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The Future Landscape of Energy Trading

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Background

Who trades energy commodity derivatives and why do they trade?

These seemingly simple questions beg answers as we continue to research and analyze energy commodity market performance during the past few years. Essential drivers of crude oil and natural gas spot and futures prices reflect current and expected conditions in supply–demand balances and associated inventory levels, as well as key basis differentials related to shifting geographies and distances (location of supply sources relative to demand and changes in demand), variations in quality and so on. Increasingly, price levels of energy commodities reflect other variables such as the relative value of currencies (the dollar against other denominations) and returns derived in other financial markets (equities, bonds and other interest bearing instruments), cognizant of inflation expectations. Finally, the question of “who trades” raises the issue of speculation, and whether some market participants are engaging in side bets and/or whether energy commodities markets are attracting participants that have no vested interest in the physical commodities businesses. That is, are there market participants seeking returns from energy commodity derivatives purely for gains in financial portfolios? If so (and the answer is certainly “yes”) what are the consequences?¹

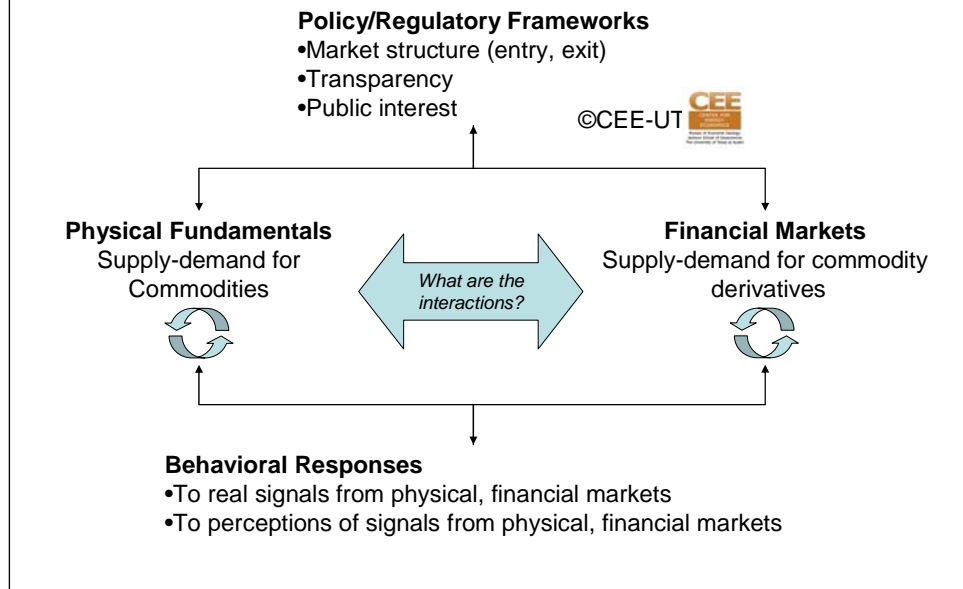
Two issues bear further thought and research.

¹ In its Staff Report on Commodity Swap Dealers and Index Traders with Commission Recommendations, September 2008, CFTC stated in its executive summary: “Major changes in the composition of futures market participants have developed over the last 20 years. Specifically, there has been an influx of new traders into the market – commodity index traders (including pension and endowment funds) that seek exposure to commodities through passive long-term investment in commodity indexes, and swap dealers that seek to hedge price risk resulting from their over-the-counter (OTC) activity....The swap dealer, which is often affiliated with a bank or other large financial institution, has emerged to serve as a bridge between the OTC swap market and the futures markets. Swap dealers act as swap counterparties both to commercial firms seeking to hedge price risks and to speculators seeking to gain price exposure. In essence, swap dealers function as aggregators or market makers, offering contracts with tailored terms to their clients before utilizing the more standardized futures markets to manage the resulting risk”. See <http://www.cftc.gov/stellent/groups/public/@newsroom/documents/file/cftcstaffreportonswapdealers09.pdf> for the full report.

The first relates to the last question above, and how commodity and financial markets interact as well as the information flows between these markets and the policy/regulatory environment, on the one hand, and behavioral responses to price signals for both market participants and broader audiences. The conceptual figure below suggests a set of relationships, some of which are provocative with regard to current thinking. Our diagram of modern energy markets makes the following inferences.

