J.P. MORGAN CENTER
FOR COMMODITIES
UNIVERSITY OF COLORADO
DENVER BUSINESS SCHOOL

GLOBAL
COMMODITIES
APPLIED RESEARCH DIGEST

SPRING 2016

CONTRIBUTING EDITOR'S COLLECTION

"WHEN HAS OPEC SPARE CAPACITY MATTERED FOR OIL PRICES?"

"WHAT ARE THE SOURCES OF RETURN FOR CTAs AND COMMODITY INDICES? A BRIEF SURVEY OF RELEVANT RESEARCH"

"CASE STUDIES FROM COMMODITY DERIVATIVES DEBACLES"

"BRIEF CASE STUDIES ON FUTURES CONTRACT SUCCESSES AND FAILURES"

HILARY TILL, SOLICH SCHOLAR,
J.P. MORGAN CENTER FOR COMMODITIES,
UNIVERSITY OF COLORADO DENVER BUSINESS SCHOOL;
AND CONTRIBUTING EDITOR,
GLOBAL COMMODITIES APPLIED RESEARCH DIGEST

Supported by a
generous grant from

CME GROUP
FOUNDATION

Business School
UNIVERSITY OF COLORADO DENVER

Contributing Editor's Collection

Hilary Till
Solich Scholar, J.P. Morgan Center for Commodities, University of Colorado Denver Business School; and Contributing Editor, *Global Commodities Applied Research Digest*

This collection of four separate digest articles provides answers to the following questions:

- When has OPEC spare capacity mattered for oil prices?
- What are the sources of return for CTAs and commodity indices?
- What are the risk-management lessons from high-profile commodity derivatives debacles?
- What determines whether commodity futures contacts succeed or not?

Each article takes a different approach in answering these questions, as noted on the next page.

Hilary Till, M.Sc. (Statistics), Solich Scholar, J.P. Morgan Center for Commodities (JPMCC) at the University of Colorado Denver Business School, posing a question at the JPMCC's Research Council meeting on December 4, 2015. She is flanked (left) by Dr. Sueann Ambron, Former Dean of the Business School and Senior Advisor, JPMCC; and (right) by Dr. Thomas Brady, Chief Economist at Newmont Mining Corporation; and (immediate foreground) by Dr. Margaret Slade, Professor Emeritus, Vancouver School of Economics, University of British Columbia and Co-Chair of the JPMCC Research Council.

Original Empirical Analysis

The first article on OPEC spare capacity and oil prices examines historical data and finds that at least in the past, OPEC spare capacity has only mattered when (U.S.) crude oil inventories have been low. The article does raise the question on whether a focus on OPEC behavior will continue to be relevant if America's shale industry has replaced OPEC as the oil market's "swing producer."

Survey of Empirical Research

The second article on Commodity Trading Advisors (CTAs) and commodity indices surveys empirical research on the long-term drivers of return for futures programs. From this survey, one can find strong evidence that there are persistent returns in futures programs due to momentum, roll yield, and also due to rebalancing. Further, a CTA investor may also require that a program's dynamic trading strategies produce returns that have options-like payoff profiles; and institutional investors expect commodity index programs to provide diversification for their balanced equity-and-bond portfolios.

Industry Case Studies

The third article on commodity derivatives debacles uses case studies to infer key risk-management lessons. Each of the case studies did not involve complex mathematical issues; instead, they can each be summarized as fundamental control problems. Large commodity derivatives trading companies must emphasize (1) compliance with regulatory rules and laws; (2) the valuation of derivatives instruments by third parties independent of front-office personnel; and (3) the imposition of position limits in all electronic trading systems.

A Complex System Modeled as a Competitive Game

The fourth article on futures contract successes and failures treats the futures markets as a competitive game. Specifically, futures trading can be seen as a game where the competing players, the hedgers and speculators, each have sufficient economic reasons to participate. The referee of this game, the government authorities, has the power to stop the game, if there is not a convincing economic rationale for a futures contract's existence. Therefore, a futures contract can only succeed if it responds to a hedging need, and if speculators are able to manage the risk of taking on hedger positions. In addition, if one cannot make a convincing case that a contract serves an economic purpose, then the contract is at risk to either being banned or being heavily curtailed.

