Devil or Angel? The Role of Speculation in the Recent Commodity Price Boom (and Bust)

By

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

Power Point Presentation for the
International Agricultural Trade Research Consortium
Analytic Symposium
*"Confronting Food Price Inflation:
Implications for Agricultural Trade and Policies"*

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Seattle, Washington

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UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

A Bull Market Sees the Worst in Speculators

By DIANA B. HENRIQUES
Published: June 13, 2008

As Oil Rises, More Speculating About Speculators

JUNE 30, 2008, 10:25 AM

MARKET MAKER

Energy Speculators Draw the Heat

Are Pension Funds Fueling High Oil?

A Senate hearing weighs charges that speculation by big investors and sovereign wealth funds is behind the rise in commodities and energy prices

The Role of Speculators in the Global Food Crisis

By Beat Balzli and Frank Hornig

Vast amounts of money are flooding the world's commodities markets, driving up prices of staple foods like wheat and rice. Biofuels and droughts can't fully explain the recent food crisis -- hedge funds and small investors bear some responsibility for global hunger.

AFP

☆ **4 months ago:** WASHINGTON - JUNE 24: Michael Masters (R), of Masters Capital Management, LLC, testifies while Walter Lukken (L) , Chairman U.S. Commodity Futures Trading Commission, and Dr. James Newsome (C), President and Chief Executive Officer NYMEX, listen during a Senate Homeland Security and Governmental Affairs hearing on Capitol Hill, June 24, 2008 in Washington DC. The Committee is hearing testimony on excessive speculation in the commodity markets.

Susan Walsh/Associated Press

Fadel Gheit, left, Roger Diwan, Michael Masters and Edward Krapels appear before a House subcommittee investigating the energy speculation and the high cost of crude oil.

House passes oil anti-speculation bill

Thu Sep 18, 2008 2:29pm EDT

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1 of 1 Full Size

WASHINGTON (Reuters) - The U.S. House passed a bill intended to prevent excessive speculation in oil and other futures trading on Thursday despite a veto threat from the White House.

The bill requires the Commodity Futures Trading Commission to set position limits on major oil and agricultural futures contracts and to monitor look-alike contracts traded over the counter. It could set limits on those contracts, if need be.

Foreign exchanges would have to adopt reporting standards and trading limits similar to U.S. exchanges to have access to U.S. customers.

Feeling Powerless, India Blames Oil Speculation

By HEATHER TIMMONS
Published: July 23, 2008

Oil prices driven by speculation not demand: Italy

Fri Jun 13, 2008 1:49pm BST

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Japan blames speculators for oil hike

Font Size: Print Page:

Peter Alford, Tokyo correspondent | *May 28, 2008*

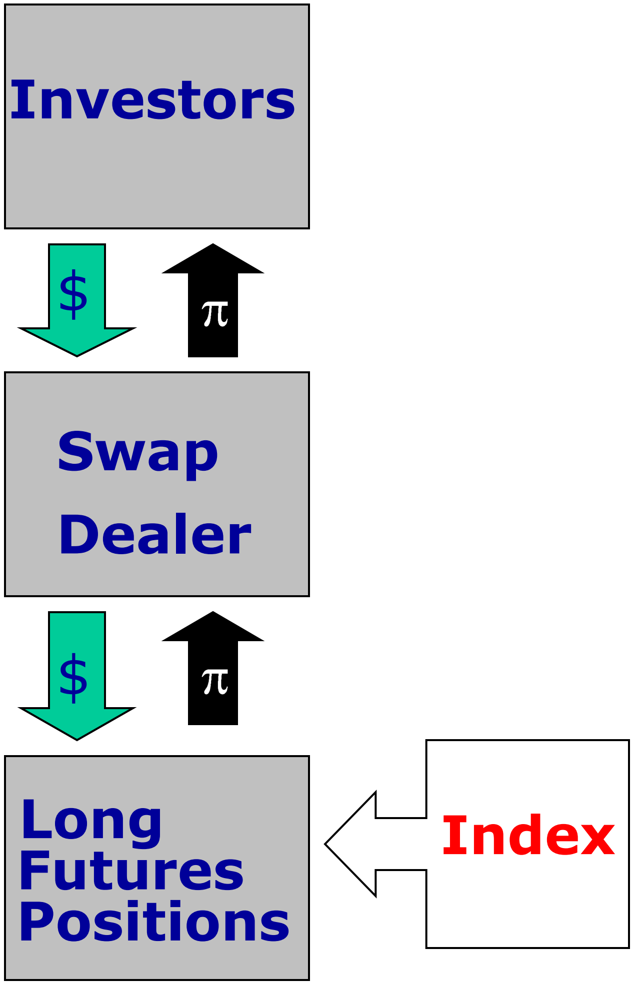
FINANCIAL speculation and other non-supply/demand factors may have increased crude oil prices by more than a third recently, according to a new Japanese Government white paper.

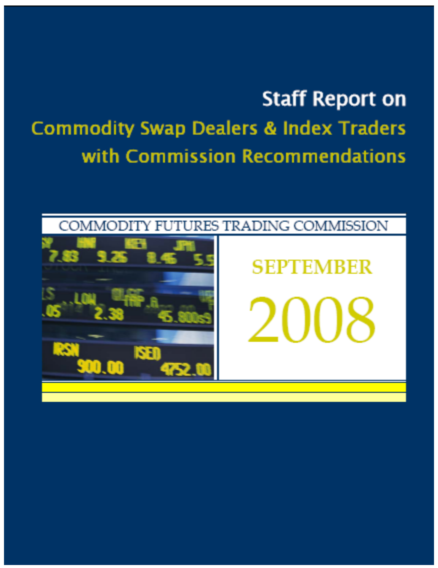
Outline

- Bubble logic
- Conceptual errors
- Inconsistent facts
- Empirical evidence
- Changing fundamentals
- Lessons from history

