
Shackling Short Sellers

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Short sellers: heroes or villains?

- Are short sellers able to identify overvalued stocks, helping them get to the “right” price?
- Do they help pop bubbles or keep them from forming?
- Or can they sometimes drive prices below fundamental value?

The answer should guide our policy choices.

Shorts are always blamed for crashes

**PRACTICE OF SHORT SELLING
AGAIN ATTACKED AS UNETHICAL**

**Its Foes Assert It Serves No Useful Purpose, While Others Say It
Is Tightly Woven Into the Fabric of Modern Business**

New York Times, 4 Oct 1931, p. 129.

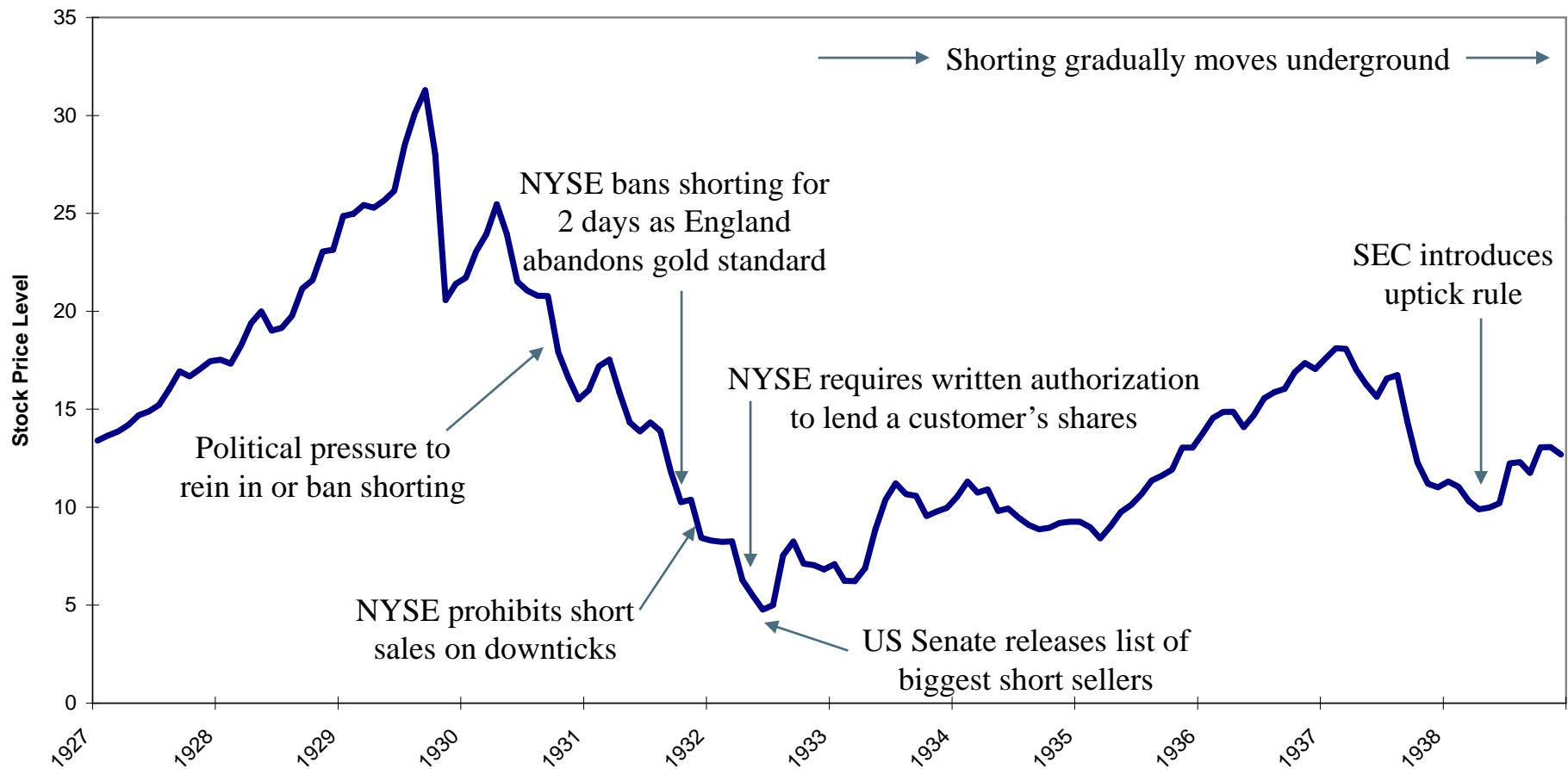
GERARD AGAIN STRIKES AT SHORT SELLING

***Replying to Whitney, He Insists
Practice Is a Menace and
Should Be Banned.***

James W. Gerard, former Ambassador to Germany, speaking last night in the Collier's Hour program over station WJZ and a National Broadcasting Company network, attacked short selling of stocks as a "menace" to the financial stability of the world and called for the banning of short sales. His address was a reply to a defense of short selling made recently over the radio by Richard Whitney, president of the New York Stock Exchange.

New York Times, 26 Oct 1931

US stock prices 1927-1938



Role of short-sellers: theory

- Difference in beliefs
 - E. Miller (1977), Harrison and Kreps (1978), Duffie, Garleanu, and Pedersen (2002)
 - When shorting is prohibited, only optimists hold stocks and stocks are overvalued.

- Rational expectations
 - Diamond and Verrecchia (1987)
 - When shorting is restricted/prohibited, stock prices are unbiased, but prices adjust slower to negative information.

- Manipulative shorting
 - Goldstein and Guembel (2008)
 - Khanna and Mathews (2009)

Role of short-sellers: empirics

- Uniform results: prices are more efficient with short sellers.
- Miller (1977): when shorts are restricted, stocks are overvalued.
 - Jones and Lamont (2002)
 - Lamont and Thaler (2003)
- Diamond and Verrecchia (1987): when shorts are restricted, adjustment to negative information is slower.
 - Bris, Goetzmann, and Zhu (2007)
 - Reed (2007)
- Diamond and Verrecchia (1987): short-sellers are more informed.
 - Dechow, Hutton, Meulbroek and Sloan (2001)
 - Boehmer, Jones and Zhang (2008)

Short selling in the US before 2008

- Short selling is wide spread in US before the short ban
 - In late 2007, approximately 40% of trading volume involves a short seller.
 - Most of the short-selling comes from institutional investors (mainly via hedge funds) and proprietary trading desks.

- As part of Regulation SHO, the SEC removed the uptick rule for all firms in July 2007
 - Boehmer, Jones and Zhang (2009)

Shorting regulation changes in 2008

- March: Bear Stearns collapses
- July 21: SEC emergency order bans naked shorting for 30 days in 19 financial firms.
- Sep 15: Lehman files for bankruptcy
- Sep 16: AIG bailout
- Sep 17: Financial firms drop sharply (MS falls 25%)
- Sep 18: SEC bans all naked shorting, UK FSA bans all shorting in financial stocks.
- Sep 19: SEC emergency order temporarily bans all shorting in 797 financial stocks .

Why the restrictions?

All the empirical evidence says shorting restrictions cause prices to be wrong.

To defend the new restrictions, something must be different in 2008:

- Maybe short sellers are now manipulators, driving prices below fundamental value.
- Maybe the manipulative “bear raids” are a particular threat for financials due to multiple equilibria (a Diamond-Dybvig bank run).
- Maybe this is one time when we need stocks to be overvalued (due to systemic risk).
- Maybe behavioral finance is right, and investors are unduly pessimistic due to herding, extrapolation bias, you name it. Regulators can change the equilibrium or slow things down.

The shorting ban was far-reaching...

- Stocks affected:
 - Initially applied to 797 financial stocks (based on SIC codes)
 - SEC soon delegated the composition of the list to exchanges
 - About 200 more firms added to the ban list later (including GE, GM, IBM)
 - About 8 firms removed themselves from the ban list.

