

**Comments on Permanent Senate Subcommittee on Investigations Report
“Excessive Speculation in the Wheat Market”**

Scott H. Irwin, Darrel L. Good, Philip Garcia, and Eugene L. Kunda
Department of Agricultural and Consumer Economics
University of Illinois
July 6, 2009

Issue

The Senate’s Permanent Subcommittee on Investigations (hereafter referred to as the “Subcommittee”) released a report on June 23, 2009 concluding that excessive speculation by large index funds in the Chicago Board of Trade (CBOT) wheat futures market resulted in over-valued futures prices, a large carry in the futures price structure, and a wide divergence between futures and cash prices during the 2006 through 2008 period.¹ The main findings of the Subcommittee are summarized as follows,

This Report finds that there is significant and persuasive evidence to conclude that these commodity index traders, in the aggregate, were one of the major causes of “unwarranted changes”—here, increases—in the price of wheat futures contracts relative to the price of wheat in the cash market. The resulting unusual, persistent and large disparities between wheat futures and cash prices impaired the ability of participants in the grain market to use the futures market to price their crops and hedge their price risks over time, and therefore constituted an undue burden on interstate commerce. Accordingly, the Report finds that the activities of commodity index traders, in the aggregate, constituted “excessive speculation” in the wheat market under the Commodity Exchange Act. (USS/PSI, 2009, p. 2)

Based on these findings, the Subcommittee recommended that: 1) existing position limit waivers for index traders in wheat be phased out, 2) if necessary, impose additional restrictions on index traders, such as a position limit of 5,000 contracts per trader, 3) investigate index trading in other agricultural markets, and 4) strengthen data collection on index trading in non-agricultural markets.

Comments

We find the Subcommittee’s evidence neither “significant” nor “persuasive.” The investigation cited, but dismissed, rigorous academic analysis of the causes of poor convergence performance of the CBOT wheat contract during the study period which concluded that poor convergence performance was not the result of increased trading by index funds (Irwin et al., 2009). Instead the Subcommittee chose to rely on finger-pointing by industry participants who were adversely affected by high prices and weak basis and on cursory analysis of temporal price, basis, and trading activity data. Our purpose is not to provide a point-by-point rebuttal of the

¹ While the CBOT is now part of the CME Group, Inc., the CBOT remains the self-regulatory organization that is approved by the Commodity Futures Trading Commission (CFTC) to list the corn, soybean, and wheat futures contracts for trading. For this reason, we refer to the CBOT wheat futures contract throughout this commentary.

Subcommittee analysis and conclusions, but to highlight critical issues that significantly undermine the conclusions of the investigation.

1. Of the logical errors are made by the Subcommittee, the most serious is equating index fund money flows into wheat futures with demand. Investment dollars flowing into either the long or short side of a futures market is not necessarily the same thing as demand for a physical commodity. These are zero-sum markets where all money flows must by definition net to zero. It makes as much logical sense to call the long positions of index funds new “demand” as it does to call the positions on the short side of the same contracts new “supply.” This is another way of saying that flows of money, no matter how large, do not necessarily affect the futures price of a commodity at a given point in time. Prices will only change if new information emerges that causes market participants to revise their estimates of physical supply and/or demand.

A contemporaneous correlation can exist between money flows (position changes) and price changes if information on fundamentals is changing at the same time. Simply observing that large investment has flowed into the long side of the wheat futures markets at the same time that futures prices have risen substantially (or the reverse) does not necessarily prove anything. Simple graphical comparisons like those used by the Subcommittee risk making the classical statistical mistake of confusing correlation with causation. Rigorous tests that account for changes in money flows and fundamentals should be applied before reaching conclusions about the impact of index fund trading in CBOT wheat futures.

2. Wheat futures prices and prices of other grains and oilseeds did increase to record high levels during the study period when index funds had a large share of the open interest in these futures contracts. As noted above, cause and effect, is not necessarily implied by the contemporaneous nature of these two trends. A widely-accepted method for testing the temporal relationship between two economic variables is the use of “Granger causality tests.” These tests can establish whether lagged position changes in commodity futures markets help to forecast current futures price changes in a statistically significant manner.² Several studies conduct Granger causality tests and find very little evidence that position changes for any group in commodity futures markets consistently forecast movements of futures prices (Sanders, Boris, and Manfredo, 2004; Bryant, Bessler, and Haigh, 2006; Gorton, Hayashi, and Rouwenhorst, 2007; ITFCM, 2008; Sanders, Irwin, and Merrin, 2009a). In addition, Aulerich, Irwin, and Garcia (2009) test specifically whether index fund positions help to forecast price movements over the last several years in 12 commodity futures markets, including CBOT wheat. The authors find only a few cases where index trader position changes help to forecast price changes in commodity futures markets, and