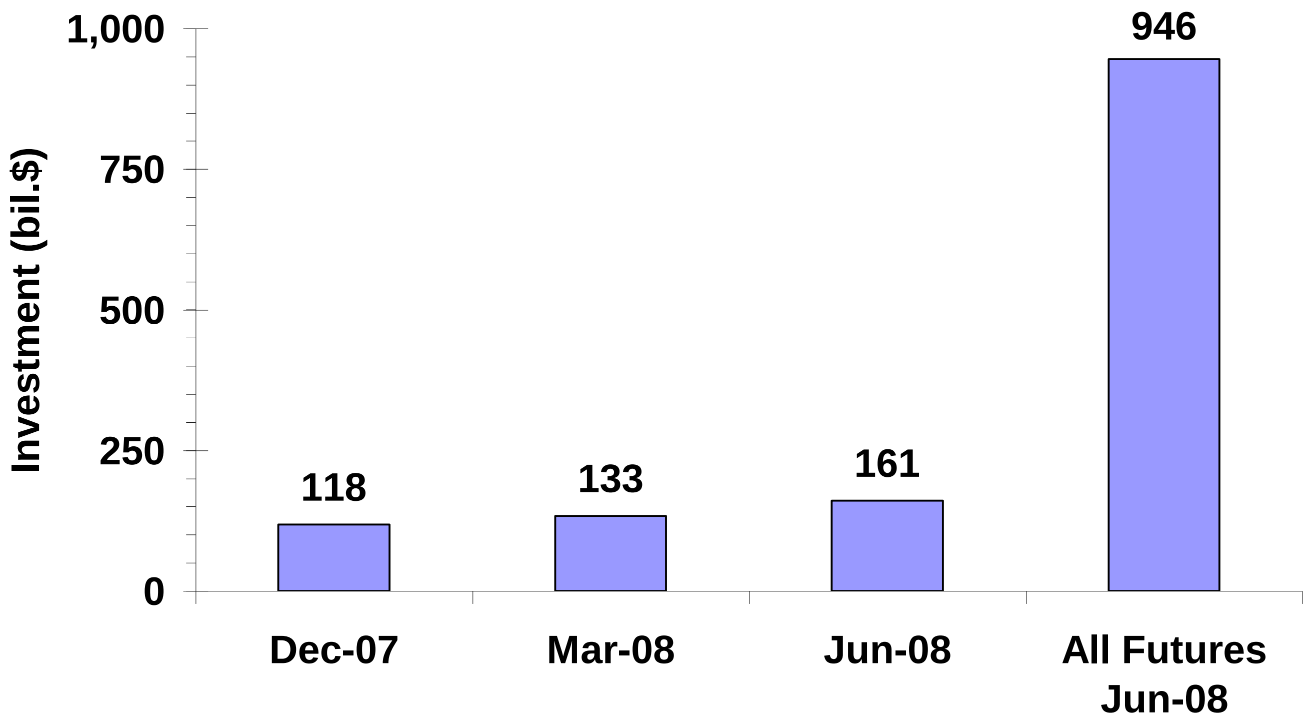
A New Type of Commodity Speculator

- Commodity Index Investors
  - Desire portfolio exposure to returns from a basket of commodities
  - Long-only
- Popular Indexes
  - GSCI
  - Dow Jones-AIG
  - Reuters/Jeffries-CRB
- Investment Types
  - OTC index funds
  - Exchange-traded funds
  - Exchange-traded notes





Notional Value of Commodity Index Trading on U.S. Futures Exchanges (CFTC)



It Has to be a Bubble!

- A 'titanic' wave of money invested in commodity futures markets
- Overwhelmed 'normal' supply and demand fundamentals
- Greatly magnified upward trend in commodity prices
- Final result: A bubble

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So it’s becoming increasingly clear that there are very few people left in academia and economics-land that think that commodities were anything but a bubble. In fact it appears the only economists left attacking the bubble theory are the ones being paid by Wall Street to defend their actions.

---Accidental Hunt Brothers Blog, October 15, 2008

The World According to Mr. Masters

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

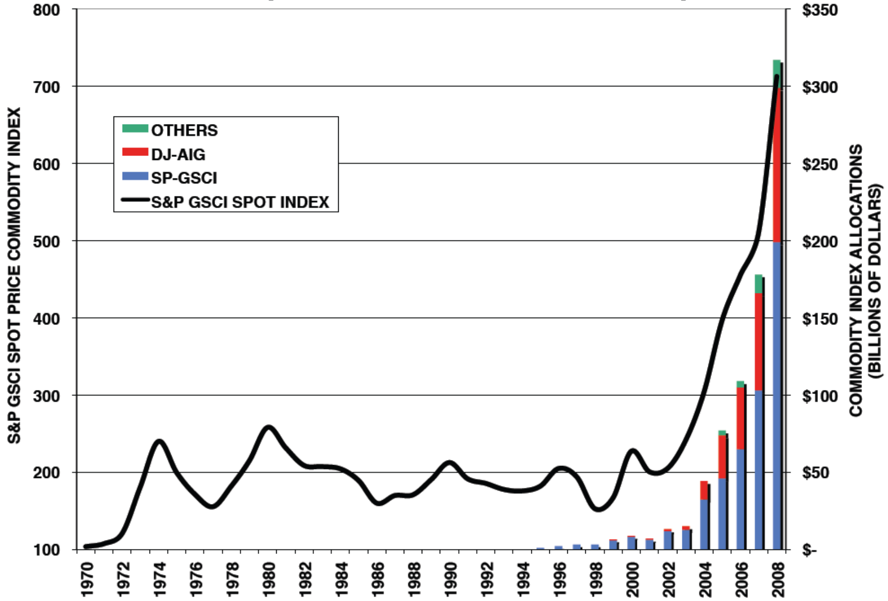
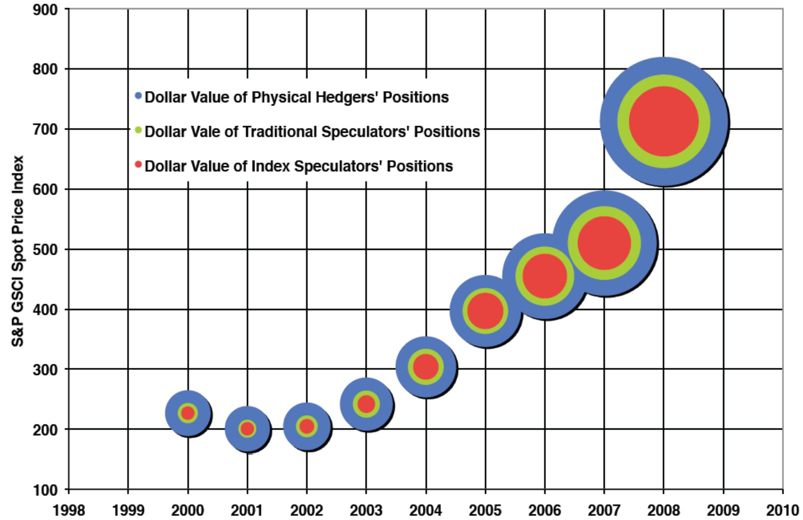


Chart 2. Commodities Futures Market Size (Billions) vs. S&P GSCI



Conceptual Error #1: Money Flows are not the Same as Demand

- Futures markets are zero-sum games
- If long positions of index funds are new "demand" then the short positions for the same contracts are new "supply"?
- Simply observing that large investment has flowed into the long side of commodity futures markets at the same time that prices have risen substantially does not **necessarily** prove anything

Agricultural and Consumer Economics

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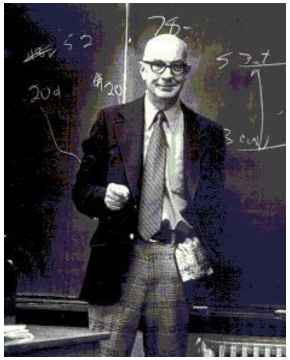
"…for every long there is a short, for everyone who thinks the price is going up there is someone who thinks it is going down, and for everyone who trades with the flow of the market, there is someone trading against it."