Common Theme

The goal with each of the four digest articles that follows is to provide both industry participants and policymakers with useful insights on the frequently opaque, but always dynamic, commodity markets.

Case Studies from Commodity Derivatives Debacles

Hilary Till
Solich Scholar, J.P. Morgan Center for Commodities, University of Colorado Denver Business School; and Contributing Editor, *Global Commodities Applied Research Digest*

Available at SSRN: **http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2617705**

Until recently, one could only gain expertise in commodity-derivatives relationships if one had worked in niche commodity-processor companies or in banks that specialized in hedging project risk for natural-resource companies. The contribution of this paper is to help fill the knowledge gap in the risk management of commodity derivatives trading. The paper emphasizes the constant challenges to a trader when attempting to navigate the very dynamic flows of both the commodity markets and the prevailing risk environment. The paper also emphasizes that operational controls are paramount in an age of increasing legal and regulatory risk, particularly for firms involved in large-scale commodity derivatives trading.

This digest article focuses on the risk-management lapses at three large institutions involved in commodity derivatives trading, including an international oil company, a Canadian bank, and a Futures Commissions Merchant.

International Oil Company

In 2007, an International Oil Company in the Chicago suburbs ran afoul of market-conduct laws and rules, as enforced by the Commodity Futures Trading Commission and by the U.S. Department of Justice, for trading activities of the previous five years.

There is a strict body of law prohibiting market manipulation by commodity traders, especially when retail customers are put at risk. The International Oil Company had attempted to corner the market in physical propane and senior management had consented to the strategy. For example, in the CFTC complaint, the compliance manager at the company's business unit responsible for propane trading is quoted as approving the propane-purchasing strategy.

The total monetary sanction against the company was approximately $303-million, "the largest manipulation settlement in the CFTC history," according to CFTC (2007), which included both civil and criminal penalties. The civil and criminal fines *far* exceeded the market risk of the activities, illustrating where the risk-management priorities need to be for large participants in the commodity markets.

The key risk-management lesson from this debacle is to establish clear-cut compliance and ethics programs, not just for the trading staff but also for senior management. Also, prospective traders entering into large-scale derivatives trading operations need to be as (or more) knowledgeable about regulatory rules and laws, as they are with sophisticated market risk-management techniques.

Canadian Bank

At the end of April 2007, a Canadian bank announced trading losses of $350 to $400 million Canadian dollars. These losses were later revised upwards to $680-million Canadian dollars, which was higher than the bank's revenue from trading during the previous year. Unfortunately, the bank's auditors had found that the bank's over-the-counter natural-gas book had been seriously mismarked. The auditors reported that they had never seen such a large discrepancy between the marks that were used, and market value.

Another way of framing the significance of the bank's natural-gas trading loss was that in its filings with the U.S. Securities and Exchange Commission (SEC), the bank had stated that its average one-day Value-at-Risk in its commodity book was only C$8.8-million during the quarter that ended on January 31st, 2007, according to BMO (2007). We have to conclude that for large-scale commodity-trading efforts, the complexity may not be in market-risk monitoring, but in relatively simply described operational controls, which must be rigorously applied throughout a large organization.

Futures Commissions Merchant

On February 28th, 2008, a large Futures Commissions Merchant (FCM) revealed an unexpectedly large $141.5-million loss from a wheat-futures trading position taken by one of its registered representatives in Memphis, Tennessee for the representative's proprietary (own) account. The representative had amassed more than 15,000 futures contracts covering 75 million bushels of wheat on the Chicago Board of Trade, between midnight and 6 a.m. on February 27th. Apparently, the clearing firm did not have automatic limits in the sizing of futures trades executed electronically, when the operator was a registered representative of the firm.