² Granger causality tests reflect the basic idea that if event *X* causes event *Y*, then event *X* should precede event *Y* in time. These tests are straightforward to interpret if the null hypothesis of no causality (no statistical prediction) is not rejected: no correlation means no causation. However, these tests require careful interpretation if the null hypothesis of no causality is rejected (Hamilton, 1994). A statistical correlation may be observed between *X* and *Y* when in reality an omitted variable *Z* is the true cause of both *X* and *Y*. Hamilton (1994, p. 308) suggests it is better to describe “Granger causality” tests between *X* and *Y* as tests of whether *X* helps forecast *Y* rather than whether *X* causes *Y*. He notes that the tests may have implications for causality in the conventional sense, but only in conjunction with other assumptions.

none in CBOT wheat. When significance was found the size of the estimated price impact was small and the direction of the impact was as likely to be positive as negative.

Another recent study provides further empirical evidence on the potential price impact of index funds in commodity futures markets. Sanders, Irwin, and Merrin (2009b) argue that if index funds inflate prices one would expect markets with the highest concentration of index funds positions to show the largest price increases. To test this hypothesis, the authors examine the relationship between price changes and the percentage of open interest controlled by index funds across 12 commodity futures markets, including CBOT wheat. Two examples of their “cross-sectional” regressions are presented in Figure 1, one showing a positive relationship and one a negative relationship. The key is that when the results are pooled across all quarters (or months or weeks) in the 2006 through 2008 sample the average relationship is a flat line. There is no evidence that higher concentrations of index fund trading lead to higher futures prices.

The results of the most recent studies, completely ignored by the Subcommittee, provide overwhelming evidence that index funds were not responsible for the run-up in grain and oilseed markets, particularly in the wheat market. Historically, price “spikes” have not been uncommon in the grain markets as market participants react to developments that are less permanent than anticipated. Such episodes are not infrequently attributed to speculation rather than the underlying fundamental factors responsible for the market situation (Irwin, Sanders, and Merrin, 2009).

3. The increase in the magnitude of the carry in the price structure of CBOT wheat futures contracts and the resulting impact on convergence performance has been well documented (Irwin et al., 2009). The Subcommittee concludes that the rolling of positions by index funds is responsible for the persistence of the large carry. We dispute this conclusion based on the evidence found in Figure 2, which shows the behavior of nearby spreads for CBOT wheat during the first 13 business days of the calendar month prior to contract expiration. The time window for the analysis is centered on days 5 through 9, the time period of the so-called “Goldman roll” when index funds tend to roll their positions from the nearby to the next deferred contract. The averages reveal a consistent increase in the size of the spread to the next contract (expressed as a percent of full carry) during “Goldman roll” days 5 through 9. However, the spike in the magnitude of the spread either disappears entirely or noticeably recedes during days 10 through 13, so rolling did not necessarily lead to a permanent increase in the magnitude of the spread. The spike in the magnitude of the spread during the roll period was also present long before convergence became an issue and before long-only index funds had a major presence in these markets. This is not surprising since the time window when index funds roll to the next contract is also the same time period when many other traders roll their positions.

The Subcommittee did acknowledge this evidence (see footnote 261) but argued that it was no longer relevant because index funds have altered their trading to concentrate positions in deferred contracts and roll over a wider time interval. Aulerich, Irwin, and Garcia (2009) find some trend towards more use of deferred contracts and a wider time interval for rolling by index funds but changes have been marginal rather than substantial.

While the mechanism may not be fully understood, it appears that the Subcommittee and many others believe that the mere presence of index funds is the cause of the large carry in CBOT wheat. This can be termed the “crowded market” hypothesis. Consider Figure 3 which depicts the percent of full carry in the wheat market and the percent of open interest held by index funds (CITs) on a weekly basis over January 2006 through June 2009.³ There is virtually no correlation between the two series over this time period. Without correlation no cause and effect can be implied.

The relative behavior of the carry in CBOT corn, soybeans, and wheat over the last year also runs counter to the hypothesis that index funds are responsible for the large carry in wheat. Figure 4 presents index fund (CITs) percent of open interest and percent of full carry on the first day of delivery for the May 2008 through May 2009 CBOT corn, soybean, and wheat futures contracts. In each market there has been very little change in the percent of open interest associated with CITs over the last year. Yet the carry in corn has dropped sharply, the carry in soybeans has been all over the board, and the carry in wheat has risen slightly. The only way to reconcile these patterns is to argue that the impact of index fund trading on the carry is somehow unique to CBOT wheat, which is a difficult argument to support (see Figure 3).

