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Discussion: Commodity Price Discovery: Problems That Have Solutions or Solutions That Are Problems

T. Randall Fortenbery

This paper examines three invited papers focused on commodity prices. Public responses to high nominal commodity prices and perceived increases in price risk have ranged from attempts to assign blame, attempts to change contracting arrangements, and development of public policy that “protects” the market from future occurrences of unacceptable behavior. Interestingly, a result of increased commodity price volatility has suggested that futures markets no longer “work.” This is ironic given that futures markets initially came into existence as tools for managing the negative impacts of commodity price risk. In response to perceptions of market failure some are looking for strategies to regulate the who and how of futures trading.

Key Words: futures markets, hedging, price risk, risk management, speculation

JEL Classifications: G13, Q11, Q13, Q14

Introduction

Commodity price action over the last couple of years has led to a reevaluation of both the functions of the market, and the role that individual market participants play in the price discovery process. Over the last couple of years, experienced market analysts have claimed that futures markets are “broken” (Cattlenetwork, 2009; Futures Magazine, 2009; Southeast Farm Press, 2008), that the market’s role in price discovery has been perverted and compromised by large speculators (Luken, 2008), and major commodity groups have claimed that the market has been destabilized due to the development of new demand centers for basic commodities (primarily ethanol and bio-diesel) (National

Cattleman’s Beef Association, 2007). Coincidental with accusations of market failure have been changes in the willingness of even the largest agribusiness firms to use futures contracts as a forward pricing mechanism (Wilson, 2009). This has fundamentally altered the opportunities for risk management in the cash market as firms have become reluctant to pass on hedged prices in the form of cash contract price guarantees. In addition, the risk of default in cash contracts has increased as producers become dissatisfied with a predetermined price when pricing opportunities improve for the commodities they produce (Wilson, 2009).

The papers discussed here look at the recent price experience from three different perspectives. The first, by Irwin, Sanders, and Merrin (2009), investigates the role of speculators on commodity price formation. They do this by appealing both to previous theoretical and empirical work, and through new analysis they conduct using recent price history. The second,

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by Wilson (2009), looks at the change in risk dynamics faced by those contracting in the cash market, and discusses both recent innovations to account for the new risks, and prescriptions for further development of risk management tools. In the last paper McKenzie and Kunda (2009) introduce a market based strategy to help firms manage the growth in margin risk that results from increased price volatility in the futures market.

Speculative Influence in Commodity Markets

As noted by Irwin, Sanders, and Merrin (2009), there has been a significant amount of interest in blaming speculators in general, and commodity index funds specifically, for both the general increase in commodity prices experienced through the first half of 2008, and the associated market risks. The authors reject the notion of a speculative bubble in commodity prices, and argue that speculative activity does

not explain recent price action. In making their case, the authors identify four basic premises related to the proposition that speculators cause a bubble in commodity prices. First, they suggest that supporters of the bubble hypothesis use flawed arguments, and reveal an ignorance concerning how markets actually work. Second, they identify “facts” that are inconsistent with the existence of a price bubble in commodity markets. Third, based on their own causality tests they suggest that no individual group of futures traders leads futures price changes. Finally, they note that there is a historical pattern of attack against futures speculators.

Irwin, Sanders, and Merrin (2009) argue much of the “evidence” in favor speculative price impacts comes from the casual observance of simple correlations (Figure 1), not from a rigorous test of causality. How do we know that speculators led, as opposed to followed, the increase in prices? Most of the evidence provided by Irwin, Sanders, and Merrin (2009) does point to a lack of a substantive



