
Shorting restrictions, liquidity, and returns

Charles M. Jones
Columbia University

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This paper

- Helps us understand the historical context underlying the uptick rule.
 - Examines three discrete events from the U.S. in the 1930's that made shorting more difficult or more expensive:
 - 1931 prohibition of short sales on downticks
 - 1932 requirement that brokers get written permission to lend shares
 - 1938 SEC uptick rule
 - Measures time-series and cross-sectional effects on:
 - returns
 - volatility
 - liquidity
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Shorting in the 1920s

- Popular among professional traders in the U.S.
 - Shorting and share lending were highly developed, with little regulatory oversight or restrictions.
 - no uptick rule
 - no requirement to locate shares before shorting
 - minimum margins set by the exchange or by the broker
 - Near the close each day, NYSE members got together in the “loan crowd” at a post on the floor of the exchange to borrow and lend shares.
 - Centralized market probably reduced search costs.
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A 1930s timeline of shorting restrictions

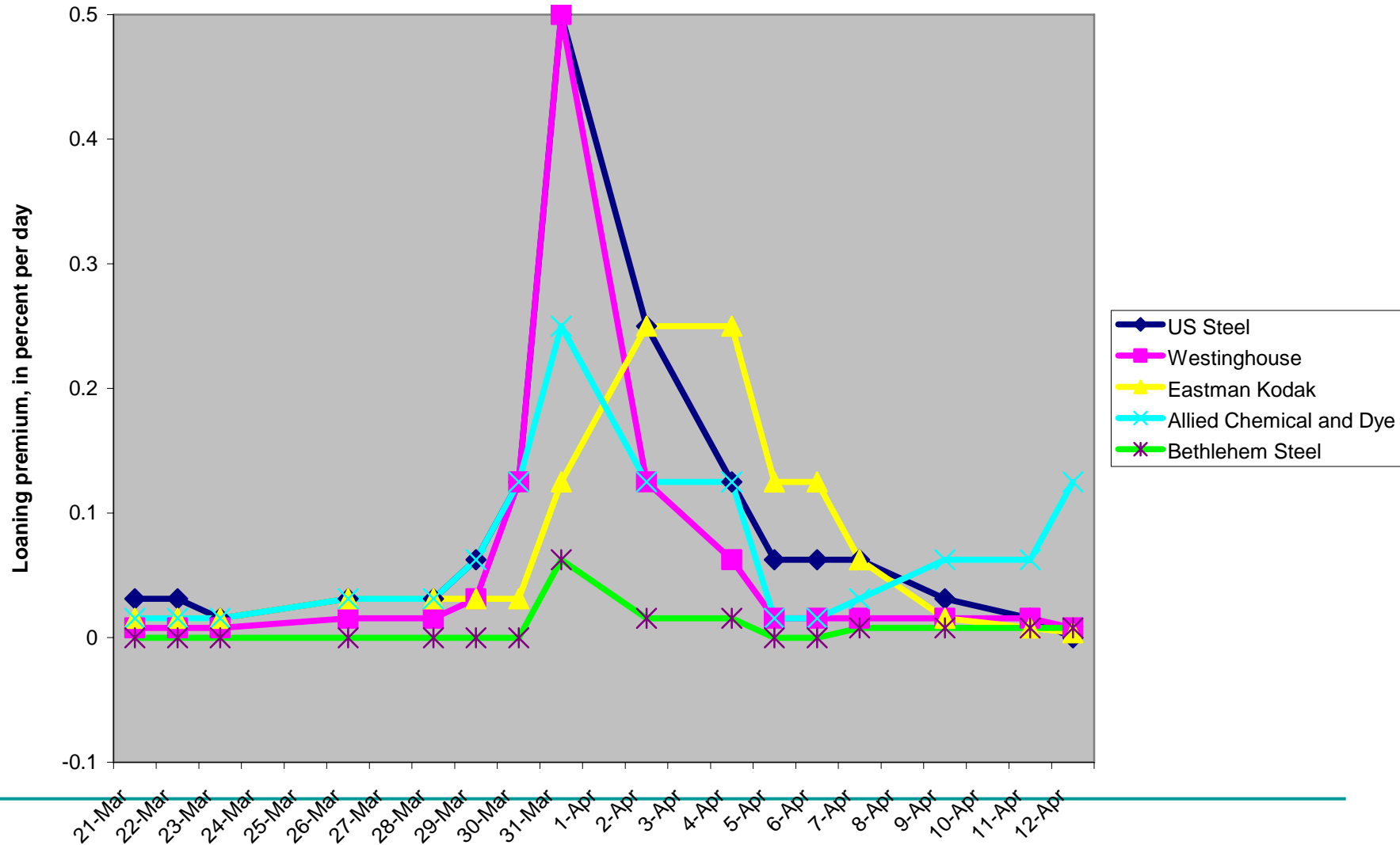
- Short sellers were blamed for the stock market crash.
 - Beginning in 1930: political pressure to rein in or even ban shorting; many holders urged not to lend out their shares for shorting.
 - 21 Sep 1931: all short sales prohibited on the NYSE for two days as emergency measure when England abandons gold standard
 - 21 Sep 1931: NYSE requires daily short interest reports from all members
 - 6 Oct 1931: all short sales prohibited below last sale price
 - 1 Apr 1932: brokers required to get written signatures from investors allowing hypothecation.
 - Late spring 1932: US Senate releases list of biggest shorts
 - 8 Feb 1938: SEC imposes strict uptick rule
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1 Apr 1932: written permission to lend

