

Inside the Oil Market:
The Relationship Between Commercial Trading
Activity and Subsequent Price Movements

by

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An honors thesis submitted in partial fulfillment

of the requirements for the degree of

Bachelor of Science

Undergraduate College

Leonard N. Stern School of Business

New York University

May 2011

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1. Introduction

As part of its role in monitoring commodity markets, the United States Commodity Futures Trading Commission (CFTC) collects data on the daily positions (expressed through open interest) of large participants in individual commodity markets. The CFTC aggregates this data and groups individual trading entities into several classes of traders, and releases the positions of the aggregate groups in its weekly Commitments of Traders (COT) report. There are three groups of traders in the traditional COT report, Commercial Traders, generally thought of as hedgers, Non-Commercial Traders, generally thought of as speculators, and Non-Reporting Traders, generally thought of as small players.

The COT report is released each Friday at 3:30 PM EST, and gives accurate open interest data for traders' positions as of the prior Tuesday. The COT report is frequently discussed by industry professionals, and many analysts refer to aspects of the report in their commentary on commodity markets. There are also several dedicated "newsletters" promising to periodically offer profitable trading signals from the COT report, and books promising to teach readers how to master analyzing the report to gain an "inside edge" in trading. Some analysts look at the depth of non-commercial positions (speculators) to identify when market moves are overheating, and predict reversals. Others argue that the net-hedger position (Commercial Longs – Commercial Shorts) should be followed as they know the market best. For the most part, it seems there is a general notion amongst professionals and the media that the COT report can be valuable, but its meaning is hard to quantify. (Briese, 2008)

For 30 years academics have been studying the COT report as well. Research has focused mainly on finding whether certain groups of traders' positions lead or lag returns, and how hedging pressure affects prices. Other studies look into both the COT report and open interest

levels in general, to discern whether open interest as an indicator contains any information that can be used to anticipate price movements (Hong & Yogo, 2010). The COT report contains a breadth of information, and it has led to a lot of interesting research on commodity markets. However, given the amount of information contained in the report, it is easy to get lost in trying to make generalizations across different trader types or different commodity markets. As such, the goal of this paper is to focus on one type of trader in one market.

The paper is not meant to provide insights on how commodity markets function and the effect different traders can have within them. Rather, the paper explores whether certain market participants in the Oil market (New York Mercantile Exchange) have information that isn't available to all market participants, and if the presence of this information can be identified through the COT report. In particular, this paper focuses on the "Commercial Shorts" category of the COT report, as this category is supposed to represent hedgers who have significant business risk in selling oil (most notably the producers of oil). The largest traders in this category are Exxon Mobil, Chevron Texaco, and Conoco Philips (Briese, 2008).

The main question this paper seeks to answer is whether we can use the COT report to identify if/when players within the "Commercial Short" category are acting on information that isn't yet incorporated into prices. The hope is that by identifying this information and quantifying it as being either price positive or negative, we can better predict future price movements.

The paper begins in Section 2 with an overview of the COT report, how it has changed over the years, and a more detailed look at the Commercial category. Then in Section 3, we analyze past research done on the COT report, and identify some strengths and shortcomings of past studies. In section 4, we analyze the relationship between Commercial Shorts and price, and

present our results. Finally, in section 5, we summarize our conclusions and discuss potential areas to build upon our findings.

2. The Commitments of Traders Report

The CFTC COT report breaks down open interest in several large commodity markets where at least 20 individual players hold positions large enough to be monitored by the CFTC. The CFTC issues two reports each Friday, the *Futures-Only COT report*, and the *Futures-and-Options Combined COT report*. The CFTC calculates open interest for the combined report on a delta-adjusted basis to capture the true nature and depth of trader positions.

Within the COT report, traders are split into reporting and non-reporting entities. Reporting firms, (Futures Commission Merchants, Clearing Members, and Foreign Brokers), are responsible for identifying to the CFTC when individual trader positions are above the CFTC's minimum reporting threshold in a given market. The CFTC adjusts its minimum reporting threshold on an inconsistent basis, to ensure that reportable traders make up roughly 70-90% of the entire open interest in a given market. The purpose is to ensure that all players large enough to severely impact the market are sufficiently monitored.

When a reporting firm identifies a trader who is "reportable," the trader is responsible for filing CFTC Form 40 with the CFTC. In Form 40, traders self-classify themselves as commercial or non-commercial traders. The CFTC conducts its own inquiries into the nature of traders' activities, and reserves the right to re-classify traders as it sees fit. In order to report as a

commercial trader, a trader must be a “bona fide hedger.” The definition given in form 40 is as follows:

“Bona fide hedging transactions and positions mean transactions and positions in a contract for future delivery on any contract market, or in a commodity option, where such transactions or positions normally represent a substitute for transactions to be made or positions to be taken at a later time in a physical marketing channel, and where they are economically appropriate to the reduction of risks in the conduct and management of a commercial enterprise”

In the traditional report, reportable traders who are not given commercial classification are referred to as “non-commercial” traders, and are generally thought of as speculators. After calculating the positions of reportable traders, the CFTC is able to determine the net positioning of non-reportable traders by subtracting from the total open interest figure available in the market. (CFTC, 2011)

For Commercial Traders, the COT report shows how many contracts are held by “Commercial Longs” and how many are held by “Commercial Shorts.” Spreading (being long one contract for one maturity and short one contract of a different maturity) is not reported for Commercial Traders, as these traders should only have hedging need to be on one side of the trade (either short or long). Different business units of an individual company that would require to be on different sides of a trade are classified as separate traders, so in effect if the CFTC classifies traders correctly, there should be no commercial need for spreading. Within the non-Commercial category, contracts held by non-commercial longs, shorts, and spreaders are reported. For non-Reportable traders (in the NYMEX WTI market typically less than 10% of total Open Interest), longs and short positions are given.