Figure 1. Net Futures (Long – Short) of Commercial and Noncommercial Traders Versus Nearby Corn Futures Prices

speculative bubble that persists over an extended period of time, but their work does not negate the possibility that there can be short run bubbles, and that they can be influenced by speculative behavior. Further, some of their “inconsistent” facts are not really facts, and are themselves potentially inconsistent with some of the most recent market research. For example, the authors state “...bubble proponents are conceptually flawed and reflect fundamental and basic misunderstandings of how commodity futures markets actually work.” While it is certainly true that commodity markets have historically been blamed for a whole litany of social evils, often by those that do not understand how markets work, it is a bit of a leap to suggest all those questioning whether a speculative bubble exists or could exist are ignorant of the nuances of market behavior. Indeed, several former Commodity Futures Trading Commission directors testified before congress that they believed the price level in the oil futures market in the summer of 2008 was in fact speculatively influenced. As noted by Irwin, Sanders, and Merrin (2009), the Commodity Futures Trading Commission (CFTC) following the congressional hearings conducted an empirical investigation of speculative impacts on oil prices (Commodity Futures Trading Commission, 2009), and concluded that there was no causal link between speculative market positions and price levels. But the fact that the CFTC failed, after the initial testimonies, to find any evidence of speculative price impacts does not imply that all who testified before Congress are ignorant of the price formation process in futures markets. Indeed, Irwin, Sanders, and Merrin (2009) provide no indication as to whether the prior suspicions regarding causal effects of price action in early 2008 were abandoned by former commissioners once the CFTC results were released.

The authors cite, as one of the most fundamental errors of bubble proponents, the tendency to equate money flows into futures markets with demand. By demand, the authors mean demand for the physical commodity. Because there is, in theory, an unlimited number of contracts that can be traded at any given futures price, money flows do not necessarily

affect futures prices. This is correct, but the key word is necessarily. While the authors are correct in the assertion that money flowing into a futures contract does not create “new” demand for a physical commodity, they ignore the difference between demand for futures contracts prior to expiration, and the demand for physical commodities at expiration. In fact, while money flows do not “necessarily” (in the words of the authors) affect price, it does not mean they cannot affect price under certain scenarios. If a fund, as an example, comes to the market to fill a predetermined number of long positions, and only a small percentage of those positions are offered at any given price, then filling all the long positions by trading though several different offers at different prices will in fact impact prices in the sense that reported prices reflect the last transaction made. In other words, while there is a buyer for every seller, it does not mean that buying and selling pressure are the same at every price. Given that commercials generally were unwilling to hedge in the late spring and early summer of 2008 because of the margin risk associated with a hedged position (McKenzie and Kunda, 2009), it is quite likely that as funds rolled to new positions they traded at price levels that they would not have experienced had the commercials been more willing sellers. This does not imply that commercials would let the market go higher forever before becoming aggressive sellers, but because of the perception of increased margin risk associated with a hedged position, they may well have been willing to let the market go further beyond their perception of fair value before taking a position than would normally be the case as compensation for the perceived increase in margin risk. This could result in higher short run prices than would exist in the absence of increased margin risk. One might interpret these “higher” prices as bubbles. This is an important point for two reasons. First, it differentiates between the concept of demand for a physical commodity at contract expiration and the short-run demand for a futures contract by traders who may not be focused on the expected supply/demand balance of the physical commodity at contract expiration. If the futures market price moves

further than it otherwise would in the absence of increased margin risk, and if the demand for long futures positions is dominated by the speculative side of the market, it seems quite reasonable to suggest that speculative interests led to higher prices in the short-run. In fact, the expiration of the December corn contract in 2008 was several dollars below its summer prices, and it may well be that as the contract approached expiration, market participants felt it was over-priced. However, those same sellers may have been reluctant to take a position in the December contract as early as June, even if they thought it was over-priced, because of the perception of extraordinary margin risk.¹

The second important point is that a price impact from speculators does not necessitate a conclusion of price manipulation. If there is a dearth of market offers at any specific price, and the short-run demand for long positions results in prices moving higher, it does not necessarily follow that buyers manipulated price. The fact that, at a given price, the demand for long futures positions exceeds the demand for short futures positions, and thus prices are observed going higher to fill long orders, does not imply market manipulation. In fact, if speculators could actually manipulate price they would purchase all their positions at below fair market value and liquidate those positions at prices above fair market value. Impacting price through market activity is not the same thing as manipulating price for personal profit. It is possible for groups of traders to have short-run effects on price direction if they are a large enough part of the trading community and still have the power to explicitly manipulate price. The authors seem to associate speculative bubbles with explicit price manipulation, and argue that specific trader behavior cannot influence the June price for December delivery unless speculators are