Tom Hieronymus



Conceptual Error #2: Index Futures Positions Distort both Cash and Futures Prices

- Futures contracts are financial transactions that only rarely involve the actual delivery of physical commodities (i.e. "side bets")
- To impact the equilibrium price of commodities in the cash market, index investors must take delivery and/or buy quantities in the cash market and hold these inventories off the market
- Absolutely no evidence that index fund investors are taking delivery and owning stocks of commodities

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Conceptual Error #3: Hedgers are Benign Risk-Avoiders and Speculators are Harmful Risk-Seekers

- Hedging and speculation are best described as a continuum
- Index funds entered a dynamic and ever-changing "game" between commercial firms and speculators with various motivations and strategies
- Commercial firms tend to have an informational advantage
- Index funds add liquidity and may improve competition in commodity futures markets

THE WALL STREET JOURNAL.

BUSINESS | JANUARY 14, 2009

Cargill's Inside View Helps It Buck Downturn

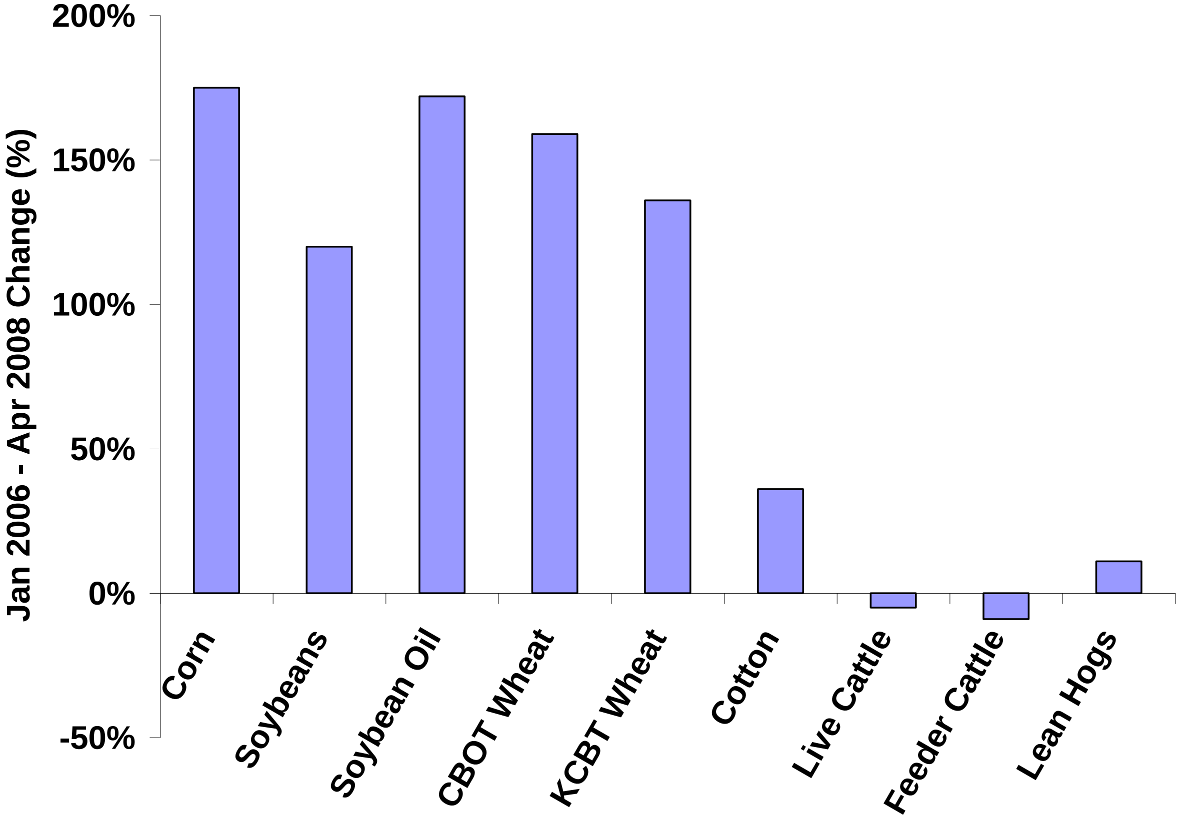
Agricultural and Consumer Economics

Inconsistent Fact #1: Speculation is not Excessive Compared to Hedging (2006:I-2008:I Averages)

	Long Hedging	Short Hedging	Long Speculation	Short Speculation
Corn		---# of contracts---		
2006	328,362	654,461	558,600	208,043
2008	598,790	1,179,932	792,368	182,291
Change	270,428	525,471	233,768	-25,752
Soybeans				
2006	126,832	192,218	183,105	107,221
2008	175,973	440,793	351,379	74,844
Change	49,141	248,575	168,274	-32,377
Wheat				
2006	57,942	213,278	251,926	92,148
2008	70,084	240,864	300,880	121,578
Change	12,141	27,585	48,954	29,430

Source: Sanders, Irwin, and Merrin (2008a)

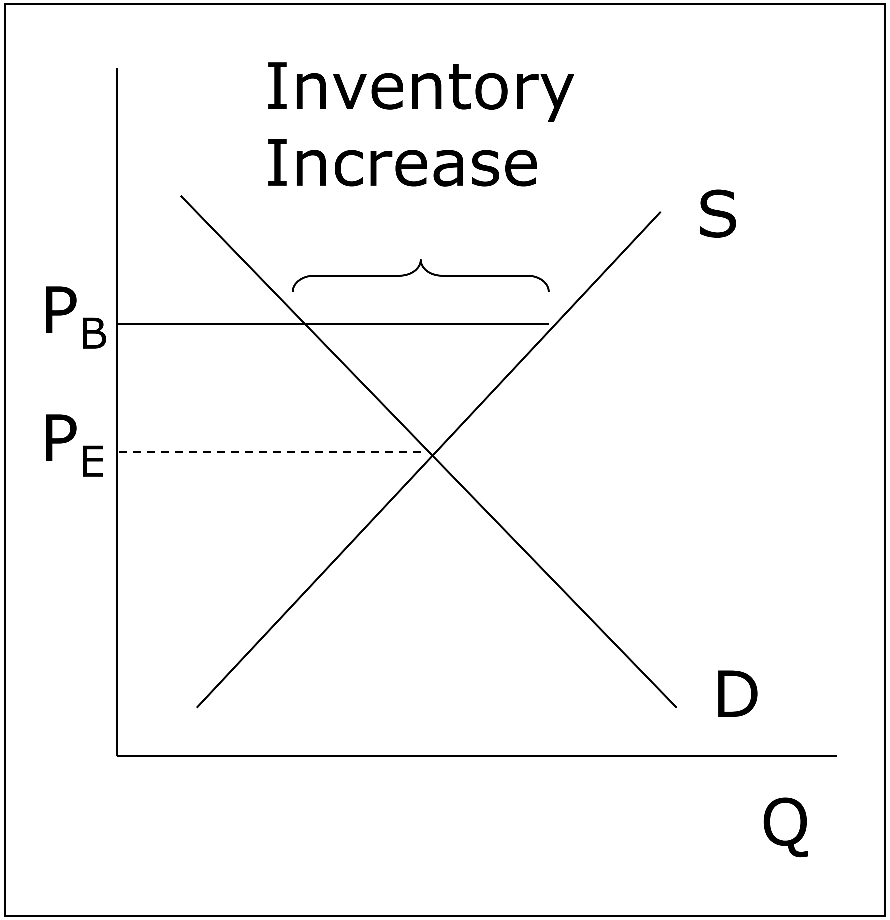
Inconsistent Fact #2: Price Increases Did not Occur in All Commodity Futures Markets Included in Popular Indexes (January 3, 2006 – April 15, 2008)