As a consequence of the wheat loss, the FCM's CEO stated that "the company would introduce limits on positions taken by all customers and traders," reported Cameron and Lucchetti (2008). The FCM also took other remedial actions to restore customer and shareholder confidence in its risk-management infrastructure. The lessons from this trading mishap are to impose strict position limits in all electronic trading systems and to restore customer confidence by taking immediate action.

Summary of Risk Management Lessons for Large Institutions

None of these three examples involve complex mathematical issues; they can each be summarized briefly and simply as fundamental control problems. That said, this statement is admittedly not fair to individuals at large organizations. Employees at large companies operate in *extremely* complex social environments. Frequently, for individuals working at large companies, one can liken employment to a sumo-wrestling match. From the outside, it does not look like anything much is getting done, but just staying in the ring is actually the accomplishment.

The real conclusion from these case studies might be an insight from a textbook, which is not considered a risk-management primer: Good to Great. In the main, a large organization can only do well when it implements a handful of simple concepts, which it consistently applies in scale, and across time, by individuals who all share common business values. In the case of large commodity derivatives trading companies, an emphasis on:

(1) complying with regulatory rules and laws;

(2) valuing instruments based on pricing sources genuinely independent of the trading team; and

(3) imposing strict position limits in all electronic trading systems

are clearly core principles that all stakeholders in institutionally-sized commodity trading firms should embrace.

Conclusion

The perhaps surprising conclusion of this article is that the risk-management lapses at three large institutions were due to simply described operational control problems. After learning the risk-management lessons from these debacles, readers will hopefully be helped in avoiding such mishaps in their own careers.

Endnote and Acknowledgement

Some of the concepts in this article were previously discussed in Till (2008). In addition, the comprehensive article benefitted from comments from Hendrik Schwarz.

References

[BMO] Bank of Montreal, 2007, “CAN 6-K for 5/29/07 Ex-99-1,” Securities and Exchange Commission File 1-13354.

Cameron, D. and A. Lucchetti, 2008, "MF Global Takes a Large Loss On Unauthorized Wheat Trades," *Wall Street Journal Online*, February 28.

[CFTC] Commodity Futures Trading Commission, 2007, "BP Agrees to Pay a Total of $303 Million in Sanctions to Settle Charges of Manipulation and Attempted Manipulation in the Propane Market," Release 5405-07, October 25.

Collins, J., 2001, Good to Great, New York: HarperBusiness.

Till, H., 2008, “Case Studies and Risk Management Lessons in Commodity Derivatives Trading,” in H. Geman (ed) Risk Management in Commodity Markets: From Shipping to Agriculturals and Energy, Chichester (UK): John Wiley & Sons Ltd., pp. 255-291.

Keywords

Risk management, commodity derivatives, trading, regulatory, hedge fund

GLOBAL COMMODITIES
APPLIED RESEARCH DIGEST

The *Global Commodities Applied Research Digest* is produced by the J.P. Morgan Center for Commodities (JPMCC) at the University of Colorado Denver Business School. The JPMCC is the first center of its kind focused on a broad range of commodities, including agriculture, energy and mining. Established in 2012, this innovative center provides educational programs and supports research in commodities markets, regulation, trading, financial fundamentals, investing, and risk management.

In addition to its education mission, the J.P. Morgan Center for Commodities' aim is to become a focal point for worldwide research on commodities.

J.P. MORGAN CENTER FOR COMMODITIES
UNIVERSITY OF COLORADO DENVER BUSINESS SCHOOL

Physical Address

J.P. Morgan Center for Commodities

University of Colorado Denver Business School

1475 Lawrence Street
Denver, CO 80202

Mailing Address

J.P. Morgan Center for Commodities

University of Colorado Denver Business School

Campus Box 165
P.O. Box 173364
Denver, CO 80217

Web

business.ucdenver.edu/commodities

Contact

Mr. Matthew Fleming
Program Coordinator
J.P. Morgan Center for Commodities
University of Colorado Denver Business School
matthew.fleming@ucdenver.edu
1.303.315.8019

Business School
UNIVERSITY OF COLORADO DENVER