...but had a number of holes (by design)

- Time line
 - Announced late evening Thu 18 Sep
 - Effective Fri 19 Sep.
 - Could be extended for total of 30 calendar days
 - Shorting resumed on Thu 9 Oct
 - Exemptions
 - Registered market makers, block positioners, or other market makers in the over-the-counter market
 - Options market-makers
 - It is still possible to take a bearish position via puts, total return swaps, credit default swaps, etc.
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Confounding events

- Fri 19 Sep was a very unusual day:
 - Triple witching day (expirations for index futures, index options, equity options)
 - U.S. shorting ban and other short sale reporting requirements
 - Treasury secretary Henry Paulson announces creation of what would soon become known as TARP (Troubled Asset Relief Program)
 - Treasury announces money-market fund guarantee program
 - Federal Reserve announces asset-backed CP lending program
 - Federal Reserve widens range of allowable collateral for existing lending programs
 - Breathtaking intraday volatility

Empirical design

- We examine effects of the shorting ban on:
 - Shorting activity
 - Stock returns
 - Market quality and volatility
- Methodology
 - Matching firms
 - Panel regressions

Data

- We merge data from 5 sources.
 - List of affected stocks from SEC and exchanges
 - Various stock characteristics from CRSP
 - Intraday data on trades and quotes from TAQ
 - Short interest data from the exchanges
 - Proprietary NYSE and Nasdaq intraday short sale data

- Sample
 - Aug 1, 2008 – Oct 31, 2008
 - 465 firms (404 on initial list, 61 added later)

Matching firms

- We match each banned firm with a non-banned firm by using:
 - Listing exchange
 - The presence or absence of listed options
 - Pre-ban market capitalization
 - Pre-ban dollar volume
 - Matching metric
 - The sum of absolute values of % difference in market cap and dollar volume
 - We choose with replacement using smallest distance
- Matching pairs: 465 pairs

Alternative matching

- Add an industry match as a robustness check
 - 3-digit SICs with at least one firm banned, one firm not banned.
 - Then we follow the same procedure based on options listing status, listing exchange, market cap and dollar volume.
- Matching pairs: 61 pairs
 - Pure financial SIC codes are eliminated.
 - This sample is dominated by firms in non-financial industries with modest financial arms.

Panel regressions

- Daily panel regression of a matched pair difference Y_{it} on the ban dummy with two-way fixed effects:

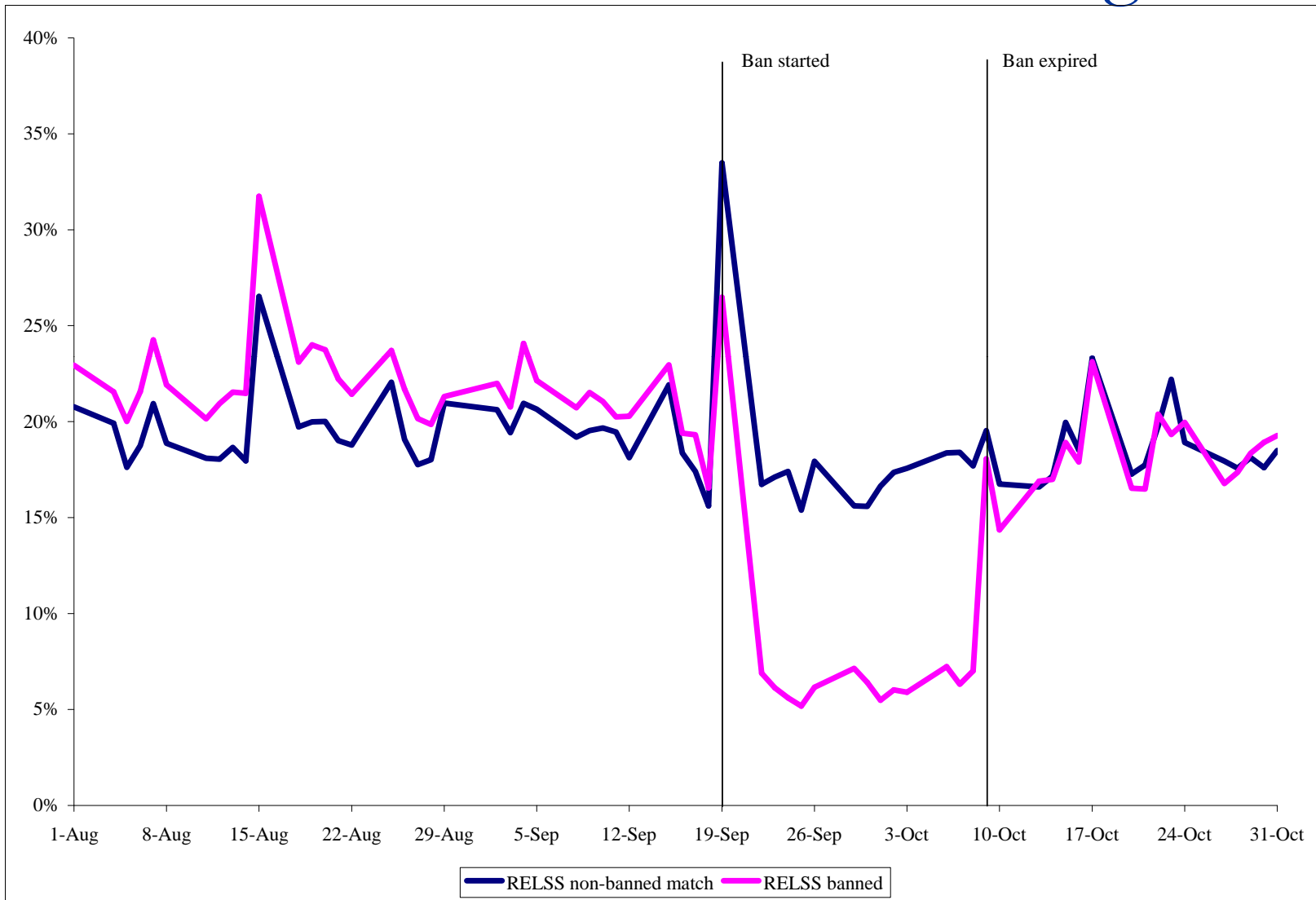
$$Y_{it} = \alpha_i + \gamma_t + \beta DBAN_{it} + \theta X_{it} + \varepsilon_{it}$$

- X_{it} includes controls for:
 - Market cap
 - Dollar volume
 - Intra-day volatility
 - Daily volume-weighted average share price
- Standard errors are computed using Thompson (2009) to control for correlations over time and cross firms

Results on shorting activity

	original ban list			matched sample		
	pre-ban	ban	post-ban	pre-ban	ban	post-ban
Number of days	34	14	17	34	14	17
RELSS	0.2179	0.0630	0.1849	0.1973	0.1908	0.1962

The ban works: much less shorting!



Cross-sectional mean of short sales as a percentage of trading volume (RELSS) for 404 stocks on the original SEC ban list with matched non-banned stocks.