- Policy and regulatory frameworks both inform and, in turn, are influenced by performance in commodity and financial markets. Behavioral responses are formed by *both real and perceived* price signals emanating from the markets. Together, these assumptions “shade” the separation between endogenous and exogenous forces. That is, regulators establish the rules of the game for trading but also respond to, and react to, market performance. Market participants and external audiences (for instance, energy consumers and their elected politicians) react to price signals but are also capable of exerting pressure on the markets, not least via policy and regulatory oversight.
- The physical fundamentals associated with energy commodities are driven by supply-demand balances and all that these entail. A rule of thumb for energy commodity trading and risk management has always been that *cash flow protection is manifest* and that speculative trading or side betting creates risks for both energy producers and customers and can undermine enterprise value.
- New to the architecture is discreet demand for commodity derivatives in financial portfolios. In our scheme, the demand for, and thus supply of, energy commodity derivatives is driven to a large extent by investors seeking returns across competing opportunities. *That is, energy commodity derivatives have become an asset class.* Thus, the role of energy commodity derivatives in financial markets becomes more distinct and pervasive as use of derivatives expands to achieve overall investment portfolio targets. The number and diversity of market participants using energy (or any other) commodity derivatives to meet financial portfolio targets has grown and ranges from hedge funds to pension funds, sovereign funds and other entities . *Any bailout of these financial bettors with taxpayer funding creates moral hazard that will encourage similar behavior in the future, further undermining the trust in energy derivatives trading.*
- As a result, and controversially, our model suggests that interactions do exist between physical fundamentals and financial markets. *Arguments that energy commodity trading reflects purely or only physical fundamentals do not, we believe, properly reflect true strategic behavior among market participants.* The search for returns in financial markets can exert profound impacts on energy commodity prices and price signals.

Modern Energy Markets



Very little research has been done along the lines we propose. And yet, the implications for energy prices, investment in the physical businesses (oil and natural gas exploration and production and all associated infrastructure for pipeline and marine transportation, storage, refining, marketing and conversion, including electric power) are substantial. The uncertainties for both energy producers and consumers around the world are huge. First, the challenges of managing in this new environment are extensive, including strategic planning for investment, energy policy formulation and fiscal management by producing governments that rely on revenues from export sales. Without a doubt, the demand for energy commodity derivatives represents important liquidity for overall market performance. *Clearly, traders must have counterparties to trade with.* Indeed, past energy commodity market turmoil included “round trip” trading and manipulation of price indexes as some market participants sought to build a perception of liquidity and also establish market power in key physical locations.

A second, a related issue involves performance in both the commodities and financial markets. Concerns are that the extent of participation by pure speculators and side bettors and predominance of demand for energy commodity derivatives for financial portfolios overwhelms physical fundamentals and triggers movements in energy commodity prices that are unfounded. The key considerations are:

- The extent to which energy commodity derivatives are traded over the counter rather than in exchanges and the lack of transparency associated with OTC trades; and
- The prevalence of “black box” or index trading in energy commodity derivatives.

