

RESEARCH AND PRODUCT DEVELOPMENT

Market Concentration in Futures and Options for Crude Oil and Natural Gas

Bob Biolsi

CME GROUP ENERGY RESEARCH
AND PRODUCT DEVELOPMENT

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As the world's largest and most diverse derivatives marketplace, CME Group is where the world comes to manage risk. CME Group exchanges offer the widest range of global benchmark products across all major asset classes, including futures and options based on interest rates, equity indexes, foreign exchange, energy, agricultural commodities, metals, weather and real estate. CME Group brings buyers and sellers together through its CME Globex electronic trading platform and its trading facilities in New York and Chicago. CME Group also operates CME Clearing, one of the largest central counterparty clearing services in the world, which provides clearing and settlement services for exchange-traded contracts, as well as for over-the-counter derivatives transactions through CME ClearPort. These products and services ensure that businesses everywhere can substantially mitigate counterparty credit risk in both listed and over-the-counter derivatives markets.

ENERGY PRODUCTS

In 2008, NYMEX became part of CME Group. Together, we offer the most extensive and liquid energy complex in the world, including Light Sweet Crude Oil (WTI), Natural Gas (Henry Hub), petroleum and electricity products. Many of our contracts are benchmarks that set the price for these resources worldwide. From the world's largest industrial companies to financial institutions, our diverse universe of participants clear an average daily volume of 1.5 million energy contracts every day on CME Globex, through CME ClearPort or on our trading floor. And now that NYMEX is part of CME Group, the world's leading energy marketplace is growing even stronger.

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The energy futures markets are characterized by robust, competitive markets, with little or no market concentration. Despite assertions that a few large bank dealers are dominating futures trading, there is little evidence from public data that this is in fact the case. Concentrations of even the largest players are too small to exert market power by any standard definition of market concentration. Not only is there a large globally diverse group of market makers involved in energy derivatives, but in addition, commercial companies, money managers, retail traders, and speculative interests have been active in both buying and selling energy derivatives.

One means of assessing market competition, and the degree of concentration, is to focus on derivatives dealers, and their market making function. Each year *Risk Magazine* ranks market makers based on end-user customer surveys. The listings for commodity markets in general, and energy in particular reveal intense competition. Ranked market makers vary by product, as well as by changes in rankings over time. The changing ranks over time and across commodity groups yields evidence of a dynamic microstructure. In turn, this gives evidence that energy derivative markets in energy derivatives are highly competitive.

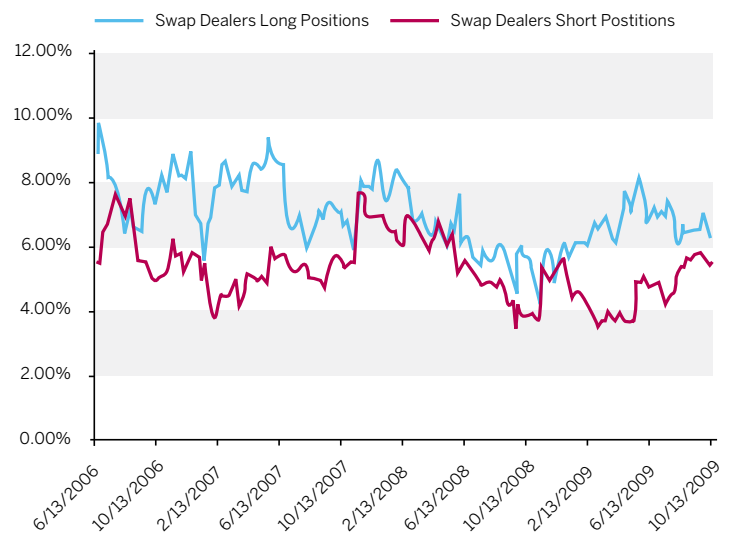
Examples gleaned from *Risk Magazine* (February 2009 issue) of this dynamic can be found in overall commodity market maker rankings. For example, Deutsche Bank was ranked fifth in 2008 but second in 2009, leapfrogging over Goldman Sachs, Barclays, and Societe Generale. Citibank made the list in 2009 despite not being on it in 2008. For petroleum, Societe Generale was ranked the number 1 dealer, while for Natural Gas, BP was the most highly ranked. The magazine enumerates a slate of diverse, highly capitalized dealers for energy derivatives. In addition to the above names, the list includes Shell Energy, Gaselys, EDF Trading, BNP Paribas, Total Oil, UBS, Goldman

Sachs, Morgan Stanley, JP Morgan, Citibank, Societe Generale, Deutsche Bank, BP, Barclays Bank, and Bank of America. Rather than shrinking, this list has been getting larger over recent years, enabling futures and options markets in energy to become more liquid and more difficult for individual participants to influence price trends.