Shorting activity and trading activity

	All firms	Industry match
RELSS (%)	-11.782	-8.344
	(-7.12)	(-4.55)
Shorting volume ('000 shares)	-513.087	-406,568
	(-5.51)	(-3.41)
Number of shorts	-1,967	-1,591
	(-7.03)	(-3.94)
Dollar volume (\$mil)	-34.759	-17.692
	(-2.56)	(-1.26)

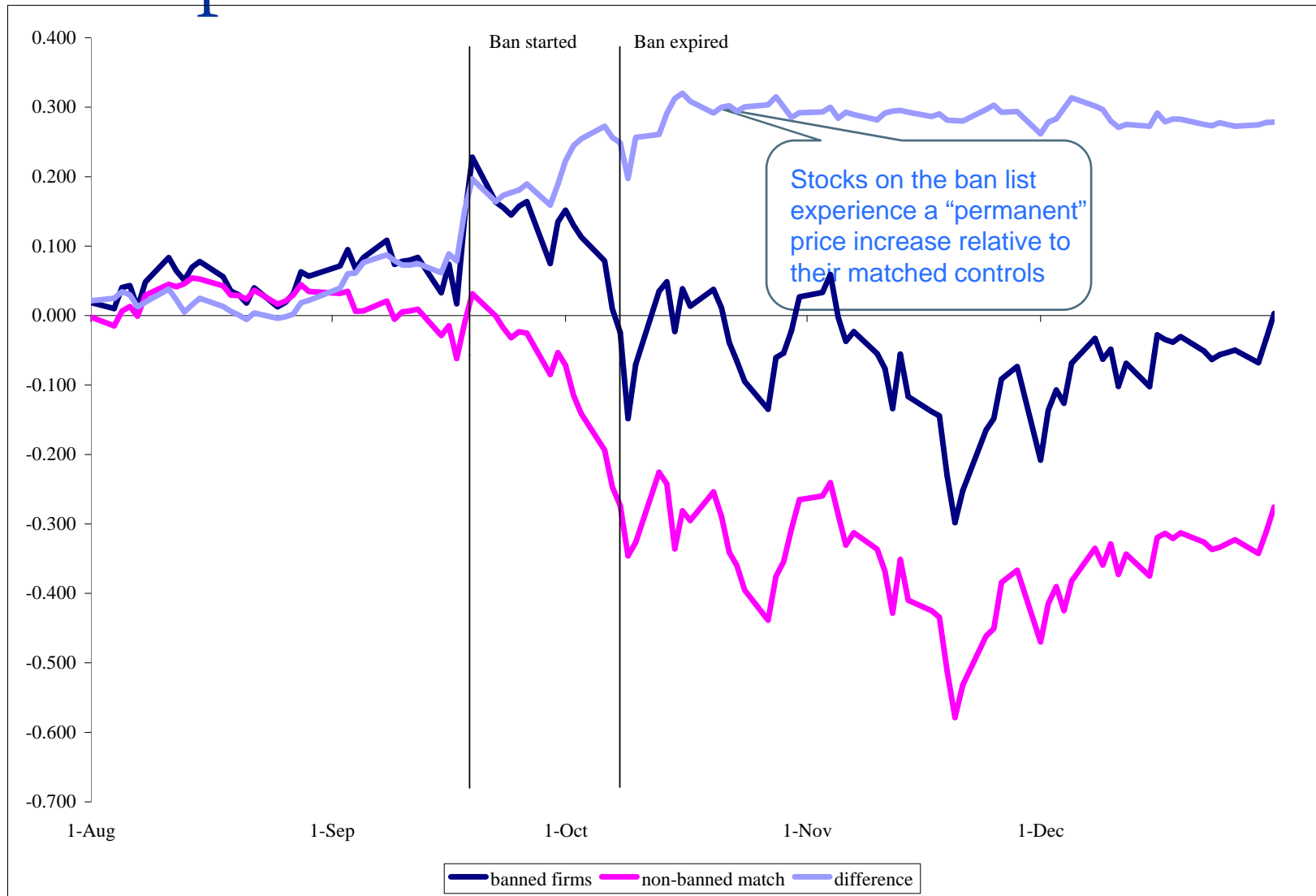
Shorting activity and trading activity

	Quartile 1	Quartile 2	Quartile 3	Quartile 4
RELSS (%)	-6.230	-11.025	-16.014	-14.833
	(-0.86)	(-2.76)	(-5.07)	(-9.72)

Effects on stock returns

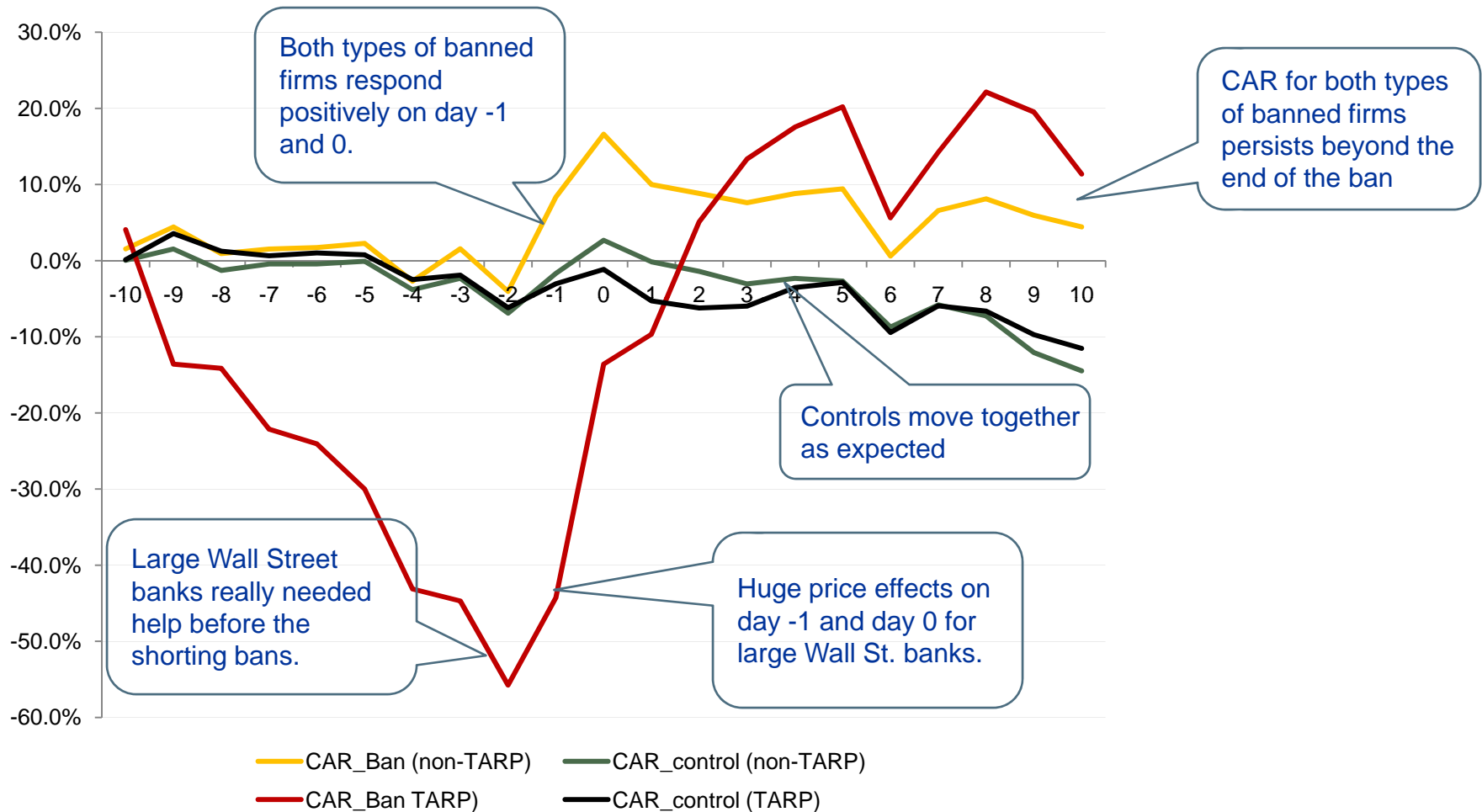
- If Miller (1977) is correct, with a temporary shorting ban, stocks should be temporarily overvalued.
 - Other channels (e.g., puts) were still open
- The confounding effect from TARP
 - Stock price would respond positively to TARP
- We use CAR to examine impact on stock prices