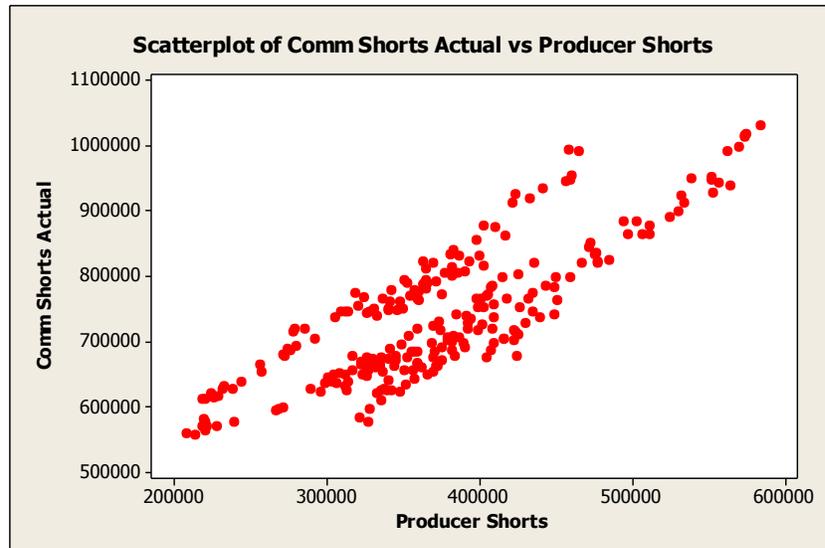
Beginning in 2009 however, the CFTC conducted a major overhaul of its report, and moved away from its traditional classifications. It had become apparent over the years that the CFTC categories were no longer reflective of their original purpose, particularly in the commercials segment. With the increased prevalence of commodity index funds, and many of these types of traders falling under the reporting category of commercials, many observers had lost faith in the COT report's ability to accurately reflect the positions of trader groups. In fact, in 2008, a rumor circulated that the CFTC was planning on halting publication of the report altogether (Briese, 2008). However, rather than stop reporting its data, instead the CFTC moved towards a re-categorization of its trader groups, hoping that this would increase the relevance of the report.

The original commercial versus non-commercial split has been abandoned in the new report, and replaced with four categories of reportable traders; Producer/Merchant/Processor/User (Bona Fide Hedgers), Swap Dealers, Money Managers, and Other Reportables. The new Producer/Merchant/Processor/User category is meant to serve the purpose of the original Commercials category. The new categories, if reported accurately, will allow observers to much better understand the market, as true hedgers (Producer/Merchant/Processor/Users), and large speculators (Money Managers) positions are now presented with clarity.

The report with the new categories began publication in 2009, and data is available with the new categories from June 2006. Additionally, the report is still published with the old categorizations as well. (CFTC, 2011)

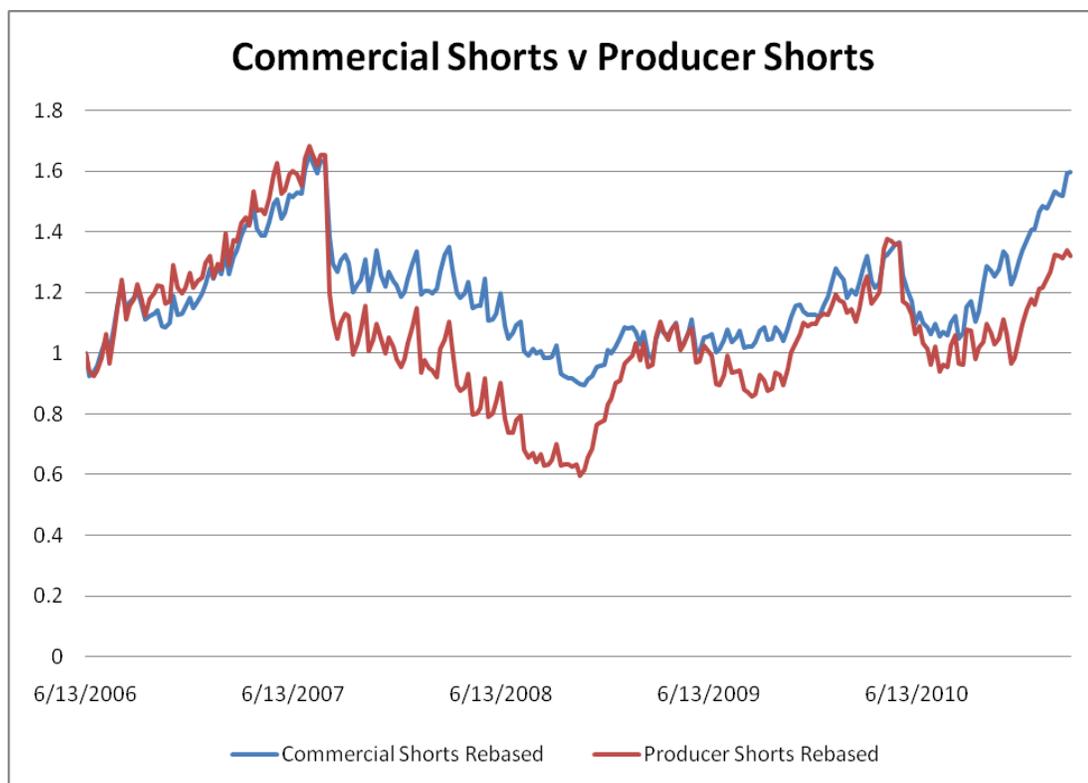
2.1 Analyzing Commercials Category versus Producer/Merchant/Processor/Users