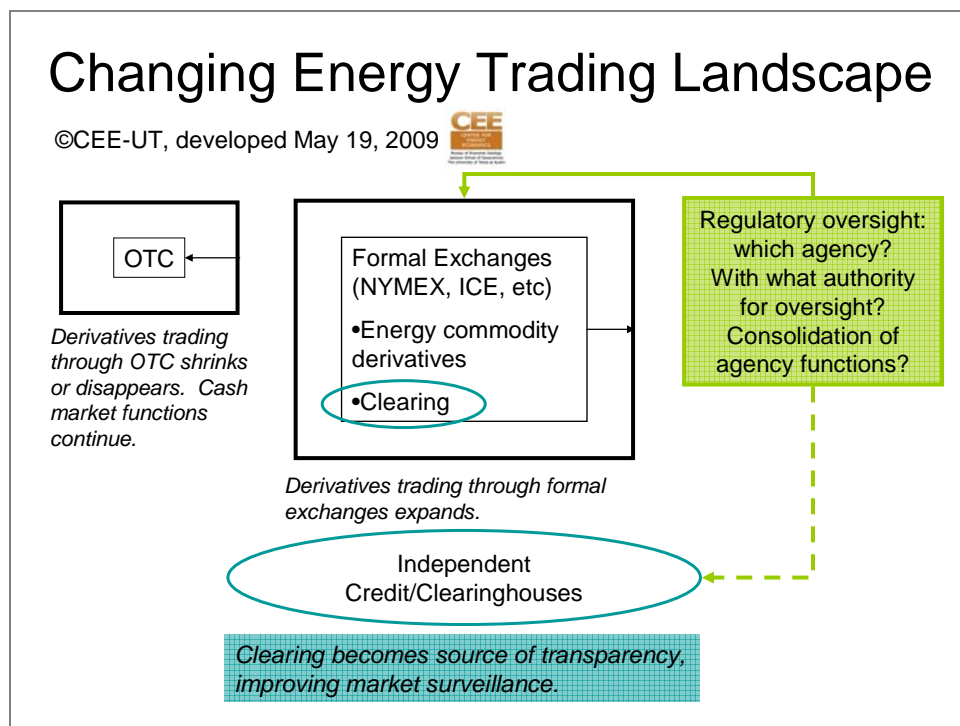
It may be useful to pause and ask a few simple questions. Is it appropriate for the side bets to overwhelm and influence the underlying market in large, global raw materials businesses? Do they serve the purpose of the markets for price discovery and signal the need for investments and disinvestments in the physical infrastructure and resource development? To use an analogy that is somewhat far afield, we as a society prohibit side bettors in a sporting event from influencing the outcome of a game by bribing coaches and key players to fix it. Why are commodity markets so special that we allow side bettors to freely influence the underlying commodity markets? Who pays to deal with social unrest that may result from extremely high prices? Who pays for reduced investments because producers have been burnt too many times by whip-sawing prices? And if side betting is to be discouraged, what is the best and most neutral way to achieve this goal?

These considerations happen to overlap with concerns about integrity of financial derivatives in general. Current problems in US and international financial markets emanate, to a large degree, from the lack of integrity associated with many derivatives products that were developed to mitigate risks and actually advance certain goals and objectives. For instance, home ownership in the US has long held a prominent position as an important means of economic advancement and household wealth creation. Extending home ownership to new borrowers is a worthy goal, but distinct risks surface with respect to creditworthiness of borrowers and lenders and potential for foreclosures. Bundling these risks into securitized assets that can be insured and traded is not an unreasonable strategy for risk mitigation. The difficulties arise in the opaqueness of the derivative instruments – the underlying value of assets – and how these instruments are traded. Another is the burgeoning Credit Default Swap (CDS) market, the notional value of which exceeds \$50 trillion. A CDS facilitates transfer of third party credit risk in return for payments that mimic insurance premiums. Should the third party fail, the CDS provider must acquire the defaulted asset (typically a bond). The bulk of the more than \$100 billion bailout to AIG went to pay counterparties who bought CDSs from AIG. The CDS itself is a “bet” on whether a company fails or defaults. A bank that is “long” in CDS positions on a company while also holding a loan with that same company may have perverse incentives for the company to fail if the bank profits more from the CDS than the loan – a distinct conflict of interest.²

In general, a trend appears to be underway in which more derivatives trading takes place through formal exchanges than over-the-counter (OTC; see chart below). Regulatory oversight would be able to expand with regard to information collected by market monitors. Clearing would become a means for increased transparency. From the point of view of energy market participants, these developments could solve a number of problems. Large participants, in particular those with physical commodity businesses, should be interested in how these developments play out. Given the need for energy commodity and financial trading, in general, to remain robust, with a high degree of integrity but also with carefully targeted government intervention, we expect private market actors to shift activities in anticipation of

² “Berkshire’s Munger Favors ‘100% Ban’ on Credit Swaps”, *Bloomberg.com*, May 1, 2009.

government actions. A form of bargaining may emerge in which energy market regulators formulate responses that reflect changing patterns across the energy trading landscape. Unintended consequences, however, are likely to surface. For instance, would a shift in trading and clearing to the large, formal exchanges rather than OTC lead to an increase in quantitative trading that simply attracts bigger and more pervasive institutional fund flows, in particular hedge funds? What might be the implications?³



Short of outlawing futures markets (which would deny market mechanisms to those who need or want them for price risk management) or speculators (and, realistically, futures markets cannot function without speculators to take the risk hedgers want to shed), the challenge lies in structuring regulatory oversight that levels the playing field and ensures transparency. A number of initiatives have surfaced at the Federal level. These include the following.