ANALYSIS ON THE FUTURES MARKET CONCENTRATION OF SWAP DEALERS IN WTI CRUDE OIL AND NATURAL GAS FUTURES

In Figure I, is a graph based on CFTC Commitment of Traders (“COT”) data. They clearly illustrate that large swap dealers role in Light Sweet Crude Oil (WTI) futures is relatively small and generally do not carry positions that are likely to influence market prices in any one direction. In the first graph, it is clear that in the aggregate swap dealers have consistently been less than 10 percent of the WTI futures and options markets since June of 2006 (the earliest date for the CFTC data on swap dealers). Not only have their aggregate positions been small, but more tellingly they have been declining to about 6 percent (both long and short) in the most recent data.

Figure I: Commitment of Traders for Crude Oil Swap Dealer Positions as a Percent of Open Interest

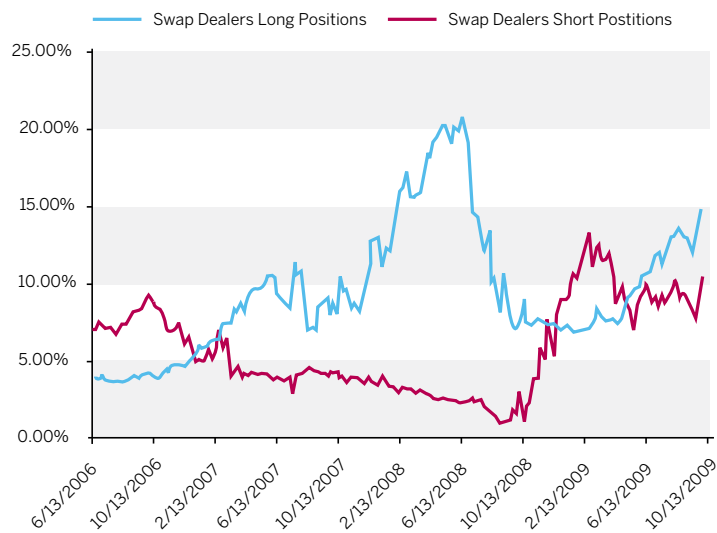


Source: CFTC Historical Commitments of Traders

Looked at on a net (long less short) basis, the overall positions of swap dealers have ranged between 0 percent and 4 percent of open interest, and more generally less than 2 percent. This overall balance in their positions demonstrates their market neutrality. Large market swings in either direction can only marginally benefit their profit and loss statements.

Natural Gas, another major core energy contract, has a somewhat different pattern. Swap Dealers tend to have proportionately higher positions relative to open interest than they do for Crude Oil. In particular, positions over the past three years have been as high as 20 percent. Note, however, that these positions can swing from positive to negative. As with Crude Oil, these relative positions have been trending downward, and the net position is under 5 percent. This is illustrated in Figure II below.

Figure II: Commitment of Traders for Natural Gas Swap Dealer Positions as a Percent of Open Interest



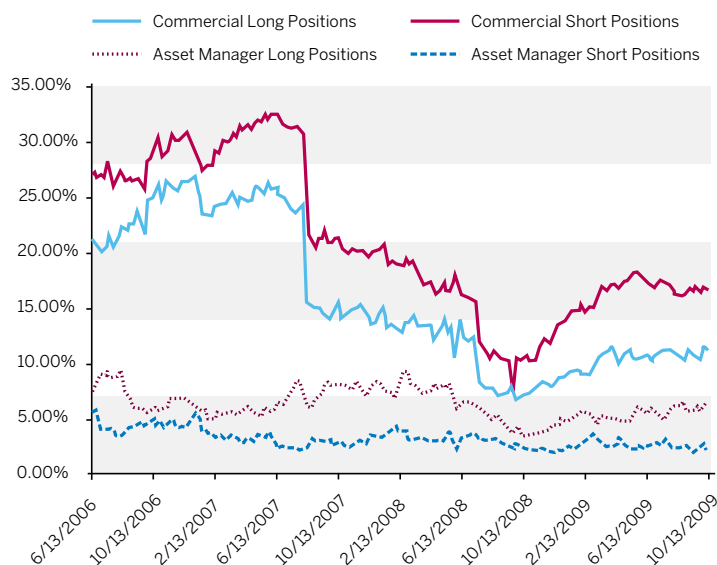
Source: CFTC Historical Commitments of Traders