Below, a scatterplot of the available data (from June, 2006) of corresponding Commercial Shorts (old category) versus Producer/Merchant/Processor/Users (new category) is presented.



The relationship between the two is very strong, however the scatterplot appears to show two different lines. Graphing both separately, and rebasing by setting each category equal to its initial value (on June 13th, 2006) and then presenting each future value as a multiple of the initial value, we see in the graph below that the new category (Producer Shorts) appears to react more pronouncedly than the old category. While the direction of change is typically the same for both categories, it appears that the producer category changes more in magnitude relative to the commercials category.

Particularly this is noticed on 8/14/2007. That week, the Producer Shorts fell from 416,976 contracts to 386,055 contracts, for a total reduction of 157,460 contracts. Meanwhile, the Commercial Shorts fell from 1,014,069 contracts to 860,484 contracts, for a total reduction of only 153,585 contracts. This data point, and the chart in general, supports the prevailing notion that a large portion of the commercials category is stagnant, and not reflective of hedger activity. The new categorization for Bona Fide hedgers (Producer Shorts) appears to solve this problem.



3. Past Work

Much research has been done on the Commitments of Traders' Report. The typical question these academic studies explore is whether specific groups' of traders (Commercial, Non-

Commercial, Non-Reportable) positions lead, lag, or have no relevance to price. In order to explore this question, we need a way to quantify the positioning of traders.

In their study, *The Forecasting Ability of CFTC Large Traders*, Sanders, Irwin, and Merrin propose using the Percent-Net-Long method. What their methodology entails is subtracting shorts from longs within any given category, and then dividing by the total contracts held by the category (shorts + longs), to come to their PNL indicator. The rationale is that the PNL normalizes the data (as the number of contracts held by each trader group dramatically changes over time) so that practitioners can quantify the magnitude, or “depth,” and direction of each trader category’s position at any given time. (Sanders, Irwin, & Merrin, 2007)

While their study looks at all trader categories, it has a particular focus on the Non-Commercial category. In particular, the study seeks to address how “smart-money” is positioned relative to price changes; do commodity funds’ (non-commercials) positions lead price changes, or do they follow them. The strongest conclusion of the Sanders, Irwin & Merrin study shows that across several markets, non-commercial positions follow price changes; as a group these traders are trend followers. However, in terms of traders positioning in leading price changes, or offering information about future price changes, there appears to be little evidence that any group of traders’ positions are important. It is noted however that “If the COT data provide any forecasting information, it is likely found in the commercial category and in isolated markets.”

So why doesn’t their study, or for that matter similar studies from both academics and industry professionals alike, derive any meaningful information from or relationship between the COT

commercials category and price? While the methodology employed in this study can yield meaningful results when used to analyze the non-commercials category, in our view it is not applicable to the commercials category.

Sanders, Irwin, & Merrin are not the only researchers to devise a methodology to quantify the net-positioning of the commercials category. In his work, Wang also devises a formula very similar to the PNL, which he calls the Sentiment Index. Similarly, industry practitioner Stephen Briese uses his own Commercial Index to quantify the net-positioning of the commercials category. For the most part, all three methods are very similar, as even Sanders, Irwin & Merrin comment on in their paper. However, it is our view that while net-positioning can be pertinent in the non-commercials category, within the commercial traders category its meaning is suspect.

Within the non-commercials category, most traders are able to go from long to short and back; they are speculators trying to profit off of predicting changes in price. A trader who is net-long today, could very well be net-short tomorrow. As such, using an indicator like PNL makes a lot of sense, as PNL captures the overall sentiment of the group.

However, within the commercials category, traders are only allowed to be on one side of the trade. When a trader in this category registers with the CFTC, they declare a business need which requires hedging, and this hedging can only be on one side of the trade. As such, a trader who is net-long today, will still be net-long tomorrow (or have no position), and he will never be net-short. Thus in our view, unlike in the non-commercials category, traders within the commercials category cannot be viewed as a homogenous group. Traders who are long must be viewed

separately from traders who are short. Thus, using a net-position metric in our estimation is largely meaningless, as it is synonymous to netting out the positions of two completely different sets of traders.