- Previously any stock held in “street name” could be lent to shorts (no distinction between cash and margin accounts).
- New NYSE rule gave customers control over lending, and perhaps less incentive to take physical delivery of stock certificates.
- Announced 18 Feb 1932, effective 1 Apr 1932
- On 31 Mar, NYTimes reported that “25 to 40 percent of the floating supply of stock – or shares held by brokers – have not yet given their consent.”
- Cost of shorting rose markedly on 31 Mar; negative rebate rates on 27 issues, an all-time high.
- Loan rates available daily in WSJ. Spike in loan premiums was short-lived; loan market was back to normal two weeks later.
- 29.1% reduction in short interest in first two weeks of April 1932.

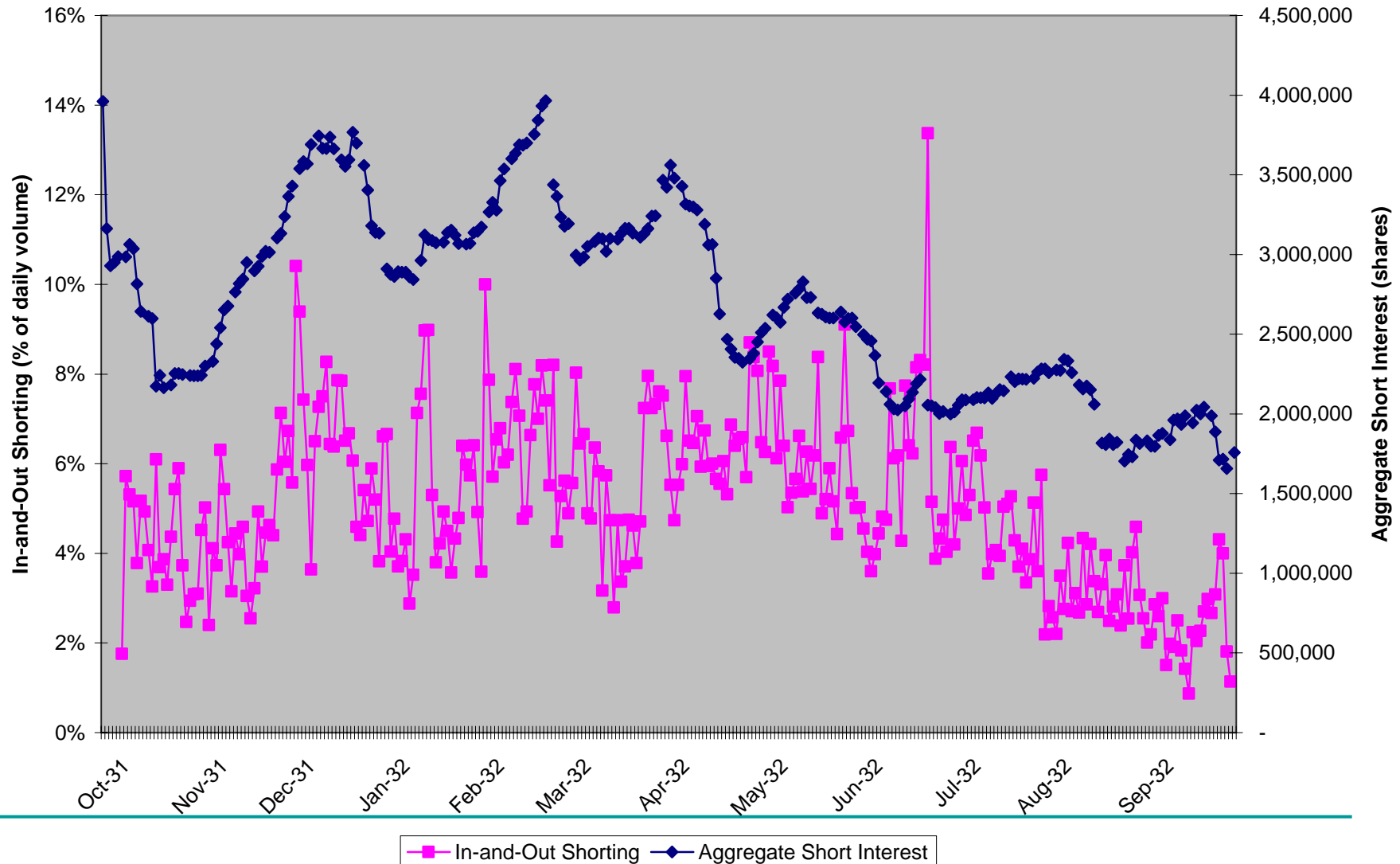
A significant but short-lived shock

Figure 1. Selected Daily Loan Rates, Mar-Apr 1932



And short interest is permanently lower

Figure 2. Selected Shorting Statistics, 1931-1932



1 Apr 1932: effects of the event

An exogenous shock to the supply of lendable shares. What happened?

