



Energy Market Manipulation

METU - IAM 750 – Energy Trading and Risk Management

Barış Sanlı

Market power – Different Definitions

- OECD: "Market power refers to the ability of a firm (or group of firms) to raise and maintain price above the level that would prevail under competition is referred to as market or monopoly power. The exercise of market power leads to reduced output and loss of economic welfare. "
- US FTC : "market power as the ability of a single or several competing firms to set prices above their competitive level or consistently withhold supply to raise prices for their own benefit for a given period of time"
- EU : "dominant position", "'a position of economic strength enjoyed by an undertaking which enables it to prevent effective competition being maintained on the relevant market by giving it the power to behave to an appreciable extent independently of its competitors, customers and ultimately of its consumers'

Gaming, manipulation, fraud

- Gaming: "behaviour that circumvents or takes unfair advantage of Market Rules or conditions in a deceptive manner that harms the proper functioning of the market and potentially other market participants and consumers" (FERC)
- Fraud: Fraud is a question of fact and is defined generally "to include any action, transaction, or conspiracy for the purpose of impairing, obstructing or defeating a well-functioning market."

§1c.2 Prohibition of electric energy market manipulation.

(a) It shall be unlawful for any entity, directly or indirectly, in connection with the purchase or sale of electric energy or the purchase or sale of transmission services subject to the jurisdiction of the Commission,

(1) To use or employ any device, scheme, or artifice to defraud,

(2) To make any untrue statement of a material fact or to omit to state a material fact necessary in order to make the statements made, in the light of the circumstances under which they were made, not misleading, or

(3) To engage in any act, practice, or course of business that operates or would operate as a fraud or deceit upon any entity.

(b) Nothing in this section shall be construed to create a private right of action.

Indices

m-firm concentration ratio

$$C_m = \sum_{f=1}^{f=m} \alpha_f$$

α_f represents company f 's market share.

- Aggregate share of m largest companies
- Generally $m \sim 4$
- Or number of companies representing 95%

Hirschman-Herfindahl Index

- R_H or HHI

$$R_H = \sum_f \alpha_f^2$$

- %100 = 10000
- 2500 upper limit for reasonably efficient
- 1000-1800
- Anti-trust policy
- ? 1x30% , 10*7% ? HHI 1390

Pivotal Supplier Indicator

- PSI
- A company is pivotal if
 - All other producers can not cover market demand
- PSI is binary
 - Pivotal or not

Residual supply index

- The ratio between the total capacity of all a company's competitors to total demand

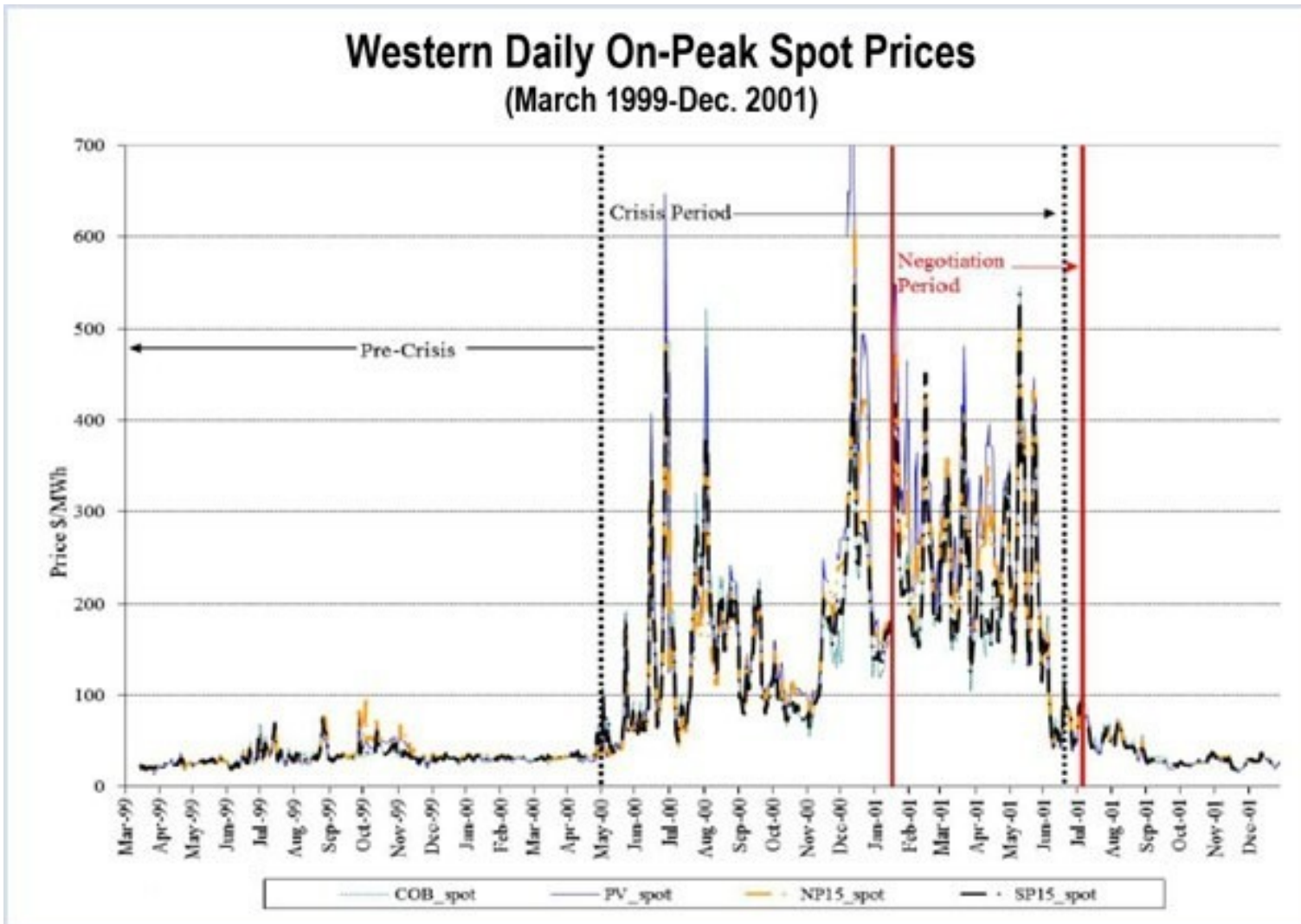
$$\begin{aligned} RSI_f &= \frac{\text{Company } f\text{'s residual supply}}{\text{Total demand}} \\ &= \frac{\text{Total supply capacity} - \text{Company } f\text{'s supply capacity}}{\text{Total demand}} \end{aligned}$$

