“How to Define Illegal Price Manipulation”

By Albert S. Kyle
(University of Maryland)

and

S. Viswanathan
(Duke University)

Columbia University
April 1, 2009
The Value of Financial Markets

• Financial markets improve welfare in two ways:
  – Prices as Signals: enable more efficient resource allocation if more accurate
  – Markets as Trading Opportunities: Greater liquidity makes it less costly to transfer risk
    • Kyle (1984b)
    • Foster and Viswanathan (1990)
    • Pagano (1989)
    • Admati and Pfleiderer (1988)
Informed Traders and Noise Traders

- Informed Traders
  - Make prices more accurate
  - Make markets less deep due to adverse selection

- Liquidity Traders = Noise Traders = Hedgers = Demanders of Liquidity
  - May make prices less accurate by adding noise
  - Make markets deeper by reducing adverse selection, a positive network externality
    - Chowdhry and Nanda (1991)
  - May attract more informed trading

- Liquidity trading “taxed” by informed trading to make prices more accurate
  - More liquidity trading may lead to more endogenous production of private information, making prices more accurate
What is Illegal Price Manipulation?

• Violator intends to pursue a scheme which is “unambiguously bad” in that it makes matter worse in BOTH or two ways
  – Makes prices less accurate
  – Undermines market depth

• Pricing accuracy and Market Depth undermined throughout market
  – “Price Manipulation” = “Market Manipulation”
“Pricing Accuracy” vs. “Market Efficiency”

• These are two different concepts

• Pricing Accuracy: Tendency for prices to provide signals for an efficient allocation of resources.
  – In a squeezed market, high nearby prices provide signals to mis-allocate resources.

• Market Efficiency: Predictability of returns base on available information
  – In a squeezed market, prices may accurately forecast the probability of a squeeze at all times.
Inadequate Definitions of Illegal Manipulation

• Manipulation = Deceit
  – OPEC is public cartel involving no deceit
• Routine exploitation of market power
• Bayesian Nash Equilibrium
  – Pursuing self-interest not evil
    • Adam Smith (1776)
  – “Manipulation of beliefs” not evil
• Trading against information
  – Chakraborty and Yilmaz (2004): Selling when bullish
    • Rules out routine market-making
• Misunderstandings of derivatives and short-selling
  – “Index arbitrage” not intrinsically bad
  – Short-selling protects buyers from manipulators
  – Pre-Adam-Smith idea that arbitrage is immoral
Examples of Illegal Manipulation

• Corners and Squeezes ("Repo squeeze")
  – Inefficient distortions to intertemporal production.
• Reverse Corners and Squeezes
  – Also inefficient distortions to intertemporal production.
• “Pump and Dump” Schemes
  – Normally requires some disclosure fraud
  – What about “pump-and-dump” without disclosure fraud, e.g. an “honestly” over-optimistic CEO?
• Reverse Pump-and-Dump: Predatory Short-selling of “good” company
  – May also involve some disclosure fraud or circulation of false rumors.
  – What about predatory short-selling without misinformation?
• Fake Transactions to Influence Prices with false impressions of liquidity
• Failure to make required disclosures or making false disclosures
Examples of Benign Strategies

• Routine hedging (even with market power)
• Routine market making (even with market power)
• Routine speculation
  – Attempt to profit from legitimately acquired private information.
  – Attempts to profit from providing risk-bearing service to others
• Bluffing and mixed strategies
  – Honest rumors (as in Bommel (2003), Black (1991)).
• Market Depth Arbitrage
  – “Fishing for Stops”
• “Punching the close” to replace expiring cash-settled contracts
  – Like taking delivery
• “Natural Squeeze”
Examples of Illegal Strategies which are not Manipulation

• Abusing Agency Relationship
  – Front-running
  – Mishandling customer orders

• Quoting fake prices to influence cash-settled contracts
  – If doing so does not affect future trading opportunities
EXAMPLES OF ILLEGAL PRICE MANIPULATION
Corners and Squeezes