ANALYSIS ON THE FUTURES MARKET CONCENTRATION OF COMMERCIAL AND MANAGED MONEY IN WTI AND NATURAL GAS FUTURES

The two other major participant categories involved in futures markets are Commercial Hedgers and Managed Money traders. It may be instructive to gauge their respective relative positions in order to illustrate the breadth of participation in commodity futures, and by inference the low levels of concentration of individual participants. Figure III illustrates the recent trends for Crude Oil. Commercial Interests far outweigh (in most cases more than double) those of Managed Money. In addition, long positions tend to be about 5 percent lower (relative to open interest) than short commercial positions. Short positions had exceeded 30 percent of total open interest in 2007 but has been in the 15 to 20 percent range more recently. The opposite is true of Managed Money positions: long positions are consistently higher than short positions. Moreover, it is also uniformly true that the long positions trend in the 5 to 10 percent range. Overall, the distribution of positions tend to be well dispersed across trader categories.

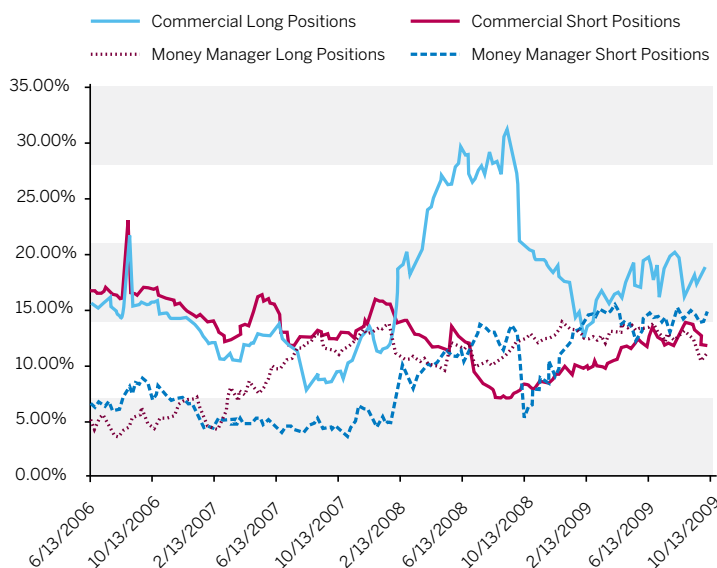
For Natural Gas somewhat different patterns emerge in Figure IV. Here the long and short positions for commercial interests tend to be evenly balanced. Net positions have no clear pattern, alternating between being net long and net short. However, unlike crude oil, Managed Money short positions tend to outweigh the long positions. As with Crude Oil, trading interests are diverse, and small relative to total open-interest.

Figure III: Commitment of Traders for Crude Oil Commercial and Managed Money Positions as a Percent of Open Interest



Source: CFTC Historical Commitments of Traders

Figure IV: Commitment of Traders for Natural Gas Commercial and Managed Money Positions as a Percent of Open Interest



Source: CFTC Historical Commitments of Traders

ANALYSIS ON THE CONCENTRATION IN OTC COMMODITY POSITIONS

A long established measure of market concentration in Economics is the Herfindahl-Hirschman Index (“HHI”). This is a measure employed by the Federal Trade Commission and Justice Department in enforcing anti-trust laws. The overall level of concentration in a market is measured by the Herfindahl-Hirschman Index (HHI), which is the sum of the squares of the market shares of all participants. From the FTC Guide to the Antitrust Laws, the index is illustrated “For instance, a market with four equal-sized firms has an HHI of 2500 (252 + 252 + 252 + 252). Markets with many sellers have low HHIs; markets with fewer players or those dominated by few large companies have HHIs approaching 10,000, a level indicating one firm with 100 percent market share”. The index was calculated for the top fifty participants for both Crude Oil and Natural Gas in November 2009. The market share measure was calculated as the total futures and options (on a delta or futures equivalent basis) as a percent of total open interest.

