Structural Change in Agricultural Futures Markets: What Have We Wrought?

Scott H. Irwin
The Chicago Board of Trade c. 1885


http://2.bp.blogspot.com/-SppcsN29pCo/TseiE1jJoUI/AAAAAAAAIzI/Fi9xGyo39CA/s1600/Board%2Bof%2BTrade.jpg
1990s

http://static.squarespace.com/static/520fd45de4b030489db95a95/t/523ae725e4b07feda73fcf86/1379591973314/Chicago-grain-2978.jpg
Structural Change #1: The Switch to Electronic Trading

Percent of Futures Volume Transacted on Electronic Platform, 2004-2011

HFT: High Frequency Trading

Reign of the High-Frequency Trading Robots

By WALLACE TURBEVILLE

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http://www.usnews.com/opinion/blogs/economic-intelligence/2013/10/18/how-high-frequency-trading-is-taking-over-markets

Richard Finger, Contributor

I expose the folly in boardrooms and capital markets.

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High Frequency Trading: Is It A Dark Force Against Ordinary Human Traders And Investors?

High Frequency Trading (HFT) is the use of computer algorithms to rapidly trade stocks. Highly sophisticated proprietary strategies are programmed to move in and out of trades in timeframes as little as fractions of a second. It is a business dominated by a few giants as it is a sandbox that costs many millions to play in. There are many facets to High Frequency Trading. I knew roughly what High Frequency Trading was, but in this article I try to understand some of the nuance of a phenomenon that, as we will discover, is the dominant force on the exchanges today.

Structural Change #2: A Revolution in Market Access

- [Image](http://www.optionsxpress.com/index.aspx)
- [Image](http://www.reviews.com/forex-trading/wp-content/blogs.dir/44/files/2013/10/Trading_Station_Mobile_for_Mobile_Forex_Trading___FXCM-900x600.png)
- [Image](https://www.cannontrading.com/images/iRunner-mobile-futures-bar-charts.jpg)
### Table 2. Exchange Traded Products Tracking Agricultural Commodities

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Name</th>
<th>Assets ($1,000s)</th>
<th>Volume (shares)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DBA</td>
<td>PowerShares Deutsche Bank Agriculture Fund</td>
<td>2,560,550</td>
<td>1,729,900</td>
</tr>
<tr>
<td>JJG</td>
<td>iPath Exchange Traded Notes Dow Jones – American International Group Grains Total Return Sub-Index Exchange Traded Note Series A</td>
<td>226,785</td>
<td>152,556</td>
</tr>
<tr>
<td>JJA</td>
<td>iPath Exchange Traded Notes Dow Jones – American International Group Agriculture Total Return Sub-Index Exchange Traded Note Series A</td>
<td>155,940</td>
<td>48,656</td>
</tr>
<tr>
<td>CORN</td>
<td>Teucrium Corn Fund</td>
<td>107,075</td>
<td>130,840</td>
</tr>
</tbody>
</table>
Structural Change #3: The Rise of Passive Investment

- Long-only exposure to basket of commodities
- Risk diversification objective
- GSCI most widely tracked index

Investment in Commodity Index Funds, 2000-2009

Source: Barclays

Growth of Trading Volume in Commodity Futures Markets (2000-2010)

- Rapid growth of commodity index funds
- ETFs and ETNs widely available
- Switch to electronic trading
- Rise of HFT firms
- Discount online brokerage services

Graph showing volume trends for CBOT Corn, CBOT Wheat, and NYMEX Crude Oil from 2000 to 2010.
"The Masters Hypothesis"

Chart 1. S&P GSCI Spot Price Index vs. Index Speculator Assets


http://www.loe.org/images/content/080919/Act1.pdf
Passive index investment “too big” for commodity markets:
• Long-lived and massive bubbles
• Prices far exceed fundamental values during spikes
“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... 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.” (p. 2)
“Passive speculators are an invasive species that will continue to damage the markets until they are eradicated. The CFTC must address the issue of passive speculation; it will not go away on its own. When passive speculators are eliminated from the markets, then most consumable commodities derivatives markets will no longer be excessively speculative, and their intended functions will be restored.”

Michael W. Masters, Testimony before the Commodity Futures Trading Commission (CFTC), March 25, 2010

Food prices are a matter of life and death to many in the developing world. Financial markets that should be helping food growers and processors to manage their risk and set prices have become a potential threat to global food security. Deregulated and secretive agricultural commodity derivatives markets have attracted huge sums of speculative money, and there is growing evidence that they deliver distorted and unpredictable food prices. Financial speculation can play an important role to help food producers and end users manage risks, but in light of the harm that excessive speculation may cause to millions, action is required now to address the problem. This briefing explains what has gone wrong with financial markets and what the United States, the European Union and other G20 members should do to fix them.