4. The Subcommittee ignored other possible explanations of the poor performance of the CBOT wheat contract in terms of price discovery and convergence. The CBOT wheat contract is the most popular wheat contract in the world and appears to be widely used to trade “wheat” generically. In contrast, the delivery market locations make the contract a soft red winter wheat contract at maturity. To the extent that world wheat and soft red winter wheat fundamentals diverge there is the potential for poor basis performance. This potential disconnect is acknowledged by the industry and the CBOT, but has not been investigated.

There is also persuasive evidence that the current delivery markets for CBOT wheat have been and continue to be out of the commercial flow even for soft red winter wheat. Figure 5 shows the annual flow of grain through facilities regular for delivery of CBOT corn, soybeans, and wheat over 1975 through 2008. Declining commercial activity in the corn and soybean markets led to a change in delivery locations in 2000 for these contracts and the magnitude of commercial activity at delivery locations increased sharply as a result. Commercial activity through facilities regular for delivery of wheat has been persistently small, even in comparison to corn and soybeans before the 2000 change in delivery locations. Yet, as indicated by Figure 6, delivery locations for wheat tend to hold large inventories relative to commercial shipments. This suggests a tendency for wheat to move to these locations because they are delivery markets and not to satisfy the demand for commercial shipments. The unavoidable conclusion is that CBOT wheat delivery markets are out of position and that congestion likely contributes to poor basis and convergence performance. This state of congestion was generally ignored until recently when additional delivery locations were added by the CBOT. Whether these additional wheat delivery

³ In order to prevent distortion of the relationship, three observations are deleted when a large inverse (negative % of full carry) is present.

locations will contribute to improved convergence performance is debatable due to the “safety valve” nature of location price differentials (Irwin et al., 2009).

5. The structural problems associated with the CBOT wheat contract have resulted in a long history of poor hedging performance of that contract, a point basically ignored by the Subcommittee. The hedging effectiveness of a contract can be quantified by measuring the level of basis at some point before the delivery period and regressing this “initial” basis on the change in basis from that point forward through the delivery period. When delivery location basis is perfectly predictable, the relationship between initial basis and the change in basis has a slope of -1 and the intercept is 0. In other words, if basis is -50 cents per bushel two months before expiration, the change in the basis over the subsequent two months should be +50 cents per bushel. Additionally, all points lie directly on the line, which implies the R^2 for the regression is 1 and that hedges over the interval are perfectly effective in eliminating basis risk.

Figure 7 shows the predictability of wheat delivery location basis at Toledo for each of the last three decades. The horizontal axis in each chart measures the level of the delivery location basis on the day after the preceding contract expires. The vertical axis measures the change in the delivery location basis from the day after the preceding contract expires to the first day of delivery. By historical standards, hedging effectiveness was barely adequate in the 1980s, with an R^2 of only 55% and a slope of -0.56.⁴ For an initial basis of -50 cents, the slope estimate implies that the subsequent basis change is only +28 cents. With R^2 dropping to only 30%, hedging effectiveness declined precipitously in the 1990s. The disastrous nature of hedging effectiveness in the current decade is obvious. Declining hedging effectiveness provides concrete evidence of the underlying structural problems in the delivery specification of the CBOT wheat contract.

Summary

It is important to recognize that problems with the CBOT wheat futures contract are not a recent phenomenon. Gray and Peck (1981) reviewed concerns about delivery specifications of the wheat contract that stretch all the way back to the 1920s. By substituting “Chicago and Toledo” for “Chicago,” comments made by Tom Hieronymus about the CBOT wheat contract in 1978 could just as well have been written in the last couple of years,

The Chicago wheat futures market has been criticized from time to time for not keeping contract terms current with the changing commerce in wheat. There have been major changes during the past 20 years. Formerly, the predominant movement of wheat was from west to east for flour milling and eastern states were more important than they now are in wheat production. At this time, a higher proportion of U.S. wheat is produced west of the Mississippi River and exports are now about two-thirds of total use. The bulk of exports move through Texas Gulf ports and New Orleans. These changes have reduced the representativeness of Chicago as a pricing and delivery point. (Hieronymus, 1978, p. 27)

⁴ See Working (1953), Peck and Williams (1991), and Williams (2001).