Lerner index

- A behavioural index that measures market imperfection as overpricing with respect to a perfect market

$$L_I = \frac{P_{\text{realmarket}} - P_{\text{perfectmarket}}}{P_{\text{realmarket}}}$$

Western Energy Crisis



Trading Strategies (!) - Enron Era

Strategy	Category	Discussed in Enron Memos	Discussed in ISO DMA Reports	Discussed in FERC Staff Final Report
Export of CA Power	Energy market trading	✓	✓	✓
Ricochet (Megawatt Laundering)	Energy market trading	✓	✓	✓
Underscheduling by Utilities	Energy market trading	✓	✓	✓
Fat Boy ("Inc-ing" Load)	Energy market trading	✓	✓	✓
Load Shift	Congestion relief	✓	✓	✓
Death Star (Circular Schedules)	Congestion relief	✓	✓	✓
Wheel Out	Congestion relief	✓	✓	✓
Non-Firm Export	Congestion relief	✓	✓	✓
Scheduling to Collect Congestion Charges	Congestion relief	✓	✓	
Get Shorty	Ancillary services	✓	✓	✓
Selling Non-Firm as Firm	Ancillary services	✓	✓	✓

Trading strategies

- Ricochet strategy involves scheduling exports on a day-ahead or hour-ahead basis and re-importing the power for sale in real time or out of market in order to evade price caps or reporting requirements.
- Underscheduling: shifting demand from the PX market to the ISO real-time market, where prices were capped
- Fat Boy (or Inc-ing Load): Overscheduling load with the Cal ISO on a day-ahead or hour-ahead basis in order to be paid for excess generation in real-time