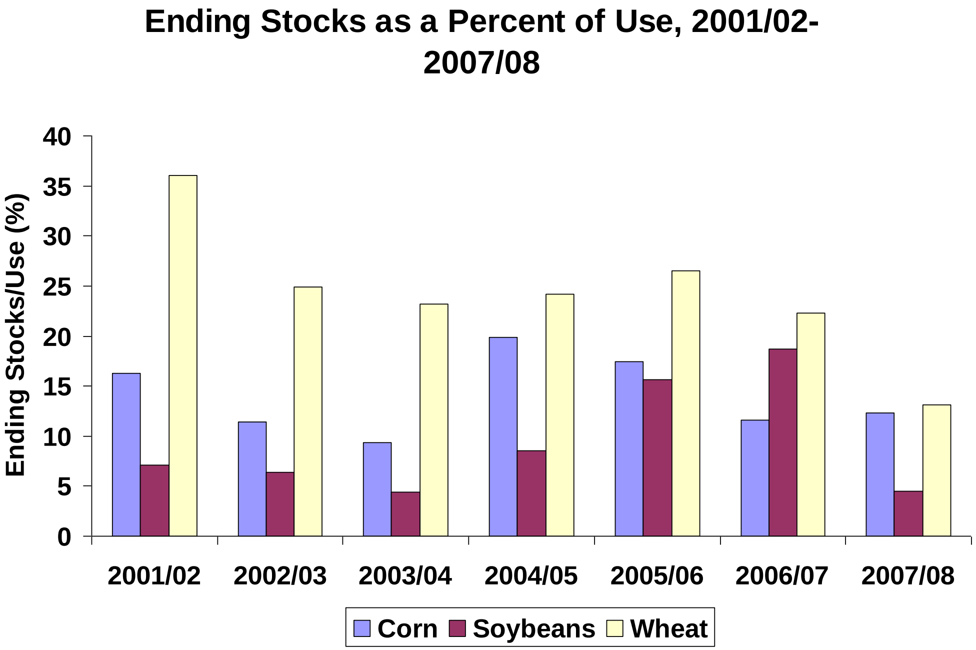


Inconsistent Fact #3: Price Increases Occurred in Commodity Futures Markets not Included in Popular Indexes or Markets Without Futures

	January 2006	April 2008	Change
Nearby Rough Rice Futures	$8.27/lb.	$22.17/lb.	+168%
Nearby Fluid Milk Futures	$12.65/cwt.	$17.29/cwt.	+37%
Apples Fresh Use (cash)	$0.26/lb.	$0.41/lb.	+58%
Edible Beans (cash)	$19.30/cwt.	$34.40/cwt.	+78%

Inconsistent Fact #4: Inventories did not Increase for Storable Commodities





"So my challenge to people who say there's an oil bubble is this: let's get physical. Tell me where you think the excess supply of crude is going."

This Time is Different!

- Facts build a persuasive case against bubble hypothesis
- But, evidence is “circumstantial”
- Bubble proponents can argue “this time is different”
- Direct evidence on the relationship between speculator positions and price changes is needed

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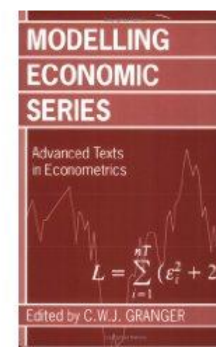
Solution: Granger causality tests

“If event *X* causes event *Y*, then event *X* should precede event *Y* in time”

$$R_t = \alpha_t + \sum_{i=1}^{n} \gamma_i R_{t-i} + \sum_{j=1}^{m} \beta_j S_{t-j} + \varepsilon_t$$

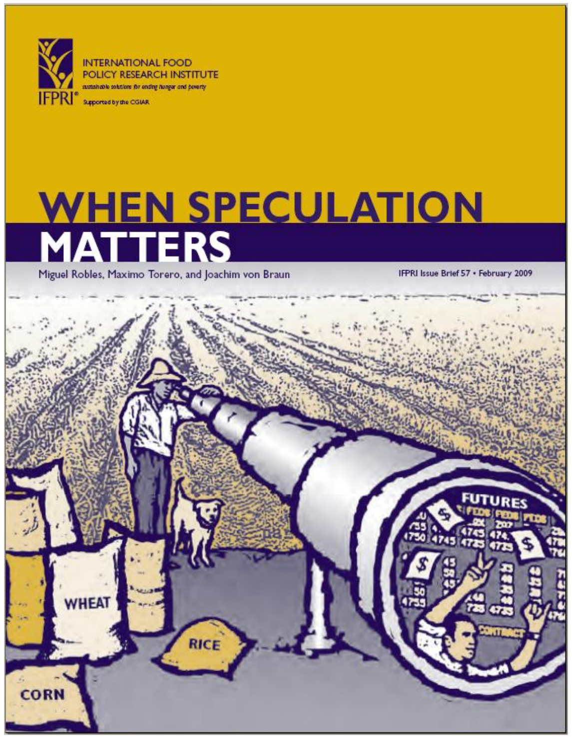


Granger Causality Test Results for CFTC Trader Categories, Positions Do Not Lead Weekly Returns, 1995-2006

$$R_t = \alpha_t + \sum_{i=1}^{m} \gamma_i R_{t-i} + \sum_{j=1}^{n} \beta_j PNL_{t-j} + \varepsilon_t$$