In our view, net-position metrics have become the popular way to analyze the COT data, because most analyses start by looking at the non-commercials category, as much attention has been paid to the role of speculators in these markets. The non-commercials category lends itself well to using net-position metrics, and thus the methodology is employed, and then as research expands it seems logical to use the same net-position metrics to analyze the commercials category. However, as we've argued above, it does not seem fundamentally sound to look at just net-positions in the commercials category when trying to form conclusions about the information held by traders within this category and how it relates to price.

Due to the limitations of using net-position metrics, in our analysis we will propose an alternative methodology to make inferences from the COT data, and in particular we have devised a methodology that hopes to identify when market participants (particularly within the commercial shorts category) have information that can be used to predict subsequent price movements.

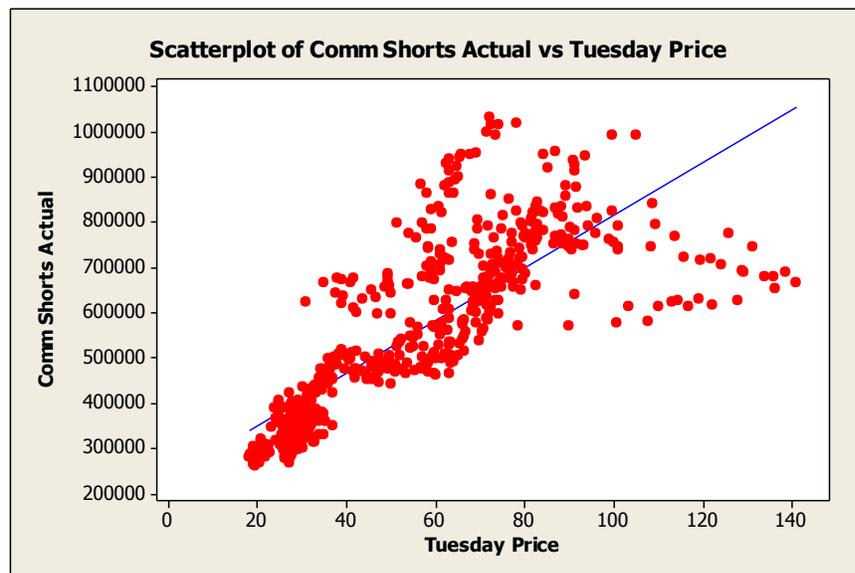
4. Commercial Shorts and Price

While the new category of Producer/Merchant/Processor/Users would appear to have a more relevant data set than the Commercials category, in the following sections we will be using the

Commercial Data set. This is because we have more data for the Commercials Category, and can thus come to more confident conclusions.

4.1 Contemporaneous Relationship Between Commercial Shorts and Price

Below is the scatterplot of Commercial Positions versus corresponding closing price of the front month contract. The data is based off the COT report with one point each week dating from 1/4/2000 to 3/8/2011. The regression line overlays the plot. The coefficient of correlation (R Squared) is 69.56%, and as a predictor of commercial positions the closing price variable is statistically significant at the 99% confidence level.



As the scatterplot reflects, price does appear to have some bearing on commercial short activity, but by no means is price by itself a good predictor for the number of commercial shorts.

One theory we assert is that price is a primary driver of commercial hedging activity. In terms of how producers adjust their positions, we make the assumption that in the absence of other factors, as prices rise hedgers increase their short positions to lock in the higher prices. Similarly, as prices fall, hedgers reduce their shorts as the prices are no longer as appealing. Note that we are not saying this is always the case, but rather that when changes in hedger shorts are out of whack with changes in price (as they often are), this signals hedgers taking a specific view on future market prices. This view may be based on market wide knowledge, or it may be specific to information known by certain traders within the group.

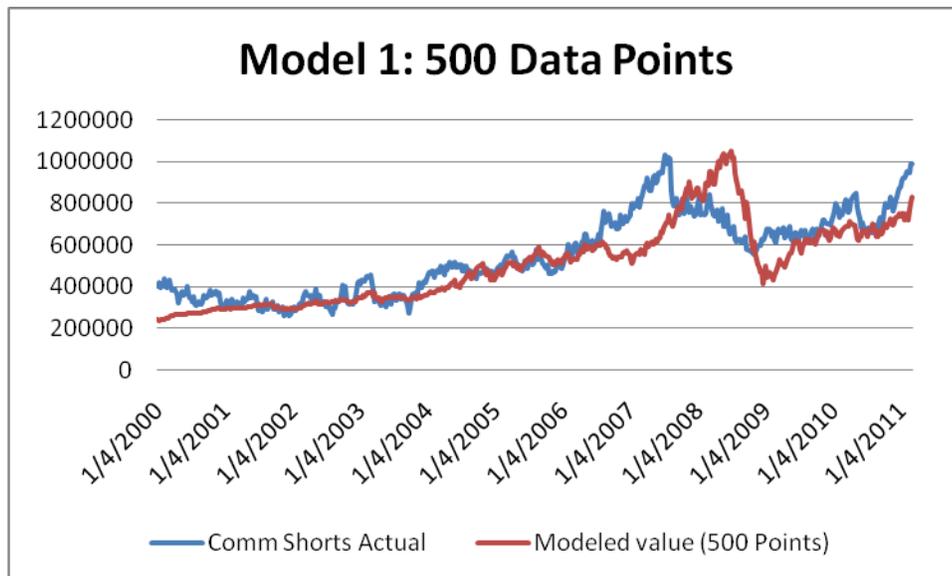
4.2 Deriving a Model for Commercial Shorts

