

# Lessons from CFTC Commodity Futures Position Data

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# Futures Markets and CFTC Position Data

- Exponential growth in futures markets with huge positions taken on by market participants which could be a source of systemic risk
- CFTC currently collects detailed daily position data in commodities markets for surveillance and enforcement purposes
- Today: lessons from CFTC daily position data that the OFR can apply to collecting disaggregated data in a broader scope of asset classes as well as commodities markets to help measure systemic risk
  - **Good analysis and research begins with good data!**

# Futures Markets and CFTC Position Data

- CFTC's Large Trader Reporting System (LTRS)
  - Audit trail data with identities of traders
- **Mandatory reporting** of daily positions of large traders
  - Data from clearing members, FCMs, and foreign brokers
  - Positions of individual firms are reported whenever the position exceeds a specified lower bound
  - Gross positions on each futures contract, long and short, for all expirations (options as well, delta-adjusted)
  - Data is then aggregated into weekly public reports on outstanding positions of different types of traders
    - Commitment of Traders reports: Commercial, Non-Commercial, etc.

# Futures Markets and CFTC Position Data

- Example:

**Chicago Board of Trade December 2001 Corn Future (in contracts) As of: 08/15/01**

| Trader Name          | Futures Position |       | Delta-Adj Options |       | Net Open Position | Delivery Notices |        |
|----------------------|------------------|-------|-------------------|-------|-------------------|------------------|--------|
|                      | Long             | Short | Long              | Short |                   | Stopped          | Issued |
| <b>ABC Corp.</b>     | 1115             | 0     | 410               | 20    | Long-1505         | 0                | 0      |
| <b>Doe Arbitrage</b> | 0                | 986   | 974               | 0     | Short-12          | 0                | 0      |
| <b>Joseph Smith</b>  | 0                | 874   | 0                 | 0     | Short-874         | 0                | 0      |

Source: CFTC.gov

# Futures Markets and CFTC Position Data

**Question:** Why do we need disaggregated data? To understand how shocks propagate through the financial system

- **Need to understand who is acting in the market with what purpose and why**
- Shock affects Trader Type A. How does this affect the market? How does Trader B react? Trader C?

Many positive lessons for OFR from CFTC data collection

1. **Disaggregated & Comprehensive** – Contract-level data. If position in one contract exceeds reporting threshold, all positions for that commodity are reported
2. **Accurate** – reported levels are compared to data from exchanges, with possible direct follow-up with trader

# Futures Markets and CFTC Position Data

Additional lessons that we focus on today:

1. **Collect Data at the Line-of-Business-Level:** Net as little as possible across lines of business within the same firm- clarifies who is in the market and why
2. **Construct Detailed, Time-Varying Trader Classifications:** Transparent classifications that are backed up with market analysis and which always track histories
3. **Completeness & Replicability:** Gather data not only on what positions are held, but what positions are *not* held- especially important in disaggregated data.

Data design should minimize necessary subsequent cleaning by researchers and analysts. Addressing these are key to good, **replicable** research and analysis

# Completeness & Replicability

Suppose data has a record of 100 oil contracts for ABC Corp. yesterday, but no record of it today. What is the position change?

- Researcher needs to be confident that this is because ABC is under the reporting threshold or has closed out its position, rather than because ABC has failed to report.
- Database should **physically record the zero**. If no record of ABC's position is recorded, no change is recorded
- If not recorded, **data will fail to aggregate** properly: sum of changes in disaggregated data will not equal change in sum'd levels

Researchers address this issue by creating the zero (data cleaning), but inhibits **replicability**. Initial data design should be **complete**, especially with disaggregated data.