For Crude Oil, the HHI in November of 2009 came in at 20, while for Natural Gas it was 60. Both of these results come in substantially below the 1,000 threshold established by the Federal Trade Commission for determining concentrated market structures. These levels, in fact, approximate the classical economic ideal of pure competition. In this type of environment, economics teaches that the ability of market participants to exert pressure on prices becomes extraordinarily difficult. In economics terms, the data on concentration ratios imply that all participants in energy futures and options trading become “price takers” (i.e. each individual participant has virtually no influence on price).

A WIDER UNIVERSE OF ENERGY DERIVATIVES

It is worth noting, that the above statistics refer only to the NYMEX Division of CME Group. While undoubtedly, NYMEX trading accounts for a very large portion of energy trading, competition does not end there. Other Exchanges, for example ICE and the SGX (Singapore Exchange), also participate in energy derivatives trading. Any remote possibility that NYMEX prices don't reference actual demand and supply conditions in the cash market, would assuredly lead to trading opportunities at these other venues. Arbitrage opportunities would arise and quickly force convergence between NYMEX futures and the cash markets .

In addition, a large and vibrant over-the-counter market exists in energy derivatives. While by their nature there is no transparent means of gathering statistical data, evidence can be garnered by evaluating quarterly data on domestic bank holding companies collected by the Federal Reserve. The data tends to be somewhat different in that it reflects notional values rather than number of contracts. Still, it is useful in determining the level of competition. The table below shows that Bank of America held of \$2 Trillion in gross notional amounts as of Q2 2009.

While these numbers seem quite large, this is consistent with BAC's Q3 10Q filing and may be a result of merger with Merrill. A few other important points to note:

- BAC had over 88 percent of its reported exposure tied to commodity futures contracts, while on average the banks held 27 percent of their gross notional exposure in futures.
- Futures represented 41 percent of total gross notional commodity exposure for this domestic banks; swaps were next with 16 percent or \$874 Billion.
- OTC options positions were double the gross notional exposure of exchange traded options activity

The depth and breadth of the over-the-counter markets in energy gives additional assurances that the competition in energy derivatives remains free of market distortions.

GROSS NOTIONAL AMOUNTS OF DERIVATIVES HELD \$000							
	JP Morgan	Bank of America	Citi	Wells Fargo	Goldman Sachs	Morgan Stanley	Totals*
Futures Contracts	45,839,000	1,881,694,971	45,163,000	10,474,000	125,793,000	94,557,000	2,206,074,877
Forwards	46,556,000	25,007,821	39,742,000	220,000	103,587,000	138,316,000	388,967,458
Exchange Options Sold	81,721,000	44,147,453	19,254,000	4,344,000	80,668,000	102,835,000	333,251,770
Exchange Options Bought	72,049,000	41,854,012	19,223,000	4,704,000	87,588,000	102,639,000	328,381,526
OTC Options Sold	114,520,000	24,037,193	11,409,000	6,707,000	130,649,000	261,420,000	550,408,532
OTC Options Bought	118,277,000	22,967,692	11,031,000	6,378,000	108,750,000	397,961,000	667,254,498
Swaps	186,168,000	90,182,145	27,451,000	30,707,000	222,969,000	315,295,000	874,993,109
Total Notional for Trading	665,130,000	2,129,971,287	173,273,000	63,534,000	860,004,000	1,413,023,000	
Percent of Total	12 percent	40 percent	3 percent	1 percent	16 percent	26 percent	

For questions or more information, please contact Bob Biolsi at
bob.biolsi@cmegroup.com or **212 299 2610**.

Futures trading is not suitable for all investors, and involves the risk of loss. Futures are a leveraged investment, and because only a percentage of a contract's value is required to trade, it is possible to lose more than the amount of money deposited for a futures position. Therefore, traders should only use funds that they can afford to lose without affecting their lifestyles. And only a portion of those funds should be devoted to any one trade because they cannot expect to profit on every trade. All references to options refer to options on futures.

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CME GROUP HEADQUARTERS

20 South Wacker Drive
Chicago, Illinois 60606
cmegroup.com

info@cmegroup.com
800 331 3332
312 930 1000

CME GROUP REGIONAL OFFICES

New York
212 299 2000

London
+44 20 7796 7100

São Paulo
+55 11 2565 5999

Houston
713 658 9292

Singapore
+65 6593 5555

Washington D.C.
202 638 3838

Tokyo
+81 3 5403 4828