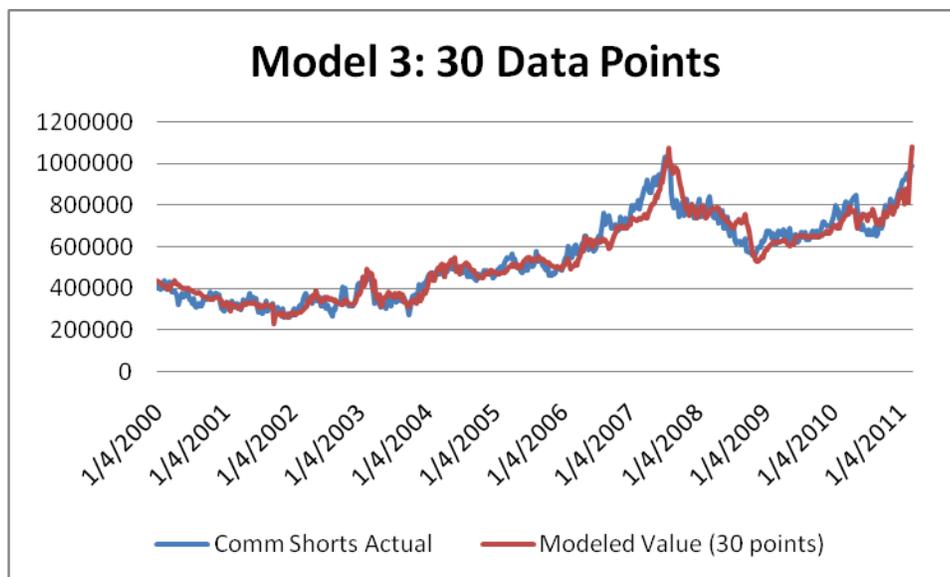
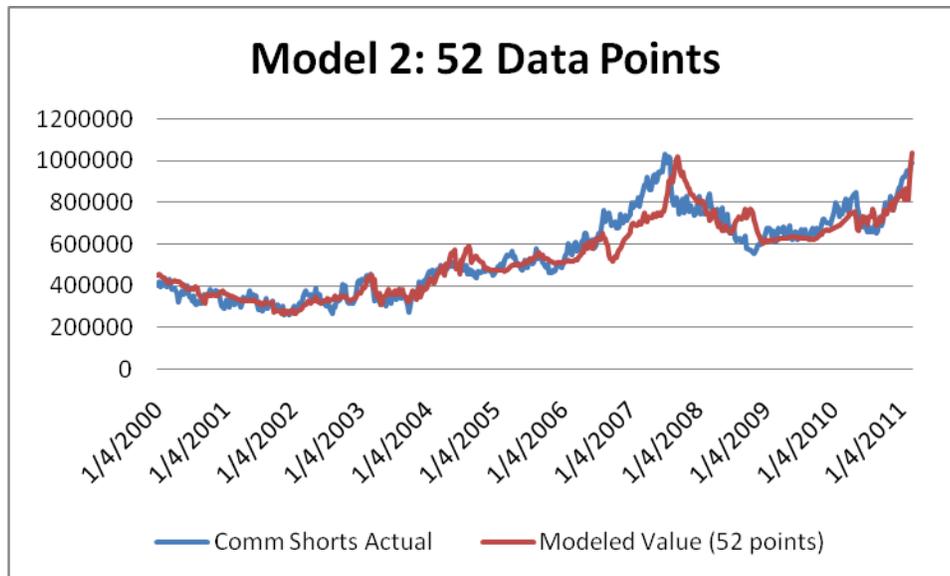
As argued in section 3, indicators such as Percent-Net-Long (PNL) as advocated by Sanders, or the Sentiment Index as advocated by Wang, are not very informative in identifying information held by market participants within the Commercials category. Essentially, we do not believe it is sound to compare the positions of longs versus shorts within the Commercials (Hedgers) category, as the traders on each side of the market are distinctly different. Unlike speculative traders who can go from long to short to reflect their opinion on price movements, bona fide hedging traders are expected to only be one side of the market, as their business is exposed to only one side of the trade.

As such, we look into an alternative model to extract information out of the Commercial data. Following on our view that price is a fundamental determinant of hedger positions, below we present graphically 3 models for commercial positions. The first model uses the previous 500 data points at any given point to create a regression equation connecting Commercial Short

contracts to closing price. At the following point, the last data point (point 501) is dropped out, and the most recent data point is included (from the previous week's COT report), and the regression equation is recalculated and using this week's price derives a predicted value for the coming week's report.

Models 2 and 3 are very similar to the first model; the only difference is the number of data points each uses to predict the next point. Model 2 uses 52 data points (1 year's worth of data), and Model 3 uses 30 data points.





The problem with all of these models, is that they rely far too heavily on our theoretical assumption that price is the driver of hedging activity. While we are confident in our assumption that price is a key determinant of hedging activity, we readily accept the fact that it is not the only factor that determines the level of commercial shorts. Thus, particularly when looking at longer periods of time, there are many other factors embedded into our data points that the

models fail to capture, and thus our ability to come to meaningful conclusions based off of these models is limited.