# Application: CIT Traders

- To be concrete, we show how these issues come up in analyzing systemic risk in commodities markets using the CFTC data
- **Question:** How do **Commodity Index Traders** affect market dynamics?
  - Large vehicle of exponential growth in commodity investing as new alternative asset class
  - Can improve sharing of commodity price risk
  - But portfolio rebalancing can spill over volatility and systemic risk from outside markets to commodities markets and across different commodities (Tang and Xiong, 2010)

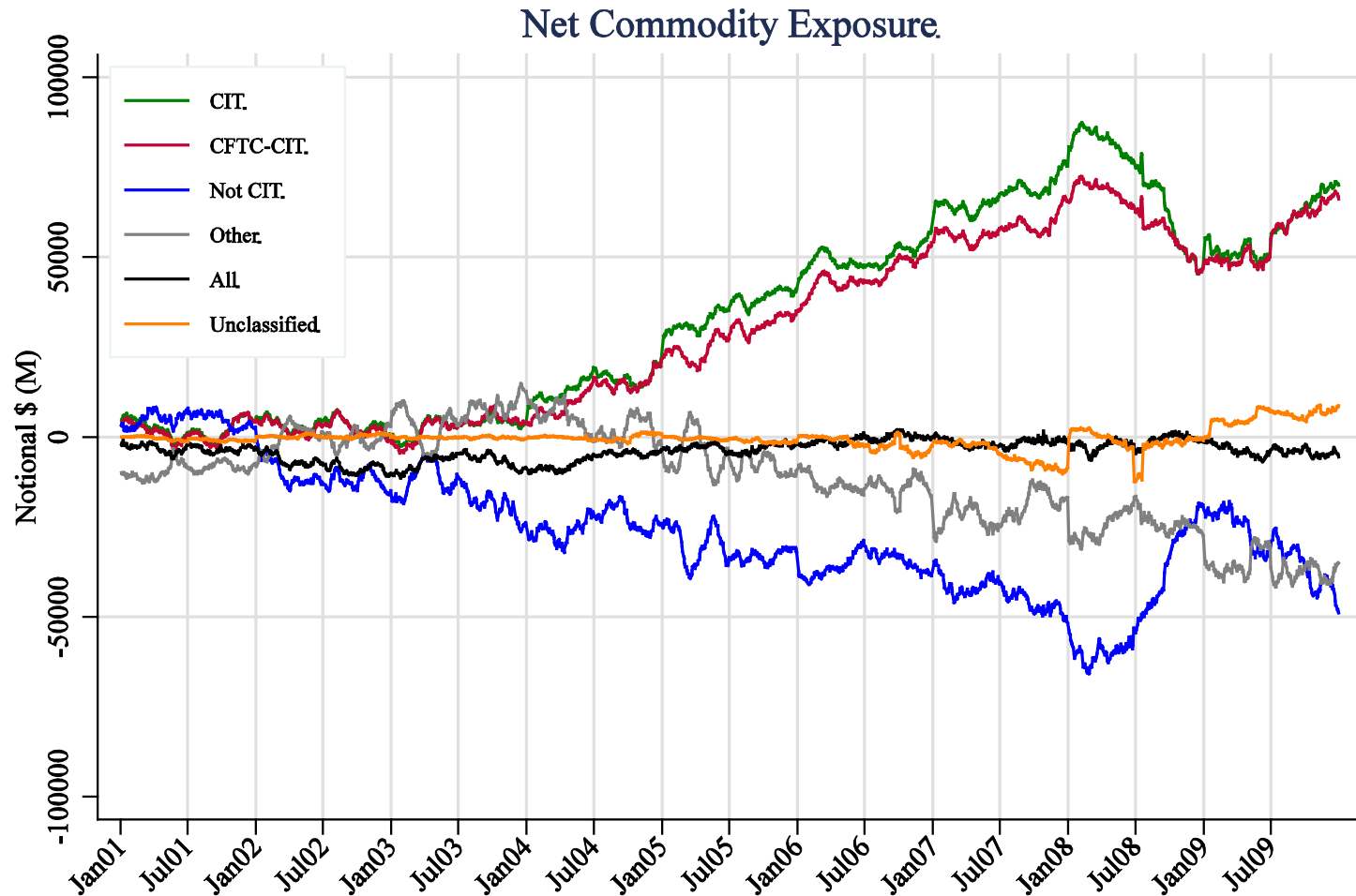


# Application: CIT Traders

- Several recent studies find no evidence of relation bw aggregate CIT positions and commodity prices (null hypothesis)
  - Stoll and Whaley (2010) and Irwin and Sanders (2010)
- Based on CFTC CIT classifications, a “black box”
  - Updated on an ad-hoc basis, meaning recent classification could be stale. Highlights issue with **classifications**
  - Only most recent classification is kept, so prior reports are **not replicable**
  - Issue is that data table which governs institution characteristics does not track history, so historical position data can only be matched to current characteristics - data architecture should **always track histories**
- Using the disaggregated data, we find new evidence of a relationship between CIT position changes and returns by mapping out the entire space of market participation in commodities

# Topology of Commodity Exposures

(using fixed price day, 15dec2006)



Exposure defined as Net Position(t) x Front Month Contract Price(15dec2006).

# CIT Traders

- Post 2004, contemporaneous flows to CITs are highly correlated with daily returns to commodities
  - Are less correlated or even negatively correlated for other market participants (zero sum constraint)
  - Persistent price effect that does not revert
- CIT trading behavior can be summarized as follows:
  - They tend to hold positions in multiple commodities;
  - Their positions tend to be long;
  - They follow pre-determined rolling schedules;
  - Trading across different commodities tend to be correlated;
  - Feedback-type traders whose position changes in many commodities are correlated with equity market returns

# CIT Flow and Commodity Return

(daily correlation, CIT vs CFTC-CIT)