- Example is Hunt brothers silver squeeze, 1979-1980
- Monopolistic control over supply
  - Borrowing and lending of collateral expensive
  - Off-the-street financing diagnoses squeeze
  - Intertemporal prices distorted
- Kyle (1984a)
  - Squeeze makes prices send signals for inefficient resource allocation, even though markets are weak-form efficient
  - Deeper market makes squeezes easier
  - Possibility of squeezes lowers market depth by introducing unnecessary new source of adverse selection
Reverse Corners and Squeezes

• Dumping collateral into the market when it is very costly to finance or store
  – Normally not applicable to financial assets where storage costs low and credit is supplied competitively
    • But: Hunt silver squeeze broken in part by Fed telling banks not to lend to finance commodity speculation
  – Applicable to storable commodities where storage facilities are expensive and in finite supply.
    • Example would be warehouses making only 50% of capacity available to stockpilers, when stockpiles equal more than 50% of warehouse capacity.
Intertemporal Distortions to Production

• Oil
  – Shipping so much oil that prices reflect expensive above-ground storage costs when cheaper for manipulating producer to store in ground
  – Failure to ship oil when apparently profitable to do so by storing in ground despite falling forward price pattern

• Electricity
  – Flooding grid with electricity which cannot be stored, pushing prices to levels far below marginal cost of production with say natural gas.
  – Taking production offline for “maintenance” when prices are very high, to push prices higher
Short Selling

• Reverse corner or squeeze involves short selling.
• But: Short selling per se is not generally manipulative
• Might represent routing hedging
  – Adds to market depth
• Might represent useful speculation based on negative information:
  – Protects buyers from paying too high a price.
• Might represent market making:
  – Adds to market liquidity
Pump-and-Dump

• Usually involves false disclosure
  – Manipulator buys stock
  – Manipulator makes false bullish disclosure to gullible investors, perhaps publicly or perhaps through private newsletter
  – After prices rise as result of false disclosure, manipulator dumps stock at high prices.

• Prices provide inaccurate signals

• Market depth suffers since traders cannot trust disclosures which might be false
Does Pump-and-Dump Require False Disclosures?

• “Bullish” CEO makes positive statements about company (“hype”), without saying anything which can be proven false.
• Market participants buy into CEO bullishness, and stock price rises.
• High stock price allow CEO to go on acquisition spree.
• Price fall back somewhat after acquisitions, but not enough to make the overall scheme unprofitable.
• Hard to enforce, since hard to read mind of “bullish” CEO
Reverse Pump-and-Dump

- Manipulator (hedge fund) short-sells stock.
- Manipulator makes false bearish disclosures.
- Company stock price falls as market believes false disclosures.
- Manipulator buys back stock at a profit.
Does Reverse Pump-and-Dump Require False Disclosure

- Goldstein and Guembel (2006)
- Manipulator massively short-sells stock of “good” company which needs to raise capital to prosper.
- Stock price falls to such low level that managers and other traders, relying on stock price as signals, fail to provide needed financing to company.
- Company fails and stock price falls to zero.
- Manipulator exits with a profit.
- Very difficult to diagnose whether manipulator’s short-selling based on “sincere” belief that company is bad.
Fake Transactions Creating False Impression of Market Depth

- Manipulator buys asset, pushing prices up.
- Manipulator engages in a large number of fake transactions, creating false impression of deep market.
- Naïve supplier of liquidity buys from manipulator, thinking asset will be easy to sell later.
- Manipulator has successfully exited, but supplier of liquidity is stuck with loss.
- Such schemes both distort pricing accuracy and undermine ability of suppliers of liquidity to rely on public data to make measurements of liquidity, so liquidity suffers too.
False Disclosures, Failure to Make Require Disclosures

- Distorts pricing accuracy.
- But also makes markets less liquid, since market cannot rely on disclosures to substitute for private information.
EXAMPLES OF BENIGN STRATEGIES
Routine Speculation, Hedging, Market-Making

• Speculation
  – Informed trading makes prices more informative
  – Providing liquidity makes markets deeper.

• Hedging
  – Noise trading makes markets more liquid for others.