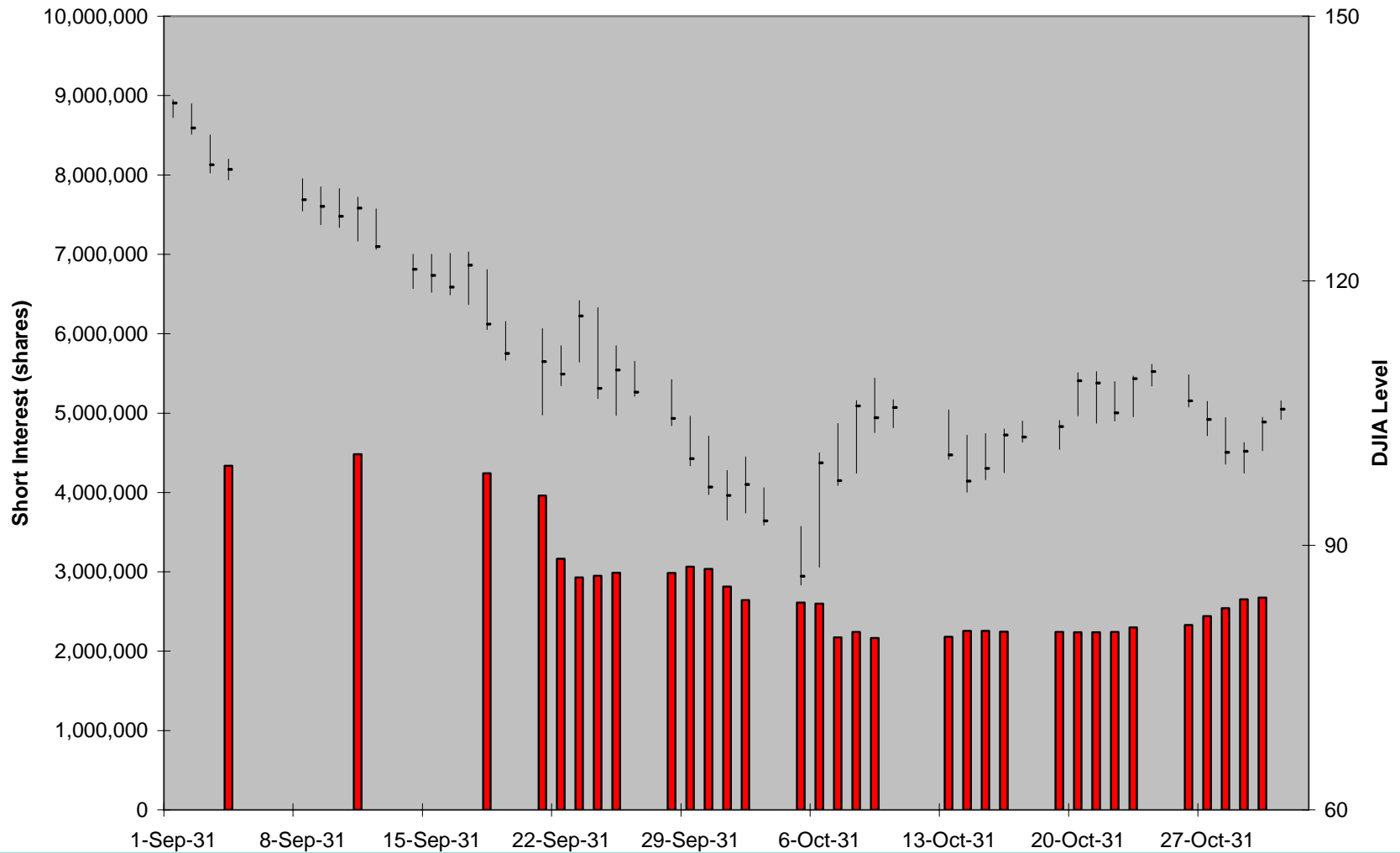
- Announcement day DJIA return: 3.51%
- Effective date 2-day average DJIA return: -3.35%
- Neither of these is statistically different from zero.
- Street gossip columns indicate that market participants expected some shorts to be rationed out of the market, and the negative returns were the result of disappointment that there were plenty of lendable shares.
- Cross-section of returns not related to loan rate or amount of short interest.
- No evidence here against the rational model that prices are on average correct, with or without short-sellers.

6 Oct 1931: downtick shorts prohibited

- Previously “bear raiders” could aggressively short and drive down stock prices.
- Short sales did not need to be identified in any way.
- The NYSE had always prohibited “demoralizing” trades.
- Beginning 6 Oct, NYSE stated that short sales on downticks were presumptively demoralizing.
- For enforcement, required all sales to be marked long or short.
- Announced before the open and effective same day.
- Clearly a shock to shorting demand: **short interest fell by 16.3% in one day!**
- Before 6 Oct, an average of 15 stocks lent at premiums; afterward, an average of 11 lent at premiums.

Short interest falls, prices rise