Stock price effects



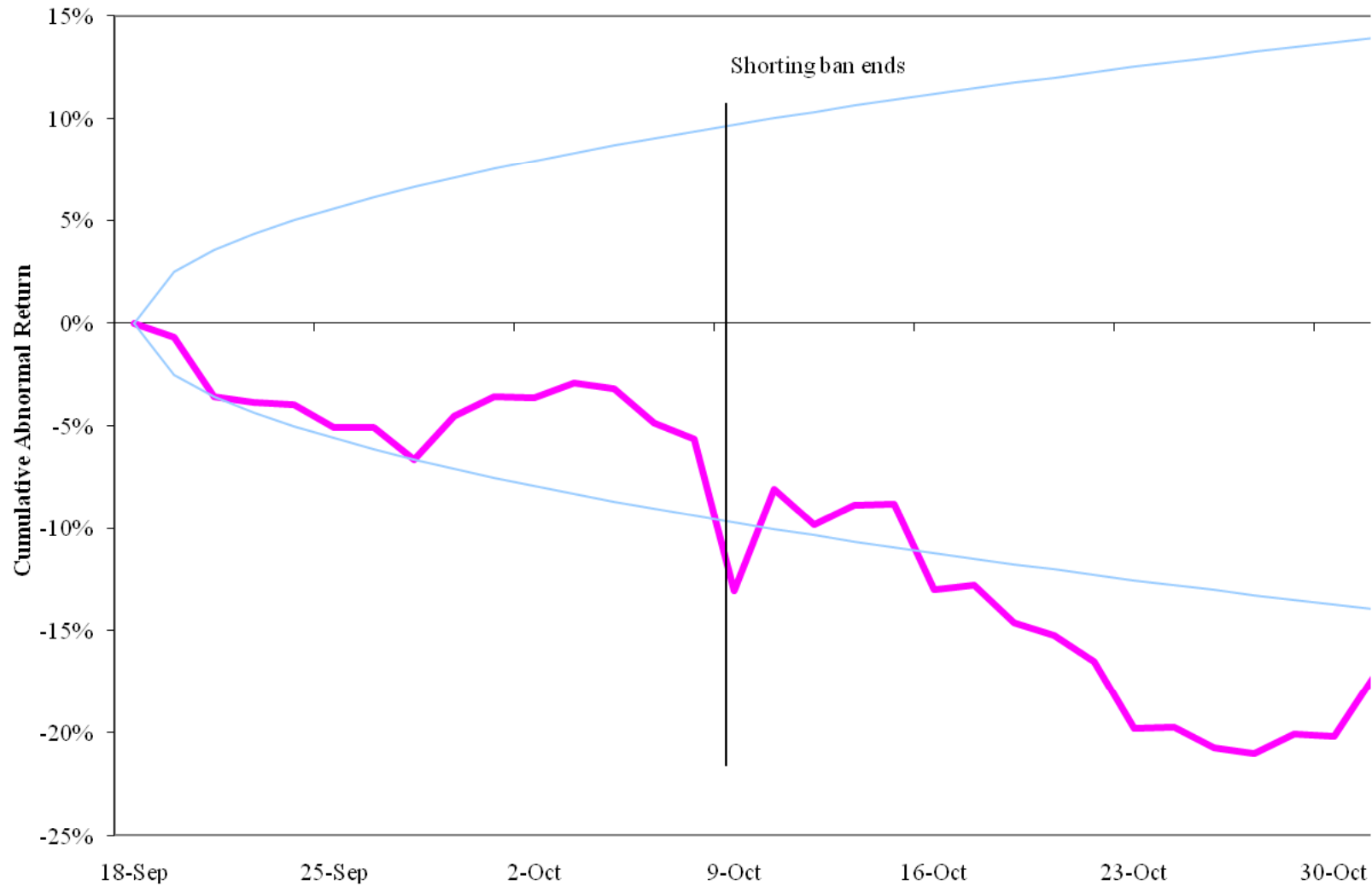
Equal-weighted cumulative returns on 404 common stocks on the original SEC ban list, 404 matched non-banned stocks, and the difference.

Share price effects on large Wall St. banks



Equal-weighted cumulative returns on 8 primary dealers vs. 396 other firms on the original SEC ban list, and the corresponding matched non-banned stocks.

Stock price effects: later additions



Equal-weighted CARs on 61 common stocks added later to the shorting ban.

Effects on market quality

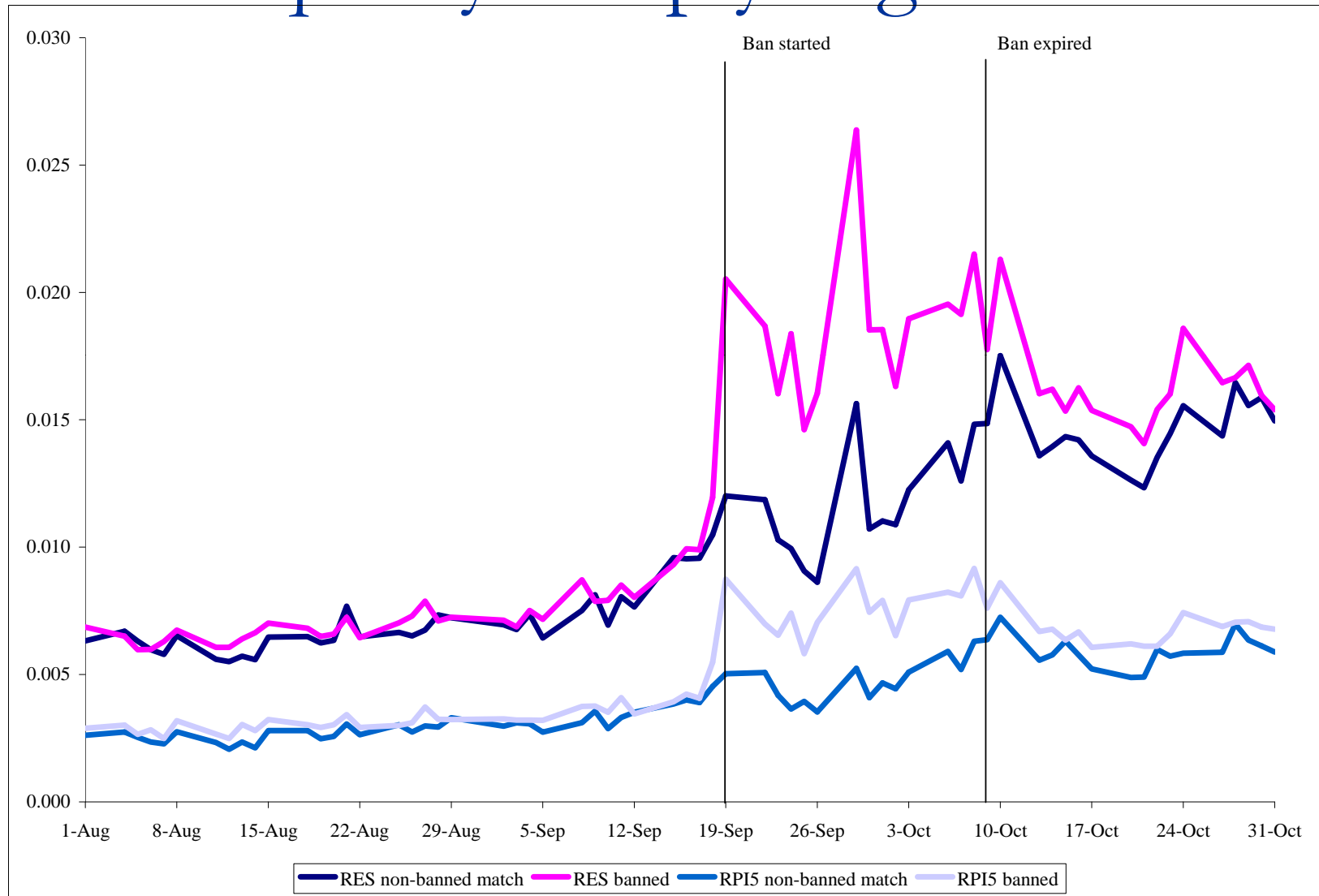
- Market quality
 - Spread measures:
 - effective spread
 - quoted spread
 - price impact
 - Volatility: intraday relative volatility

- Do short-sellers provide liquidity?
 - If short-sellers do not provide liquidity on average, market quality should be unaffected.

