



# CRA Insights: Financial Markets

CRA Charles River  
Associates

September 2012

## Market manipulation: recent events and economic analysis

In the wake of the financial crisis of 2007–2008, authorities are stepping up investigations into alleged fraud and manipulation in financial and commodity markets. Recent examples include:

- In June 2012, Barclays Bank settled with the US Commodities Futures Trading Commission (CFTC), the US Department of Justice (DOJ), and Britain's Financial Services Authority (FSA) for \$453 million in a complex case of alleged manipulation of the London Interbank Offered Rate (LIBOR) by several major banks from 2005 through 2009.
- In June 2012, Morgan Stanley made a \$5 million settlement with CFTC in connection with alleged false reporting of futures trades from 2008 through 2009.
- In April 2012, Optiver Holdings agreed to a \$14 million settlement with the CFTC in connection with alleged manipulation of the crude oil futures price in 2007.
- In March 2012, the Federal Energy Regulatory Commission (FERC) obtained a \$245 million settlement for alleged electricity price manipulation by Constellation Energy Group during the years 2007 and 2008.
- The CFTC is currently prosecuting allegations of crude oil futures price manipulation in early 2008 by Arcadia Petroleum and Parnon Energy.

These actions take place in the midst of legislative and rulemaking reforms intended to ensure greater integrity in the markets by sharpening the tools for disciplining bad behavior. The Wall Street Reform and Consumer Protection Act (Dodd-Frank Act) passed in 2010 includes expanded authority, higher penalties, and amended standards. The CFTC acted on this expanded authority to join the recent investigation of the trading losses at JP Morgan's Chief Investment Office. In Europe, the European Market Infrastructure Regulation (EMIR) and related legislation, such as the Market Abuse Regulation (MAR) and Regulation on Wholesale Energy Market Integrity and Transparency (REMIT), also expand regulatory authority. Responding to a 2011 mandate from the leaders of the G20, the International Organization of Securities Commissions (IOSCO) published a consultative report on the operation of oil price reporting agencies (PRAs), private businesses that had not been the subject of regulation.

Based on the Dodd-Frank Act, the CFTC passed new rules (Rule 180.1 and 180.2) that expand protections against market manipulation in two important ways. For cases of false reporting of prices and information, the Act lowers the bar for prosecution from specific intent to recklessness. In proving a charge of price manipulation, the CFTC will be guided by the traditional four-part test,<sup>1</sup> but in some cases the new rules lower the evidentiary burden by presuming the existence of artificial prices. Economic analysis plays a critical role in establishing or rebutting the manipulation and its impact. In light of the new rules, we examine the Arcadia case.

### **Case illustration: CFTC v. Arcadia Petroleum and Parnon Energy et al.**

The allegations in the case are laid out in a complaint made by the CFTC and filed in the US District Court for the Southern District of New York in May 2011. Defendants in the case include Parnon Energy, Arcadia Petroleum, Arcadia Energy (Suisse), Nicholas Wildgoose, and James Dyer, referred to collectively here as Arcadia. The CFTC charged Arcadia with manipulating or attempting to manipulate New York Mercantile Exchange (NYMEX) crude oil prices from January to April 2008, which allegedly resulted in approximately \$50 million in unlawful profits.

The alleged manipulative scheme involved trades in two related oil markets: the physicals market and the futures market.<sup>2</sup> The accompanying Figure 1 shows how the alleged manipulation of futures prices unfolded during the month of January 2008.

In January 2008, Arcadia is alleged to have bought a large fraction of supply in the physical market; out of an expected total local supply of seven million barrels, Arcadia accumulated ownership of 4.6 million barrels or 66% of the market. Arcadia planned to hold that supply off the market until late in the month, past the conventional date for arranging any sales for delivery for the next month. Consequently, as the close of the month approached, the price for this physical supply would rise sharply.