However, the models can help identify when changes in commercial short interest are out of whack with changes in price. Particularly, we can see several instances where sudden drops or rises in open interest are not predicted by the model (and as such not explained by changes in price). It becomes apparent that if there is any value that can be derived from looking at the COT report using our method, it must lie in these sudden, unexplainable (by price) changes. This led us to develop a second method to focus on these dramatic, shorter-term changes.

4.3 Identifying When Information is held by Commercial Shorts

While the model-based approach could potentially allow us to identify the price views of Commercial Short traders, its meaning does not seem to be easily quantifiable. Particularly in our goal of identifying when Commercial Shorts have information not embedded in market prices, the model is inconclusive. As such, we explore another method to identify when Commercial Shorts possess information that could have significant impact on future prices.

Building off our theoretical assumption that in the absence of all other factors, Commercial Short Open interest should rise when prices rise and fall when prices fall, we have developed an “event-based” approach towards analyzing Commercial Short Activity. First, we identify unusual week-to-week changes in Commercial Short Open Interest. We call these occurrences open interest events. Then, if there is a corresponding unusual week-to-week price change, referred to

as a price event, we ignore the open interest event, as we believe it can be accurately explained by the price event. However, if there is no corresponding price event, we turn the event into a price signal, on the basis that commercial shorts have some information leading them to the dramatic week-to-week activity.

A positive open interest event (i.e. a dramatic rise in the number of contracts held by commercial shorts) would be a bearish price signal, as shorts are increasing their activity locking in prices at their current levels. A negative open interest event (i.e. a dramatic reduction in the number of contracts held by commercial shorts) would be a bullish price signal, as shorts do not find current prices adequate, and are signalling higher prices are soon to come.

For the purposes of the following analysis, we define an open interest event to be a 5% change in Commercial Short open interest during a 1 week period. We define a price event to be a 2% change in price during a 1 week period.

In Appendix Table 1, we show the full results of each trade signal following a simple methodology. The trade is executed at the Friday Settlement Price, the day the COT report is issued (in cases when the market is closed on Friday, we use the Monday price). If the price moves 5% in the direction advocated by the signal, the trade is considered to have hit the target. If this price target isn't reached within 40 trading days, the trade is considered to have missed, on the basis that by this point any information that was indicated in the signal is no longer relevant. Additionally, a trade signal in the opposite direction of the original signal closes out the previous trade.

Note, this methodology is not defined to enhance returns, but rather simply identify whether commercial shorts possess information leading them to trade with conviction. If using this methodology we find that we can correctly identify when commercial shorts have inside information, a more complex trading strategy could be developed to optimize returns.

In Appendix Table 1, all trades in white hit the price target as expected. Trades in red did not. Trades in yellow were closed out by an off-setting signal the following week. The highlights of the results are summarized below:

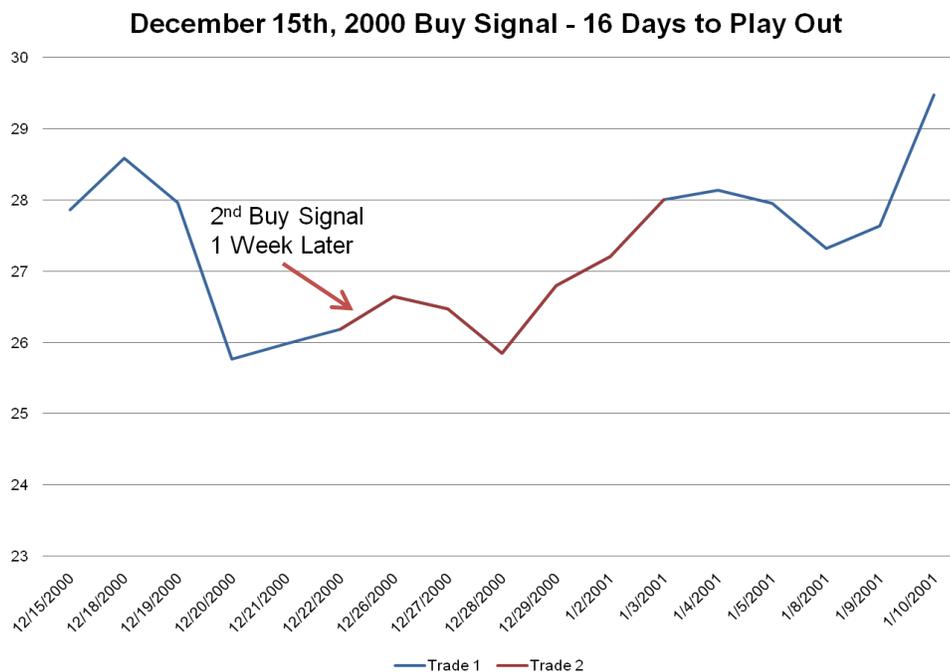
- 58 Trade Signals generated since 2000
- 43 Trades resulted in successfully hitting the target
- Average time for successful trade to hit was 8 days
- 9 Trades did not the price target within the allotted 40 days
- 6 Trades were offset by an opposite signal the following week

Out of 58 trade signals given by our event-based approach, 43 resulted in trades that worked out as predicted by the approach, resulting in a success rate near 75%. While this by no means is conclusive, this does appear to be an encouraging sign.