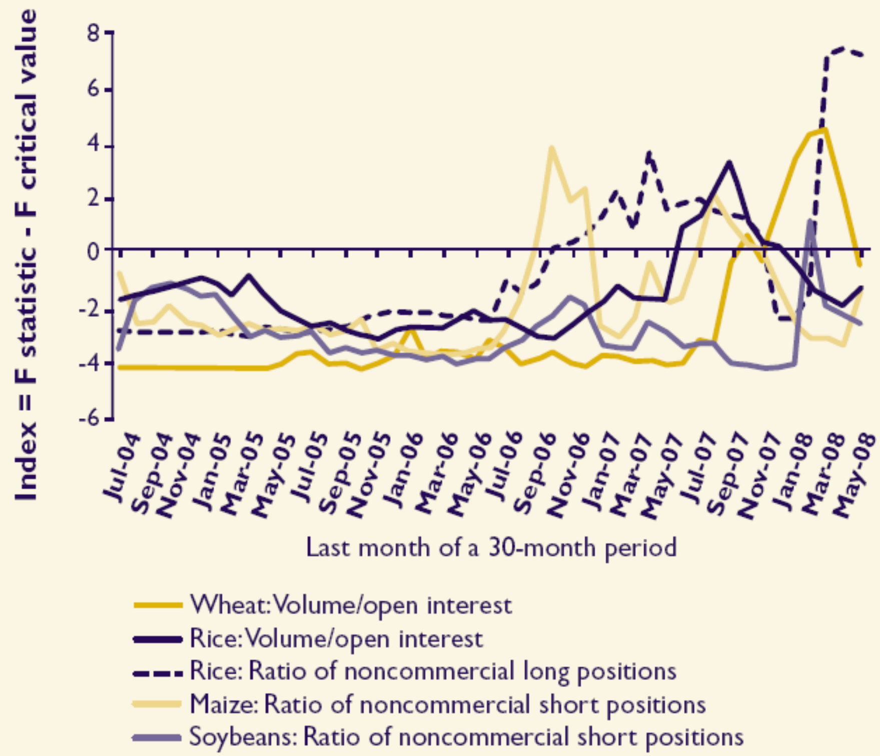
	P-values for Hypothesis Test: $\beta_j=0, \forall j$		
	Commercials	Non-Commericals	Non-Reporting
Wheat CBOT	0.01	0.18	0.54
Wheat KCBOT	0.03	0.24	0.71
Wheat MGE	0.63	0.15	0.76
Corn	0.35	0.79	0.33
Soybeans	0.83	0.05	0.78
Soybean Oil	0.24	0.30	0.94
Soybean Meal	0.70	0.93	0.61
Lean Hogs	0.05	0.34	0.08
Live Cattle	0.75	0.83	0.48
Feeder Cattle	0.10	0.16	0.23

Source: Sanders, Irwin, and Merrin (2009)



"Changes in supply and demand fundamentals cannot fully explain the recent drastic increase in food prices."

Figure 4—Evidence of speculation influencing commodity prices, July 2004–May 2008



Note: Positive numbers on vertical axis show evidence of influence.

Source: Robles, Torero, and von Braun (2009)

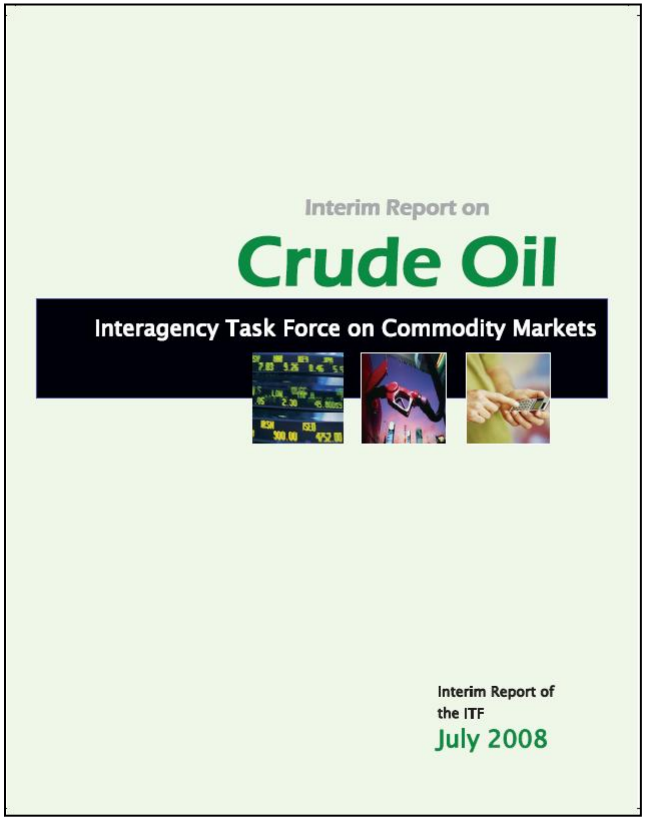


Figure 16 Granger Causality Tests relating Daily Position Changes to Price Changes in the NYMEX WTI Crude Oil Futures Contract from January 2000 to June 2008

Trader Classification	Hypothesized Direction of Causality: Price Changes lead Position Changes			Position Changes lead Price Changes		
	Direction	Significant?	P Value	Direction	Significant?	P Value
All Commercials (includes Manufacturers, Commercial Dealers, Producers, Other Commercial Traders, and Swap Dealers)	+	Yes	0.028	.	No	0.896
Manufacturers	+	Yes	0.048	.	No	0.191
Commercial Dealers	+	Yes	0.040	.	No	0.908
Producers	+	Yes	0.032	.	No	0.449
Other Commercial Traders	.	No	0.918	.	No	0.391
Swap Dealer	.	No	0.114	.	No	0.832
All Non-Commercials (includes Hedge Funds, Floor Brokers & Traders)	.	No	0.062	.	No	0.764
Hedge Funds	-	Yes	0.003	.	No	0.585
Floor Brokers & Traders	.	No	0.741	.	No	0.494
All Non-Commercials combined with Swap Dealers	.	No	0.062	.	No	0.947

Source: Commodity Futures Trading Commission

Granger Causality Test Results for CFTC CIT Category, Positions Do Not Lead Daily Returns, 2004-2008

$$R_t = \alpha_t + \sum_{i=1}^{n} \gamma_i R_{t-i} + \sum_{j=1}^{m} \beta_j CIT_{t-j} + \varepsilon_t$$

