

Comments on Anthony Zhang's Competition & Manipulation in Derivative Contract Markets

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Overview

- Nice paper that could use further tightening
- Practically relevant—many markets (gold, silver, Platts MOC) use auction mechanisms to set prices that are used to settle large-volume derivatives contracts
- Allegations of manipulation rife (full disclosure—I am working on such cases)



Basic Modeling Issues

- Two basic approaches to motivate trading: noise trading vs. hedging/portfolio balance
- Noise trading useful to model markets with informed trading and how such trading can create manipulative opportunities (e.g., Pirrong 2019)
- Hedging more structural/less *ad hoc*, but usually abstracts from informed trading
- Anthony's paper takes the hedging approach



Model Setup

- Derivative contract initiation: agents trade a derivatives contract to hedge exposure to a risk. Derivatives contract payoff can't be written on the risk factor itself, but on the spot price of a commodity at a future date
- Contract termination: payoff to derivative determined by spot price for a commodity determined in an auction in which a subset of agents participate



First Best Benchmark

- If spot auction is perfectly competitive, under assumptions of model spot price is perfectly correlated with the risk factor
- First best outcome
- All market participants hedge their exposures completely



Manipulation

- Imperfectly competitive spot auction (due to limited participation) means that spot price not perfectly correlated with risk factor: “Basis risk”
- Spot auction participants’ trades at the auction depend on their positions, e.g., if they are long the derivative they have an incentive to buy at the auction to drive up the settlement price
- The ability to manipulate affects spot market agents’ first round trading



Manipulation Details

- Basic model: homogeneous agents
- Manipulation-induced basis risk harms hedgers and leads to underhedging: welfare loss
- Ability to manipulate can induce spot market agents to “overtrade”, i.e., take positions bigger than their risk exposure (cf. Pirrong 2020)
- Overtrading v. undertrading depends on model parameters
- Spot market agents would benefit from collusion



Model Extensions

- Heterogeneous agents (different risk preferences, and a pre-existing position in the commodity, y_i)
- Odd treatment of y_i : it affects position cost, but not payoff. Wouldn't payoff to pre-existing position depend on the spot price? Implicit assumption about information content of trades?
- IMO the extended model introduces substantially greater complexity with little benefit in terms of insight: consign to an appendix or jettison altogether



Assessment

- Basic model provides nice insight regarding how imperfectly competitive auction mechanisms create potential for opportunistic/strategic behavior that undermines economic function of derivative markets (risk shifting)
- Endogenizing spot participation or better motivating limited participation would improve paper



Regulatory Implications

- Meh
- Focuses on *ex ante* vs. *ex post* regulation (*cf.* Pirrong 1996) but doesn't provide a realistic analysis of trade-offs in *ex ante* regs (e.g., position limits)
- “Optimal regulation”=“pie in the sky”
- Model could provide a basis for identifying *ex post* serious manipulations of the auction: worthy topic for additional thought



Limitations

- All modeling involves trade-offs
- Modeling framework here doesn't permit examination of persistence of price impacts of spot manipulations that can arise in markets with asymmetric information (Kumar-Seppi 1992, Pirrong 2019): paper should acknowledge this
- These are potentially practically important (e.g., Amaranth, Optiver, and “bang the close” cases)