Figure 3. Dow Jones Industrial Average and Aggregate Short Interest, 1931



6 Oct 1931: effects of the event

What happened in response to this shock to shorting demand?

- Biggest one-day DJIA return *ever*: 14.87%
 - Daily short interest available by stock during this period. Event-day returns do not depend on short interest or loan rate.
 - Evidence strongly supports the limits-to-arbitrage model: with shorts restricted, optimists are the ones who determine prices.
 - Cross-sectional return evidence indicates that all stocks were affected similarly by the rule.
 - Predictions on spreads and liquidity:
 - Substitution effect: liquidity should improve, as shorts are now forced to supply liquidity rather than demand it.
 - Income effect: if shorts exit, not clear what this means for liquidity.
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Liquidity improves after the event

Table 4

The effect of prohibiting downtick short sales beginning 6 Oct 1931

	<u>Pre-event</u>	<u>Post-event</u>	<u>Difference</u>
Avg. Spread (\$)	0.323	0.262	-0.061***
Avg. Spread (%)	0.730	0.592	-0.138***
Avg. Price Impact (bp per 1000 shares)	4.324	6.132	1.809
Avg. Daily Volume (shs)	22,750	16,059	-6,691*
Avg. Daily Volume (\$mm)	0.843	0.626	-0.217