actually taking physical delivery in December. Since they do not observe speculators taking delivery, they argue their trading activity did not drive price action. However, if there are short-term constraints to commercial firms in managing the cash flow associated with futures margin accounts, as argued by the authors of the other two papers reviewed here, then their absence from the market may result in a larger speculative price effect than would be the case in the absence of margin constraints. It also is important to note that the extent to which firms faced increased margin risk in the recent past is actually a function of the behavior in the second moment of the price distribution (volatility), not the first. Theoretical work by Witherspoon (1993) suggests that it is possible for a market to get out of balance relative to speculative and hedging interests, and that such an imbalance will be reflected in price distributions' second moments (i.e., excessive speculation leads to increased volatility in both the futures and cash prices). Thus, even if the authors' argument against a price level effect from speculative behavior is accepted (as supported by the recent CFTC oil market study), it does not necessarily follow that speculative effects will not exist in the higher moments of the price distribution. While the second moment might not define a price bubble, its behavior might still reflect a speculative price influence.

In short, while the authors fail to find a speculative price impact, they have not proven there was not one. Their appeal to previous work that is over a decade old (Garbade and Silber, 1983; Zulauf and Irwin, 1998) is not overly compelling given recent changes in both market composition and the amount of risk capital directed at commodity futures markets. The authors' own directly estimated evidence uses highly aggregated data to estimate Grainger Causality, and does not include data through the summer of 2008 when the market impact arguments were most heavily promoted (they also do not address issues related to combining potentially nonstationary data (prices) with stationary data (market position) in the same regression). As a result, their data could mask price influences that occur over shorter time intervals, and not account for the price action through the late

¹They may also have been unwilling to short the market in June because they thought the price was at fair value given the production expectation in June. An argument is not being made that there was a speculative bubble in June 2008, but rather that the evidence provided by Irwin, Sanders, and Merrin (2009) does not preclude that possibility.



Figure 2. Nearby Futures Prices for Corn and Soybeans

spring/summer of 2008. Note from Figure 2 that one of the more extreme moves in corn and soybean futures prices occurred over a 6-week period. While the Irwin, Sanders, and Merrin (2009) study provides solid evidence that there has not been a long-run, sustained speculative price impact, it does not really address the assertion that short-run price movement is affected by speculative behavior, or that speculators' market activities impact overall market stability (i.e., the higher moments of the price distribution).

The authors appeal to the management of physical inventories as evidence against a speculative impact in commodity futures prices. They note that inventories did not grow as prices rose, and argue that if prices were being influenced in a positive direction by speculative behavior there would have been an accumulation of inventories in the cash market. Since they do not observe an accumulation, they argue that prices were actually rising in response to a tightening supply situation, not

speculative market activity. However, there are two potential problems with this argument the authors do not address. First, for a once a year harvested crop, when should inventories be observed? The authors show lower stocks during the old crop year even as prices for futures rose. However, the ending stocks on September 1, 2008 were higher than the ending stocks for the previous year (Figure 3), thus perhaps inventories were accumulated as prices rose.

Second, Irwin, Sanders, and Merrin (2009) argue that convergence between cash and futures markets will keep physical stocks tied directly to futures prices. This argument is inconsistent with the findings of Hatchett, Brorsen, and Anderson (2009) for wheat markets in 2008. They argue that there was in fact a de-coupling of the cash and futures markets for wheat, and that convergence in summer 2008 did not occur. This would imply that futures prices would not necessarily influence cash positions, thus inventory management decisions

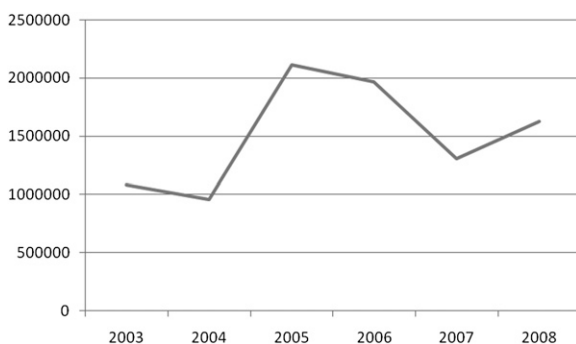


Figure 3. September 1 U.S. Corn Stocks—Million Bushels

would not lead to any direct evidence regarding whether speculative behavior does or does not impact futures price levels.