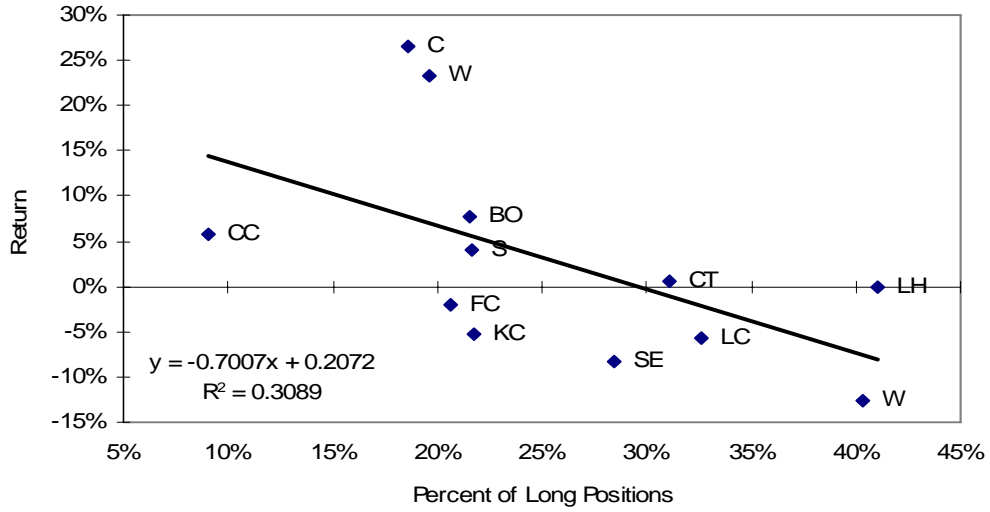
The fundamental problem is that changes in wheat production patterns, transportation logistics, and trade flows have left the contract with an increasingly narrow commercial flow of wheat to draw upon in the delivery process. Under these conditions, there is a constant potential for congestion in the delivery process of CBOT wheat futures and the attendant distortion of cash and futures prices. By ignoring this central problem with the CBOT wheat futures contract, the Subcommittee points in the wrong direction in trying to fix problems with the contract. Index funds are a side-show compared to the real problems with the contract.

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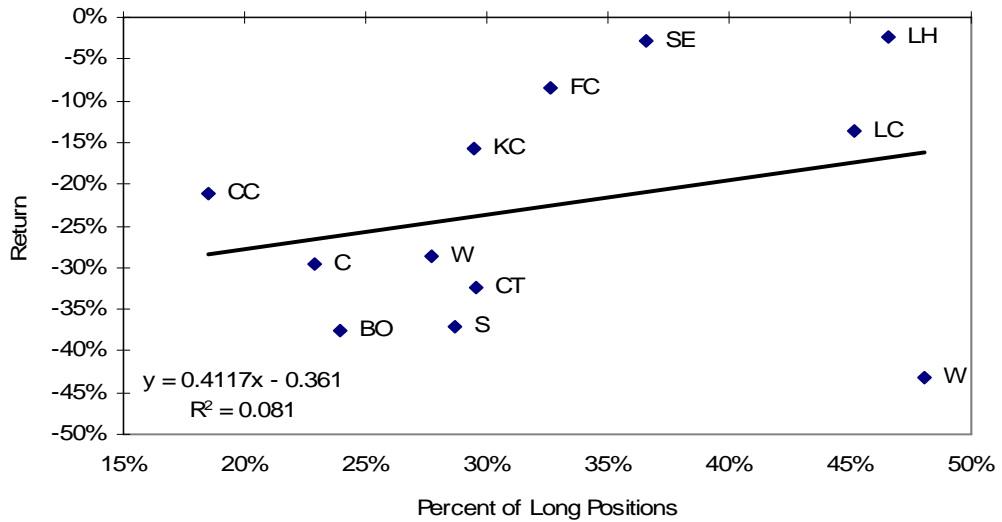
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Panel A: Second Quarter of 2007



Panel B: Third Quarter of 2008



Source: Sanders, Irwin, and Merrin (2009b)

Figure 1. Examples of the Estimated Quarterly Relationship between Commodity Index Trader (CIT) Percent of Long Positions and Returns in 12 Commodity Futures Markets