Congestion Relief Strategies

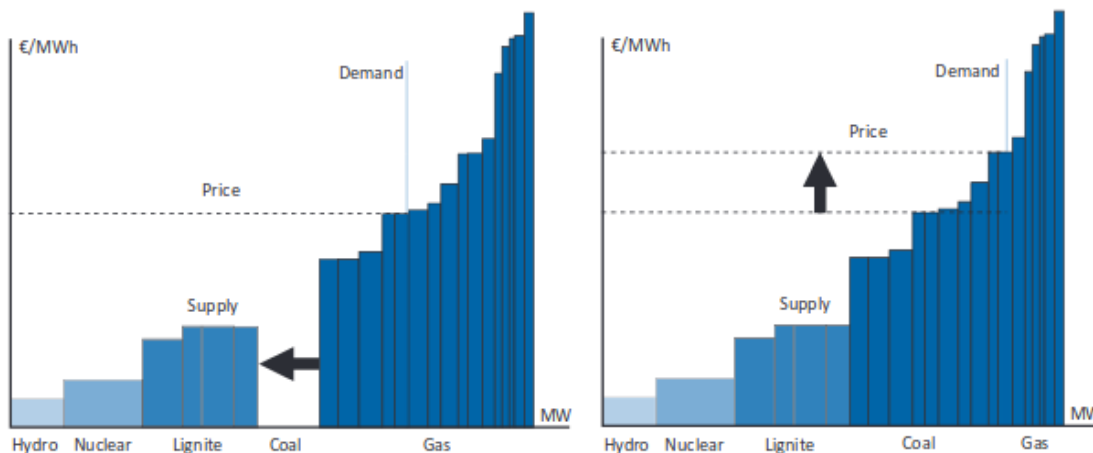
- Congestion relief strategies: the ISO generally did not rescind congestion payments for energy flows that were not actually provided in real-time
- Load shift is a scheduling and bidding strategy designed to maximize the value of financial congestion compensations
- Death star: the ultimate source and sink for the energy are the same such that no energy need flow. The key is that one of these schedules is on a congested line in the opposite direction of congestion so that a congestion relief payment is received
- Wheel-out: when the schedules are submitted, the traders know that the line capacity is zero and thus are certain that the schedules will be cut in real time. Due to this software flaw, the entity receives a congestion payment while never having to supply the energy.
- Non-Firm Export: scheduling a non-firm energy (energy not backed by reserves) export from California to earn congestion relief payments with no intention of actually exporting the energy.

Ancillary Services

- Get Shorty: Get Shorty involves selling ancillary services short in the day-ahead ancillary services market with the hope of buying them back at a lower price in the hour-ahead market. The ISO tariff recognizes the buyback of ancillary services as a legitimate form of arbitrage. What differentiates Get Shorty from legitimate buyback is that the selling entity never possessed the reserve energy and had no intention of ever supplying it. For this reason, this is referred to as paper trading of ancillary services
- Selling non-firm as firm energy: Since firm energy includes ancillary services and non-firm energy does not, a seller of non-firm energy would be charged for ancillary services.

E.ON 2008

- In 2008, the EU Commission alleged that E.ON **withheld electricity production capacities** with the aim to increasing wholesale prices → price increases and harm for consumers (exploitative abuse)
 - Case concerns the German electricity wholesale market in the 2002-2007 period
 - Individual abuse of joint dominant position (E.ON, RWE, EnBW, Vattenfall, ~70% market share)
 - E.ON committed to divest **5,000 MW** of capacity to resolve concerns
- The Commission alleged that E.ON favoured its production affiliate for providing **balancing services**
 - E.ON committed to **divest its extra-high voltage network** in early 2010



on its analysis, the Commission took the view that E.ON may have withdrawn or refrained from bidding certain amounts of capacity into the German power exchange EEX even though that capacity was available and would have been profitable to run given the market price in those hours. As discussed above, the breadth of E.ON's German generation portfolio may have enabled the company to undertake this profitably, meaning that it may have been able to earn higher profits from bidding less capacity in the short-term market while achieving higher prices on its entire portfolio due to the price increases caused by the withdrawal.

The investigation gave rise to another Commission concern: E.ON may in addition have pursued a strategy of deterring generation capacity investments by third parties by either offering them long-term contracts or shares in E.ON generation projects. Alto-

The Commission's investigation led to concerns that the E.ON TSO may in its daily practice have purchased secondary balancing power instead of tertiary balancing power. In doing so it would have favoured its own generation affiliate since it is the main one providing secondary balancing power whereas there is significantly higher competition for tertiary balancing power. Although secondary and tertiary balancing power are part of separate product markets due to their technical specifications⁽¹⁸⁾, both types of reserves are called on by the TSO⁽¹⁹⁾ for the purpose of balancing the system and the TSO has some flexibility to order either of the two reserves in order to resolve some unbalances. In addition it appeared that the E.ON TSO may have prevented competitive cross-border market entry for such services. Both activities have likely caused sig-

Iberdrola - 2013

- "Spanish Comisión Nacional de los Mercados y la Competencia (the national competition and markets authority) fined Iberdrola Generación €25 million for manipulating the Spanish wholesale electricity market."
- "between 30 November and 23 December 2013, Iberdrola engaged in a strategy of raising prices for its hydroelectric plants"
- Price €53/Mwh->€80-90/Mwh (30 Nov -> 12 – 21 Dec)
- 45 GWh dispatched at prices of around €70/MWh, with average daily prices at around €45-55/MWh, this reduced to 13 GWh per day over the period. Similarly, whereas at the end of November volumes of around 40-50 GWh at a price higher than €90/MWh remained undispached, this increased to a volume of around 105 GWh in December. This undispached output remained in excess of the average day-ahead market price despite the fact that the day-ahead market price increased from around €53/MWh on 30 November to about €80-90/MWh between 12 and 21 December"

Oil price rigging (Index manipulation)

- Platts comes up with its benchmarks after collecting information from traders via phone or instant message, focusing mostly on trades during the last 30 to 45 minutes of the trading day, which traders call the "trading window. Each day after the market closes, it comes up with a benchmark price it considers the best representation of the value at the close."