A NEW REALITY REQUIRING NEW RULES: FINANCIALIZED FOOD MARKETS

NOT A GAME: SPECULATION VS FOOD SECURITY
REGULATING FINANCIAL MARKETS TO GROW A BETTER FUTURE

Financialization of Commodity Markets

A NEW REALITY REQUIRING NEW RULES: FINANCIALIZED FOOD MARKETS
Commodities

G20 urged to help end world hunger by stopping commodity speculation

More than 450 economists from 40 countries have urged G20 finance ministers to prevent financial speculation in commodity markets from driving up food prices and fuelling hunger.

Sterling Smith, commodity trading adviser at Country Hedging, said it’s unlikely to keep people who want to speculate away from commodities. “The bottom line is, people want to be long these markets and if they can find a way to leverage themselves they’re going to. If a foreign entity offers said vehicle they may go there. This doesn’t address the problem of the (2008 financial) crisis, which was bad mortgages,” Smith said.
Devil or Angel? The Role of Speculation in the Recent Commodity Price Boom (and Bust)

Scott H. Irwin, Dwight R. Sanders, and Robert P. Merrin

It is commonly asserted that speculative buying by index funds in commodity futures and over-the-counter derivatives markets created a “bubble” in commodity prices, with the result that prices, and crude oil prices, in particular, far exceeded fundamental values at the peak. The purpose of this paper is to show that the bubble argument simply does not withstand close scrutiny. Four main points are explored. First, the arguments of bubble proponents are conceptually flawed and reflect fundamental and basic misunderstandings of how commodity futures markets actually work. Second, a number of facts about the situation in commodity markets are inconsistent with the existence of a substantial bubble in commodity prices. Third, available statistical evidence does not indicate that positions for any group in commodity futures markets, including long-only index funds, consistently lead futures price changes. Fourth, there is a historical pattern of attacks upon speculation during periods of extreme market volatility.

Key Words: commodity, futures, index fund, market, speculation

JEL Classifications: Q11, Q13

Led by crude oil, commodity prices reached dizzying heights during mid-2008 and then subsequently declined with breathtaking speed (see Figure 1). The impact of speculation, principally by long-only index funds, on the boom and bust in commodity prices has been hotly debated. It is commonly asserted that speculative buying by index funds in commodity futures and over-the-counter (OTC) derivatives markets created a “bubble,” with the result that commodity prices, and crude oil prices, in particular, far exceeded fundamental values at the peak (e.g., Gheld, 2008; Masters, 2008; Masters and White, 2008). The main thrust of bubble arguments in this (1) a large

In reality, a variety of investment instruments are available under the heading “commodity index fund.” Individuals may enter directly into over-the-counter contracts with swap dealers to gain the desired exposure to returns from a particular index of commodity prices. Some firms also offer investment funds whose returns are tied to a commodity index. Exchange-traded funds (ETFs) have also recently developed to make it even easier to gain commodity exposure. ETFs and ETPs trade on exchanges in the same manner as stocks on individual companies. See Engelke and Yuan (2008) and CPF (2009) for further details.
CBOT Wheat Futures Prices and Index Trader Net Long Positions, January 2004-September 2009

Index Trader Open Interest
(left scale)

Nearby Contract Price
(right scale)
Relationship between CBOT Wheat Returns and Index Trader Net Long Positions, June 2006-December 2009

\[
y = 0.0002x - 0.0798 \\
R^2 = 0.0187
\]
“The current state of knowledge indicates only a few, and weak, findings that verify the assumption that the rise in financial speculation in recent years has increased (1) the level or (2) the volatility of agricultural commodity prices...... Seen in this light, the alarmism about financial speculation should be classified as a false alarm: Those who desire to effectively combat hunger in the world have to take real-economy precautions to ensure that food supplies will match the envisaged increasing demands.”
Were There Even Bubbles?
Were There Even Bubbles?

How to determine bubble from non-bubble episodes?
Were There Even Bubbles?

How to determine bubble from non-bubble episodes?
Bubble Periods in Grain Futures Prices, 2004-2012

(a) Corn

(b) Soybeans

(c) Wheat

(d) Kansas Wheat

What Have We Learned?

- Index investment did not drive agricultural price spikes
- Agricultural futures markets were not excessively speculative
- Price bubbles in agricultural futures were infrequent, small, and short-lived
What Have We Learned?

• Index investment did not drive agricultural price spikes

• Agricultural futures markets were not excessively speculative

• Price bubbles in agricultural futures were infrequent, small, and short-lived

“*The Masters Hypothesis is not a valid characterization of reality*”
...any effects of excessive speculation on food prices likely occur at **high frequencies**. Such effects would imply that futures markets do not function efficiently as **venues of price discovery**. For this reason, studying price discovery provides a promising path for future research on the connection between futures market trading and prices.”

---Aaron Smith (2012)
Bid-Ask Spreads in the Electronic Corn Futures Market, 2009 Contracts

Quality of Tick-by-Tick Price Discovery in the Cotton Futures Market, January 2006 – March 2009