	P-values for Hypothesis Test: β_j=0, for all j			
	2004-2005		2006-2008	
	Nearby	Next	Nearby	Next
Corn	0.89	0.75	0.92	0.77
Soybean Oil	0.29	0.13	0.70	0.37
Soybeans	0.92	0.30	0.37	0.93
Wheat CBOT	0.48	0.86	0.11	0.75
Wheat KS	0.23	0.55	0.83	0.46
FeederCattle	0.77	0.17	0.59	0.19
LeanHogs	0.33	0.85	0.33	0.11
LiveCattle	0.02	0.07	0.04	0.34
Cocoa	0.00	0.18	0.02	0.07
Coffee	0.43	0.03	0.06	0.25
Cotton	0.26	0.06	0.46	0.88
Sugar	0.07	0.02	0.42	0.74

Source: Aulerich, Irwin, and Garcia (2009)

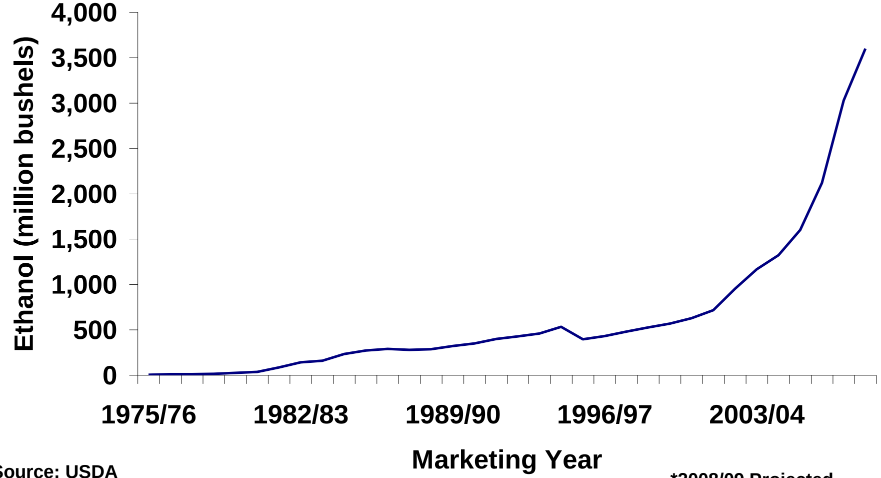
Changing Fundamentals?

For at least the last 50 years the primary determinant of the fundamental value of corn has been the value placed on corn by livestock feeders

"The price of feed is determined by livestock feed demand, feed production, exports, and food and industrial uses. The lines of causation are from consumer demand through the livestock sector to feed prices."

"Master Model of Midwestern Agriculture," Hieronymus, Good, and Hinton (1980)

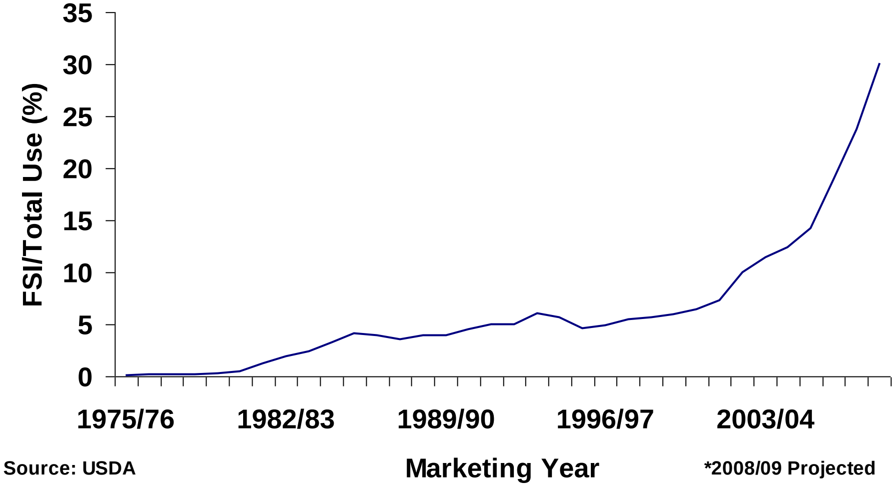
US Corn, Ethanol for Fuel Use, 1975/76-2008/09*



Source: USDA

*2008/09 Projected

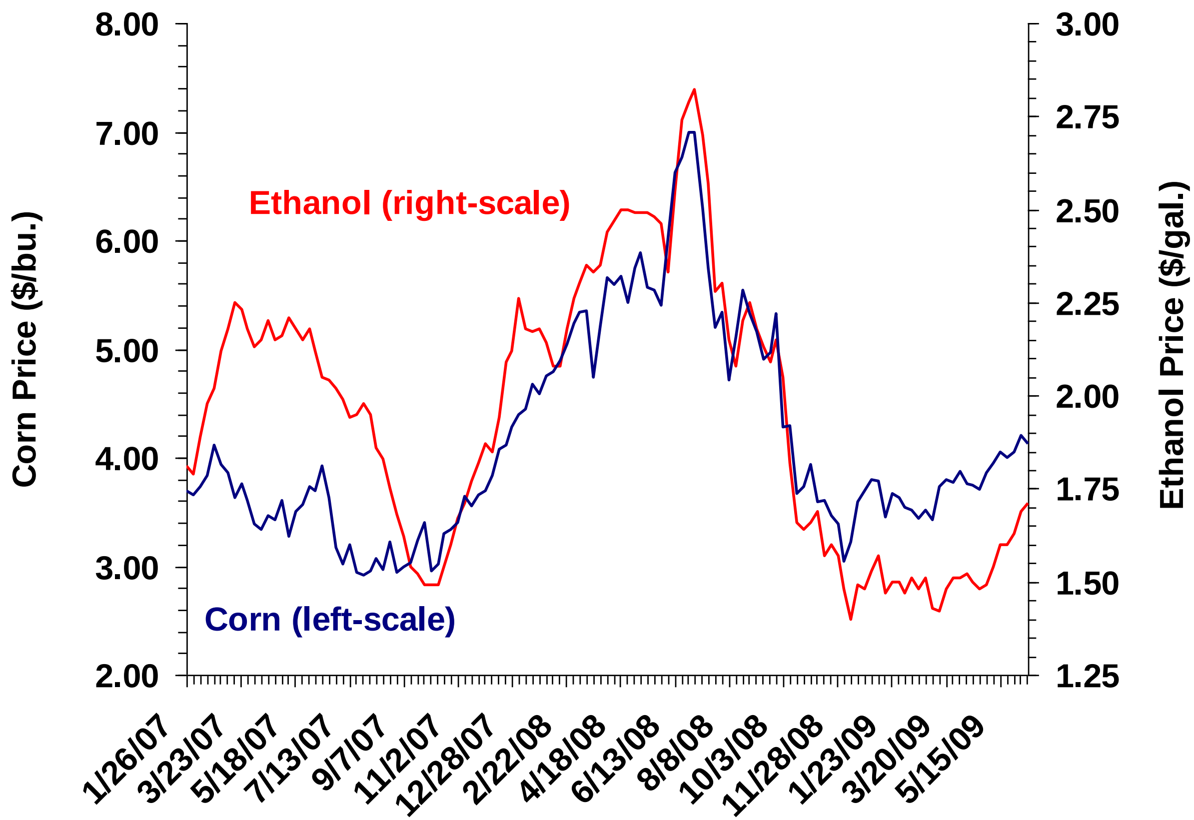
US Corn, Ethanol for Fuel Share of Total Use, 1975/76-2008/09*



