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SESSION 6: "Financial Markets and Short-Term Energy Prices"

Mr. Lidderdale: This session is on the relationship between speculation in financial markets, and the impact on prices and energy markets. I expect everyone in this room is well aware of the current debate regarding the effect of speculation in financial commodity prices and on prices in physical markets. Yesterday 229 million barrels of light sweet crude oil for May delivery were traded on the NIMEX futures market. This compares with about 400,000 barrels a day of WTI crude oil that's produced, 5 million barrels a day of total U.S. production, and about 80 million barrels a day of worldwide production.

All of us bring our own biases to this debate. For example, many economists are strongly influenced by their training in the traditional theory of the static equilibrium between supply and demand, or the so-called fundamentals. Many energy market traders, marketers, and consumers on the other hand can't help but observe the apparent correlations between the level of investment in financial commodity markets and prices. Unfortunately, rigidities in current microeconomic theory and limitations in the data that can be used to test alternative hypotheses have inhibited our ability to advance the debate much beyond our own biases. We all know of numerous cases where activity in financial markets, even outright attempts at manipulation, have significantly impacted prices in the short run. Do market prices return to the equilibrium level dictated by supply and demand, and how long does it take?

Over 70 years ago John Maynard Keynes sent the resounding shock across the bow of conventional macroeconomic supply and demand theory when he suggested that the short run can indeed be very long. Do we know

enough about the dynamics of the energy markets to assert that speculation was not the primary driver of oil prices to over $140 barrel, just because we did not see an increase in inventories implied by microeconomic theory? Do we know how much money actually flowed into commodity markets from the various sources over the last several years? And if that money came in expecting prices to rise, to fall, or simply as a stampeding herd of ex-Presidents.

We are pleased to have with us today four speakers who have been extensively involved in trying to understand the relationships between financial and physical markets. Jeff Harris is the Chief Economist at the Commodity Futures Trading Commission. Dr. Robert Weiner is Professor of International Business, Public Policy, and Public Administration and International Affairs at George Washington University. Adam Sieminski is the Chief Energy Economist for Deutsche Bank. And Robert McCullough is the Founder and Manager Partner at McCullough Research, an energy consulting firm in Portland, Oregon. I've asked each of the presenters to make a brief presentation regarding their research or understanding of the relationship between financial markets and the physical markets. And following the presentations we'll open it to questions from the floor.

To start the presentations, I'm happy to introduce Jeff Harris who joined the Commodity Futures Trading Commission in 2006 as a visiting economist and consultant, and was named Chief Economist of the CFTC in 2007. Dr. Harris is serving at the CFTC while on leave from his faculty appointment as Professor of Finance in the Lerner College of Business and Economics at the University of Delaware. He previously held faculty positions at the University of Notre Dame and the Ohio State University. Dr. Harris also served as a visiting academic fellow at the NASDAQ stock market and a visiting academic scholar

at the U.S. Securities Exchange Commission. His research is focused on the microstructures of securities in futures markets as related to trading rules, market regulation, and securities issuance. Dr. Harris has published a number of journal articles appearing in the *Journal of Finance,* the *Journal of Financial Economics*, *Financial Management*, and the *Journal of Investment Management*. He has a B.A. in Physics, an MBA in finance from the University of Iowa, and a Ph.D. in finance from Ohio State University. Jeff Harris.

Dr. Harris: Thanks, Tanc. Quite the introduction. I'm going to try to keep my comments brief and I have a couple goals, I think, to lead off our panel discussion here today. And part of my goal as Chief Economist at the CFTC is to give sort of education to the outside world about what we do at CFTC and so I want to focus my comments today about exactly what we do at the CFTC, what data we analyze, how we come to conclusions about what's going on in the market, and to reassure actually, I think, at the bottom of everything that we are looking at data every day, examining what's going on in the energy markets and all the futures trading markets, and we have very specific and very comprehensive data about what traders are doing from a financial perspective in these markets.

So I just want to start out briefly by telling one of the reasons why I took this job actually from my academic career is that one of the beauties of the data that we have at the futures markets is that we have trading information about who buys and sells each contract every day. It's a tremendously powerful tool represented in our large trader reporting system in the CFTC. And what we have access to then is for any given time in any given contract who's buying and who's actually selling every day. That gives us a very powerful tool to look at the economic sort of ramifications of if prices are rising on any particular day, I can go to the data set and say who are the people that were buying in that

market and those people that are buying obviously are pushing prices up. So we've done that in most of our markets.

We have a progress sort of program in place where we look at a large set of markets. We put data out on a weekly basis that's a bit aggregated to the public as well. So this has turned out to be a bit of a challenge for our agency but briefly speaking, most of you probably are aware of our Commitment of Traders reports. And on every Friday we package basically Tuesday's data so at the close of business today we'll start reevaluating and processing that data and on Friday this week we'll put today's data to the outside world. That particular data is grouped among commercial traders and non-commercial traders.

And some of the clarifications need to be taken here is we don't actually define the intent of the individual trader when they enter into our market. So if a British Petroleum or an Aramco comes into our market, we consider those people commercial traders. That's not to say that they're always hedging their positions in the marketplace, however, and in fact we've run into situations where we do see commercial traders seemingly taking speculative positions. So a little bit of the controversy I believe in the last year, year and a half when oil markets were going way up and way down, and other energy markets have exhibited sort of large scale volatility at weekly and monthly horizons, has been the distinction that we make within our agency between the commercial and non-commercial set. The marketplace itself, since we put out weekly data, is familiar with the commercial and non-commercial set so that's naturally what people benchmark to. But I want to put out that we don't actually look at the intent of the individual trader when they come to our market. And we also don't have sort of underlying information about the underlying position of a market. So if someone has a long position in a million barrels of oil and they take a

position short on 2 million barrels, part of that position might be considered hedging but the extraneous part of that hedge might actually be considered a bias toward the downside or a speculative position. That particular trader, if they're classified as a commercial trader in our marketplace, gets reported as a commercial entity no matter what their trading behavior looks like.

I want to point out at the end of my brief talk here that we are looking at the actual trading behavior and we have an effort within the agency to try to discern and disentangle the trading behavior of each individual participant in our markets compared to their self-stated or self-reported and audited position as a commercial or non-commercial entity in the marketplace. But needless to say, our Commitment of Traders data comes out on a weekly basis, but from my office's standpoint we have that data every day.

So what our efforts have been on the research end in the last year, or at least the year and nine months since I've been at the CFTC, has been to try and disentangle what's actually going on, what types of traders are moving markets. It's a very powerful data tool, we have every day every position who buys and who sells. We have price movements every day that reflect price increases, no change, or decreases. So we've taken econometric tools to this database and looked at daily horizons; we've looked at daily horizons aggregated over two days, three days, four days, and up to 5 days and weekly horizons to try to discern really what has been going on in the energy markets in the last few years and what's driving prices way up and down in the oil market, especially way down. The unfortunate part has been the answer hasn't been all that palatable perhaps to the politicians. It hasn't really actually been that palatable to us as an agency. It would be nice to be able to point the finger at one specific group of traders and say ha, we've got the group of traders that's pushing prices up and pushing prices down. The unfortunate part of my

reporting has been then we look at different groups of traders whether they be commercial or non-commercial and we haven't been able to see a systematic pattern where one individual group of traders has been pushing prices up or down.

Now that's not to say we don't have investigations going on in the energy markets. We have an entire crude oil investigation team in our enforcement division looking at instances on a micro basis on a few particular days on a few particular weeks that look at and seek out to punish or to uncover nefarious behavior in our marketplace. But the run up from say $40 to $147 last summer and back down to $50 or so today, we haven't been able to pin that on any one particular group.

So I'll give you a little bit of scene behind the scenes. We classify two groups of traders as commercial and non-commercial, but within our agency we have some fairly powerful information about these particular groups as well. Within the non-commercial trading group, our office can actually see hedge funds. So one of the biggest groups of non-commercial traders is the hedge fund group.

Another set of non-commercial traders might be a floor broker or trader or market maker set of traders in the market place. And we can track individual trading groups like those, different professional types of traders that resemble each other in the subsets of those commercial and non-commercial trades. And we've also done this same analysis on a number of those. In fact every possible combination of different types of commercial and non-commercial entities, and in particularly in the crude oil market we have not yet been able to find the smoking gun, to say we're systematically able to find one group of traders pushing prices up and down.

Well this has led to a couple different interesting phenomena from our agency standpoint. We are one agency that actually identifies hedge fund trading in the oil and energy markets. The SEC, IOSCO, and a number of the international divisions of different regulatory agencies have been now proposing rules at the G20 summit last week, for instance, to look at hedge funds in more detail. Should we have hedge fund registration? What are hedge funds doing, are they really a black box? One of the nice things about data from the CFTC is we can actually identify what are the trading behaviors, what are the positions taken in the futures markets from that hedge fund group. So we do have some information, at least in the energy market, and we have sort of some of the only information about publicly available positions that hedge funds have been taking in financial markets, commodity markets, and in our case the futures market. So we do have a large set of data.