Traders Try to Game Platts Oil-Price Benchmarks

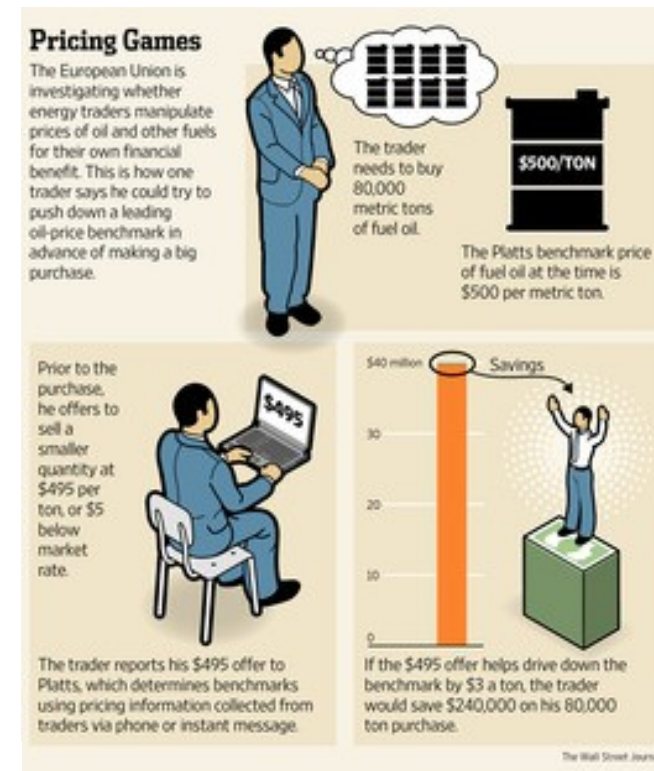
By *Justin Scheck and Jenny Gross*

Updated June 19, 2013 3:01 p.m. ET

LONDON—The European Union says it is searching for evidence that oil traders manipulate prices. If oil trader Halis Bektas is correct, it shouldn't be hard to find.

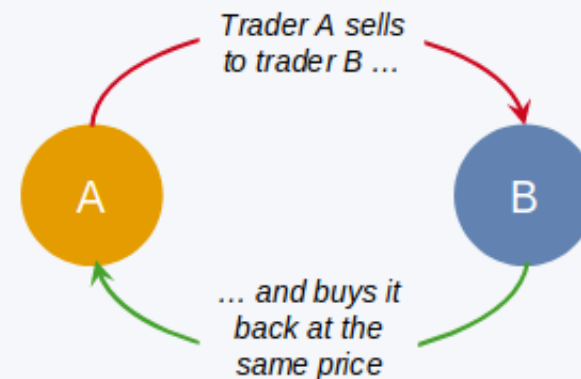
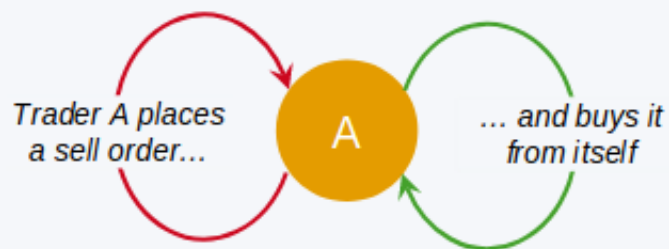
Mr. Bektas describes one strategy he has used himself: Offer to sell a small amount at a loss to drive down published oil prices, then snap up shiploads at the lower price.

He says such a trading strategy works this way: He might be scheduled to buy perhaps 80,000 metric tons of fuel oil, its price pegged to the daily benchmark published by Platts, a division of **McGraw Hill Financial** Inc. In the days before the purchase, he could offer to sell smaller quantities at discount prices—sometimes \$3 to \$5 a metric ton below market rate—and report those offer prices to Platts.