Cash Market Responses to Price Volatility

Regardless of the causes of recent changes in market dynamics, cash market participants do see themselves facing increased market price risks. The result is that the way in which business is done has changed. Wilson (2009) notes that there have been several drivers in changing the way cash contracts are developed. These include both the competition for acres reflected in the first moment of price distributions, and also the increases in price volatility across both commodities and market location (i.e., futures prices, cash prices, and basis levels have all experienced increased volatility). Further, as noted by Hatchett, Brorsen, and Anderson (2009), the extent to which futures and cash prices actually converge has become an important issue. Without convergence the futures market becomes an unreliable index for cash pricing, and less useful as a direct risk management tool.

Wilson suggests that some of the increases in price volatility may stem from both fundamental and market structure issues. However, consistent with the work of Irwin, Sanders, and Merrin (2009) described above, he cites the most important factors as being related to market fundamentals, and suggests that the combination of near record low stocks prior to 2009 and the challenges of increasing stocks because of increased demand for feedstocks

from bio-fuels production contributed to the increased price volatility for grain products.

Because of increased volatility Wilson (2009) argues that traditional risk management strategies have become less effective, and documents several changes in cash contracting arrangements. For example, he argues that nonperformance or delivery by sellers has become an increasing problem as volatility has increased. Further, legal recourse to noncompliance is often viewed as an unacceptable remedy because both the buyer and the seller tend to operate in relatively small markets (both geographically and in terms of number of participants), thus it will likely be the case that the two parties will do business again.

While a large part of the discussion in the last year or two has focused on futures prices, and the relationship of futures to cash prices, Wilson (2009) documents similar price discovery issues in cash markets that do not have futures, and highlights the difficulties in designing and negotiating risk management terms in the absence of futures market information. Like Irwin, Sanders, and Merrin (2009), Wilson (2009) finds the recent price and volatility issues have gone beyond the futures markets, and impacted cash commodity markets that have no futures markets associated with them. In fact the volatility in many nonfutures commodities has exceeded the volatility in futures traded commodities. One result of the increased volatility has been a growth in contract arrangements in nonfutures commodities. The contract incentives include an attempt to insure

adequate acres, and to then mitigate the price risks associated with volatile markets.

Improved Access to Futures Market Risk Management Opportunities

McKenzie and Kunda (2009) focus on the development of a swap instrument to address margin risk issues related to the second moment of a commodity's price distribution. Specifically, they note that in the recent market environment commercial firms that would normally use futures markets to hedge have faced credit constraints that have had a negative impact on their abilities to access futures markets. They introduce an over-the-counter financial instrument called a Margin Credit Swap (MCS) as a tool for increasing commercial access to futures markets for the purposes of hedging. The MCS takes margin management risk away from merchandisers using the markets for hedging, and shifts it to professional margin management agents. In a sense, then, McKenzie and Kunda (2009) are interested in the development of a market tool that will help address some of the problems identified by Wilson, and focus on market strategies for addressing increased margin risk. An MCS is currently being developed by the Merchant's Exchange, and is intended as a source of margin capital to replace the use of the firm's working capital or lines of credit from commercial lenders. The MCS proposed will be bilaterally negotiated between the buyer and the seller, and will be marked to market daily, just like the futures contracts for which the MCS provides margin funds. In general, potential hedgers would be swap buyers and margin managers, the swap sellers. The negotiated price of an MCS will correspond to the position a potential hedger intends to take in the futures market to offset price risk, and will include negotiations for an initial price (the price of the underlying futures contract for which the margin is needed), the duration of the hedge (and thus MCS), and an interest rate. The interest rate represents the "earnings" to the seller of the MCS. By marking to market daily, the buyer of the MCS (the hedger in the futures market) will make a daily interest payment to the liquidity provider equal to the interest rate times the total

margin exposure outstanding. At expiration, the futures market hedger (swap buyer) returns the margin money to the swap seller.