I wanted to point that out that we are looking, the fact that we haven't found the particular smoking gun doesn't mean we haven't stopped. Just because we didn't find it on a weekly basis or a daily basis, we've looked at different combinations, we've looked at a lot of different combinations trying to find out what's going on in the marketplace. Many of you might have read our interim report last July on crude oil when we were at the crisis, sort of historically high above 140 dollar price of oil, and that that particular document summarizes fairly generally and with some specificity on the Grainger causality econometrics that we applied to that data.

We've been opening up our agency to try to accommodate outside agencies to come in and examine that data. We've brought in people from the Fed. We have people from the USDA looking at agriculture markets, and we've opened up a conduit with the Energy Information Administration here to try to have some of their own sort of independent third-party verification of people

looking at the same data. So that's the basic bottom line of the research we've been doing in the large trader reports, looking at speculation as a problem, as a concern, as a broad policy implications in the economy in general.

And as part of that we've come up with a couple other new angles to look at, different types of data. And one of the things we came up with, came out of testimony last year looking at the index fund trader. It turns out the CFTC was looking at index funds and the growth in index funds for the past three years. I was brought on board to try to examine what's going on as a consultant three years ago to look at different types of traders and the growth in the long end of spectrum in different energy markets. One concern at the time three years ago was that there wasn't a lot of hedging opportunities out past two or three years in these markets. And surprisingly, or perhaps not surprising to many of you, oil markets in particular have hedging opportunities now on the organized exchange out eight to 10 years, whereas if you looked 10 years ago you probably couldn't have found a very actively trading contract beyond two years. So we do see some development at the long end of curve.

But one of the things that came out of that is we said, well, we have a lot of information about what's going on in the marketplace, we can identify these index traders. But one thing we found shortcoming is we couldn't identify index traders in the energy markets. Two years ago we started an emphasis on identifying index traders that we actually could identify, and it stems from the way we collect our data. Typically we collect our data from the entity and the type of business they operate. Well, there's no such thing as a trader for an index fund. An index fund can come to the market through a commodity pool operator, they can go through a CTA, or other different types of mechanisms, through a bank. And it turns out most of the index trading that's done in the United States through the energy markets come through entities known as

swap dealers. For a swap dealer will package a set of commodities or a pool of cash flows, selling it to these entities over the counter to the index fund traders, and then they'll turn around and hedge their own exposure to that risk on the organized exchange. What the CFTC sees is the second half of that transaction where the index fund trader positions are hedged through the swap dealers in our markets.

Well in twelve agricultural commodities, there was no swap dealing two years ago. So one easy way to identify swap dealers in agricultural markets is to look at what are swap dealers doing. And since there was no swap dealing in 2006 or very little in 2005 in the agricultural markets, we could identify swap dealing in those markets and it was a good proxy for the index trade crowd. For most of you that follow energy trades, however, it turns out that index funds trading through swap dealers were mixed in with all the other swap dealer business. There was a large and voluminous volume of trade through swap dealers in the energy markets in 2006 and 2007. So when the swap dealers started servicing the index trading crowd, what we had reported to our agency was a mixture of index money in the energy markets with the swap business in the energy markets combined. So it wasn't a very good look at what index funds were doing. For those of you who have been following this, we decided this was a big shortcoming in the agency and put out a special call last summer to the set of people who were doing index fund trading, swap dealing, and any other over-the-counter business that we thought was related to passive long index portfolios. We did a census of these entities last summer, put out a report, it's on our website on September 11, and one of the interesting things we found from there was it turned out that the net positions in the oil market, as oil was going up from about a hundred to up over $140 during the first six months of 2008, that was accompanied actually by a decrease in the number of futures

equivalent swap contracts that index traders were executing. So there were some out there claiming that index fund trading simply by going long passively and simply buying at whatever price it was, was driving prices up. But it turned out when you actually disaggregated the data and looked at the index fund crowd, the average index fund actually decreased their exposure to oil.

Now as an economist that makes some sense because an index fund is typically set up with fixed portfolio percentages. And if I hold a portfolio of a broad set of commodities and one of the commodities doubles in price, like oil did, the natural inclination in that situation to keep oil at the same constant rate in my portfolio means I would have had to pare my holdings in oil to decrease my exposure to maintain a constant percentage of exposure. So as an economist it probably wasn't too controversial or maybe even unexpected but it did turn out to be actually the opposite of what a lot of people were speculating perhaps during the first half of last year. We since updated some of those numbers. I should apologize we don't have some of those numbers out. We put out index trading report in September, looking at the beginning of 2008, March 31, and June 30. Since then we've been collecting data on a monthly basis. We have numbers through September and year end of 2008. Unfortunately we don't have a public document that actually shows that. Interestingly enough it turns out in the oil markets in particular there have been very little change in the index fund positions, despite the fact the oil has dropped from 140 to the $50 range. So there hasn't been a wide scale abandonment of the marketplace, and again in some regard that makes some sense. If oil is dropping by a third or by 50 percent, you'd expect to keep a constant percentage of oil in a portfolio that's fixed in percentage terms, you'd have to load up on oil market contracts.

So we continue to exercise our authority to collect this data. It hasn't been without controversy. It is also, I think, the first time that a federal agency

and perhaps any agency worldwide has actually dug down and had reports from over-the-counter markets given to a federal agency. I think, actually, that's an unprecedented step. We've had very good compliance. We had some controversy internationally because some of the entities actually reported to us when their home country…basically they violated a law in their home country, but they reported to us under penalty of law and then asked for forgiveness from their home country before. But it is two areas I believe where the CFTC is out in front of the game looking at these different types of traders.

We like to point out the fact that there hasn't been any reneging, any default, any problems with settlement in our markets, whereas in many over-the-counter markets where you can sort of hope the market comes back with you if you're working with collateralized mortgage obligations or wishing that prices would come back. In our markets we settle mark to market every day. There hasn't been any problem. There have been issues with people making margin calls in the ag markets last year but nobody actually reneged on any of these commitments. We think that our markets have been robust.

The two areas that we think we are actually leading some of the national and international efforts is to look at the hedge fund data that have been reporting to us on a regular basis for years now. And then the second area is looking at over-the-counter transactions where there's a lot of uncertainty in the marketplace and financial world. We are getting actually fair good data from the over-the-counter market at least as it relates to the index fund trading in our markets. So with that, I guess my basic theme is unfortunately I don't have a good answer for why oil prices went up. My whole research career in finance actually has been chosen to follow these markets because there's such an intriguing notion about what makes markets move. I've written papers on these things.

My first paper was on NASDAQ collusion in that sense. I have a little bit of a bias to find the controversy or try to explore the controversy where we find it, and I'm actually disappointed that we actually couldn't find anything. It could have made or partially made my career at the CFTC had we actually been able to find something. And I don't want to make too light of that because I do think we have a very strong team of professionals that are looking at these issues every day. I want to reemphasize the point that we have the data, we have facts about these markets, we have very good facts. Even if you went to the SEC and asked them who traded IBM stock today, they would have no idea. If you asked me tomorrow who traded natural gas or crude oil today, I can tell you everyone who bought and everybody who sold and how much today. So it comes in with a day lag but we can do the analysis the following day. We have a team of experts in our surveillance that does this every day. We know there has to be some improvement. Congress has recognized some of that in the sense that they've given us a budget increase of about 30 percent or more this year. We're hiring more economists. We're hiring more surveillance team people. We have the issue that we haven't had the manpower in place to process some of the over-the-counter data but we have that process under way. And we hope to have ongoing stream now of publicly available data in those areas on a monthly basis, looking forward.

So with that I think I'll try to leave you with a positive feel for what we do. Some of the other panelists, I think, can give you their perspective, but thank you for having me today.

Mr. Lidderdale: Our next speaker is Dr. Robert Weiner. He is Professor of International Business, Public Policy, and Public Administration and International Affairs at the George Washington University School of Business where he teaches courses on the world economy, privatization, nationalization,

and international financial management. He's a senior advisor to the Brattle Group, has consulted for petroleum companies, commodity exchanges, governments, and the World Bank. He has been a visiting professor at the School of Advanced International Studies, Johns Hopkins University; a Gilbert White Fellow, Resources for the Future; a research fellow JF School, Harvard University; served as an eminent person on commodities for the United Nations Conference on Trade and Development. Professor Weiner has authored four books, "Energy and Environment," "Oil Shock," "Oil and Money," and "Oil Markets in a Turbulent Era," and more than 50 articles on the oil and gas industry focusing on contracting, risk management, speculation and trading, and energy crises. Current projects include resource nationalism and political risk, reserve evaluation, petroleum fiscal vulnerability and risk management, Russian petroleum, oil trading and derivatives markets, and privatization in national oil companies, and you don't have a bit of spare time, do you? He received his B.A. in Applied Mathematics and Master's and Doctoral degrees in business economics, all from Harvard University. It's my pleasure to present Dr. Robert Weiner.