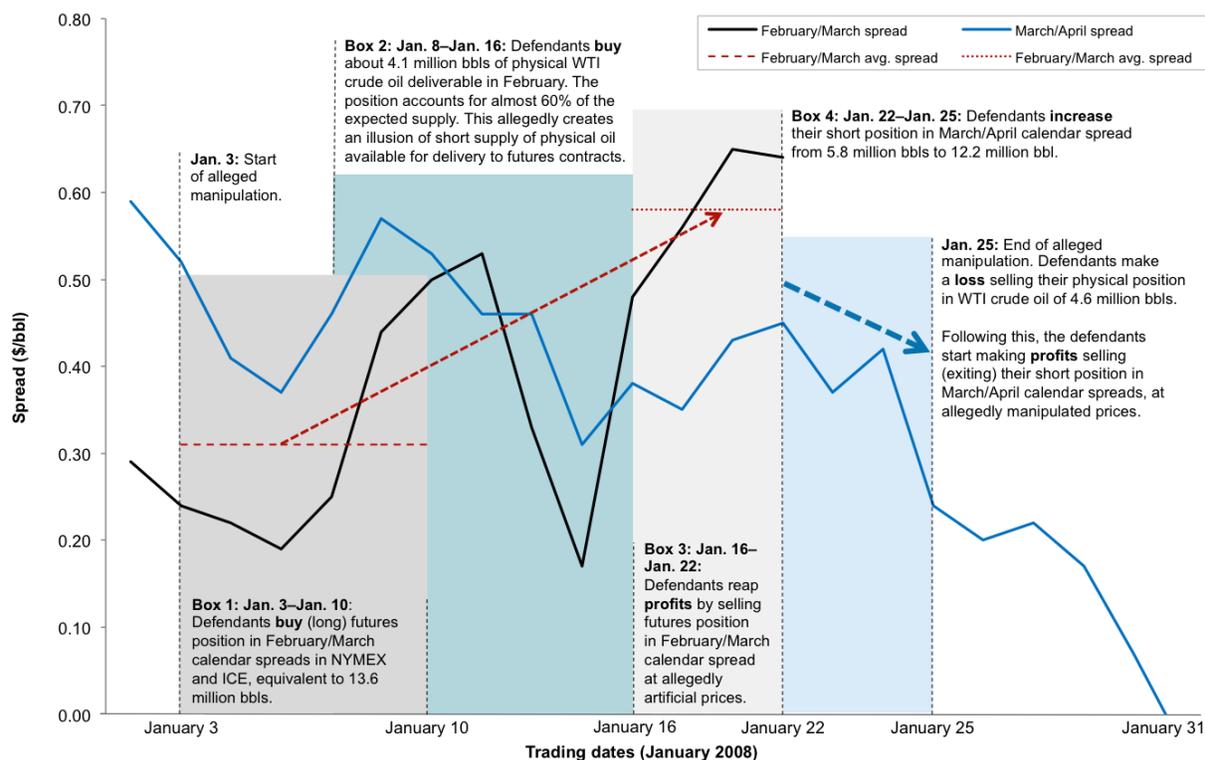
In order to profit from the manipulation originating in the physicals market, the complaint alleges, Arcadia bought oil futures contracts in front of the anticipated price run-up in the physicals market—in total, 13.6 million barrels. These were bought in the form of February/March calendar spread contracts. A calendar spread contract enables the investor to profit off a rise in the February futures price that is greater than the rise in the March futures price. It protects the investor against a general rise or fall in the price of oil that would be incorporated into both the February and the March futures prices. (See glossary section for more details on the calendar spreads trading strategy.) Since the price of the futures market is tied to the price in the physicals, the futures market price increases as the physical market price increases. As the end of the month approached, Arcadia is alleged to have sold its futures contracts at the high price created by its alleged manipulation, capturing a profit.

To complete the cycle, Arcadia allegedly prepared also to profit from the inevitable collapse of the manipulated price. They did this by switching from buying futures contracts to selling them, i.e., by switching from a long position to a short position. Arcadia is alleged to have sold short the March/April calendar spread in the futures contract so that as it sold its physical contracts and the price of the futures contracts then fell, it would gain.