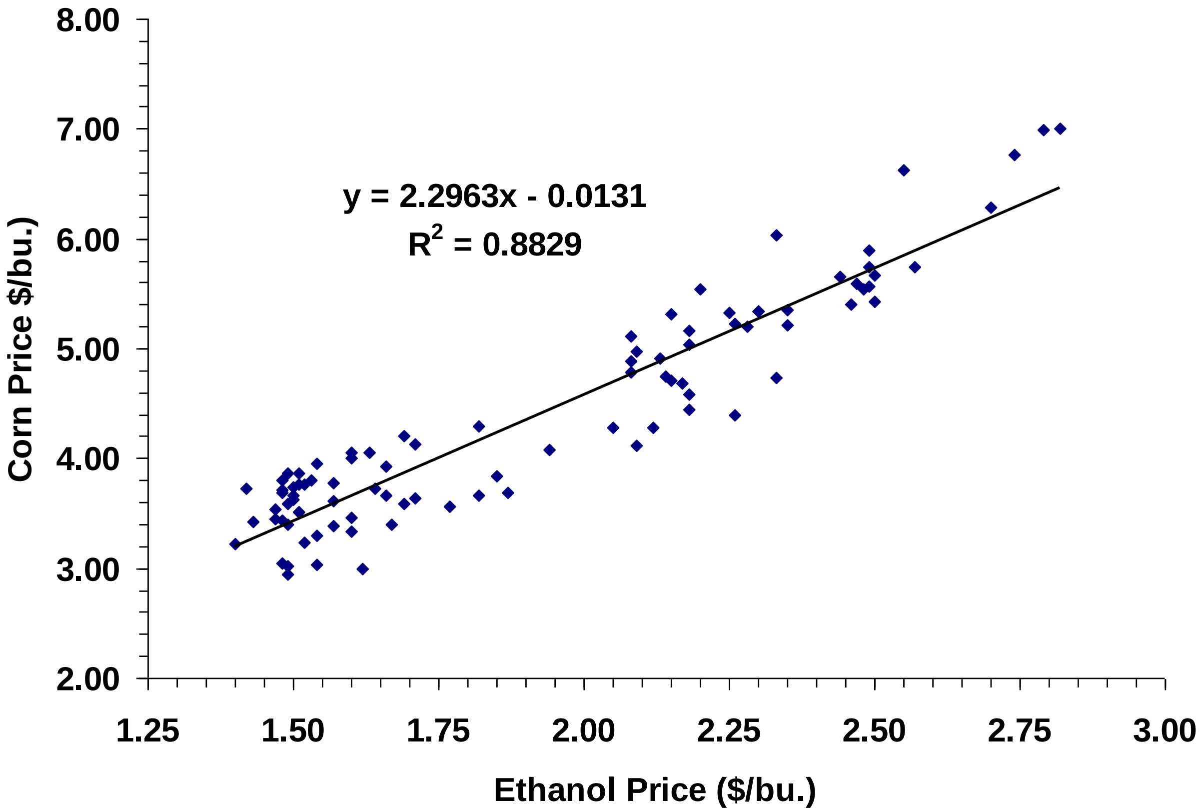
Source: USDA

*2008/09 Projected

Weekly Ethanol and Corn Prices at Iowa Plants, January 27, 2007 – June 12, 2009



Relationship between Weekly Corn and Ethanol Prices at Iowa Plants, September 7, 2007 – June 12, 2009



Agricultural and Consumer Economics

We Have Been Here Before: Lessons from History

Abraham Lincoln: "For my part, I wish every one of them [speculators] had his devilish head shot off."

Vladimir Lenin: "For as long as we fail to treat speculators the way they deserve—with a bullet to the head—we will not get anywhere."

Harry Truman: "…the cost of living in this country must not be a football to be kicked around by grain gamblers."

U.S. Congress: "Speculative activity in the futures markets causes such severe and unwarranted fluctuations in the price of cash onions as to require complete prohibition of onion futures trading in order to assure the orderly flow of onions in interstate commerce."

The American Heritage® Dictionary of the English Language: Fourth Edition. 2000.

scapegoat

SYLLABICATION:	scape·goat
PRONUNCIATION:	skāp'gōt'
NOUN:	**1.** One that is made to bear the blame of others. **2.** *Bible* A live goat over whose head Aaron confessed all the sins of the children of Israel on the Day of Atonement. The goat, symbolically bearing their sins, was then sent into the wilderness.
TRANSITIVE VERB:	Inflected forms: **scape·goat·ed**, **scape·goat·ing**, **scape·goats** To make a scapegoat of.
ETYMOLOGY:	scape² + goat (translation of Hebrew *'ēz 'ōzēl*, goat that escapes, misreading of *'ăzā'zēl*, Azazel).

IFPRI

Implementing Physical and Virtual Food Reserves to Protect the Poor and Prevent Market Failure

Joachim von Braun and Maximo Torero

IFPRI Policy Brief 10 • February 2009

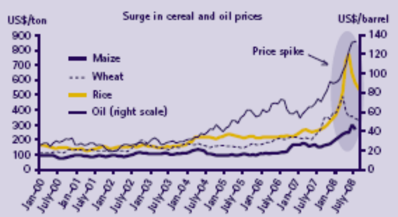
The 2007–08 international food price crisis caused hardship on a number of fronts. The steep rise in food prices led to economic difficulties for the poor and generated political turmoil in many countries. The crisis could also result in long-term, irreversible nutritional damage, especially among children. There is a global interest in preventing such events from recurring.

The price crisis was triggered by a complex set of long-term and short-term factors, including policy failures and market overreactions. One important factor in the crisis was the entry of significant financial resources into futures markets, including food commodity markets, which contributed to a price spike during the first six months of 2008. This episode highlights the need to modify the architecture of international financial and agricultural markets to address the problem of price spikes, especially their effects on the livelihoods of the poor.

Although a set of guiding principles for regulating agricultural and commodity futures markets should be developed and recent inappropriate trade policy instruments such as export bans should be reviewed, these actions are not sufficient to avoid extreme price spikes and to ensure that the world can respond to emergency needs for food. We propose two global collective actions to meet these goals. First, a small physical food reserve should be established to facilitate a smooth response to food emergencies. Second, an innovative virtual reserve should be set up to help prevent market price spikes and to keep prices closer to levels suggested by long-run market fundamentals like supply and demand. This brief offers some specifics on implementing a proposal described in our earlier IFPRI policy brief titled *Physical and Virtual Global Food Reserves to Protect the Poor and Prevent Market Failure* (June 2008).