Dr. Weiner: Thank you very much, and thank you all for coming today. Just as Dr. Harris played the role of the government regulator, I'm going to play the role of the college professor and try to talk about some of the basics, especially for an energy audience that's less accustomed to dealing with financial markets.

I want to start by talking about what factors drive oil price volatility in principle and the way we talk about them is two groups: one is market fundamentals and the main subject of this conference is market fundaments, supply, demand and changes in market power such as OPEC. And then it's important to note that some market fundamentals are related to expectations.

Any time you have a storable commodity, market fundamentals are not just about production and consumption today but they're about expectations about changes in those fundamentals tomorrow, and those could be due to political factors, those could be due to weather, those could be due to economic factors, etc.

Many people have asked me, Professor Weiner, how could you claim the market fundaments have resulted in such a sharp decline in oil prices. Isn't it those bad, those darned speculators that… I said we've had the most severe recession in many years, and reminded people that the price of oil lost roughly 80 or 90 percent of its value from the late 1920s to the early 1930s. When the price of oil hit ten cents a barrel in the mid 1930s, that's when we started the first collusion with Interstate Oil Commission and the Texas Railroad Commission.

The thing I'm going to talk about today is primarily is about speculation. In principle our economic models show that traders can move prices away from market fundamental values, and we have some specific ideas about circumstances where those might occur. What I'd like to do is talk about the idea behind those and then to act as a consumer of the information that Jeff's shop puts out and talk about what the data actually show us. I want to remind people that there are some memorable experiences, especially for a lot of you who like me are losing what hair we once had and the remaining hair is turning gray. I want to remind you that the Gulf crisis, the first Gulf crisis of the early 1990s was perhaps the first major impetus for concern about speculation in the futures markets. Oil prices went up very, very sharply and then plummeted all within a few months, and yet there was very little obvious change in fundamentals, if you define them by our standard measures of current production and consumption. There was a sharp decline in production as Iraq

and Kuwait went out of the world market but that was rapidly made up by Saudi Arabia and other players. And people looked around for somebody to blame and they found speculators and they said, oh, if it weren't for the speculators that spike wouldn't have occurred, and you can see the market price fluctuations in this diagram look pretty similar before the Gulf crisis and after, and said if we'd only shut down the market for a cooling off period we wouldn't have seen this.

Blaming speculators is a very, very widely practiced game. There are some people who have a vested interest in it and so whenever I see speculation being blamed for one thing or another I look to see what the incentive of the blamers is. OPEC clearly has an incentive to blame high prices or low prices on somebody else. But investment analysts, those who don't have a particular axe to grind on high and low prices, also blame speculators. And I just highlighted something, for example, from an investment report from Societe Generale before SG became famous for their trading activities. It says hedge funds have been a massive force amplifying the positive uptrend in commodity prices. In other words saying that speculators are the reason we're … or the major reason why oil prices have risen, this was in 2006 before the big price hike.

Politicians are another group of people who are in the business of either fixing things or blaming others for those things that they can't fix, and I apologize to any politicians who may be here. The most detailed report on speculation to come out in the last few years were a couple of papers that were put out by the Senate Permanent Subcommittee on Investigations, and just to summarize their findings, they noted there's been tremendous rise in speculation, which is true, and also the speculation has increased prices and that says that speculations contributed to rising U.S. energy prices, which is their conclusion, which is absolutely not necessarily absolutely the fact. And

then they also note that the gap in data makes it hard to say for sure, that's some of the data that Jeff was talking about a moment ago.

And so the people have blamed speculators are a wide and disparate group but we take the conventional wisdom that trading causes volatility, it should be noted that this conventional wisdom is not based on any systematic analysis, not the type of high-quality analysis that economists expect. It's done on intuition. Oh, it makes perfect sense. You've got a lot of people speculating, therefore the price has gone up. Economic theory says that speculators cannot affect the price of oil or gas in terms of level or anything else unless they take the stuff off the market. I think earlier Tanc mentioned the question about inventories, unless you find a lot of speculators storing oil in their bath tubs or under their houses, and some people have stored oil in various places, inventories haven't changed much.

Oil prices cannot be higher or lower on a permanent basis because speculators neither consumer nor produce oil. They can affect oil price volatility in principle. In other words, speculation could make oil prices or gas prices more volatile than they otherwise would be and that's a theory that has some models that say yes, under certain circumstances, could be true. The fear is the data that have been used, the aggregate data we use do not show any relationships between speculation and oil price volatility, and the studies done by the CFTC and published by CFTC and the International Monetary Fund. Nonetheless, some aggregate statistics make it seem doubtful that in fact speculation really is behind volatility, and the most basic point is that there's been a big increase in trading volume and no clear trend in volatility.

And of course we should remember that speculators make very, very convenient targets. Many people in this business know that oil companies are not that popular with the public, and when the public mutters about large

companies they blame big oil. Yet the public is well aware that without the oil industry, they would have a hard time, say, heating their houses or running their automobiles. It's much, much harder to find a useful role in society for speculators. Speculators contribute to society by buying high and selling low. That doesn't seem like that much of a contribution, and it's mostly a bunch of rag-tag economists such as myself and Dr. Harris who say yea, that actually does contribute a lot to society. It makes markets work better. I want to remind people, especially people who are not in the oil and gas business, that volatility 2008 was quite high and this just shows you a picture of prices over time, the New York contract, the New York Mercantile Exchange for natural gas and for the main crude oil contract for West Texas Intermediate. And to me you see tremendous rise and tremendous fall. Isn't that an indication that speculation is causing it? The answer is of course it's not.

We also noted that a bunch of speculators came into the market and left the market, and it's very tempting to say oh, these guys went out of business, they all went broke, or a lot of them went broke, therefore that's why oil prices have fallen. Never occurs to people to say maybe they went broke because of the rise and fall, and it's easy to mix up cause and effect in this business.

I want to give a longer term perspective on volatility. This gives you a sense of volatility measures by two fundamentally different looks at volatility. The blue line is basically a rolling average on the last 30 days, historical volatility, how much have prices moved relative to their mean value over the last 30 days. And whenever there's a big price spike it takes a while to wear off. The red line is looking forward. It's the volatility implied in oil futures options prices, using but backing out of the variation of Black Scholes model, the Black model. You can figure out what the level of volatility expected by market participants would have to be in order to give options prices their actual values in the

market. Whether you like the backward looking measure or the blue line, or the forward looking measure or the red line, the two things have in common is that there has not been systematic increase in volatility. There are time periods when volatility goes up, and there are time periods when volatility goes down. In 2008 we extend this graph through the end of 2008 will show an uptick in volatility, yet the fact remains that over a time period in which trading has increased tremendously, there's been no statistically significant and you don't need a complicated model, you can just look with your eyes, and if anything is volatile it's probably down slightly during this time period.

Let's step back and ask how in principle can speculation influence volatility, and there's really only two possibilities: either you've got a dominant player, a person in the market who moves prices up or down, or you have to have herding, players moving in the same direction. You can sometimes, in a market you can sometimes have a big player moving a market by accumulating a large position. That's part of the job of Jeff's colleagues in surveillance, CFTC, to avoid market manipulation.

People very, very casually combine market manipulation and speculation together, and say oh, those darn speculators, they're manipulating the market. The truth is that some of the main instances of market manipulation were by people who are commercials in the market, MG, Metalgesellschaft probably the most notable one, building up a big position to move in prices. They weren't speculators, they may have been doing the right thing or the wrong thing from their perspective, but they were commercial players, not non-commercials. It's very unlikely that a dominant player, a player large enough to move the market, can exist for much period of time, the markets are just too large now.

We go to the second, herding, that seems much more of a possibility. If you tend to have all the speculators doing the same thing at the same time, you

don't need a dominant player. And here's a quote to indicate that concern about herding has existed for a very long time in financial markets, and this is a quote from the stock market from the first book about the stock market which was published at the end of the 17th century and very notably called, the English translation would be "Confusion of Confusions," to show you that questions about the opacity of markets and understanding them have a long history. Anyway, de la Vega said as there are so many people who cannot wait to follow the prevailing trend of opinion, they think only of doing what others do and following their examples. That's a perfect description of herding. Rather than analyzing fundamentals of the current and expected future supply and demand, what they're doing is copying each other. The modern version of this is following your favorite guru, *Wall Street Week*, or maybe Adam Seminski, whoever it is who tells you to buy, somebody else tells to sell.

What is herding and does herding make sense? And certainly like pornography, it's easier to recognize herding than define, but very broadly it's making decisions by copying what others do rather than observing market fundamentals. If I go to a new city, for those of you in Washington and looked for a place to eat when EIA can provide me with lunch, you look around till you find a bunch of identical looking restaurants and they have similar prices, what are you going to do? You look and see which ones have people eating in them. And all you have to do is run that process backwards and the first person arrives randomly and pretty soon everybody crams into the same restaurant. That's a cascade, has nothing to do with market fundamentals. The only difference between that and herding this market is that in this little example, the local restaurant doesn't raise its prices, or it's not so easy for it to raise its prices. Herding can be perfectly rational if others are better informed. The restaurant example, the best seller list, why do people buy books that are on

the best seller list? They haven't analyzed the books they're buying, the books of those other people are buying the books, another example of herding.