Effects on market quality

	original ban list			matched sample		
	pre-ban	ban	post-ban	pre-ban	ban	post-ban
Number of days	34	14	17	34	14	17
Rel. effective spread	0.0042	0.0145	0.0100	0.0033	0.0052	0.0068
Rel. quoted spread	0.0055	0.0184	0.0142	0.0042	0.0070	0.0105
Rel. price impact in 5 min	0.0020	0.0066	0.0046	0.0016	0.0026	0.0034

Market quality sharply degraded

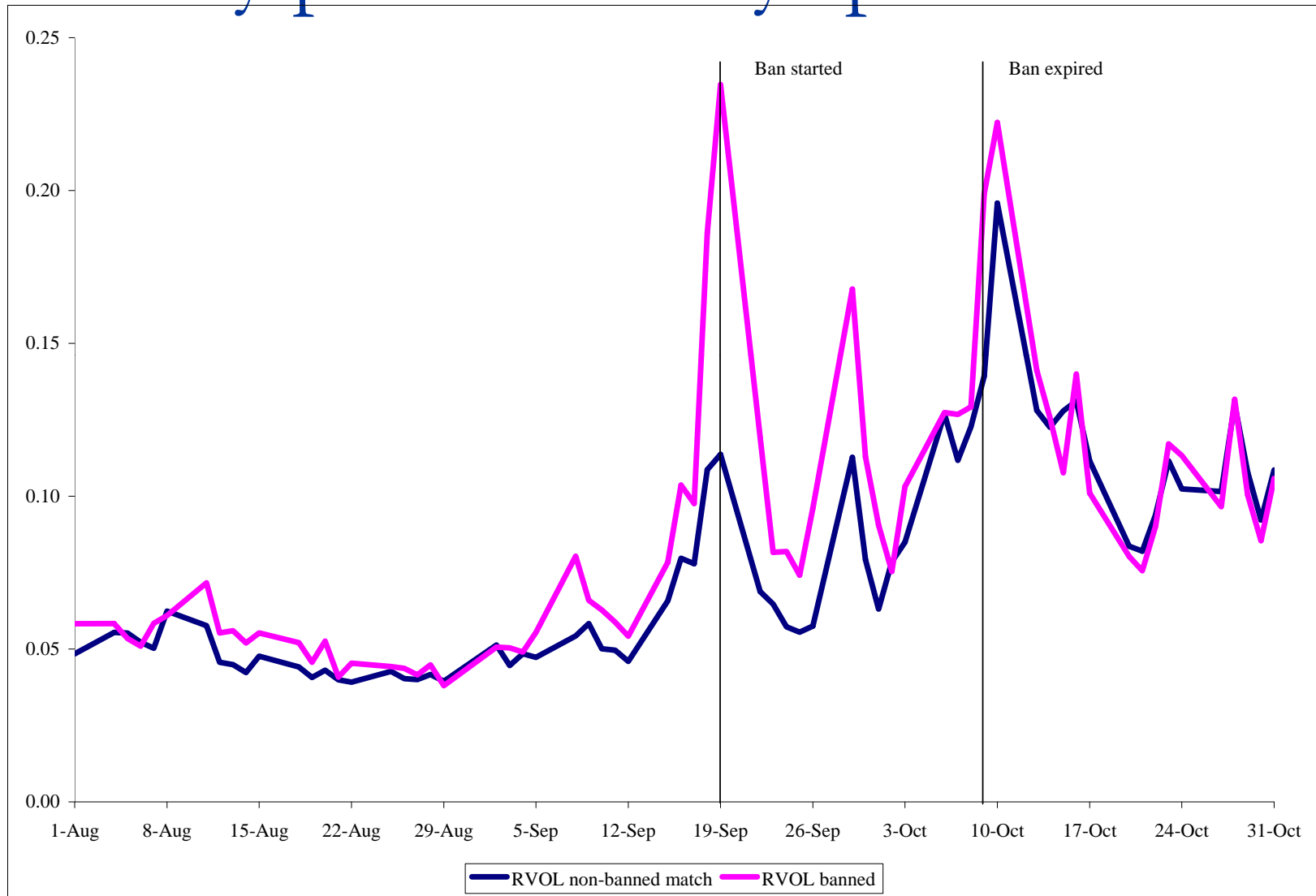


Average effective spreads (RES) and 5-minute price impacts (RPI5) on 404 common stocks on the original SEC ban list vs. matching non-banned stocks.

Market quality in various subsamples

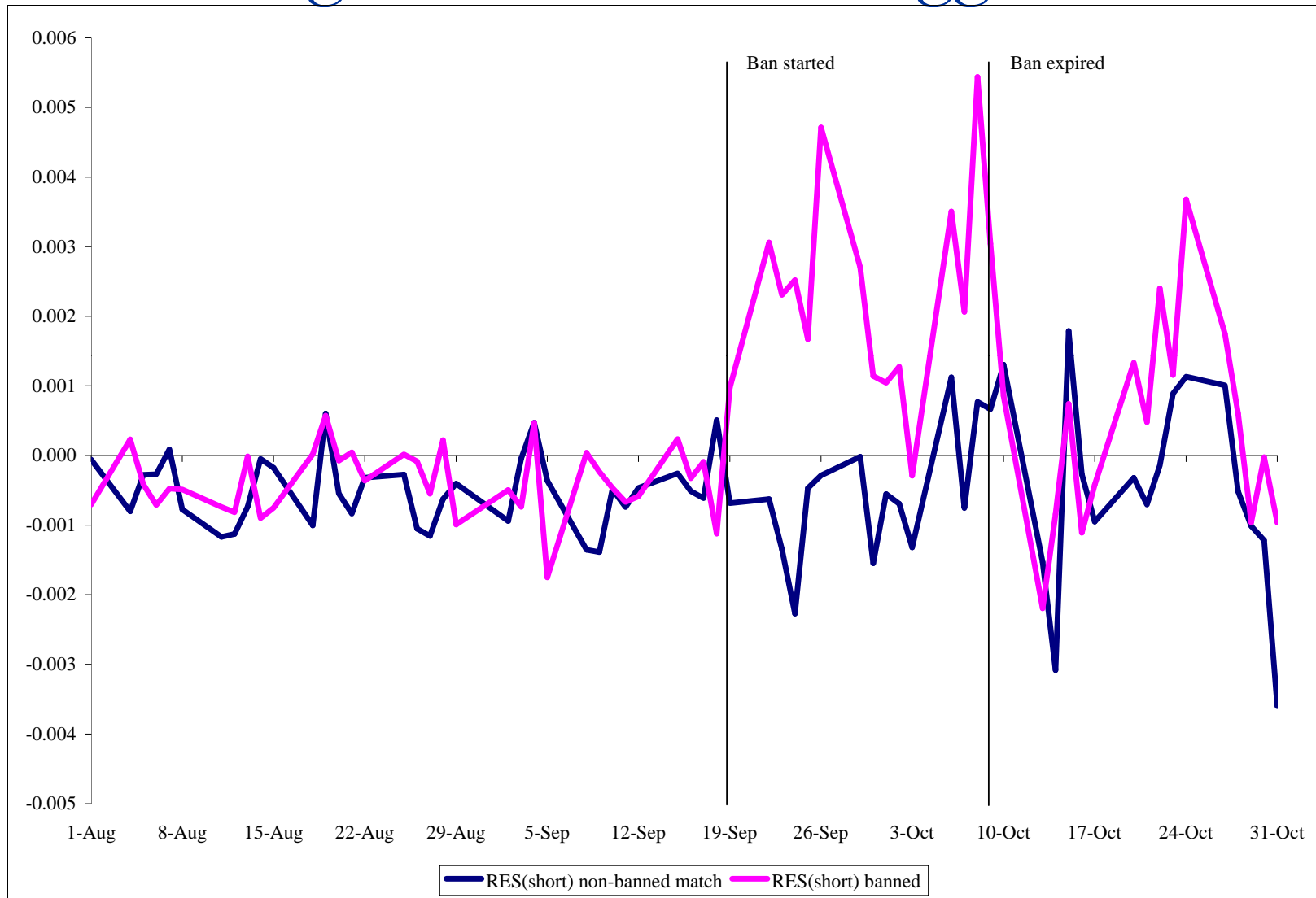
	All	Quartile 1	Quartile 2	Quartile 3	Quartile 4	Largest TARP firms	Later additions only
RES	0.321 (3.01)	-0.145 (-0.38)	0.576 (5.21)	0.453 (9.76)	0.225 (5.98)	0.183 (2.58)	0.331 (6.18)
RQS	0.373 (2.11)	-0.849 (-1.56)	0.848 (6.65)	0.570 (6.56)	0.271 (5.80)	0.202 (2.65)	0.351 (5.07)
RPI5	0.109 (2.08)	-0.168 (-0.97)	0.228 (4.21)	0.231 (7.24)	0.092 (5.07)	0.059 (2.18)	0.160 (4.53)

Intraday price volatility spikes



Cross-sectional average of intraday transaction price range (RVOL) for 404 common stocks on the original SEC ban list vs. matching non-banned stocks.