At the last possible moment in January's market calendar, Arcadia sold its physical contracts. Because it was selling such a large physical position at such a late point in the month, it caused the price to reverse sharply. This event was described as the "inevitable puking" of the position.

According to the CFTC complaint, Arcadia executed this roundtrip manipulation in January 2008 and again in March 2008. It is alleged that Arcadia was planning to repeat the process again in April, but news that the CFTC had opened an investigation into its trades led it to abandon the effort.

Figure 1: Alleged oil price manipulation in January 2008 by Arcadia



The CFTC alleges that Arcadia completed one cycle of its alleged manipulation of oil prices during January 2008. The solid black line shows the February/March WTI oil futures price spread, and the solid blue line shows the March/April WTI oil futures price spread during January. Box 1 demarcates the dates when Arcadia is alleged to have been buying futures spread contracts. The dashed red line shows the average spread price during these dates. Box 2 demarcates the dates when Arcadia is alleged to have purchased its large physical supply, causing the physical price to increase and ultimately causing the futures price spread to increase. Box 3 demarcates the dates when Arcadia is alleged to have sold its February/March futures spread contracts. The dotted red line shows the average spread price during these dates. Box 4 demarcates the dates when Arcadia is alleged to have been selling additional March/April futures spread contracts. On January 25, Arcadia is alleged to have sold its physical position, which completed this month's cycle of the alleged manipulation.

## Burying the corpse

The Arcadia case highlights one focal point for economic analysis in manipulation cases: the distinctive market dynamics—or fingerprint—around the execution of the manipulation. The complaint alludes to this when it highlights how unusual the price reversals on key dates were.

In a classic “corner,” a trader captures control of local supply, driving up the price other traders must pay to settle their futures contract obligations. These traders look farther and farther afield for alternative supplies they can deliver, spreading the price increase geographically. At the conclusion of the manipulation, the trader will have its profits from the squeeze as well as a large unwanted inventory of physical supply that was delivered by those shorts that were able to locate supplies at reasonable cost. What is to be done with this supply? Disposing of it quickly reverses the price climb and suddenly leads to reverse pressures on storage and transport so that the fact of the manipulation is quickly exposed.

This is known as the problem of “burying the corpse.” The expression is attributed to Philip D. Armour, founder of the famous Chicago meat packing company that bore his name. Late in the 19th century, he was asked why he did not corner delivery on a pork contract, Armour replied, “To commit murder is very simple; the trouble is to bury the corpse.”

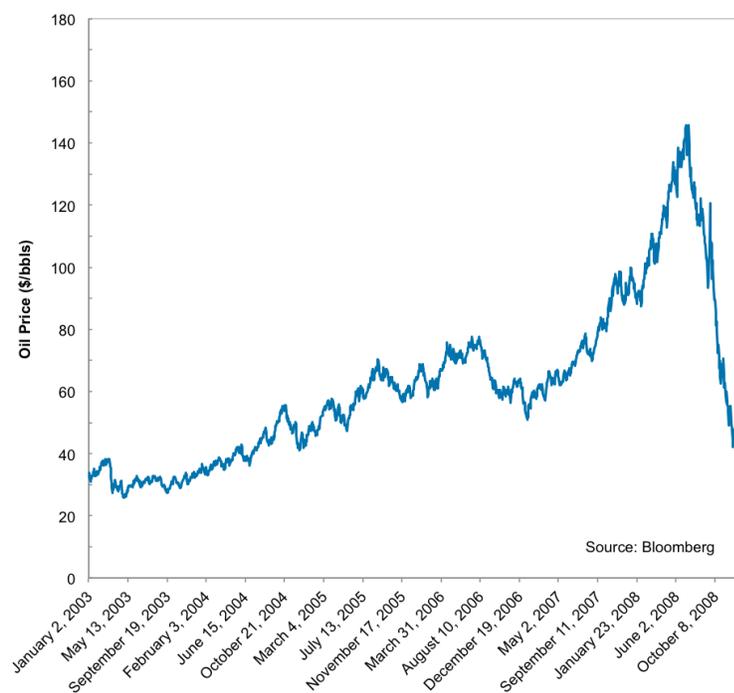
## Bubble or bezzle

In 2008, when the price of oil reached \$140 per barrel in July, there were many voices complaining that the price was being massively distorted by financial speculators—a classic bubble. A few commentators suggested that the price was being manipulated. In 2003, the price had been \$30 per barrel. Since then, however, the price had climbed fitfully but persistently to \$100 per barrel by the end of 2007 and then to \$140 per barrel by mid-2008.