We have to be careful about extending the idea of herding to derivative markets when there is a fixed assets supply. We can't have everybody buying, especially in a derivative market such as futures because the fixed supply is zero. For every long position there's got to be a short position. Herding can only take place in a subset of market participants which we call flocking. Birds of a feather flock together, that's the name of the working paper if anybody's interested in this. And of course herding in principle can move prices away from fundaments, in other words exacerbate volatility. And if lots of people try to get into a position or out of position at the same time, we can easily have amplified volatility.

It then becomes an empirical question, well does this is in fact, go on, and that's where we rely on the type of data that CFTC produces. And here's a picture of this data. All I've done is show you a picture for a particular group of speculators, commodity pool operators. Jeff mentioned commodity pool operators. The term commodity pool operators is the futures equivalent of a mutual fund manager. Commodity pools are the futures equivalent of mutual funds. Here is a picture on a day-by-day basis. Jeff mentioned that you can follow individual traders on a day-by-days basis. CFTC made this data available to me; it's old data; as part of a Department of Energy investigation but blind in the name. So I didn't know who it was who were the traders. I only knew them as number one, number two, number three. This shows you day-by-day the number of commodity pool operators buying the market never selling. What you don't see is a bunch of people all buying and selling at the same time. Typically the black line, the sellers, is almost a mirror image of the red line. In other words, on any given day you've got a lot of people buying and selling, not a lot

of speculators just buying on one day and selling the other. This picture itself should give you a hint that herding is not likely to me an important phenomenon in this market.

I'm not going to bore you with my analysis, because this is not an academic analysis where we bore each other for hours. Here's basically the bottom line. The problem is that, the underlying problem as mentioned by Tanc, is that it's hard to know what the speculator's doing. Use this CFTC market data to look to see whether they're trading in parallel. If they are, then the next step would be to say gee, are they trading in parallel because things are going on in the market. When you have a big market event you expect speculators to change their position. If they're trading in parallel where nothing's going on the market, that's when we get into the herding analysis and possibility of exacerbating. We do it very simply. All we do is count the number of speculators buying and selling each and see if most of them are on the same side of the market, and to summarize the findings, there's no evidence of parallel trading among commercial participants or oil companies, etc., and there's no evidence of parallel trading among speculators as a group. There's some strong statistical evidence of flocking among fund managers but the levels of flocking are moderate. Instead of saying well, these guys on an average day are 90/10 or 80/20, on an average day these guys are 53/47, where I'm not letting the negatives cancel out the positives. In other words if on one day they're 53/47 and the next its 47/53, the average of those is not 50/50. It's 53/47. So this is taking absolute values of distance away from the mean to basically make it harder to reject the null hypothesis of 50/50. And in fact we do reject the null hypothesis at conventional levels. But our alternative hypothesis is not that they're far away from balance. They're not far away from being balanced. And basically, roughly speaking, the effect of trading on prices, not

pieces [in the slide], that's a typo, has got to be limited because these guys are not very far away from being balance.

Let's go to the implications. Oil prices reflect fundamentals, not speculation. And the widely heard, I hear all the time in the oil trade press, that speculation adds x dollars to the oil price and what the value of x is depends on who your favorite analyst is, but the best guess of x is zero. Oil for speculation is not adding x dollars except if x equals zero. And then if we were using futures prices as a basis for price forecasting, and that makes sense. But remember that even though they may be the best basis doesn't mean they're a good basis in a volatile market. Futures prices reflect the limitations of our knowledge of the future. Forecasters diverge from futures prices subject to scrutiny. That's a polite way of saying that if your favorite forecaster such as say, EIA, is giving you a forecast that's far from the futures market, you ought to wonder what it is that they're doing.

We need to examine market fundamentals if we really want to know why the oil market is so volatile. Whether understanding the present or predicting the future, we have to say, gee, could market fundamentals have been so great that oil prices ratchet up, and it wouldn't be a very hard story to tell tremendous increases in demand and economic growth in the developing world combined with resource nationalism and a lack of new finding new world discoveries could produce the price moving way up before all of a sudden the bottom dropped out of the world economy.

Continuing with the implications, let's just finish up now, the data scarcity, the lack of transparency don't serve the public very well. It's great for Jeff and his team to have access to these, but I think you wouldn't find so many foolish stories floating around if the data were more widely accessible. In that case it wouldn't be so hard to debunk some of the silly stories that I read in the trade

press. I was only able to do these calculations because I had access to this data. Other markets such as the foreign exchange market, the interest rate market that are much, much larger than the oil market, have regular data reporting so we get a size those markets. For those who are really interested, you can read the paper but I've basically given you the essence of it. Thanks.

Mr. Lidderdale: Well thank you, Rob. Our third speaker is Adam Sieminski. Adam is the chief energy economist for Deutsche Bank working with the bank's Global Commodities Research Trading Units. Adam forecasts energy market trends and writes on a variety of topics involving energy economics, climate change, politics, and commodity prices. Adam has been president of the U.S. Association for Energy Economics and the National Association of Petroleum Investment Analysts. He is a member of the U.S. National Petroleum Council, which is an advisory group for the U.S. Secretary of Energy. He also helped author the NPC's *Global Oil and Gas Study: The Hard Truth.* Adam also acts as a senior advisor for the Center for Strategic and International Studies in Washington, and is an advisory board member of the Global Energy and Environment Initiative at Johns Hopkins School of Advanced International Studies. He is a member of the London, New York and Washington Investment Professional Societies, he just really can't stay in one place. Basic problem is he keeps moving. And he holds chartered financial analyst CFA designation. He received in B.S. in Civil Engineering and his M.A. in Public Administration from Cornell University. It's my pleasure to introduce Adam Sieminski.

Mr. Sieminski: Thanks very much, Tanc. If you noticed in that introduction my graduate degree is in M.P.A., Public Administration. When I was in college I had a goal. I wanted to run the National Park Service. I think I should have tried for that, really. Better than this.

So we're going to talk about speculation, right. So oil prices spiked. We see that moved all the way almost to $150 a barrel. Somebody must be blamed. Right. Gasoline went to $4 a gallon, everybody's upset. It's got to be, we don't accept fate anymore, we sue. So we want to know who to sue. Speculators. If you look at those two charts, see there's oil prices and there's the open interest in the NYMEX group contract, boy, they look an awful lot alike, and Professor Weiner can run the regression on that, it will probably be pretty good. So, right. So it must have been speculators, these people here. I work on a commodity desk, we're involved in this, right. Are there any other speculators here? Raise your hands. Speculators. I only see about five hands. Who brought an umbrella today? Raise your hand if you brought an umbrella. You speculated it was going to rain. You were wrong. You were a speculator. How many people have a self-directed retirement fund, you know, and IRA? Self-directed. Okay, I see a lot of hands. If you have a self-directed IRA, you're buying and selling stocks in there. I'm presuming you're buying things you think are going to go up. If you're not, come and see me. You're a speculator. I didn't say anything about fraud. Those people that brought umbrellas today were speculating that it might rain. It wasn't fraud. It was an analysis that said if it rains and I don't have an umbrella I'm going to get wet. I think I'll carry the umbrella. If you're buying stocks in an IRA, you're speculating that those stocks are going to up. I'm hoping that you're not committing fraud in doing it. There's a huge difference. Some of the speakers have alluded to this. Somehow we have this in our heads that speculation is fraudulent. It's not.

So let's talk about some of the things that might have been going on in the world oil markets that might have caused oil prices to go to $140 or $150 that didn't involve fraud. How about that in the emerging market countries, five years from 2002 to 2005, I think it was, somebody work those numbers out for

me, an average GDP growth rate of 7.7 percent. Global average growth rate for five years, four years, averaging almost 5 percent, almost unprecedented. In fact, if you look at that chart the last time we had growth rates like this were back in 1970-71-72. Oh, that's interesting. That was just ahead of the last big oil spike in 1973. So maybe there's something about economic growth and demand that causes prices to go up.