Small stocks improve a bit more

Table 5
The cross-section of liquidity changes around 6 Oct 1931

	<u>ΔPSPRD</u>	<u>ΔPSPRD</u>	<u>ΔDSPRD</u>
Intercept	-1.857*** (0.681)	-1.846*** (0.558)	-0.539* (0.328)
Volume	-0.068 (4.515)		-2.390 (2.308)
Log(mkt cap)	0.144** (0.062)	0.139*** (0.048)	0.054* (0.032)
Short Int. (days)	-0.038 (0.053)		-0.007 (0.024)
Loan Rate	-2.361 (5.476)		-4.130 (3.137)
Share Price			-0.003 (0.002)
R ²	25.0%	23.3%	13.9%

6 Oct 1931: summary of liquidity evidence

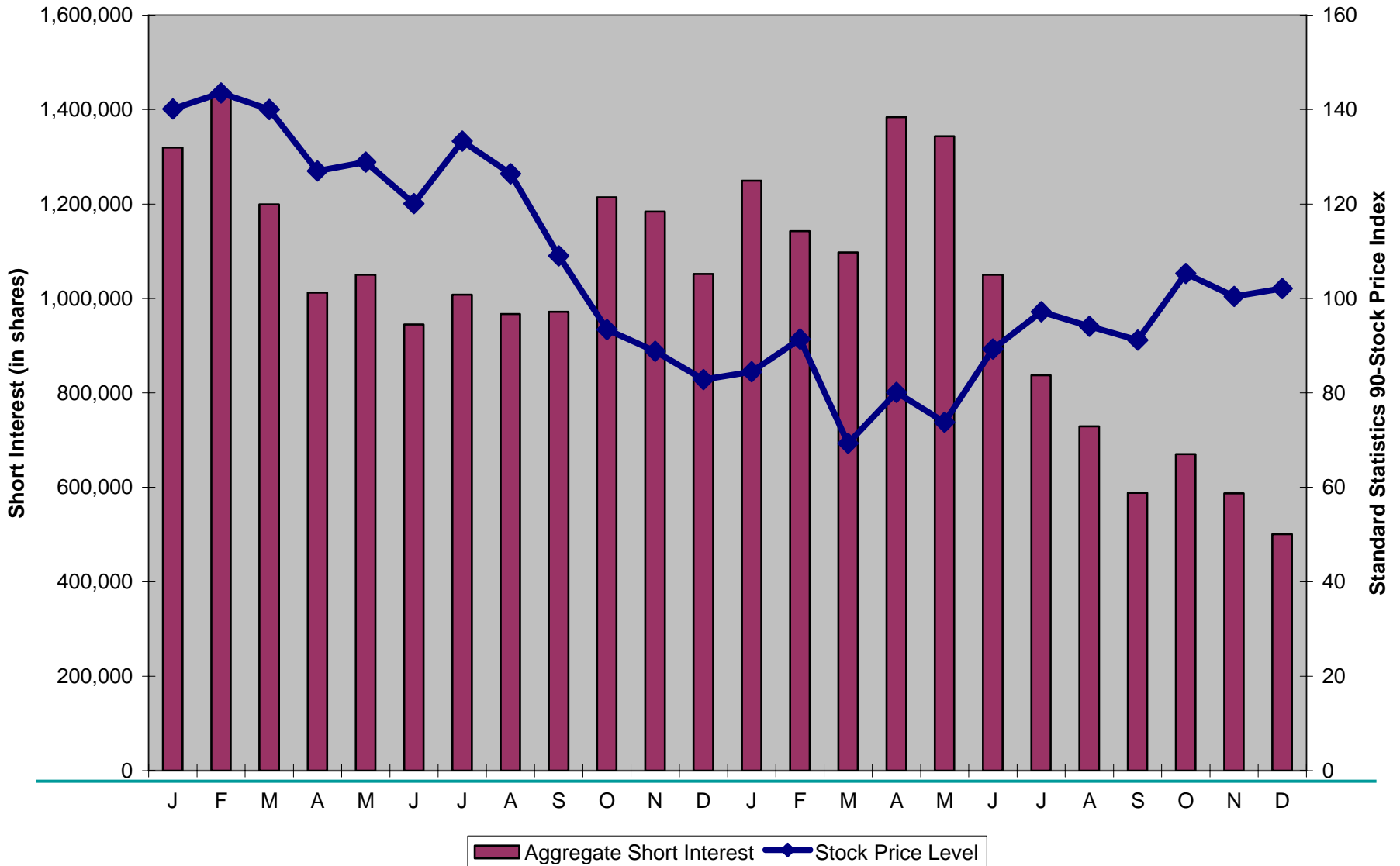
- Volume, volatility, price impacts not reliably different.
 - Bid-ask spreads narrow substantially.
 - Bid-ask spreads narrow most for small stocks.
 - Consistent with the hypothesis that shorts are now supplying instead of demanding liquidity.
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8 Feb 1938: SEC imposes strict uptick rule