Remaining short sellers are aggressive



Average effective spreads (RES) paid by short-sellers on 404 common stocks on the original SEC ban list vs. matching non-banned stocks.

Ban conclusions

- SEC's goals
 - Ban might reduce volatility:
 - Not true.
 - Ban might improve liquidity
 - Not true.
 - Ban might help to boost prices
 - Maybe
 - Probably caused by reactions to other news.
 - Could be outweighed by negative returns due to severe illiquidity.

Hindsight

- December 2008: SEC chairman Christopher Cox stated that the biggest mistake of his tenure was the shorting ban.
- Commissioner Troy Paredes in February 2009: “...it became apparent that the ban did not stabilize the markets but did results in inefficiencies and other market dislocations and disruptions. In short, the benefits of the ban did not materialize but the costs clearly did.”

Lesser restrictions are now on the table

Two price test alternatives have been proposed:

- Return of some sort of uptick rule
- Prohibition on marketable short sale orders
 - No market orders, no marketable limit orders

If adopted, price tests may not be in effect all the time

- May be imposed
 - Overall only when there is an overall market decline
 - In a specific stock if it has fallen by more than X.

What should we expect to happen?

- Nothing serious; we lived with similar restrictions for 70 years
 - We look at what happened in 2007 when we eliminated the uptick rule
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July 2007: uptick rule eliminated

- Regulation SHO adopted by the SEC at beginning of 2005
 - Reg SHO initiated a pilot program suspending the NYSE's tick test and the Nasdaq's analogous bid test.
 - All Russell 3000 stocks ranked by market value; every third stock assigned to the pilot.
 - Pilot continued into 2007.
 - Academic work found no effect on prices, little effect on market quality.
 - Diether, Lee, and Werner (2008)
 - Alexander and Peterson (2008)
 - SEC decided to repeal all price tests
 - Announced June 13, 2007
 - Effective July 6, 2007
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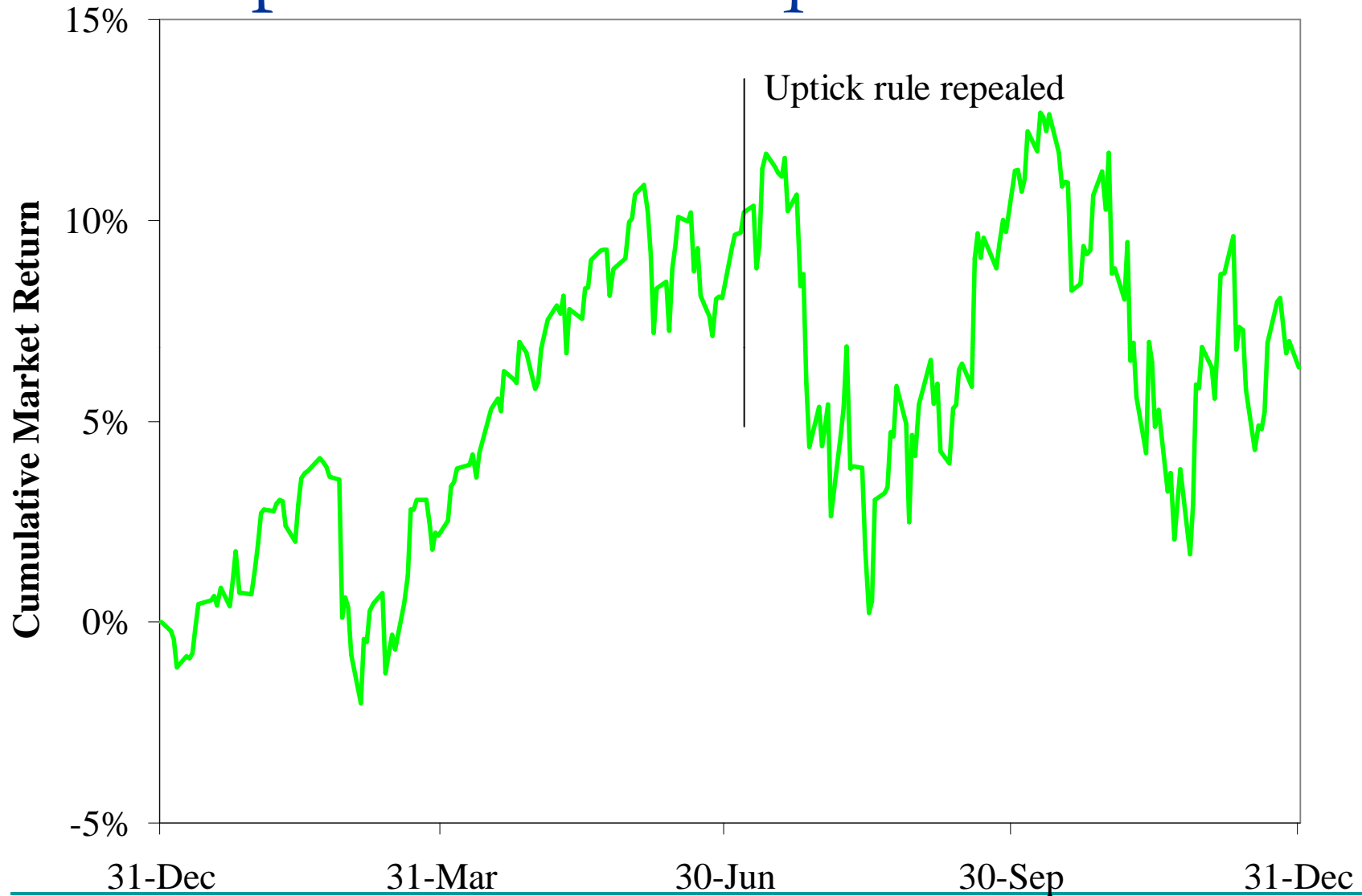
Empirical design

- Virtually random assignment simplifies econometrics
- Look before and after the July 6, 2007 repeal of the uptick rule
- Treatment vs. control
 - Treatment group (non-pilot stocks) experiences the repeal
 - Control group (pilot stocks) free of the uptick rule throughout

We examine effects of the repeal on:

- Shorting activity
- Stock returns around the event
- Aggressiveness of short sale order placement
- Market quality
- Informativeness of short sales
- Whether short sellers are contrarian vs. momentum traders
- Stock price reversals