It wasn't just oil. The Baltic dry freight index which, you know, measures what the cost of widgets is to get from Asia to markets in America or Europe, the Baltic dry freight index went ballistic too. There was a lot of demand for a lot of things. Aluminum copper, oil. Supply growth got too low. That graph there is annual change, year over year in thousands of barrels a day of Russian oil production. It was virtually zero back in the late 1990s. In President Putin's first term in office it grew rapidly, very, very rapidly. It's a good thing it did, hit that peak of almost a million barrels a day year over year change in 2004. Why was it a good idea that supply was going up in 2004? That just happens to be the year that demand in China went up by about a million barrels a day so we're grateful, should be grateful, that Russian supply came up in that year. But in President Putin's second term when all of the entrepreneurs went to jail rather than, you know, on a vacation, oil production started slipping. Growth was still there but not at the same rate as it was early on. Now we're down to the point where Russian oil production on a year-over-year basis is actually falling. Supply growth got too low. OPEC's spare production got too low. Billions of dollars of investments necessary to produce oil. A lot of people don't like to have spare production capacity. Saudi Arabia finds it acceptable to do that but the level of spare production capacity in OPEC, and there have actually been quite a few models built on the idea of you can predict oil prices on the basis of inventory levels and spare OPEC production capacity. Works reasonably well

actually in the Energy Information Administration model. Not always correct but comes pretty close. Low spare OPEC capacity is a problem so why don't we have more spare OPEC capacity? Well, somebody's got to build it. We didn't have a lot of spare refining capacity. Spare refining capacity was ample in the early 1980s, you know, again associated with a drop in demand occasioned by a rise in price. But by 2007 we only had a couple of million barrels a day, 3 million barrels a day, of spare refining capacity on a global basis.

I was at a meeting once where somebody asked Lee Raymond when he was the head of Exxon what he thought about the idea of having spare capacity. Right, if we had more spare capacity then maybe prices wouldn't be so volatile. And Lee Raymond, for those of you who know him, had this answer. I had spare capacity once and I didn't like it. (gruff voice). You know, why wouldn't Lee Raymond, why wouldn't Exxon Mobil, why wouldn't the industry want to have spare capacity? Because it means that they're not selling. Right? They've got equipment sitting idle. You could argue that maybe they could take advantage of rises in demand that other people wouldn't be able to do. They'd work that out and their conclusion is that spare capacity is great if Saudi Arabia wants to hold it but not them.

OECD inventories got too low. Look, December 2007, I mean it had been climbing from the lows back in 2002 but we had a move down in late 2007 in OECD inventories. That was a problem. Inventories are getting very high now actually. You can kind of go well, it's involuntary. And I'm not sure that people are thinking that carrying all those extra inventories is a good idea. They're not making a lot of money on it. The dollar got too low. There's been a lot of academic studies on the relationship between oil and the dollar. Now it looks like the dollar is going up there but that's the scale is reversed as the dollar-Euro rate, so when you have to pay $1.60 to buy a Euro, that's the dollar getting

cheaper. And all through 2007 the dollar, as the dollar depreciated, oil prices were going up. It pretty much continued into 2008 and then when the dollar started strengthening oil was going down. Now I'm sure somebody could probably do a study saying well which is leading and which is lagging, which is the direction here. You can actually test that, the International Monetary Fund did it. The IMF basically said it was close but that the dollar tends to push oil and gold around more than the other way around. Right, so the dollar got too low.

And decline curves got too high. We have learned better production techniques, average decline curves when they were measured ten years ago were three or four percent a year. Average decline rates now, kind of what happens if you just walk away from a well and let it go down over time. Probably in the neighborhood of seven, eight, or 9 percent a year. And so it takes a lot of investment and investments take a lot of time. A lot of the projects that are being worked on now are deep water, or they're in frontier areas, or they're in other parts of the world where the lead times are very long. And to the extent that you can't immediately ramp production back up you're going to have volatility in prices, so decline curves lead to that problem, right?

So, what else is there? Jim Hamilton, who's looked at oil markets from an econometric point of view for a long time said, well there could be geologic limitations, we know that there are low elasticities of both supply and demand, and we also know that income elasticities are actually pretty high. And if incomes are growing then demand is going to go up, and if incomes are falling demand is going to go down, and I think probably when all is said and done people are going to be able to look back at 2008 and …7 and 8 and 2009 and 2010 and say well it's pretty obvious why commodity prices went up in 2007 and 8 because incomes were rising very rapidly, and just the opposite happened in

2009 and 10. Time delays, monopoly pricing, scarcity rents, all those things, so why do we blame the speculators? Because it's fun. Look at those guys in the red suspenders and striped shirts, and they're guys, they obviously look like they work on Wall Street although it must be a really cheap firm, they still have CRTs instead of LCD screens. And it's a whole lot more satisfying to blame speculators as we just heard in the prior two talks than it is to actually try to do complicated analysis that on a huge number of social and economic variables when there's inherent limitations in the data. So the reason we like to blame speculators is because it's…yea, it's good fun. And so if you'd like to blame me for being a speculator at Deutsche Bank, I would be pleased…I'm glad…those of you who are leaning against the switches making the things go up, there are some empty chairs in the front and tomatoes will be made available. Tanc.

Mr. Lidderdale: Our fourth speaker is Robert McCullough. Bob is Founder and Managing Partner of McCullough Research, an energy consulting firm in Portland, Oregon, that specializes in energy and public policy issues throughout the U.S. and Canada. In 2000, McCullough Research was retained by a group of Pacific northwest utilities and industries to investigate the high prices in the western energy markets in 2000 and 2001, and continues to be an expert witness in the FERC dockets investigating gaming and/or anomalous market behavior. Recently the firm's analysis on behalf of the Illinois Attorney General played a central part in the ongoing $1 billion rate rollback to Illinois consumers after an electricity auction in Fall 2006 led to double-digit rate hikes in early 2007. In 2008 and just last month, Mr. McCullough testified at Congressional hearings on speculation and oil prices. In Spring 2009, Bob also testified in Connecticut in support of a bill to establish a state power authority, and in New York on market reforms and transparency issues in the New York ISO. It's a pleasure to present Bob McCullough.

Mr. McCullough: Thank you. You left off my most important qualification. My grandfather was a primary figure in the teapot dome scandal. And with respect to Dr. Harris, I did have the opportunity of identifying one of the largest market manipulations in U.S. history. It was my testimony at the Senate that launched the investigation into Enron's trading practices. My role in all of this was as the dullest and dumbest economist possible. You have to start with the data. It's nice to have opinions. They work real great, but starting with the data is really useful. When we investigated Enron, we immediately understood that their explanations failed every possible data test. There are still expert witnesses from Harvard, I won't mention their names, that still refer to the great drought of 2000. And of course we embarrass them every time they get in front of the judge. There was no great drought in 2000, Enron simply issued press releases decrying the drought. So it is useful periodically to open up the books and check the facts.

So why did the chicken cross the road? Now this is less of a joke than it seems. A lot of people want to drop the question because the answer is difficult. We know why the chicken crossed the road. If we are baffled with mathematics, we will tell you that a random walk means all chickens cross all roads. Nutrition, the grass is greener on the other side, you knew that. Competition, there probably were fewer chickens over there. And reproduction, there's always that important search for domestic partners. It is not sufficient for us to take a look at this major spike and stop simply because we say it's hard work. It is hard work. In 2008 WTI crude increased by 45 percent and then fell by 80 percent. With all due respect to my colleague at Deutsche Bank, the fact is we haven't a clue from the fundamentals why that occurred. He searched out charts from a half dozen different years, from the far future, from 5 years in the past, Russian fall and production after Putin's first term. The fact is none of that stuff happened in

the summer of 2008. We were flat out of interesting events in 2008. Just in case, to remind you, we did not have an oil boycott, we did not have a Mid East War; we did not have a sudden spike in demand, we did not have a sudden decline in supply. The point of fact, almost every major reason the pundits gave were completely hopeless. I love the India and Chinese answer, yes, you'll be glad to know the EIA knew about India and China before 2008.

Hubbard's peak, obviously there is a thing known as oil. There is a certain amount of depth in the earth where we find it, thank you very much, nice to hear it, that didn't change in the summer of 2008. Exchange rates, I love to remind people our major oil exporter to us is Canada, exchange rates went the opposite way. If you doubt that you just have to drive up to the border and check which way the dollar goes. Excessive speculation. The one thing I agree with you on is it's so sexy to blame those guys with those suspenders. What is it with the suspenders? And then market manipulation. These two just come directly out of the shoot. We don't like those two folks, they're odd, they get paid too much, let's blame it on them.

On the fundamental front, this is Tanc's work, and he puts out…frankly a pretty damn good forecast. And this is his net world supply. This actually is as close as we get to understanding inventory that's on the world level. Is the data any good? Some of it's very good, some of it's awful. Is it an honest shot? Yes. As we notice in 2008, the EIA did a pretty damn good job. They missed some of the commodities. They had the shape right. But the important issue there on that chart is that it goes the wrong way. Inventories were increasing when prices were increasing. Inventories were decreasing when prices were decreasing. Let me underline that. When inventories go up, we were taught that as children that prices go down. You were wrong. When inventories go up in this case, the prices went up. There's the arrow going up; there's the arrow

going down. This constitutes an interesting event. We cannot make it go away. We cannot say Hubbard's peak, we cannot say Putin's failure to maintain Russian production four years ago. The fact is we don't have a very good idea of which way the fundamentals are going. Now for the fun of it, I just ran through that, my fancy statistics packages, which we all have, and you'll be glad to know at 99.9 percent off of Tanc's data, the data now goes the wrong way. If we believed basic statistics we'd simply go home. More supply makes higher prices, why bother to study. We know that's wrong. We know we have to suddenly pull up our sleeves and go to work.