• Market making
  – Makes markets deeper
Bluffing and Mixed Strategies

• Informed trader with bullish information may mix some sell trades (bluffing) into overall buying strategy
  – He extracts more liquidity for himself
  – His buying and selling may also slightly increase liquidity for others.
  – Ability to make greater profits from trading (using mixed strategies) encourages production of private information

• Back and Baruch (2004) show mixed strategies necessary for equilibrium.
Market Depth Arbitrage and “Fishing for Stops”

• Kyle (1985) shows market depth arbitrage would be infinitely profitable out of equilibrium but does not occur in equilibrium.

• But might occur as part of equilibrium with relaxed assumptions.

• Effect is to smooth out liquidity over time or price levels, so depth may be improved for some traders in some states.

• Merely one aspect of Bayesian Nash equilibrium.
“Punching the Close” with Cash Settlement

• When cash-settled contract expires, contracts automatically liquidated and risk exposure vanishes
  – But with physical delivery risk exposure unaffected by taking delivery
  – Taking delivery is normally benign
• To mimic taking delivery, trader long cash settling contracts buys to expiring contracts in cash market to replace them.
  – This preserves a hedged position.
• If counterparty with short position lets positions cash settle, this trader effectively buys in short position at cash settlement by not replacing position with a sell order.
• Casual observer who sees buy orders and upward price spike may mistakenly attribute price spike to buying,
• BUT: The price spike is due to the non-seller increasing his position by not selling.
  – The buyer is supplying some liquidity like at market maker and is not manipulating.
  – But the seller might be manipulating.
• Example is Avista case, involving OTC electricity derivatives cash-settling against NYMEX electricity futures.
LEGAL ISSUES
Consistency with Legal Theories of Manipulation

• Our approach consistent with traditional four-part test:
  – **Ability** implies market power or private information
  – **Intent** requires scheme undermining both pricing accuracy and liquidity
  – **Causation** implies scheme had intended effects
  – **Artificiality** implies inaccurate price and undermined liquidity
In re Indiana Farm Bureau

• Recognizes that well-functioning market involves interplay between suppliers and demanders of liquidity.
• Focus on “illegitimate” or “extraneous” factors, rather than ultimate price
  – Not OK to distort prices in a manner which decreases trading opportunities for others
    • As in a corner or squeeze
  – OK to “distort” prices (hedging or unskillful speculation) in a manner which increases opportunities (liquidity) for others
    • Consistent with Friedman (1960), “In Defense of Destabilizing Speculation”
  – OK to profit from private information, making prices more accurate
• No obligation to provide liquidity to others because they demand it
  • Implies that “punching the close” is benign
Principles-Based Code of Conduct

• A Principles-based code of conduct is consistent with our approach
• US law does not have explicit definition of illegal manipulation or even a set of principles
• UK’s FSA and EU have moved towards principles-based code of conduct
  – Many similarities with our approach
    • E.g. corners and squeezes illegal
  – Some important differences
    • FSA and EU seem to dislike innocent “punching the close” strategies
  – EU Focus on misuse of information is different from our focus on market liquidity
    • Implies more focus on disclosure violations
Enforceability

• We disagree with Fischel and Ross (1991) that manipulation should not be illegal due to enforcement issues
  – Corners and squeezes can be diagnosed by looking for “off-the-street” financing
• But we recognize that some types of illegal manipulation are difficult to prosecute due to difficulties to inferring intent
  – Is a bullish CEO engaging in “pump-and-dump” or merely over-optimistic?
  – Is a bearish short-seller engaging in “predation” or protecting buyers from paying too much?
Disclosure

• Mandatory disclosure of otherwise private information may improve both price informativeness and market liquidity
  – If information is produced without speculative trading profits as incentive

• Public production and disclosure of information can improve both price informativeness and market liquidity
  – If publicly produced information is a substitute for private production of information to make trading profit

• We classify disclosure violations as manipulation since both informativeness and liquidity suffer.
CONCLUSION

• Defines as illegal strategies which undermine both price informativeness and liquidity

• Defines as benign use of term “manipulation” to describe routine exercise of market power or description of the logic of a Bayesian Nash equilibrium.

• Our approach is consistent with trend toward principles-based definition of illegal manipulation
  – But some differences from FSA and EU in implementation details

• We recommend nothing revolutionary, rather a return to traditional legal approaches to illegal price manipulation.