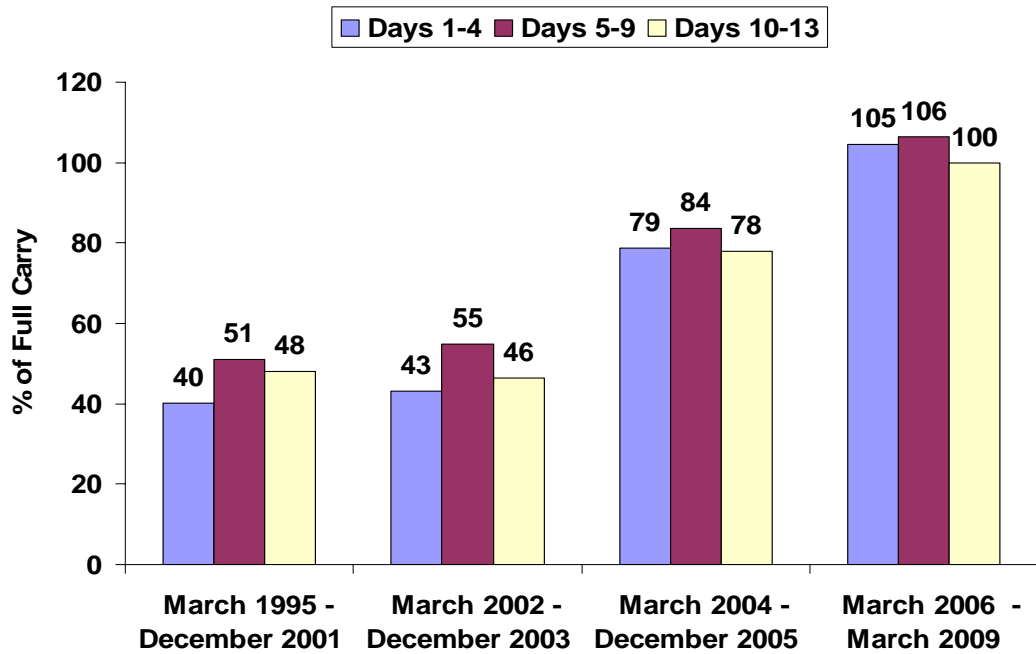


Figure 2. Average Nearby Spreads for CBOT Wheat Futures during the Roll Window of Long-Only Index Funds, March 1995 - March 2009 Contracts

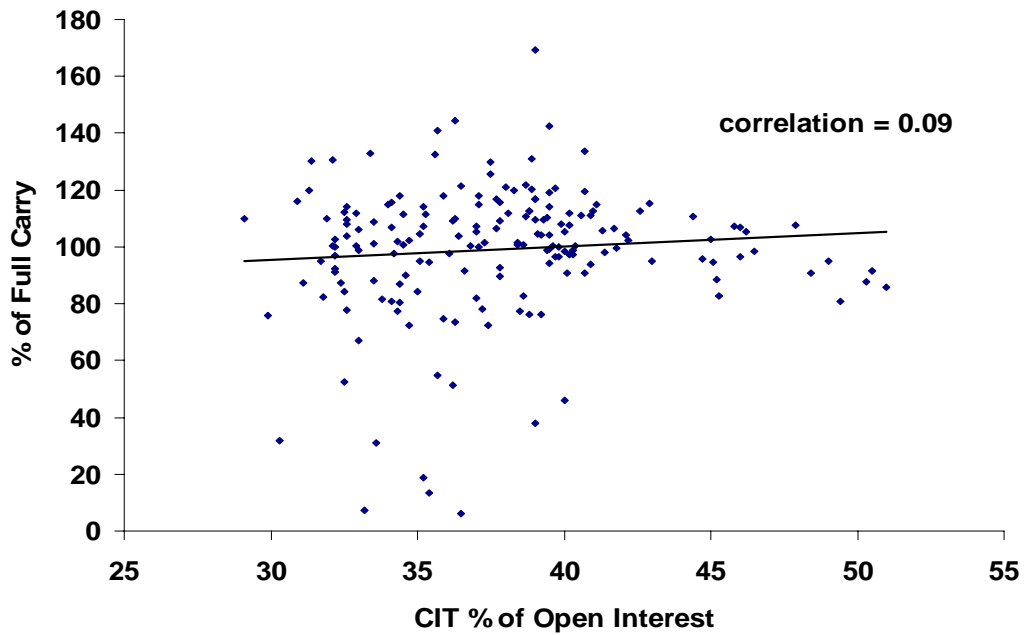
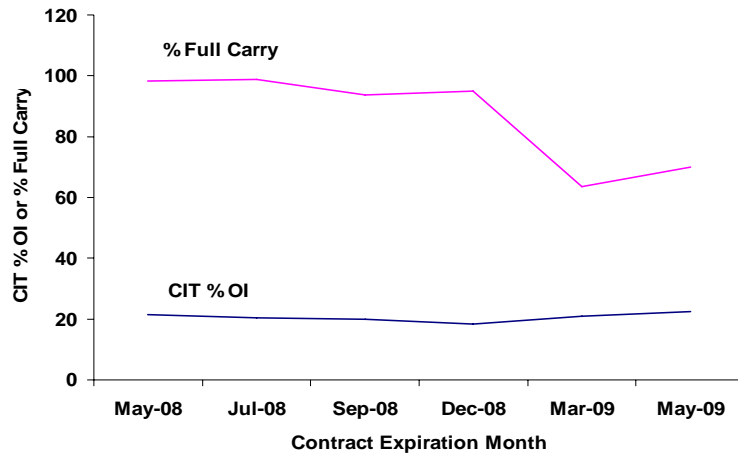
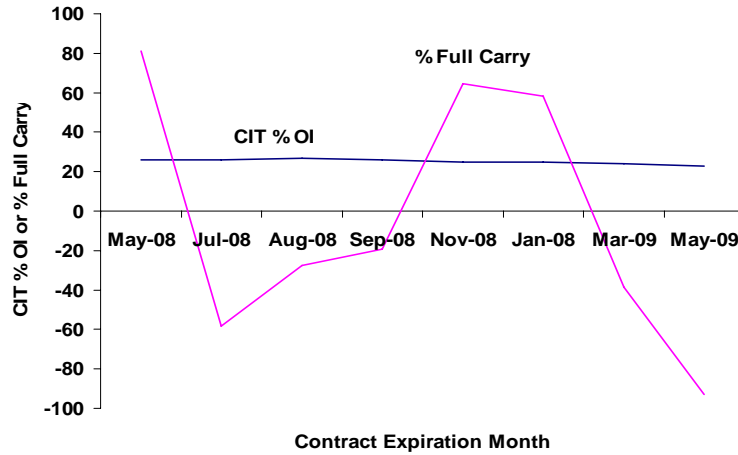