McKenzie and Kunda (2009) conduct a simulation analysis to investigate what the impact would have been on grain elevators if MCS had been available during the commodity price run up of 2006–2008. Specifically, they investigate the liquidity needs of a country elevator forward contracting at planting for the purchase of grain from a farmer, with the expectation of making the cash purchase and offsetting the hedge on December 1 of each year. The liquidity requirements of the elevator are investigated, and the total cost associated with using a MCS to satisfy margin requirements is calculated. This represents an interesting and important piece of work because it is one of the only attempts to address recent market access problems from the standpoint of a market solution, as opposed to some sort of regulatory approach generally directed at restricting speculative activity. Given the results of Irwin, Sanders, and Merrin (2009), attempts to regulate speculative activity (and hence affect market liquidity) may not address the underlying market price/volatility issues, and, if liquidity is reduced, may impose additional structural impediments to the management of price risk for commodities.

In general, the McKenzie and Kunda (2009) analysis focuses on the benefits to the swap buyers. Substantial benefits are identified in the simulation analysis, and the case is made for the important role an MCS could play in providing greater access to futures markets for hedging purposes. What is less clear, however, are what happens to the grain producer and the MCS seller. For example, does the basis offered through a forward cash contract to a grain seller underpinned by both a hedge and a credit swap become weaker than traditional forward cash contracts? Increased weakness may be expected as a result of the daily financing of the margin credit swap. While in principle the costs of managing the hedge with an MCS may be no greater than the traditional practice of accessing a line of credit, it is unclear that MCS sellers would enter into a swap at the same interest rate offered through a line of credit by a commercial lender. Presumably, firms that access commercial lines of credit to finance hedged positions

are doing other business with their lenders (real estate loans, other business loans, etc.) and to the extent that the lender recognizes that a hedged position may result in less overall risk for its entire portfolio with a grain elevator, it may actually offer a futures margin line of credit at low marginal rates of interest. Further, if a line of credit is not accessed, the borrower faces no cost. In the case of an MCS, however, it is unlikely a seller would come to the market without some guaranteed payment. The possibility of being legally liable for any and all margin calls, based on the terms of the swap, and thus having risk capital committed to the MCS buyer's hedge account, will likely require some sort of compensation even if the hedged futures position results in no margin requirements beyond the initial margin posted when the futures hedge is taken out. The MCS seller potentially has unlimited negative cash flow in the case of a margin account that is going against the buyer of the swap (the futures market hedger), but no guarantee of any return should the hedger not face margin calls. It is unlikely that speculators in the form of MCS sellers would be willing to essentially tie up large sums of capital to service someone else's margin calls without some expectation of a positive cash flow to represent their reduced liquidity. This cost will presumably come out of the grain seller's basis offering in a cash forward contract. Not only might basis be weaker on average to cover the MCS sellers minimum profit expectations, but basis might become less predictable as margin variation is experienced. It may be that MCSs are most attractive in fixed futures cash contract arrangements, as opposed to cash forward contracts where both the futures price and the basis are guaranteed to the grain seller.

All three papers make the case that 2008 was indeed an exceptional year, but none of the simulations conducted by McKenzie and Kunda (2009) actually encompass the price action realized in the last half of 2008. Thus, while the MCS is presented as a solution to a lack of market access in times of high volatility, none of the simulations conducted calculates the true cost a commercial grain merchandiser would have faced in 2008. While willing MCS sellers might solve the market access issue for

hedgers, the costs associated with buying an MCS during periods of high volatility might result in fewer forward price offerings even if margin capital is made available. This begs the question as to whether commercials reduced hedging activity in 2008 because of a lack of liquidity, or because the cost of accessing margin capital was simply too high. If the lack of forward pricing opportunities came from the latter, it is not clear what the role of an MCS would actually be in terms of insuring cash pricing opportunities for producers in times of extreme price volatility.