As Figure 2 shows, the price then collapsed spectacularly in the late summer and fall of 2008. The collapse began in advance of the bankruptcy of Lehman Brothers and the financial crisis that ensued, continuing further in the wake of that crisis. This sharp rise and sudden collapse bears the hallmarks of a price untethered to fundamental forces of supply and demand.

Was the 2008 oil price spike the result of a manipulation?

Figure 2: WTI crude oil spot price



In 2011, when the CFTC filed its complaint against Arcadia for allegedly manipulating oil prices between January and April 2008, press reports recalled the earlier debates about prices reaching \$140 per barrel and the role financial speculators may have played in driving the price to that level. But a quick comparison of the oil price chart in Figure 2 with the Figure 1 chart of futures price spreads pertaining to the Arcadia allegations reveals that we are discussing two entirely distinct phenomena here. The first half of 2008 saw the spot price of crude oil increase nearly \$50 per barrel, going from approximately \$90 to approximately \$140 per barrel. In contrast, the range of futures price spreads in January 2008 is never

greater than 60 cents per barrel. Also, the alleged manipulation in early 2008 always went full circle—first driving prices up and then driving them back down again on a monthly cycle.

To relate the Arcadia manipulation allegations to the price spike in 2008, it makes more sense to think of the causality running in the other direction. In his classic book entitled *The Great Crash, 1929*, renowned Harvard economist John Kenneth Galbraith coined the term “the bezzle” to describe the wealth that is captured by unscrupulous actors who by one scheme or another manage to embezzle something for themselves out of the vast flows of wealth that seem to be piling up in good times. These embezzlers don’t cause the general euphoria from which they profit. Instead, it is the general euphoria that creates both the occasion for their profit and the cover under which they capture it. It’s the bubble that gives rise to the bezzle and not the bezzle that makes the bubble.

<sup>1</sup> In the traditional four-part test based on case law, CFTC has to prove that the parties alleged to have manipulated the market (1) had the ability to influence market prices, (2) intended to create prices not based on normal forces of demand and supply, (3) that artificial prices existed, and (4) that the alleged manipulators caused the artificial prices.

<sup>2</sup> The shorthand names can be misleading since transactions in the physicals market are usually for future delivery and transactions in the futures market can, but seldom do, lead to physical delivery.

## Glossary

**NYMEX:** Originally the New York Mercantile Exchange, NYMEX is a derivatives trading exchange owned by Chicago Mercantile Exchange (CME) that hosts the WTI crude oil futures contract.

**ICE:** Intercontinental Exchange is a derivatives trading exchange and major competitor to the CME that hosts a copycat WTI contract.

**WTI:** WTI stands for West Texas Intermediate, a grade of crude oil with defined physical properties such as low density and low sulfur content. It is an important benchmark type of crude oil in large part due to its designation as the deliverable product for the NYMEX's successful oil futures contract.

**Cushing, Oklahoma:** An important location for transshipment of crude oil by pipeline. Its importance was multiplied tremendously due to its designation at the point of delivery for the NYMEX's successful WTI oil futures contract. Consequently, the market for physical delivery in Cushing has become formalized with standard contract terms and price quotation conventions.

**Crude oil physical market:** A standard contract design in Cushing involves delivery in the next month; for example, a deal negotiated in January is delivered in February. Trading in this standard contract by custom continues through the final "cash window" that is a set of days near the end of the month and following close of trade in the NYMEX's near-month futures contract.