Figure 3. Weekly Commodity Index Trader (CIT) Percent of Open Interest and Percent of Full Carry in CBOT Wheat Futures, January 2006 - June 2009

Panel A: Corn



Panel B: Soybeans



Panel C: Wheat

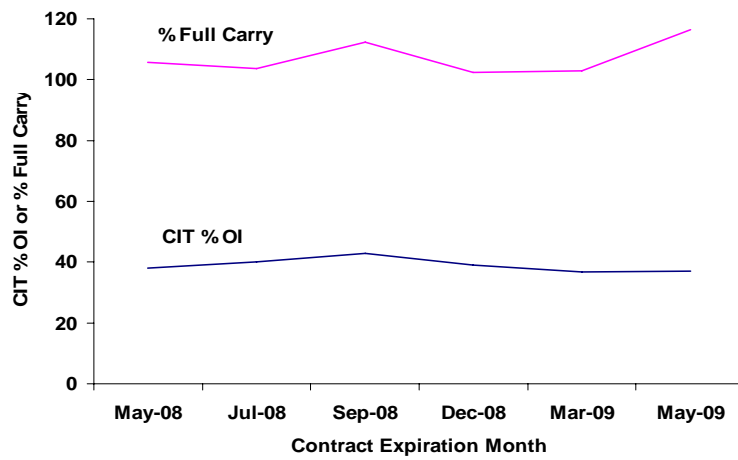
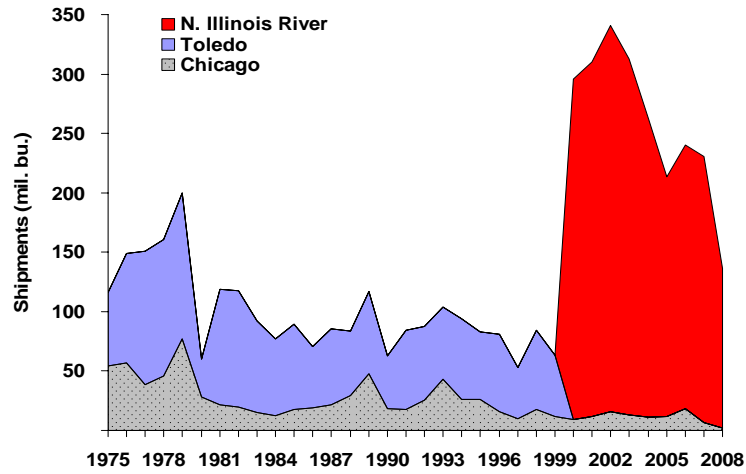
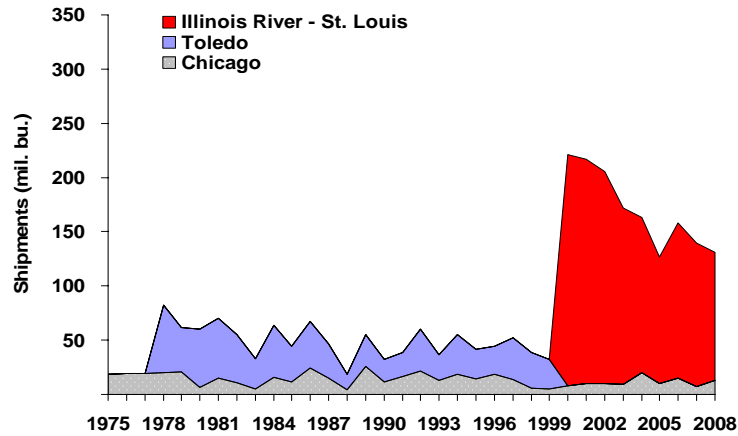