Of the 15 trade signals that proved incorrect, interestingly 6 were negated the following week (denoted by TRIGGERED in Table 1), by reverse price signals (i.e. the following week there was an unexplained open interest event in the opposite direction).

As noted in the summary of results, the average time to hit the price target was 8 days, which is an encouraging sign given the short-term nature of our hypothesis (it is unlikely any inside information would remain secret for lengthy time periods). In fact, out of the 43 correct signals, 38 times the target was hit in less than 14 trading days. However, in 5 instances it took longer than 14 days for the price target to be hit. In all 5 instances, following the initial trade signal, a dramatic price move in the opposite direction occurred.

However, in all 5 instances, a second, confirming trade signal in the same direction was issued following the price move in the wrong direction. To illustrate this, below is the price chart showing two buy signals, generated December 15th and 22nd, 2000. In the appendix, you will find full price charts of each of these 5 trades. The initial trade is charted in blue, and the second trade signal is charted in red.



As the chart illustrates, in the week following the buy signal on December 15th, the price fell dramatically. In fact, at the peak of its fall, the price was 7.5% below the entry price. However, another buy signal, following the price drop, was generated the following week, and just six trading days after this second signal, the 5% price target had been hit.

To explain this result from a practical standpoint, let us pretend we are the commercial trader on December 15th, 2000. We have inside information leading us to believe there will be a dramatic price movement to the upside. Thus, we trade with conviction, choosing to dramatically reduce our shorts from the previous week (triggering a buy signal in our model). However, during the week the price falls. We are left with a loss in our trading account (note: we are simplifying the process for the sake of explanation).

So how do we react? Well, if we have strong information that we still trust, we would double down on our bet, as we *know* the market is wrong, and prices are going to rise. Thus, we would again trade with conviction, choosing to dramatically reduce our shorts for the second week in a row (triggering another buy signal in our model). Now if we didn't have any inside information, or didn't trust our information, it is unlikely we would double-down on our bet. But, because we do trust our information, we decide to double down the week ending December 22nd, and history will show we were correct, as the market moves in our favor.

Now we understand our explanation of this event (and the other 4 instances in which the trades took longer to play out, moved in the wrong direction, and were confirmed by a 2nd signal) is

speculation, and cannot be confirmed. However, this does appear to be an encouraging sign, because our basic “story” appears to be backed up by the data.

Furthermore, from a practical standpoint, the presence of these confirming signals is an important factor. It would never be prudent to enter into a position, and hold it indefinitely until the price target was hit; at some point risk management has to be factored in, and if the market moves enough in the wrong direction the trade would be closed out. What’s encouraging about these double signals is that from a practical standpoint, this allows us to manage risk and close out trades if the market moves against us. If the information held by commercial shorts is still “good,” it will reveal itself to us again through another signal.

5. Conclusion

Using the CFTC’s Commitments of Traders Report, we have devised a methodology to explore whether using information regarding the positions of traders can be used to anticipate future price movements. Our event-based approach towards identifying when commercial shorts hold inside information pertaining to short-term price movements appears promising. Using data from the past 11 years, our approach generates 58 trade signals, of which nearly 75% successfully hit their price target.

Given the encouraging signs in our research thus far, we believe there are several avenues upon which to improve our study, as well as expand our research so that we can arrive at more meaningful and useful conclusions. The first improvement that could be made is to refine the methodology. We arbitrarily chose the levels that would initiate our signals (i.e. 5% change in

open interest, 2% change in price). In order to improve our methodology, we could adjust these signals to be generated based off of the variance of each indicator.

Beyond this simple methodology change, the story itself needs to be investigated further. We set-out to determine if we could identify when commercial short traders have inside information. We argue that we can identify this by identifying when they are trading with conviction, assuming that they only trade with conviction if they have reason to do so. To build upon our findings, it would be interesting to look into each signal our strategy generates and see if we can identify what information may have led to the signals. Did a major piece of market-relevant news come out in the following weeks that perhaps a commercial short trader knew about beforehand? If our assumption that these traders only trade with conviction off of inside information is true, then we should be able to identify this. If however we can't identify the dissemination of any information, we are left with results that still show commercial short traders with the ability to predict major price changes ahead of time. If this is the case, we would need to search for an explanation for why this group of traders performs so well in this regard.

After we refine the methodology, we see no reason why it should not be applied to other markets for which the CFTC provides coverage. Particularly in the other energy products, as well as industrial metals and other products for which seasonal patterns and trends are similar to the crude market, we believe our methodology is applicable. In order to come to more confident conclusions regarding our theory on commercial insiders, we could apply our methodology to these other markets, and see if the results look similar. If we see that our strategy of following

commercial short insiders works in those markets as well, we can be more confident that our theory is accurate.

Finally, another interesting extension of our research would be to apply a similar methodology to other trader groups within the COT report. We specifically chose to focus on commercial shorts because we felt this group would have the best information within the market, and for the purposes of this study wanted to make clear our point that each trader group needs to be viewed separately. However, our theory of inside information leading to trading with conviction should apply to other groups as well, and our method of identifying the presence of information through the COT report should hold up in other groups. Perhaps we'd be able to glean more about the information held by market participants, and the conviction with which they are acting, by using our methodology to analyze other trader types. Finally, applying our methodology to the new COT report, for which we have more trader types and clearly defined groups, could prove fruitful as well.