Wash trade

- **Market manipulation** means in short
 - entering transactions or issuing orders which
 - give false or misleading signals regarding supply, demand or price
 - secure prices at an artificial level
 - employs a deception which gives false or misleading signals regarding supply, demand or price
 - disseminating information through the media, including the internet, or by any other means, which gives false or misleading signals regarding supply, demand or price
- **Practical example:** Place orders to buy and sell for a product at the same time at the some artificially high price level (wash trade)



Spooing

- "traders place orders without intending to execute them to try to move prices in their favor"

U.S. Alleges Futures-Spooing by Three Commodities Traders

By Tom Schoenberg

“These individuals engaged in a sophisticated scheme to distort the futures market for their own advantage by placing large ‘spooed’ trading orders that they never intended to execute,” Assistant Attorney General Brian Benczkowski said in a written statement.

Cornering

- Cornering the Propane Market and Manipulating the Price of Propane
- Very common in commodities (metals etc)
- May go wrong!!

Mr Copper

The latest mystery copper trade is not the first time someone has tried to hoard the metal. Yasuo Hamanaka, infamously known as 'Mr Copper', spent eight years in jail after confessing huge losses during more than ten years of off-the-book copper deals that led to more than \$2.6bn in losses.

Related Articles

- [Mystery trader captures 80pc of London's copper market](#) 03 Dec 2010
- [Is it time to buy copper: what the analysts are saying](#) 03 Dec 2010
- [Copper: the facts and figures you need to know](#) 03 Dec 2010

Mr Hamanaka bought one million tons of copper over a decade in a desperate attempt to keep prices up. At one point he held so much of the metal - as much as 5pc of world supplies - that traders dubbed him Mr Copper.

<https://www.cftc.gov/PressRoom/PressReleases/pr5193-06>

<https://www.telegraph.co.uk/finance/newsbysector/industry/mining/8178976/From-Mr-Copper-to-Choc-Finger-Past-attempts-to-corner-commodity-markets.html>



U.S. COMMODITY FUTURES TRADING COMMISSION

Ensuring the Integrity of the Futures & Swaps Markets

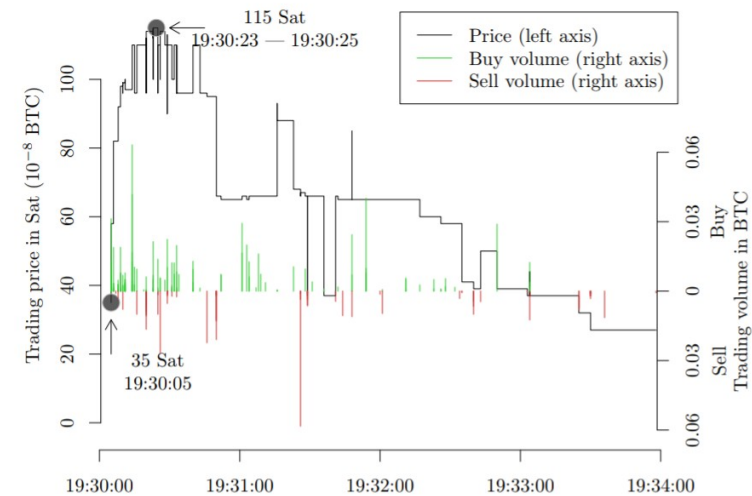
The CFTC's complaint alleges that:

- With the knowledge, advice, and consent of senior management, BP employees developed and executed a speculative trading strategy in which BP cornered the February 2004 TET physical propane market;
- In developing this strategy, BP employees discussed BP's ability to "control the market at will" by cornering the market in TET propane;
- According to internal BP documents, BP's traders would establish a long February propane position, withhold a portion of that propane from the market, and drive up the price of propane;
- By cornering the TET propane market, BP employees sought to generate a profit for BP of at least \$20 million "with potential for upside from there"; and
- BP's scheme to corner the market caused the price of TET propane to become artificially high.

"Cornering a commodity market is more than a threat to market integrity. It is an illegal activity that could have repercussions for commercial market participants as well as retail consumers around this country. This case clearly illustrates that complex and covert trading patterns will not prevent us from aggressively pursuing and exposing those that violate the Commodity Exchange Act," said Gregory Mocek, the CFTC's Director of Enforcement.

Pump & dump

- Recently in cryptocurrency market
- "The organizer begins by selecting an obscure cryptocurrency and quietly accumulating it."
- "The organizer then announces that a pump operation is about to begin and that a randomly chosen cryptocurrency will be announced at a specific time."
- "At the specified time, the organizer reveals the chosen cryptocurrency"
- "When the price reaches its peak, a sell-off begins as participants attempt to make a quick profit at the expense of anybody unlucky enough to have joined the fun unwittingly or too slowly. All this activity takes place in just a few minutes."





Questions?

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