Figure 4. Commodity Index Trader (CIT) Percent of Open Interest and Percent of Full Carry on the First Day of Delivery for CBOT Corn, Soybean, and Wheat Futures, May 2008 - May 2009 Contracts

Panel A. Corn



Panel B. Soybeans



Panel C. Wheat

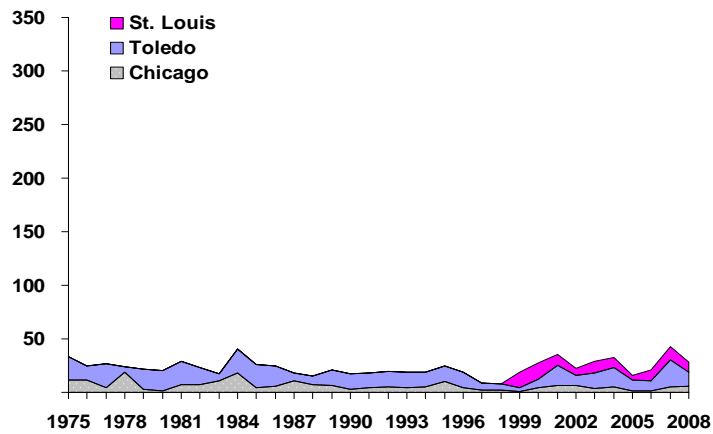
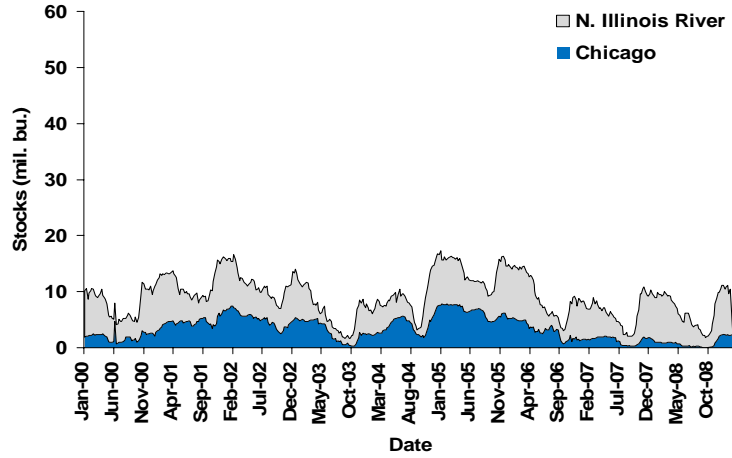
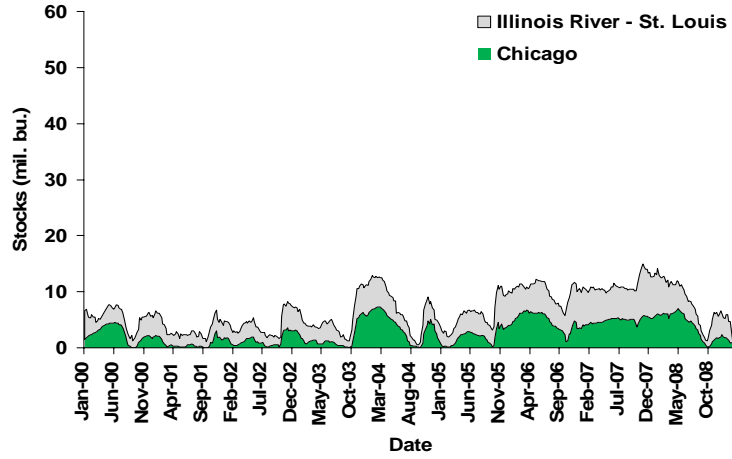


Figure 5. Annual Commercial Shipments at Facilities Regular for Delivery of CBOT Corn, Soybean, and Wheat Futures, 1975-2008.