- The proposed HR 977, Derivatives Markets Transparency and Accountability Act of 2009 under Chairman Peterson, US House of Representatives Committee on Agriculture. Among other things, HR 977 would “strengthen confidence in trader position limits on physically deliverable commodities as a way to prevent excessive speculative trading”; require “foreign boards of trade to share trading data and adopt speculative position limits on contracts that trade U.S. commodities similar to U.S.-regulated exchanges”; and “call for new full-time

³ Based on comments by Vince Kaminski, Bentek Energy Symposium, June 4, 2009, Houston.

Commodity Futures Trading Commission [CFTC] staff to improve enforcement, prevent manipulation, and prosecute fraud".⁴

- Rollout of the Obama Administration's OTC derivatives reform, which would increase margin requirements, increase reporting requirements and shift standardized derivatives trading to regulated exchanges, discourage fraud and discourage marketing of derivatives to unsophisticated parties.⁵ The US Treasury Department proposals follow very closely on the chart above.
- CFTC's proposals on swap dealers and index traders include disaggregating data in CFTC's commitments of traders reports to reveal trading by swap dealers; create a new Office of Data Collection; remove the bona fide hedge exemption for swap dealers; boost staffing and resources for oversight; encourage clearing of OTC transactions; strengthen separation of commodity research by swap dealers from transactions (similar to provisions in Sarbanes-Oxley to establish independence for trading research).⁶

All of these initiatives represent good movements towards solutions. *A further question is whether a need exists to cleanly separate side bets from speculation and hedging of the underlying physical markets.*⁷ In the current landscape, we can think of physical markets as one component, the futures markets as another (with physical delivery obligations, and both hedgers and speculators participating), and a third financially-settled or side bet market (index investors, investment allocation for commodity exposure by those who want to profit from price discovery in the underlying market). A worthy goal is to preserve the beneficial function of the futures markets while providing a legitimate and policed outlet for side bettors. The challenge is how to structure appropriate regulatory oversight to achieve that goal. A scenario could be that participants would be required to disclose which of the markets, physical-futures markets (with physical settlement and clearing) or financially settled markets. In addition, the participants (including their affiliates and subsidiaries) choosing physical-futures markets would be prohibited from engaging in the side bet markets (i.e., implementation of the "Pete Rose Rule" preventing coaches and players from betting on outcomes of their games). Dealers would have to choose to be dealers in the physical-futures space or the purely financially-settled space.

⁴ Comments from Chairman Peterson's Opening Statement, February 12, 2009, http://agriculture.house.gov/inside/Legislation/111/hr977_opening_statement.doc. See <http://agriculture.house.gov/inside/legislation.html> for all details.

⁵ See <http://www.ustreas.gov/press/releases/tg129.htm>

⁶ See footnote 1 and <http://www.cftc.gov/stellent/groups/public/@newsroom/documents/file/cftcstaffreportonswapdealers09.pdf> for staff recommendations. Comment period is extended to June 16, 2009. See <http://www.cftc.gov/lawandregulation/federalregister/proposedrules/2009/e9-12000.html>.

⁷ Matthew Hunter, now a Senior Market Advisor at FERC, conversationally questioned linking the trading of both physical and financial products by vested interests under the guise of providing trading liquidity.

The concepts and questions posed in this research note bear serious consequences for the future of critical energy and non-fuel commodity industries and businesses. Debates about effectiveness of the key commodity and financial markets cut across high and low income countries and societies; affect soundness of planning, investment and trade; cloud outlooks; and trigger political reactions that often are as volatile as the markets under scrutiny.

CEE-UT Research Agenda

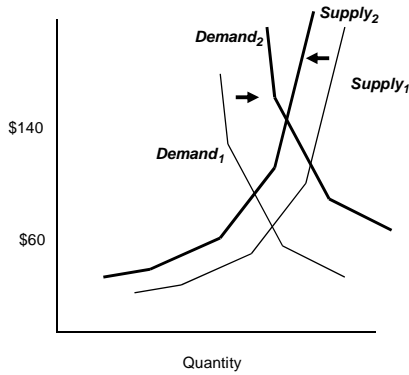
To address the myriad questions and issues raised in this research note, CEE-UT researchers are pursuing the following lines of inquiry.