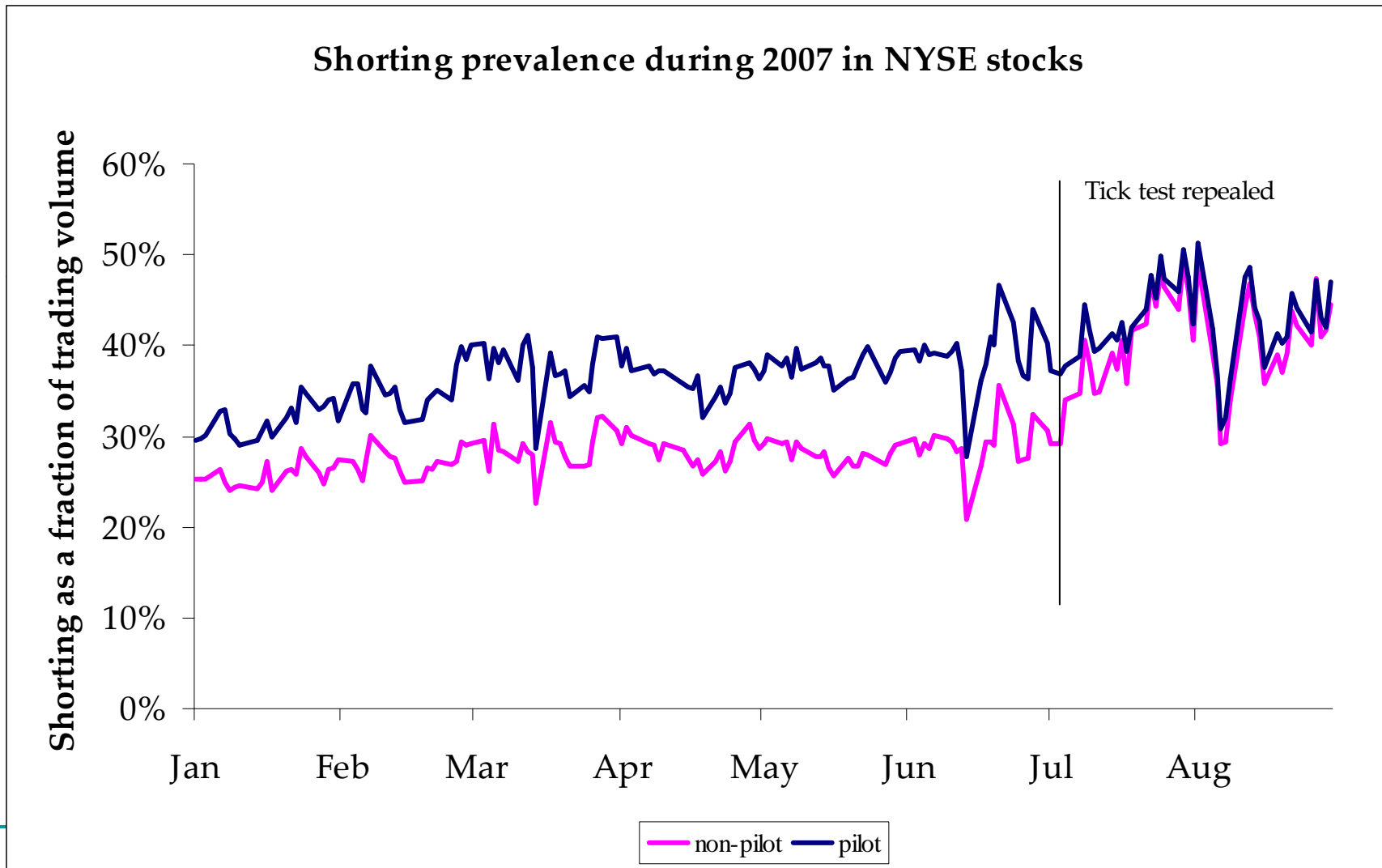
Did repeal cause the quant meltdown?



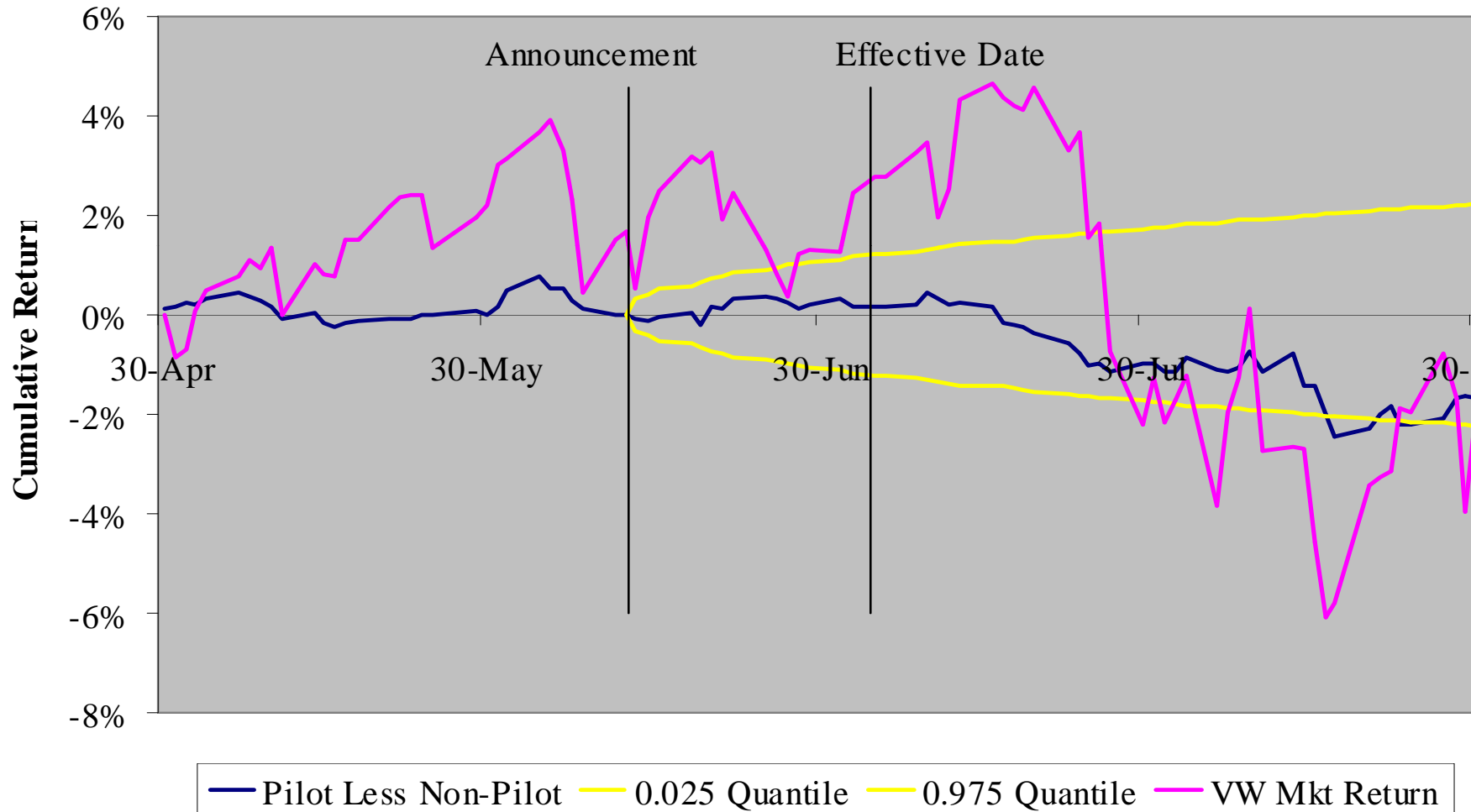
The proprietary shorting data

- All short sale orders in NYSE system order database Jan-Aug 2007
- Can observe order placement and other very micro info about each short sale order
- Sometimes easier to just aggregate all the day's short sales in each stock
- High-frequency shorting flow data
- Not the same as short interest
- Can't reconstruct short interest at intermediate dates:
 - No data on short covering
 - No data on manual short sale executions on the floor.
 - No data on short sales away from the NYSE:
 - Other exchanges
 - Upstairs market
 - Offshore
 - Derivatives and synthetic short sales (e.g., total return swaps)