By the way, I thought about doing this which is just moving the line. Vevlin once said theories are constraining on the underlying facts. I've heard a lot of people move that line verbally. It doesn't move like that. You actually have to go look at the data first. So where are we are speculation? Speculation, the non-pejorative sense, is buying land you don't plan to live on or stock in a company you don't plan to run. And yes, I own quite a bit of both. Market structure is a more intelligent pursuit that is where we actually take a look at what the structure is of the industry.

Now, just in case anyone in here had forgotten this, we have no data. We do no survey of spot oil transactions. By the way, I said that to a number of CFTC folks the other day, and they say, well, it's impossible, you could never track that. Well the fact is we do track spot transactions in other fuels. We have at the end of every quarter a picture of every electronic transaction in the United States available on the web. Crank up your Dell, pull it down tomorrow, and you have it. We don't have one piece of that data for oil.

Do we have a sense what market concentration is? No. Dr. Harris is doing a fine job with micro data but he's doing only half the job. When you go to a trading floor, there's a spot desk and a term desk. He's following a term desk

very well. He has no powers to investigate the spot desk. This is an error on Congress' part, not his part. But it is only searching for half the problem. A store detective that only watched one door of a department store would be suddenly surprised how many shoplifters he developed.

Okay, so, let's do a little thinking about the speculation front. Oil fowards should reflect the risk-adjusted cost of capital since it's pretty easily stored. And that should have something to do with the risk premium of risk takers willing to make forward commitments. If everyone in the world rushed forward to take a forward position on the NYMEX, we should in fact see some response on risk premium. For those of you who live in that industry, you know exactly what would happen. The traders would take the orders, the risk managers would stomp them out, there would be a huge internal fight, until finally decided they would take a little bit more risk on a company level if the prices went up a lot. This is not rocket science. You can't get people to take those risks without reimbursing them. So what did we see? This chart is spot, that's the black line. And then the term structure of NYMEX is a variety of other lines in colors. I agree entirely with Dr. Weiner that the best estimate of the forwards should in fact be this spot. Historical commodity, a logical world, that's a reasonable argument. What we see is we have a fair amount of term structure over long periods. We've had a term structure since the fall where forwards were higher than spot. Makes perfect sense to me by the way. I thought the price fell pretty sharply. If I was going to be out there making a guess, I would have guessed it would have gone up. The one thing we don't see is a lot of term structure at the Pickens' peak. By the way, have taken to calling it the Pickens' peak because he spent the most time predicting it, and then he spent the most time not mentioning that he had not predicted the fall. But the Pickens' peak there did not have any term structure. So if you're pushing the speculators argument,

you're telling me that there was enough movement into the forward markets to drive up the price, drive up that risk premium, but it didn't show up in the term structure at all. That's surprising. That goes exactly against the way we would think financial theory would predict it.

Now basically this is not news to us. In thinly traded foreign markets we're used to something called curve shift, that's trader talk. At the end of the day the traders get together and they mark the forward curves. When they don't have a lot of information on the forward curve, when there's a lot of volatility, when people do not understand the direction of the market, they often mark the trader curves by just incrementing by the same amount that spot changed that day. Is that scientific? No. Is it what they do? Yes. Were we seeing curve shift at the top of Pickens' peak? Absolutely. We were not in fact seeing the detailed, complicated financial ramifications we would have expected to see if it was all just people rushing into the NYMEX. Now in that, by the way, all four of your speakers are in agreement. We approached it in different ways. Dr. Harris with detailed micro data, certainly Dr. Weiner with his flocking theory, I love that by the way. I used to have some of that wallpaper when I was a child. You did fewer numbers but I agree with your conclusion. Because I'm a pretty primitive son-of-a-gun, I cranked up my GARCH, for those of you who are not statistical mavens, that's currently a whizzy tool that people like to play with, and the fact is that the correlations don't work at all. In fact, they go the wrong way. And they are significant in 99.9 percent. So if you're arguing for risk premiums, you've a pretty uphill battle on the data.

So speculators, well, I hate them too, except for when it's me, but they really haven't done a very good job of proving their case. Market structure. As I said we have no data. As with many people I mine the Commitments of Traders reports, it's very interesting. It gives us information of a variety of places. One

thing it does is it gives us an idea of net long for non-commercials. By the way, the Commitments of Traders is a 1920s report. The CFTC loves this 1920s lingo…commercial are oil companies and chemical companies. Non-commercial are those guys with suspenders. Classifications don't match current society at all, they make very little sense. Quality of the data is poor. It's over-aggregated. But the simple fact is we seem to have had a reduction in net long positions over the year. By the same token, the CFTC has its own market concentration lingo, and they will actually report the four largest traders and the eight largest traders. We have a little program that brings that back to the HHIs that the rest of the industry uses. And the HHIs were going up over this period. How good is that data? Very, very poor because CFTC is limited in what part of the markets they were able to observe. A lot of this data certainly did not include anything but the NYMEX. In fact, this statistic was entirely based on the NYMEX report. So can I drop that into my whizzy GARCH? Yes, you can indeed. And by the way, the correlations stay at 99.9 percent. For economists this is really good stuff. We never get good correlations. And what it indicates is that we had a big response on market structure. We certainly had a response on the net long positions. We had, of course, our anomalous response on inventories. They continue to go the wrong way. Bottom line is we have a fairly good argument for a market structure shift.

Now do you have to be a manipulator to be an oligopoly? The answer is no. As we all know, we buy Wheaties, we do not believe the manufacturer of Wheaties is a great evil manipulator. In fact, it's the breakfast of champions, those are good guys. Do we believe that they're an oligopolist? Yes, we do believe they're an oligopolist. Does our predictions as economists change if they're an oligopoly versus perfect competition? Actually they change 100

percent. We would expect to see very different market behavior if we have significant concentration in this market.

So, what are our conclusions? First is the Congress, as much as we love them, and we voted for them, are well down the wrong path. If we are seeing a market concentration problem, we're not going to get very far chasing down the guys in suspenders. It's quite possibly the guys in suspenders aren't the oligopolists . If we are seeing an oligopoly problem, what we need is data. Now speculation is great, it makes us all feel very good. But we have no data on this market. We have a lot of data that indicates that our spike was due to normal market processes, the market processes that we see with the concentrated market structure. But we can't tell. And we can't tell until we give Dr. Harris access to the spot data. And until then, he is going to be the store detective who only has enough detectives to cover one door of the department store. And frankly I'm not surprised that you've not found a vast number of smoking guns because if I was going to manipulate markets I would avoid you. I'd go right out that other door. On papers, I put some copies of our paper on the back, and I noticed you guys gobbled them. They're available on our website at mresearch.com. As always, we're happy to share our data with other researchers. Send an email and we'll ship it right out either in STATA or Excel. Thank you very much.

Mr. Lidderdale: We still have oh, ten minutes or so and Dr. Weiner has to get to teaching a class. If you'd like to ask questions, we have two microphones. When I recognize you, please state your name and your affiliation, whether it's a company or a private citizen. I also realized I neglected to introduce myself at the beginning of this presentation. And thankfully my panelists were able to remind me who I am. I'm Tancred Lidderdale. I lead the team at EIA that produces the monthly Short-Term Energy Outlook. And of

course Congress has been very interested in our forecasts over the last two years, unfortunately. It's good to see some of my staff here, Kobi Platt who handles our natural gas forecast, is sitting in the back. Michael Morris who does our petroleum consumption forecasting is here. I think I'm going to have to check on the rest of the staff, see if they didn't leave a little early. But like I say, we're here for a few minutes. I want to thank you very much. I'd point out one thing I've learned as a forecaster is that if you ignore the past you are doomed to repeat it, so I ask everybody here let's forget about the good years when oil was $20 and think nothing but what happened when oil was $140. So hopefully we'll repeat the past when oil was 20. We have a question in the back first.

Mr. Slocum: Yea, hi, Tyson Slocum, Director of the Energy Program with Public Citizen. I don't think that the issue is against speculation broadly but when speculators have access to information unavailable to other market participants. And I think that one issue that large speculators like investment banks have been accumulating over the last couple of years has been control over physical energy infrastructure assets. Goldman Sachs is now the largest owner of petroleum product pipelines in North America, for example. Their financial interest in that is not the ten to 12 percent return they get on it, but on the information provided by the movement of petroleum products through pipelines that they can then communicate to their trading affiliates. My question is under the Natural Gas Act, FERC has provided enforcement rules, code of conduct rules, significantly limiting the ability of owners of natural gas pipelines from communicating with energy trading affiliates. No such rules exist in the petroleum sector which might explain the interest of a Goldman Sachs and a Morgan Stanley in owning and controlling those assets. So the question to the panel is do you think code of conduct rules should be required to limit the

communications between speculators in the petroleum industry and control over those infrastructure assets? Thank you.