**Crude oil futures market:** An oil futures contract is a standardized agreement between two parties to buy or sell a specified quantity of oil with certain quality for a price agreed today (the futures price) with delivery of oil and payment occurring in return at a specified future date. These futures contracts are traded in derivatives exchanges such as NYMEX and Intercontinental Exchange (ICE). The NYMEX offers a crude oil futures contract that specifically requires the delivery of WTI crude oil at Cushing. Futures contracts are identified by the month and year of physical delivery, i.e., February 2008.

**Delivery month:** The designated month during which delivery is to be made.

**Expiry date:** Futures contracts are traded until the third business day of the month before the delivery month, i.e., the last trading date for the February 2008 contract was January 22, 2008.

**Near-month contract:** The futures contract with an expiration date closest to the current date. For example, the near-month contract on January 15th would be the February 2008 contract while the near-month contract on January 24th would be the March 2008 contract.

**Next-month contract:** The futures contract with the expiration date right after the near-month contract. For example, the next-month contract on January 15th would be the March 2008 contract while the next-month contract on January 24th would be the April 2008 contract.

**Calendar spread:** This is a trading strategy to simultaneously buy a specific month futures contract (i.e., WTI February 2008 contract) and sell an equal quantity of another month's futures contract (i.e., WTI March 2008 contract) of the same commodity. The calendar spread is defined as the price difference between two different contracts such as a February 2008 contract and a March 2008 contract. Both contract prices are influenced by world oil prices determined by perceived global demand and supply of oil. Trading calendar spreads contracts helps traders to hedge (immunize) against global oil price fluctuations but give the traders a chance to profit from the difference in prices between the prices on the two contracts.

**Long:** Taking a long position means to buy and own an asset. In the context of a futures contract, taking a long position means to purchase the futures contract with the intention of owning the commodity at a specified date in the future.

**Short:** Taking a short position means to sell and deliver an asset. In the context of a futures contract, taking a short position means to sell the futures contract with the intention of delivering the commodity at a specified date in the future.

## About the Financial Markets Practice

CRA's Financial Markets Practice provides advanced consulting services to corporate clients and attorneys. We specialize in applying the tools, principles, and findings of finance, economics, and accounting to complex litigation and business problems. Companies, law firms, and government agencies rely on CRA for high-quality research and analysis, expert testimony, and comprehensive support in litigation and regulatory proceedings. Our reputation is built on exceptional client service and our ability to present innovative and pragmatic solutions to complicated challenges. For additional information about how CRA's financial experts can help you with your litigation and regulatory needs, please visit [www.crai.com/financialmarkets](http://www.crai.com/financialmarkets).

## Contacts

For more information about this *CRA Insights*, please contact:

### John E. Parsons

Senior Consultant to CRA  
Boston  
+1-617-425-3048  
[jparsons@crai.com](mailto:jparsons@crai.com)

Billy Muttiah

Senior Associate  
Boston  
+1-617-425-3054  
[bmuttiah@crai.com](mailto:bmuttiah@crai.com)

[www.crai.com/financialmarkets](http://www.crai.com/financialmarkets)



The conclusions set forth herein are based on independent research and publicly available material. The views expressed herein are the views and opinions of the authors and do not reflect or represent the views of Charles River Associates or any of the organizations with which the authors are affiliated. Any opinion expressed herein shall not amount to any form of guarantee that the authors or Charles River Associates has determined or predicted future events or circumstances, and no such reliance may be inferred or implied. The authors and Charles River Associates accept no duty of care or liability of any kind whatsoever to any party, and no responsibility for damages, if any, suffered by any party as a result of decisions made, or not made, or actions taken, or not taken, based on this paper. If you have questions or require further information regarding this issue of *CRA Insights: Financial Markets*, please contact the contributor or editor at Charles River Associates. This material may be considered advertising. Detailed information about Charles River Associates, a registered trade name of CRA International, Inc., is available at [www.crai.com](http://www.crai.com)

Copyright 2012 Charles River Associates