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Appendix

Table 1: Full Results of Trade Signals:

Trade Date	Trade	Exit Reason	Trading Days to Hit
01/28/2000	Long	Hit	3
02/25/2000	Long	Hit	6
03/17/2000	Short	Hit	1
04/24/2000	Long	Hit	7
06/23/2000	Long	Never Hit	
09/15/2000	Short	Hit	5
10/20/2000	Short	TRIGGER	
12/15/2000	Long	Hit	16
12/22/2000	Long	Hit	6
01/12/2001	Short	Never Hit	
02/16/2001	Short	Hit	7
03/02/2001	Long	Hit	4
06/29/2001	Long	Hit	4
07/27/2001	Long	TRIGGER	
08/17/2001	Short	TRIGGER	
08/31/2001	Short	Hit	12
10/12/2001	Short	Hit	4
10/26/2001	Long	Never Hit	
12/21/2001	Long	Hit	1
04/01/2002	Long	Hit	31
04/26/2002	Long	Hit	12
05/31/2002	Short	Hit	7
08/30/2002	Short	Never Hit	
10/04/2002	Short	Hit	12
12/13/2002	Short	Never Hit	
03/14/2003	Long	Never hit	
04/25/2003	Long	Hit	10
09/12/2003	Long	Hit	14
09/26/2003	Long	Hit	4
02/13/2004	Long	Hit	7
07/16/2004	Long	Hit	10
07/30/2004	Long	Hit	10
08/13/2004	Long	Hit	5
08/26/2005	Long	Hit	2
10/28/2005	Long	Never Hit	
01/13/2006	Short	Hit	19
02/03/2006	Short	Hit	5
03/10/2006	Short	Never Hit	
05/26/2006	Long	Hit	27
06/23/2006	Long	Hit	6
08/04/2006	Short	Hit	9
08/11/2006	Short	Hit	4
08/18/2006	Short	TRIGGER	
11/17/2006	Short	TRIGGER	

02/16/2007	Short	TRIGGER	
08/17/2007	Long	Hit	12
03/24/2008	Long	Hit	2
04/25/2008	Long	Hit	9
05/23/2008	Long	Hit	9
06/20/2008	Long	Hit	5
09/26/2008	Long	Never Hit	
02/27/2009	Long	Hit	6
05/22/2009	Long	Hit	3
06/26/2009	Long	Hit	2
03/26/2010	Long	Hit	4
04/16/2010	Short	Hit	13
06/11/2010	Long	Hit	3
11/29/2010	Long	Hit	6

Figure 2: Charts of Successful Trades – Longer than 14 Days to Hit

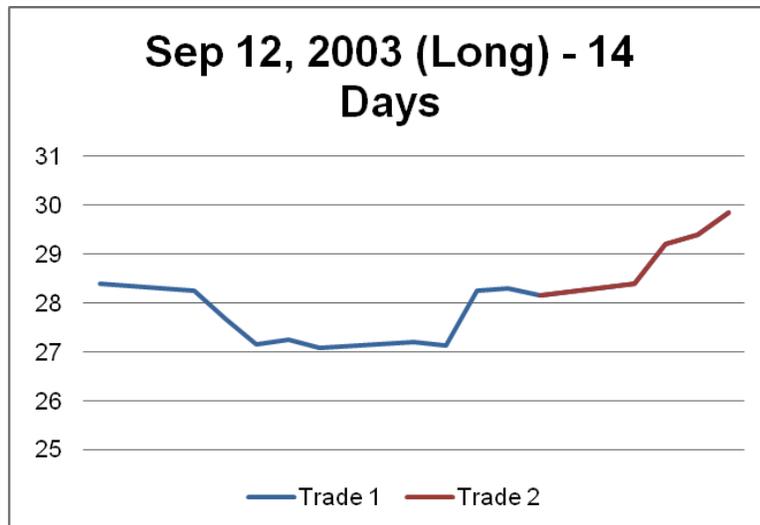
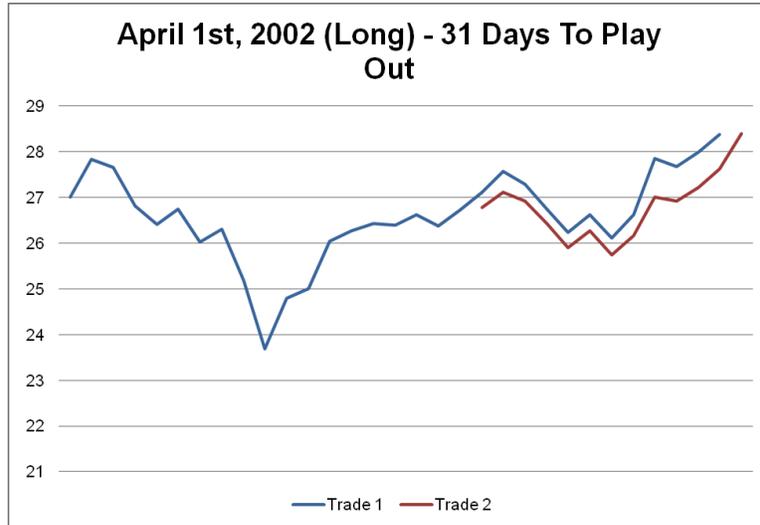


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