Executive Summary

"Informed trading in the WTI oil futures market"

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This paper provides evidence of suspicious trading patterns consistent with informed trading in the West Texas Intermediate (WTI) oil futures market on the days when the announcement of the U.S. crude oil stock level by the Department of Energy contrasts with the expectations of energy analysts collected in Bloomberg's inventory survey. Our results reveal significant order imbalance, with a majority of buyer-initiated trades in the two hours preceding the announcement of positive surprises – changes in inventories that are larger than expected – at 10:30 a.m. on Wednesday. In that case, we show a drop in the average price of -0.25 % ahead of the news release which is consistent with informed trading. We also provide evidence of an asymmetric response of the oil price to oil-inventory news, and highlight an over-reaction that is partly compensated in the hours following the announcement. The findings are robust to alternative definitions of the surprise and the measures of order imbalance considered. Our results have important implications, as the WTI futures market is the leading market with respect to price discovery and the most-traded futures commodity contract worldwide.

It is well-known that the largest impact on oil prices comes from the weekly inventory news release by the DOE-EIA about petroleum reserves in the U.S., which is the most anticipated piece of news in the oil market. Recent researches have thus focused on the price reaction to scheduled announcements. Unlike these previous works, we look at both the price and the trading pattern in the pre-announcement period. We identify days with significant inventory surprises when the difference between the expectation (Bloomberg survey) and the realized value is sufficiently large. Building on recent contributions, we go beyond the simple analysis of return patterns to assess the possibility of leakage by taking into account order imbalance as a symptom of informed trading. To our best knowledge, this is the first time such an analysis is pursued for some commodity markets.

We specifically examine the trading activity around the weekly inventory announcements in the front-month WTI oil futures contract traded on the New York Mercantile Exchange (NYMEX) over the 2007-2014 period. The U.S. Department of Energy makes an announcement about the level of oil inventories each Wednesday at 10:30 a.m. We investigate potential trading by informed investors in the hours preceding the official news release. We use intraday data to calculate the order imbalance over short intervals (2 or 5 minutes) and show that there is significant order imbalance in days when the news release contains surprising inventory-level information. This pertains when the actual stock level is higher than expected (a positive surprise). The bulk of the order imbalance occurs around the beginning of the open outcry trading session when liquidity is sufficiently high.

Our results can be taken as providing preliminary evidence that the inventory level released by the DOE each Wednesday is known by some market participants who are able to benefit from their insider position to make money with the news. Indeed, the significant order imbalance takes place around the opening of the open outcry session, when increasing liquidity facilitates discreet trading. In addition, at that time, the news release is not too distant thereby limiting the risk for potential informed traders that other news enter the market. More generally, our results call into question the overall informational efficiency of the most liquid commodity market in the world.

We should, nevertheless, be careful in interpreting these findings. While our results are consistent with the presence of informed trading, they do not explicitly demonstrate it. In particular, some traders may have superior ability in either predicting the inventory level to be released and/or in analyzing the ongoing information flow about oil supply and demand conditions. Indeed, some traders may benefit from better due diligence, which is now very sophisticated.

Despite our results remain open to interpretation, our analysis has a number of implications with respect to the Weekly Petroleum Status Report. First, it raises the question of whether EIA lock-up practices are really secure. This calls into question the overall security of government data raised recently in numerous media. Second, our work also has regulatory implications, as we might wish for the worthier monitoring of oil markets around announcements to better assess the presence of insider trading. Third, the time chosen for the announcement could also be changed to limit the potential for insider trading in times of high liquidity. For instance, an announcement at 8:30 a.m. might help to moderate the activity of insiders in the oil futures market in the pre-announcement period.