Another issue relates to the sensitivity of the simulated results to the assumed negotiated interest rate in the McKenzie/Kunda simulations. An annual interest rate of 5% was assumed to be negotiated between the swap buyer and seller. Given the liquidity constraints placed on the seller of an MCS as described above, one might believe that a significantly higher rate would be necessary to guarantee any and all margin calls would be met.

The last issue is the default risk faced by the seller. As noted by Wilson (2009), this has become a major concern to cash grain contractors (those who might be buyers of the MCS). The probability of sellers actually making delivery decreases as market volatility increases. The MCS seller will face a similar risk, and unlike the futures market there is not a clearing house that guarantees the transaction for both the buyer and the seller (the MCS is an over-the-counter instrument). What are the implications if an MCS seller, for example, trades with an ethanol plant that uses the MCS margin funds to hedge corn purchases, but does not hedge ethanol sales? It has been suggested that one reason ethanol plants in 2008 went bankrupt was not because of persistent negative margins as measured by daily corn and ethanol prices, but because corn had been hedged at relatively high prices in the summer of 2008, and the output (ethanol) was not hedged. As commodity prices began declining, the input costs for plants were fixed and their output prices were falling. If a grain contractor enters receivership with a substantial margin call on the books, and does not follow the hedge through to termination, thus making up in the cash market what has been lost

in the futures, how does the MCS seller retrieve the initial margin funds? This seems to represent a substantial risk on the part of MCS sellers, and likely results in significantly higher transactions costs for MCS buyers than those represented in the sample simulations.

Nonetheless, the general concept of seeking a market solution for what is perceived to be a market problem is novel. Most focus to date has been on market regulation. While changes in regulatory structure might be appropriate, there is the possibility the regulations that result in reduced market liquidity (i.e., restrictions on speculative activity) impose larger social costs than those already realized the past couple of years.

Conclusions

Recent market action has resulted in accusations of market failure, and calls for restricting through regulation some traders market access, notably that of speculators. Wilson (2009) documents changes that have occurred in cash contract arrangements as a result of increased market risk, but like Irwin, Sanders, and Merrin (2009) point out, that increased risk has occurred in both commodity markets that have futures and those that do not. This calls into the question the actual role futures speculators have had in changing the pricing structure of markets.

While falling short of proving that speculative price bubbles, at least for short periods of time, are not possible, Irwin, Sanders, and Merrin (2009) do provide convincing evidence that speculative bubbles, even if they do exist, do not persist over time and that explicit commodity price manipulation does not appear to have occurred in recent years. This is an important finding because it suggests that current proposed market "solutions" really do not address the underlying causes of recent price action. However, the risk of over-stating the results of Irwin, Sanders, and Merrin (2009) is that enough doubt may remain that conspiracy theories are not put to rest. More work on speculative activity needs to be conducted with higher frequency data and across a larger set of commodity markets.

McKenzie and Kunda (2009) provide a market based solution for addressing the increased risks faced by potential hedgers in volatile markets. The success of such an instrument will keep futures relevant as a risk management vehicle, and address the issues raised by Witherspoon (1993) regarding problems that might arise if the speculative and commercial interests in futures markets become unbalanced. While there are still questions regarding the proper pricing of risks when an MCS is initiated, and the quantification and distribution of risks for the MCS seller and the forward cash contract seller, the concept deserves further consideration.

Further work needs to be done concerning whether recent price experiences were an anomaly, or represent a basic change in market structure and performance going forward. Our greatest risk may be an over-reaction to recent events and the introduction of regulatory "reforms" that actually reduce the overall efficiency of markets to discover price and transfer risk. Even if speculative bubbles are possible for short periods of time it does not mean price manipulation is rampant, and the costs of trying to eliminate them may well exceed the benefits.

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