and commercial long is 18 based on this we will be using this second part of the formula, and we are calculating the speculative index as 108 for other 2 data points speculative index stands at 140 and 147. So, how do we interpret let us say the highest number which is 147 here? That means, at a given point in time there is 47 percent more speculator or excess speculation than the normal situation of 100. And as we have discussed speculators are required for the derivative market, but excess speculation is bad for the derivative market. Now, coming to the next important question can hedgers act as a speculator? This is a very fundamental question or fundamental you know aspect one has to understand and the answer to this particular question is yes.

Now, let us take an example in which kind of a situation a speculate a hedger will be you know taking certain positions which will be treated as a speculative position. So, let us take the example of a standalone crude oil refiner. What do you mean by standalone means this particular refinery company does not own any crude oil mining crude oil mining activity and it buys crude oil from somebody refines it and sells the refined product. And what is its fear? It fears that the price is going to go up and what is the monthly refining capacity? The monthly total refining capacity is about 8 million metric tons, and it always buys crude oil from one specific firm and this time also it intends to buy from the same firm, but it is fearing that the crude oil price is going to go up. Now, how it will be able to hedge the risk? It is long on asset crude oil refiner is short on asset and it will be able to enter into the long futures position to mitigate the risk.

And if it wants to be a fully hedged company it will take a long futures contract which will have a closure to the underlying asset of 8 million metric tons. Suppose the company wants to hedge partially of course, the partial hedge will be depending on the company's internal risk management policy. Sometimes companies say that we will be only hedging 50 percent or 40 percent or 60 percent of our requirement. Let us say in this case the company has a stated policy of entering into a 50 percent hedge. In that case the company will take a long futures contract close to 4 metric million metric tons.

So, these two examples will be a case of hedging. Now, how the same company can take a speculative position? Let us say the same refiner company takes a long futures position, but the number of contracts is large enough so that the total underlying value is to the tune of 10 million metric tons. Though its requirement is for 8 million metric tons, it enters into futures contract for 10 million metric tons. So, that means, this particular

refiner has taken a hedging position for 8 million metric tons and 2 million metric tons is for speculating. So, the company will be entering into a long futures contract for 10 million metric tons, but that will have two components to it.

One is for hedging activity and the other is for speculative activity. Hence, it will be very difficult for somebody from outsider to know whether you know when somebody is entering into a derivative contract, whether it is a speculative trade or whether it is a hedging trade. Now, what would be also another way of speculation for the same company? The same company may take a long futures contract for 8 million metric tons but did not close the future contract after taking delivery of the 8 million metric ton of the crude oil. Here the assumption is that the futures contract expires later than the delivery date. So, on the day if a particular company has bought the underlying and paid the money, that means the particular company does not have any exposure to price risk.

Hence, the refiner company should have squared up the position, the future contract position by taking short futures position for 8 million metric tons. If it continues to hold this particular contract even after buying the underlying, then it will be treated as a speculative trade. So, with this we will come to today's session, but let me summarize what we discussed today. We discussed that speculators are required for the market, but excess speculation is not good for the derivative market, not good for the spot market. And we discussed three popular measures of you know measuring the speculative activity in a given market.

The first one being the scalping index which measures the intraday speculative activity, the second one is your speculative pressure index, and the third one is the working T index. And also, very important understanding that the hedgers that hedgers can be a speculator. So, with this we will be ending today's session, and I look forward to interacting with all of you in the next session where we will be discussing other aspects related to spot and futures price. Thank you all of you.