Mr. Lidderdale: Well I'm going to ask Adam Sieminski and Bob McCullough to address those questions, because I think they're on sort of opposite sides of that at times.

Mr. McCullough: First it's nice to see you here today. The answer obviously is yes, good regulations make good neighbors. The sad part of it is in every investigation we've been a part of, those rules are simply ignored in practice. It is very, very difficult to tell two parts of one organization not to talk to each other. They don't report that they're talking to each other, but when you go through trader tapes quite often the first thing you see on a trader conversation is pardon me, I'll call you back on my cell phone. So I'd like to believe that that's a rule that will make everyone honest. The problem is it's a rule that works best when you start with honest people. But unfortunately dishonest people don't become honest just because you order them to.

Mr. Sieminski: Well, I think that you'd have to separate out the issue of trying to obtain the best information available in the market place from fraud and manipulation. I had the impression that your question was premised on the idea that having information about product pipeline flows would automatically lead to manipulation of fraud in the markets. I just don't see it that way. I think we could probably argue that some of the herding that was talked about earlier, maybe some of that was just simply stupidity. Mr. McCullough was trying to say that we didn't…if you look at whatever was happening in China in 2004 couldn't have influenced prices in 2008. And I'd argue that it did indeed. That expectations changed. That by the beginning of 2008 leading up into the middle of 2008, all of that data that was pouring in that said demand was rising, supply was not, concerns about Hubbard's peak which I don't particularly believe myself but was

in the market place. So I guess what we could say is that well then it was stupidity. Stupidity caused some people to buy oil contracts at $147 thinking that they were going to go up from there rather than down. So I'm wondering what government regulations are going to protect us, protect the markets, from mistakes? That's kind of what I was trying to get at with the umbrellas in the rain. I mean we don't have perfect information. Some people think prices are going to rise, some people think they're going to go down, that's the market. To the extent that you can improve the information flow that you have, that would be good. Presumably that enters the market place through supply and demand transactions. Somebody bought at $147 and somebody sold. Well, we're back to expectations. I kind of have a feeling that we keep looking for the dark markets. Everything that the Commodities Future Trading Commission has tried to do, when confronted with evidence or suggestions that well, you didn't look at this or you should have looked at that, they go and they look at it and then what they discover after spending a lot of money looking at it is that it's in rare cases there may actually have been a problem and that gets dealt with. And the vast majority of cases it's not a problem. And we turn the lights on in the dark market and guess what, there's no monsters in the room.

Mr. Lidderdale: Let me make one clarification first. You know, some of this regulation in the natural gas markets we're dealing with common carrier pipelines where the operator of the pipeline essentially knows the business of everybody else operating on that pipeline. Now we talked about Goldman Sachs moving into the petroleum, various aspects of petroleum market. You know, this is stuff that's been going on for a long time. Well, it was back in the 1970s Phibro bought what, three refineries. You know, and these are assets that are going to be in private hands whether it's Goldman Sachs or Phibro. So I think that distinction has to be made where you're talking about the information

available by owning a commonly used asset by other companies versus trying to somehow corner the markets by buying up all individual refineries that would be privately owned. But you had a comment, Bob. Sorry.

Mr. McCullough: With your permission I was going to respond to your response because I had the last speaking position so I got to prey on you and I apologize. The Indians and the Chinese. We've heard that on CNN a thousand times. But the fact is that any market participant who opened the EIA forecast on January 10, 2008, had a pretty damn good picture of what that was going to be. And if you go back through and see how good a job the EIA did, the quantities were very good. Surprisingly good. The prices were terrible. And if we're going to talk about expectations, we have to deal with this question of why were those expectations not reflecting this premier forecast. I mean this is the forecast of the U.S. government, one of the world's largest oil producers, certainly the world's largest oil consumer, how do those expectations go away? And that's always been the problem that I have. The numbers you quoted were all correct. I didn't doubt them. I just wondered why they weren't updated on January 10. And I apologize for rebutting it right.

Mr. Lidderdale: Well if you insist on saying our price forecast was that bad I may not let you speak again. But you are right. Yes.

Mr. Taft: My name is Oliver Taft from the OCC. I had a question basically related to the shape of the demands curve. You were talking about expectations. To me it seems that if you have increase in volume of, speculator or not, it doesn't matter if they're commercial traders or something else moving into the market, the volume of trades is increasing. Then couldn't you just say that the demand curve is becoming more steep and then smaller movements in the underlying fundamentals would lead to greater price changes? To me that

would seem to make some sense. I was wondering you could all comment on that.

Dr. Weiner: Just to start out with, we had asked why the oil market is so volatile, we heard lots of reasons. But remember that the underlying curves have always been very inelastic. When price of oil goes up, eventually you buy a more fuel efficient car and eventually put insulation in your house. But that takes a while. And the short time price elasticities, I don't know if Carol Dahl is still here, have always been very low. And that's true on the demand side and on the supply side. So I think that getting your quantity numbers right and getting your price numbers wrong actually doesn't tell you anything because when curves are inelastic plotting numbers are not going to move very much. And so saying wow, EIA got its' quantities numbers right, pricing was wrong, doesn't that show that they're a bunch of either private manipulators or oligopolists? No, actually it tells you nothing at all. You've always had a very inelastic supply and demand curves. The last time we had the elasticity on the supply side was when Texas Railroad Commission used to shut things in in the early 1970s. And so I don't think that increasing the numbers of speculators affects the elasticity. The elasticity has always been very low and so it doesn't take much of a shock to move the prices quite a bit.

Mr. Lidderdale: anybody else want to respond?

Mr. Sieminski: I might want to point out that EIA actually does produce some information on the prices in excess capacity, for instance. And they graphed that out last year and you did see the inelastic demand. As we approached sort of zero excess capacity outside of Saudi Arabia is where you actually can plot out a nice curve that's almost entirely vertical in the pricing of oil. We've done some of the same things in other commodities. We had a big spike in the wheat market. For those of you who don't know there's a

Minneapolis grain exchange that has high protein wheat that handles the wheat in the United States. The prices in the wheat market last end of February and early March in 2008 went from about $7 a bushel to 22, in a very short time period in a month. And we asked people at the time, first of all we looked at some of the same supply constraints we found out that we had the least amount of wheat in the United States than we've had in the post World War II reconstruction of Europe. So and the population of the Earth of course is up by a couple of billion people since then and we have the least amount of supply. We went to that exchange and we said what is driving this, and they said people are buying this wheat. Food manufacturers and everybody who is consuming this wheat just buys at any price. There's no option to say no, we're just not going to make bread, we're not going to make dough this month. They have to buy it at whatever the price becomes. And so we had a pretty extensive investigation into a number of markets that look like they have tight supplies and look like the inelastic demand is there. So there is something to this idea whether we call irrationality panic where the people are just stupid, or there is some real inelasticity there. The point of a lot of this consumption is that people need the gas, need the wheat, they need the product to run the businesses that they're operating.

Mr. Lidderdale: It's a very interesting problem, issue. I think Daniel Ahn and Adam Robinson published a paper last year where their explanation for whether speculation does or does not incfluence prices was essentially perfectly inelastic supply and demand curves over the short run. But as Dr. Weiner pointed out is that market prices in the short run still are affected by expectations over the longer run. And whereas demand may be very inelastic in the very short run, supply very inelastic over the short run, those elasticityies

certainly are different on a longer run basis and expectation of some marked equilibrium in the long run will have influence on the current spot prices.

Ms. Quiner: I am Elaine Quiner from the Department of Interior, and I have a quick question that relates to the issue of very strict correlations that we observe even as of today between the oil prices and the exchange rates of the dollar. And nobody has presented what percentage of the oil prices are purely attributable to the devaluation or valuation of the dollar, and I will not let all the speculators off the hook, in particular the FOREX speculators who have direct impact on the oil prices. And my last segment is how about the newly proposed by China and probably Russia, a neutral currency, world currency, which will impact and maybe stabilize the oil prices. Thank you.

Mr. Lidderdale: If you don't mind, I'll answer the question about exchange rates. We looked at the question of exchange rates last year because of course it became such a big issue. We haven't issued anything formally but what we identified are at least six or 7 different ways exchange rates are related to commodity prices. Perhaps most important is that exchange rates reflect differences in asset values between the two markets. In that you can have stable exchange rates as assets in both markets, the economies in both markets are growing very strongly. And which would lead to rising oil prices. If assets and the economy in Europe were growing much more strongly than assets and economy in the U.S., it depends on how strong the economies were moving whether you had increasing or falling prices. So it's an indirect relationship between exchange rates and oil prices through the growth, the relative growth of the economy. If all of the economies are growing, oil prices are rising, if both economies are falling, oil prices are falling. You know the more traditional approach is that as the dollar becomes devalued relative to the euro, oil in Europe becomes cheaper and consumption in Europe rises. That has

some small effect on the overall price of the dollar. You know, you could identify other ways that the dollar exchange rate affects oil prices. If the oil producers reacted to change in the value of the dollar in terms of their balance of trade, that may or may not give them an incentive to raise prices if the value of their revenues were actually falling, the purchasing power of their revenues. We don't think that theory particularly makes sense. But there are additional theories that really say over time there's a strong correlation, a strong positive correlation. Over the next six months there could be a strong negative correlation and over some other period there could be no correlation between the value of the dollar and oil prices.

