Do Speculators Drive Commodity Prices Away From Supply and Demand Fundamentals?

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Protecting America’s Agricultural Markets: An Agricultural Commodity Futures Conference
Do Speculators Drive Prices Away From Fundamentals?

• No
“Within the present month efforts have been made in the New York Hop Exchange to introduce the practice of dealing in so-called “futures,” a method of business which, as is well known, inevitably leads to hazardous speculation upon the delusive basis of fictitious prices.”

Submission to Committee on Ways and Means
United States Brewer’s Association, 1890
Weekly futures and options positions held by trader groups:

- **Managed Money:** a registered commodity trading advisor, a registered commodity pool operator, a hedge fund, or another unregistered fund
- **Producer:** firm involved primarily in the production, processing, packing or handling of a physical commodity
- **Swaps Dealer:** engaged mainly in commodity swaps deals with counterparties including speculative traders, index funds, hedge funds, or traders of the physical commodity
- **Other Reportable:** financial firms that aren’t managed money
- **Non Reportable:** too small to reach reporting threshold

Nearby futures prices on 21 commodities

- **Energy:** crude oil, heating oil, gasoline, natural gas
- **Metals:** gold, silver, copper, palladium, platinum
- **Grains:** corn, soft red winter wheat, hard red winter wheat, soybeans, soybean oil, soybean meal
- **Livestock:** live cattle, feeder cattle
- **Softs:** cotton, cocoa, coffee, sugar
### What the Data Look Like

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<thead>
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<th>A</th>
<th>B</th>
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• Normalized net position = \( \frac{\text{long} - \text{short}}{\text{OI}} \)
• Weekly average, 6/13/06 to 12/26/17
• Negative = short; positive = long
• Source: Disaggregated Commitments of Traders report (CFTC)
Weekly Net Positions by Trader Type: Corn

- Net position = long − short
- Source: Disaggregated COT and Supplemental COT
Weekly Net Positions by Trader Type: Soybeans

- Net position = long – short
- Source: Disaggregated COT and Supplemental COT
Weekly Net Positions by Trader Type: Live Cattle

Net position = long − short

Source: Disaggregated COT and Supplemental COT
Weekly Net Positions by Trader Type: Coffee

- Net position = $long - short$
- Source: Disaggregated COT and Supplemental COT
Weekly Net Positions by Trader Type: Copper

- Net position = *long* − *short*
- Source: Disaggregated COT and Supplemental COT
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Net position = long − short
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Results so far ....

- Most group-level trade is between managed money and producers.
- Index fund positions don’t change much.
- Crude oil and precious metals are exceptions — lots of swaps dealers hedging OTC trades.
How do Position Changes Relate to Price Changes?

• Define **change in net positions**

\[
\Delta POS_{ijt} = \frac{(L_{ijt} - S_{ijt}) - (L_{ij,t-1} - S_{ij,t-1})}{OI_{i,t-1}}
\]

for commodity \( i \), trader group \( j \), week \( t \)

• **Regression** to estimate how price changes relate to position changes

\[
\Delta POS_{ijt} = \alpha + \beta \Delta \ln F_{it} + \varepsilon_{ijt}
\]

where \( \ln F_{it} \) is the natural log of the nearby futures price for commodity \( i \) in week \( t \)

• **Interpretation**
  - \( \beta > 0 \) means group moves with prices
  - \( \beta < 0 \) means group moves against prices
\( \beta > 0 \) for Managed Money; \( \beta < 0 \) for Producers

- Vertical bars are 95% confidence intervals
- Source: Author’s calculations
\( \beta \approx 0 \) for Swaps Dealers (except precious metals)

- Vertical bars are 95% confidence intervals
- Source: Author’s calculations
\[ \beta \approx 0 \text{ for Index Traders} \]

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What Does This Mean?

- **Why do traders trade?**
  - Hedge price risk (e.g., grain marketer)
  - Profit from information
  - Earn a risk premium
  - Earn a premium for liquidity services
  - Speculate on the future
What Does This Mean?

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**TO MAKE MONEY!**
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  - Speculate on the future
  - **TO MAKE MONEY!**

- **Difference of opinion** models imply
  - traders disagree on the price and trade accordingly (Fishe et al., 2014)
  - disagreements are not resolved by trade
  - prices **move in the direction** of trader with strongest opinions
  - opinion strength determined by **confidence, amount of capital**, and **risk aversion**
Results so far ....

- Most group-level trade is between managed money and producers
  - Index fund positions don’t change much
  - Crude oil and precious metals are exceptions — lots of swaps dealers hedging OTC trades

- Position changes driven by differences of opinion between managed money and producers

- Managed money has strongest opinions, so prices move with them

- But does managed money move prices “too far”?
What would it mean for prices to move too far?

- Unlike many financial markets, commodity futures have a tight link to real economic decisions
  - If price is too high, consumers **buy less** and producers **produce more**
  - Inventories build up until the market self corrects

- How long would market take to self correct?
  - For U.S. corn, **Hendricks et al. (2014)** estimate supply elasticity is 0.3 and **Adjemian and Smith (2012)** estimate demand elasticity is $-0.7$.
  - Thus, net supply elasticity is $0.3 + 0.7 = 1$.
  - **Consider a 20% non-fundamental price increase:** inventories would increase by 20% of the crop
  - Average corn inventory is 15%, so annual inventories would more than double

- **Self correction seems likely to occur well within a year**

- Next, I test for price corrections or reversals
Do prices reverse direction after MM-induced changes?

- Average change in log futures price 0 – 20 weeks after MM net position changes
- Shaded regions are 95% confidence intervals for the impulse responses
- Source: Author’s calculations
No evidence of price corrections

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- (a) Corn
- (b) Soybeans
- (c) Wheat (SRW)
- (d) Wheat (HRW)
- (e) Live Cattle
- (f) Feeder Cattle
- (g) Cotton
- (h) Coffee
- (i) Crude Oil
- (j) Natural Gas
- (k) Gold
- (l) Copper

- Average change in log futures price 0 – 20 weeks after MM net position changes
- Shaded regions are 95% confidence intervals for the impulse responses
A **price peak** is higher than any price in the prior or next 3 months
A **price valley** is lower than any price in the prior or next 3 months
**Price paths** connect peaks and valleys
**Are reversals more frequent than in a random walk market?**
Average number of reversals is 2.5 per year

Other findings from path analysis:
- MM net positions have about as many turning points as do prices
- Prices and MM positions either **both rising** or **both falling** in 70% of weeks
- Position turning points often occur around price turning points—sometimes a little before, sometimes a little after
Conclusions

• Most group-level trade is between managed money and producers—this is where we should focus our research attention

• Prices tend to move with managed money and against producers

• No sign of price corrections after MM-induced price changes

• No sign that path reversals are too frequent

• Managed money may drive price changes, but no evidence that it drives prices away from fundamentals