- (1) Conduct a thorough empirical examination of all available physical and financial numbers, disaggregated by as many categories as possible (e.g. for financials, dealers, hedge funds, index investors, CTA's, etc.).
- (2) Conduct comprehensive research on the historical evolution of:
 - a. Physical energy commodity markets – oil, natural gas, electricity – and possibly key non-fuel commodities for comparison.
 - b. Financial commodity markets including futures, OTC derivatives, securitization, index investing.
 - c. Literature supporting interactive/feedback effects and literature refuting them, and assess what tests can be conducted to determine causality and isolate effects.
- (2) What policies were debated and instituted at pivotal moments in the evolution of energy markets and how do these compare with today? What were the consequences – positive and negative – for market structure? How are energy customers and consumers affected? What are the likely consequences for suggested policy pathways and solutions? What are possible unintended consequences? Are we creating future and larger moral hazards from the current bailouts in the name of mitigating systemic risk? And what are the consequences for the commodity industries and markets?
 - a. Would a “central regulator” make enough information available for public scrutiny?⁸
 - b. How can regulators provide both transparency while also protecting proprietary data? Should all data be protected, and should it be protected permanently or released for public review after a defined time period (six months to a year)?
- (3) Most economic models appear confined only to the physical, supply-demand drivers. Should energy modeling be more extensively integrated? Is it practical to add financial market demand for commodity-based derivatives along with speculative and other behavioral drivers in order to gauge their effects?

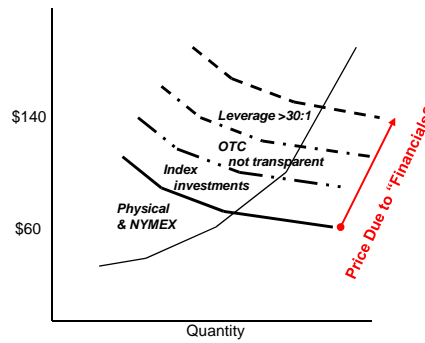
⁸ We refer the reader specifically to apparent lapses at the US Security and Exchange Commission (SEC) related to the Madoff scandal.

Steep Price Moves explained by Physical Demand or Other Reason?

Prices fully explained by Physical Demand/Supply Fundamentals



Financial Longs "add" to Physical Demand? [Financial Shorts "reduce" Physical Supply?]



Alternative Explanations for Steep Price Increase (similar but opposite for steep price decline)

3

(4) Increasingly, economists look to, and accept, behavioral drivers to explain apparent divergences from what rational models of supply and demand in an array of market settings suggest. What is the state of research in this arena? What directions and conclusions are being drawn and revealed? How can the lines of research in behavioral economics inform the research challenge posed in (2) above?

Paraphrased from page 168 of "Animal Spirits" by Akerlof and Shiller

	Rational	
Responses		
Non-rational		
	Economic	Non-economic
	Motives	

Based on *Animal Spirits*, Georg A. Akerlof and Robert J. Shiller, Princeton University Press, 2009.

- (5) What are the implications of the changing energy landscape for two important, ancillary concerns:
- a. Carbon trading, in all of its complexities. To date, Congressional proposals that would establish national caps on greenhouse gas (GHG) emissions and allow carbon trading to flourish invariably include, or create, numerous opportunities for market failure (“subprime carbon” and “subprime carbon CDSs”).⁹
 - b. Business and industry organization. A general view is that randomness works against highly leveraged participants. A key question is whether policy reforms help or hurt. Do policy actions induce leveraging? Do they force de-leveraging? What is the role of “safety nets” for losses, and what are the possible conflicts with public interests – do safety nets, and the precursor market events that trigger them, create value for society? Broad implications of these questions on leveraging exist for market structures, participants (winners and losers) and market outcomes.

⁹ CEE’s analysis of the American Clean Energy and Security Act of 2009 (HR 2454) for the Texas State Comptroller suggests that the banking, offsets, reserve and other provisions of the proposed legislation as well as the complex scheme for allocating abundant free allowances could encumber market oversight and reduce market effectiveness.