- 35% market decline in the second half of 1937 brings rumors of more “bear raids” and an SEC investigation.
 - The result: the SEC adopted Rule 10-a1, which requires short sales in listed stocks to take place only on strict upticks.
 - Announced on 24 Jan 1938, effective 8 Feb 1938.
 - (Strict uptick rule relaxed to current zero-plus tick rule on 20 Mar 1939)
 - Short interest fell by 8.6% in from the end of Jan 1938 to end of Feb 1938.
 - Some evidence that shorts hurried to beat the new rule. Number of stocks loaning at premiums peaks at nine on 4 Feb.
 - Rule was quite onerous; clearly a negative shock to shorting demand.
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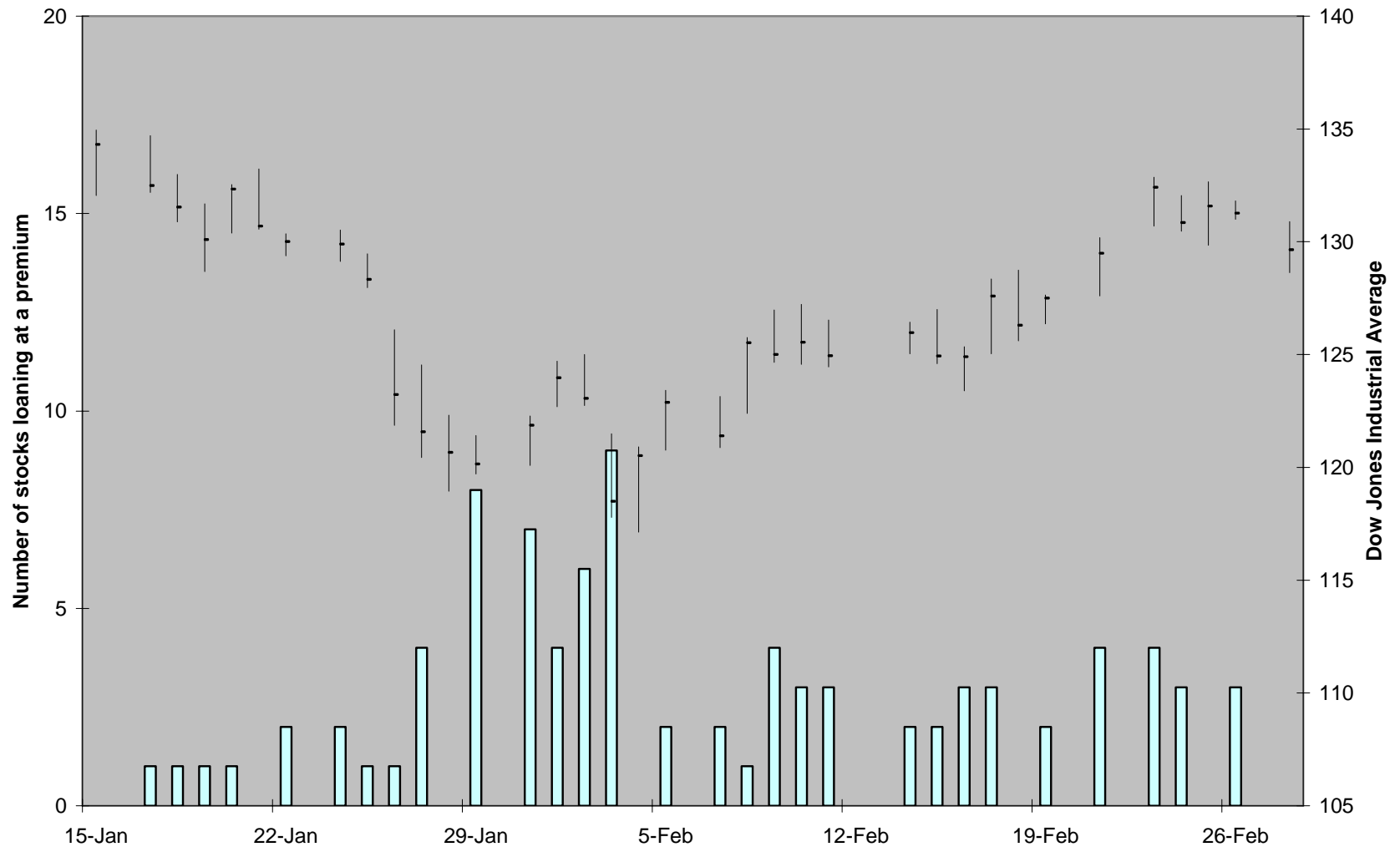
Conditions around uptick rule adoption