Unidentified Male Speaker: I'd like to go first. I just want to harken back to the plenary session presentation that Dr. Nordhaus gave. And I'm not going to ask questions, I'm just going to make a few comments. He was basically saying that this is just one big bucket that we're living in. There are many players, many consumers. And I guess my point being that what I find about the whole speculative witch hunt to the monster in the room, is that somehow that monster is western, somehow that monster lives in New York or he lives in London, or maybe even lives in Saudi Arabia, but the irony is there's what, six and a half billion petroleum consumers in this world? Are they…you know, they're part of the mix. There's…I mean I don't know how many producers you want to count on your fingers. But let me for example address the question with regard to transportation. Yes, you might have monopoly control in the U.S. over petroleum shipments, but the irony of the thing is monopoly power over a pipeline system just says that you can raise transportation rates. And a monopolist doesn't know anything about what that oil is trading at. He's given a contract to ship so many barrels from point A to point B and this is what he's agreed to pay for it. But he doesn't really know what it's trading for.

Mr. Lidderdale: Do you have a question?

First Unidentified Male: No. My point being just that it's a huge system.

Mr. Lidderdale: Right.

First Unidentified Male: And the notion that any one group of people has a conspiracy that somehow they can drive up or drive down the prices is just *prima facia* ludicrous.

Mr. Lidderdale: Besides Enron and Amranth.

Mr. Finley: My name is Mark Finley. I'm with the BP, I do have a question, just a brief one for Dr. McCullough. You ended by saying that there were signs in the data of some kind of oligopoly. But then…you also said well, we also need to watch the spot market trading because if we know the regulators are watching the futures then they won't show up there. But the data you cited was futures data. And so I'm trying to square all of this. Who are these oligopoly players and what exactly are you getting at with the data that you are showing? Thank you.

Mr. McCullough: Well the first thing is I don't know. And I don't know because two things. Jeffrey Harris will not give me all of his secrets, which by the way is correct on your part. Number two is we have absolutely no surveillance on spot market transactions. But there's nothing very complicated about all this. We saw what little concentration data go up during the period and then fall. We saw a net positions fall during the period of the…period just before the spike and then after the spike. We saw the situation, this anomalous situation where these worldwide spot inventories. All this fits an oligopoly market very, very well. It is the sort of situation that works perfectly…by the way I hate to pick on the guy who explained that the western U.S. electric market is small. I think he best get on the web a little bit a check those dollars, it's humongous. And the fact is that a low position player can in fact have a hell of

an impact. It doesn't happen every day. It requires a huge amount of risk capital to invest. But few people remember that the primary Enron investment and risk capital in 2000 was in Portland, Oregon. That whole 7th largest corporation in America was gambling its future on foreign prices and Portland, Oregon. It's an amazing issue and the amount of impact they had was enormous. I'd love to have the information ready to sell you that we had the following concentration ratios in spot trading in July 2008. That would be very valuable data. It would be valuable data to everyone in here. And it could in fact deal with this question. One last point, and I realize I'm going on too long. I often use as a model for spot forward gambits the Enron natural gas manipulation in July 2001, do I have the right month? It was before your time at the CFTC. And when we actually got available Enron data, they had run up foreign prices in the NYMEX and the Henry hub, which is a huge market, by accelerated buying in the spot market creating the impression of a shortage and then cashing out in the foreign markets. CFTC caught it, large fine. I don't think that fell on to face criminal conviction, but he might have. These are not unheard of events, and they require that you have both sets of data. In this case we did, and it was very clear what was happening. We don't have that for oil.

Mr. Lidderdale: We've got time for just two more questions, and whoever's at the ….

Speaker: Hi, to follow up on some of the comments that were made, have you done any investigation into some foreign nationals or states as a whole whose trading largely is interbank and on the swap market? Perhaps they could oligopolists you mentioned. And second of all, I would just put out the point that most traders of long term forward prices believe that the spot will move to the forward market and then having foreign nationals come in and buy

forward prices 2010, 11, 12, that will help drive up the spot prices. And I just want to get your reaction to those. Thanks.

Mr. Harris: I can speak to the special call we did to the swap dealers last summer, actually documented that there were some sovereign wealth funds investing in the oil market. Those sovereign wealth funds thought weren't the Middle East producing countries. They were typically Canadian provinces that had set up small funds to invest. They weren't smoking gun again of what you would think with inside information about production processes or other types of spot market transactions that would be sort of pushing around the futures prices. That was another dimension of that report that we got out in September.

Mr. McCullough: As I remember, you put a citation at the end of the report giving Grainger causality tests and a variety of areas, again for stats mavens that's the sort of the state of the art on the causal issue. We've never had very much luck proving whether spot drives forwards or forwards drive spot when we get to Grainger causality. I think in the real world the two desks are sitting one foot apart and you tend to have a lot of feedback between the two simply because of the nature of the trading process.

Mr. Lidderdale: you have a follow up?

Speaker (Continues): I guess the follow up was more outside of Canadian provinces or Middle Eastern provinces. The thought that some of the large consuming oil or energy poor nations out of Asia perhaps were doing long term hedging and it's some of their long term hedging was responsible.

Mr. Harris: Well one thing we do know since we've disaggregated all this data by trader, by trader type, by trader groups, by combinations of different groups is that we can't pin it on any one single group, or one specific set of traders. So we have looked at the various combinations, not to get too detailed because we do have some enforcement cases actually that have been opened

up on specific instances where we do see things. But nothing on the lines of a $40 movement in crude or a $60 drop. Most of the manipulation or instances where we see something that's unusual involves something along lines of a dollar or two on specific days. And actually it's not always up either, so we do continue to look but I can't report, again, that we found any. And the point is I guess we've looked at various combinations of every story we can think of actually during the last year trying to uncover groups of traders that are moving things.

Mr. Lidderdale: Last question.

Question: I'll be very quick. What do you think the possibility of the African emerging market has on the volatility of the price of oil?

Mr. Lidderdale: Could you repeat that?

Question: What do you think the possibility…what's the possibility the African emerging market, not China or not people that we always are talking about, what's the possibility that may have affected the volatility of the price of oil?

Mr. Sieminski: Well, let me, since I didn't say it during the presentation that it wasn't just Russia that was having a supply problem. We had a huge problem in Nigeria which is one of the large African producers. We had places in Iran, we had problems in Iraq. We had OPEC making a decision at the end of 2006 that cut quotas and oil production falling in Saudi Arabia through the first nine months of 2007, that's what was pulling inventories down. I don't, you know again, I don't think that was an oligopolist move on the part of Saudi Arabia. I think they just got it wrong. They thought that the global economy was going to turn down in 2007 and they had to cut production. And the global economy didn't turn down in 2007. In fact I keep thinking that the search for the single cause is a hopeless one. Maybe you just think in your personal lives or

your professional life how many times have you seen something happen for just one reason? I'm absolutely convinced nothing in the world has never ever happened for just one reason. There's always a smorgasbord of…it's like what is it that caused the shuttle to blow up? It was a series of it…it was too cold, the gasket was in the wrong type of material, it was…it's always five or six or seven things that all add up into the other thing.

And in one minute, Tanc, I want to come back to the question about reserve currency that the woman asked a few minutes ago because I think it's an interesting one. Nobody ever voted for the dollar to become the global reserve currency. The dollar became the global reserve currency because the U.S. economy was large enough for the currency, it was large enough so that other people could transact in that market without impacting it. Great Britain right now doesn't want to be the reserve currency because there's not enough pounds to absorb the amount of transactions that occur in the world. You want a legal system that works so that if you have investments in dollars that you have a pretty good chance that you're going to be able to defend whatever those investments are in a legal system that works, and from that standpoint I'm kind of wondering where…this comes up all the time and why WTI is the benchmark crude oil…because there's a lot of it, the legal system is there to defend you. Long term expectations make a real big difference in terms of why a currency becomes popular or not, and what is it about the growth expectations for economy that matter? Do you have the technology, do you have an education system that works? Do you have a population that's growing? All of those things basically…the dollar became the reserve currency because it was the best vehicle available, not a perfect one but the best one available. And eventually there may be some other currency, but it's going to have to be on the basis of a logic behind it. What is the legal system that

protects it? How big is that currency? What are the prospects that it can't be manipulated and so on? And all that I think is far, far different than having some global body decide to vote about what a reserve currency ought to be.

Mr. Lidderdale: Well, I certainly want to thank our panelists for joining us here, and I want to thank you for attending the session, and we will see you next year. Thank you.

END OF SESSION.