Panel A. Corn



Panel B. Soybeans



Panel C. Wheat

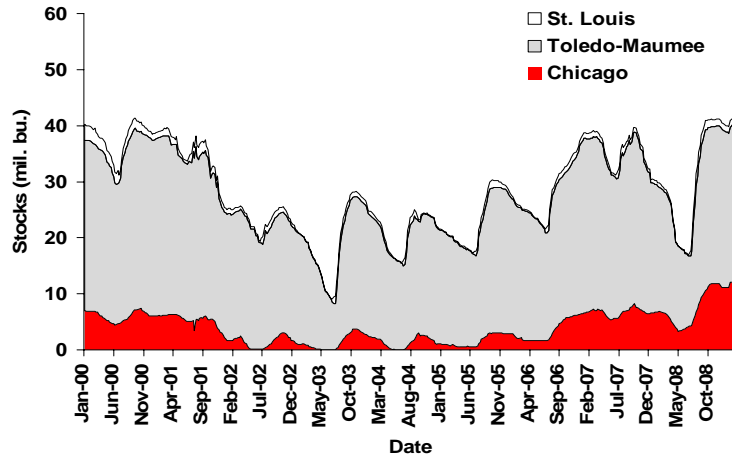
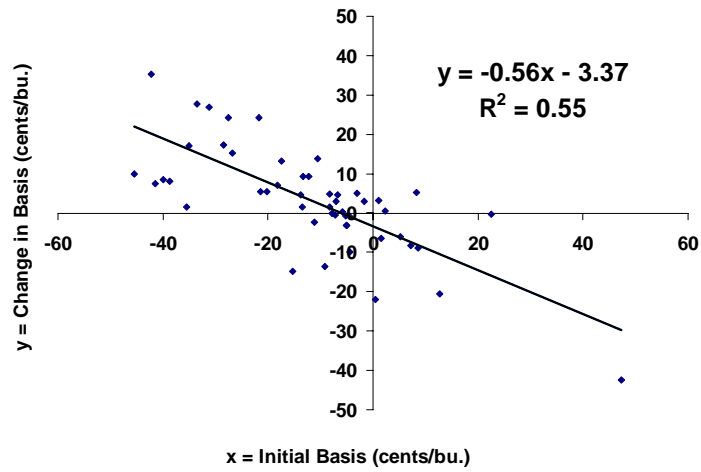
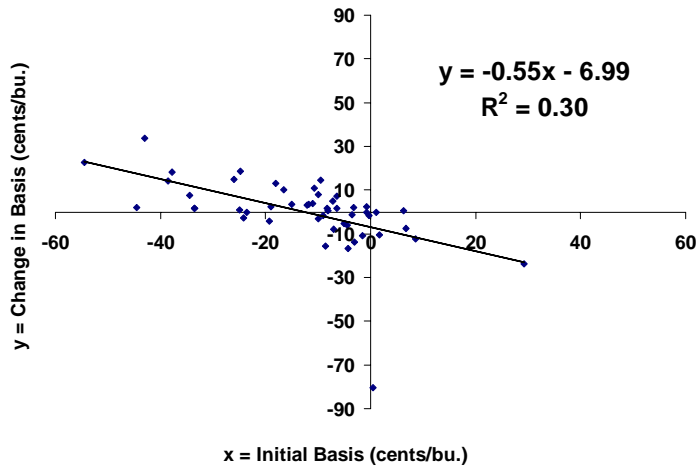


Figure 6. Weekly Stocks of Corn, Soybeans, and Wheat at Facilities Regular for CBOT Delivery, January 7, 2000 - February 27, 2009

Panel A: March 1980 - December 1989



Panel B: March 1990 - December 1999



Panel C: March 2000 - May 2009

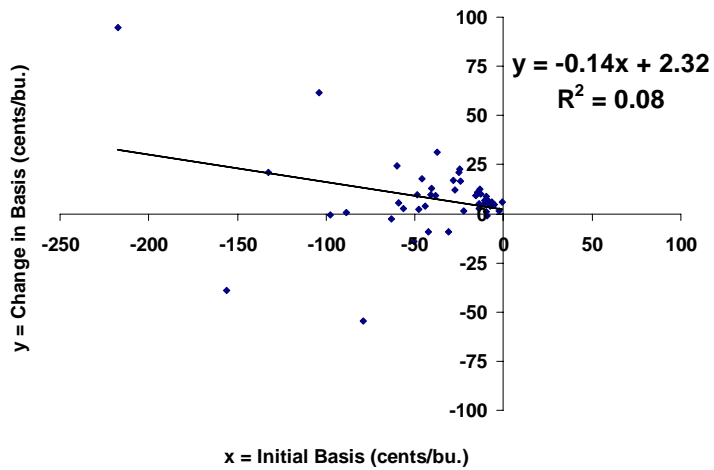


Figure 7. Predictability of CBOT Wheat Basis Change to First Day of Delivery, Toledo, March 1989 – May 2009