| <b>Commodity</b> | <b>CIT</b>  | <b>CFTC-CIT</b> |
|------------------|-------------|-----------------|
|                  | SD(X)/SD(Y) | SD(X)/SD(Y)     |
| Crude Oil        | 0.035       | 0.000           |
|                  | [1.1071]    | [0.0074]        |
| Corn             | 0.161       | 0.075           |
|                  | [4.9363]*** | [2.3292]**      |
| Live Cattle      | 0.086       | 0.019           |
|                  | [2.7811]*** | [0.6606]        |
| Copper           | 0.133       | 0.105           |
|                  | [4.1126]*** | [3.0403]***     |
| Sugar #11        | 0.071       | 0.018           |
|                  | [2.0895]**  | [0.5272]        |

# CIT Flow and Commodity Return

(daily correlation, CIT vs Non-CIT)

| <b>Commodity</b> | <b>CIT</b>  | <b>Non-CIT</b> |
|------------------|-------------|----------------|
|                  | SD(X)/SD(Y) | SD(X)/SD(Y)    |
| Crude Oil        | 0.035       | <b>-0.324</b>  |
|                  | [1.1071]    | [-10.7849]***  |
| Corn             | 0.161       | <b>-0.287</b>  |
|                  | [4.9363]*** | [-9.5321]***   |
| Live Cattle      | 0.086       | <b>-0.219</b>  |
|                  | [2.7811]*** | [-6.7550]***   |
| Copper           | 0.133       | <b>-0.306</b>  |
|                  | [4.1126]*** | [-10.7098]***  |
| Sugar #11        | 0.071       | <b>-0.384</b>  |
|                  | [2.0895]**  | [-12.4742]***  |

# Summary

- Using the disaggregated data, we find new evidence of a relationship between CIT position changes and returns
- Positive benefits of collecting **detailed contract-level data** that is **accurate**
- Highlighted the issue of **classifications** and **netting**
- **Data completeness and replicability**: in order to analyze changes in positions, need to know when positions are not held, especially in disaggregated data. Data design should account for this to minimize replicability issues

# Broader Lessons for OFR

- OFR can draw upon our methodology to focus on the **seismology of markets**
  - How shocks propagate through system when traders who have different positions react to shocks and how these reactions interact with each other
- Briefly touched upon the role of CITs in commodity markets
- Explore not just CITs but begin to understand characteristics of other market participants as well