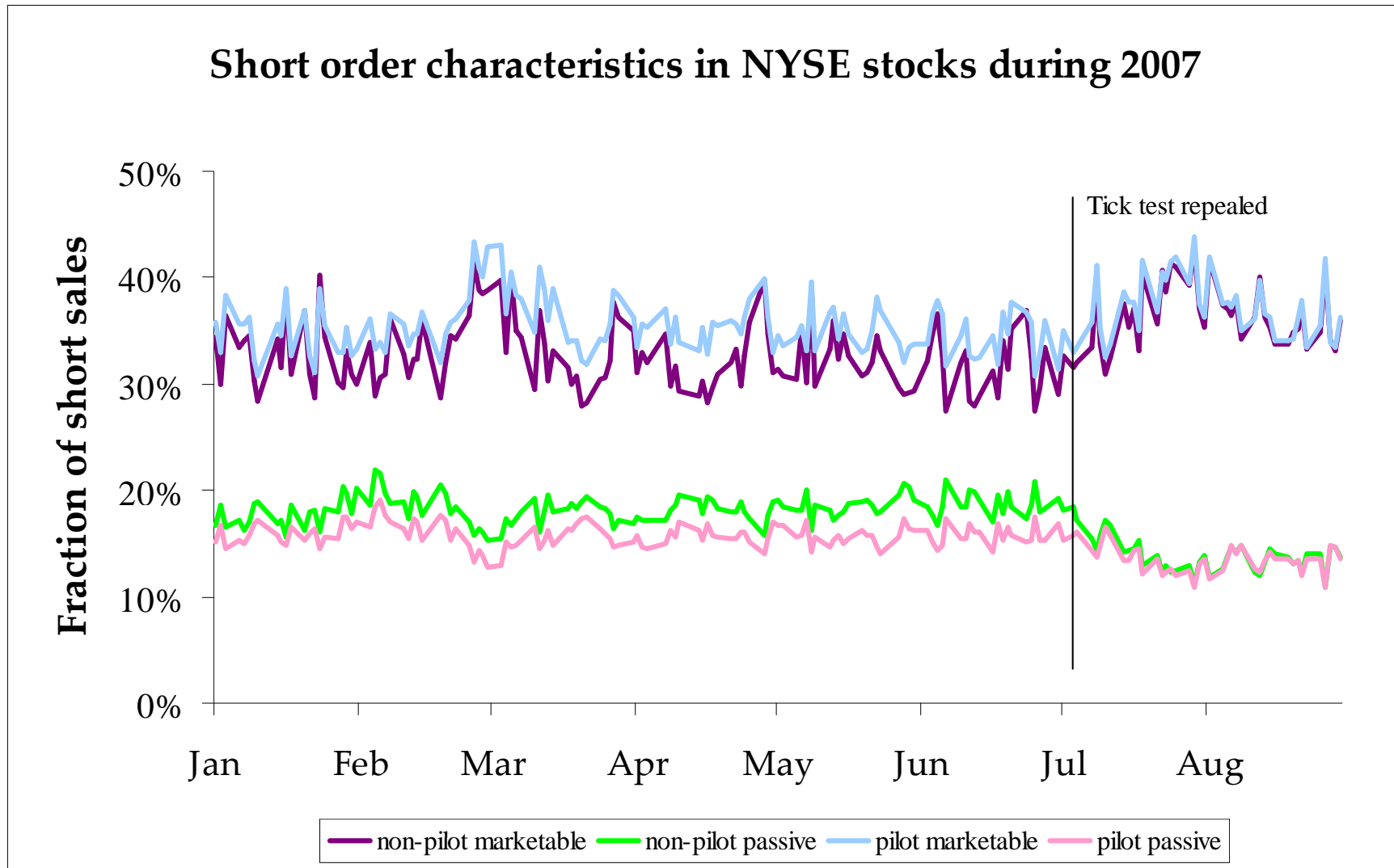
More shorting since tick test repealed



Stock returns around uptick rule repeal

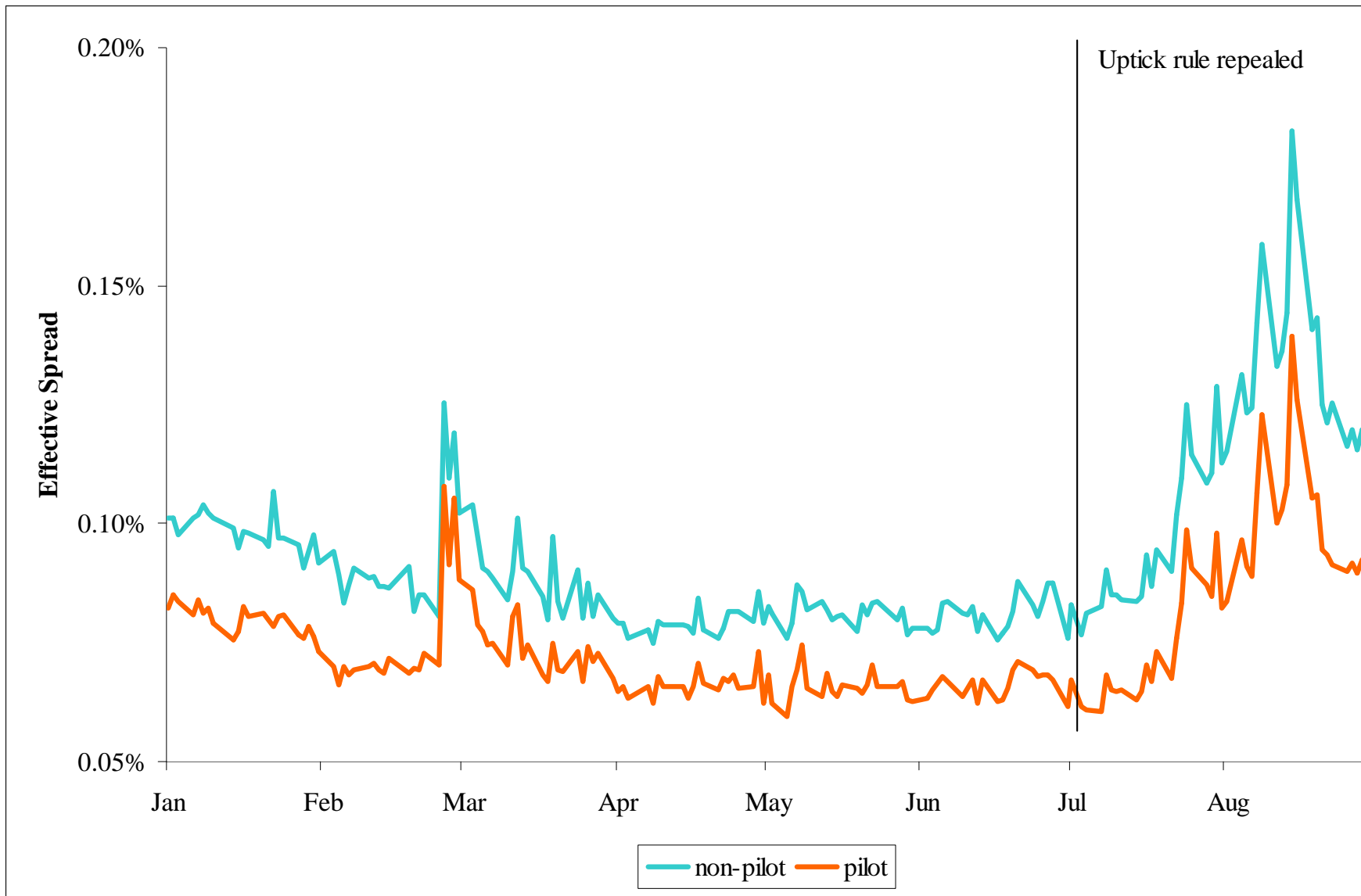


Short-sale orders become more aggressive



Passive short-sale orders are those placed at or above the prevailing ask price.

Repeal slightly widens effective spreads



Conclusions

- Shorting bans are very bad for markets
- Uptick repeal did not cause or worsen the 2007 quant meltdown
- Price tests would have big effects on some trading strategies:
 - Strategies requiring rapid implementation over short time horizons
 - Uptick version would also affect market-making strategies
- Price tests should have very modest effects on market quality
 - Forces short sellers to provide liquidity
 - Should cause slight improvement in:
 - Bid-ask spreads
 - Ask depths
- Suspect the SEC is trying to avoid imposing these restrictions, but may be forced by political pressure or outside events.