Price instability is a general feature of agricultural markets. The proposals made here are designed not to stabilize prices generally, but to prevent damaging price spikes. The proposed actions will entail costs, but the modest costs of the required organizational elements must be balanced against the benefits of more effective international financial architecture. These benefits will include prevention of economic hardship, improved market efficiency, stronger incentives for long-term investment in agriculture, and prevention of political instability.

Figure 1—Surge in grain and oil prices



Source: FAO (Food and Agriculture Organization of the United Nations), International commodity prices database, http://www.fao.org/es/esc/prices/PricesServlet.jsp?lang=en, accessed 2008.

The Role of Speculation in the Price Spike

Changes in supply and demand fundamentals cannot fully explain the recent drastic increase in food prices. Rising expectations, hoarding, and hysteria also played a role in the increasing level and volatility of food prices, as did the flow of speculative capital from financial investors into agricultural commodity markets. As a result, a price spike greater than what is explainable by fundamentals occurred during the first six months of 2008 (Figure 1).

The flow of speculative capital from financial investors into agricultural commodity markets was significant. From May 2007 to May 2008, the volume of globally traded grain futures and options increased substantially (Table 1). Another indicator of speculative activity—the ratio of the monthly volume of futures trading to open interest—also increased substantially. Open interest describes the total number of futures contracts of a given commodity that have not yet been offset by an opposite futures contract or fulfilled by delivery of the commodity. A speculator taking opposite positions in the market within days or weeks will generate an increase in monthly registered volumes but little change in monthly open interest. Therefore, changes in this ratio should capture changes in speculative activity. In 2008, soybean and rice ratios of futures to open interest were increasing at 27 percent and 19 percent, respectively, as wheat ratios continued to grow at 19 percent and maize ratios declined slightly. In contrast, in 2005 and 2006 at least three commodities' ratios were declining on average.

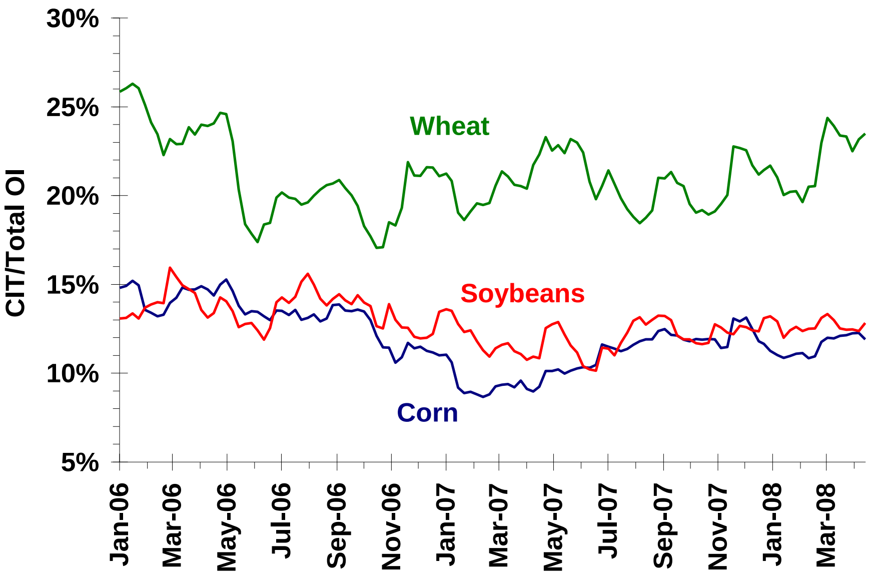
Several statistical tests were conducted to determine the role of speculative activity in pushing up commodity prices. The results suggest that speculation might have been influential (see box on page 2 entitled "On Speculation" and the IFPRI issue brief *When Speculation Matters*,

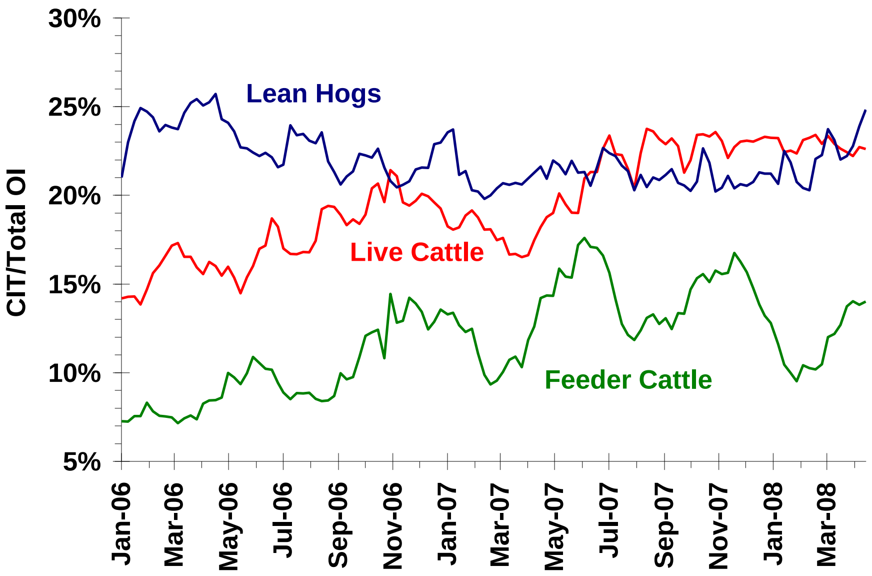
The Futures Trading Experience of the Federal Farm Board

Anne E. Peck*
Assistant Professor
Food Research Institute
Stanford University

* The author wishes to acknowledge the kind assistance of Helen Yuliberri and Douglas Helms of the National Archives in the search for the data eventually used in this research, the cooperation of the Farm Credit Administration and the Commodity Futures Trading Commission in obtaining access to the records, and the Agricultural Experiment Station at Purdue University for its support in the initiation of this research.

Proportion of Open Interest Held by Index Traders in Grain and Livestock Futures Markets, Jan 2006-Jun 2008





Source: Sanders, Irwin, and Merrin (2008a)

"Perma-longs"

Index Trading in NYMEX Crude Oil Futures

	12/31/2007	3/31/2008	6/30/2008
Notional Value (bil. $)	**39.1**	**41**	**51**
Net Long Position (# contracts)	**408,000**	**398,000**	**363,000**
Total Futures Equivalent Open Interest (# contracts)	**2,508,971**	**2,885,101**	**2,837,447**
Index Position/Total Open Interest	**16%**	**14%**	**13%**

Source: CFTC Staff Report on Commodity Swap Dealers and Index Traders (2008)