Figure 4. Short Interest and Stock Prices, 1937-1938



Loan market conditions around 8 Feb

Figure 5. Stock Loan and Stock Price Behavior, Jan-Feb 1938



8 Feb 1938: effects of the event

What happened in response to this shock to shorting demand?

- DJIA announcement day return: -0.08%
 - DJIA effective date return: 3.40% (p-value = 0.03)
 - Monthly short interest available for 24 stocks during this period. Event-day returns do not depend on short interest or loan rate.
 - Support for the limits-to-arbitrage model.
 - Cross-sectional return evidence indicates that all stocks are affected similarly by the rule.
 - Again, effects on liquidity are not obvious
 - Substitution effect: liquidity should improve, as shorts are now forced to supply liquidity rather than demand it.
 - Income effect: if shorts exit, not clear what this means for liquidity.
 - Open-high-low-close, volume, and bid-ask data hand-collected for 30 DJIA stocks around the event.
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Effects on liquidity

Table 6
1938 SEC adoption of strict uptick rule for short sales

	<u>Pre-event</u>	<u>Post-event</u>	<u>Difference</u>
Avg. Spread (%)	0.704	0.634	-0.070**
Avg. Price Impact (bps per 1000 shares)	3.856	2.588	-1.268
Avg. Daily Volume (shs)	4,769	3,456	-1,312**
Avg. Daily Volume (\$mm)	0.242	0.182	-0.059**
Avg. Daily Ri (in %)	1.924	1.435	-0.489

Liquidity effects are similar for all stocks

Table 7

The cross-section of liquidity around the 1938 uptick rule

	<u>ΔPSPRD</u>	<u>ΔPSPRD</u>	<u>ΔDSPRD</u>
Intercept	-0.153 (0.934)	-0.509 (0.869)	0.722 (0.872)
Volume	0.001 (0.002)		22.038 (18.782)
Log(Mkt Cap)	-0.007 (0.078)	0.028 (0.070)	-0.090 (0.075)
Loan Rate	-0.139 (0.214)		0.095 (0.225)
Share price			0.005** (0.002)
R ²	5.4%	0.6%	15.4%

8 Feb 1938: summary of liquidity evidence

- Volume falls. Volatility and price impacts not reliably different.
 - Proportional bid-ask spreads narrow substantially.
 - No cross-sectional patterns in spread changes.
 - Matches earlier evidence from 1931 downtick prohibition: liquidity improves perhaps because shorts are forced to supply liquidity rather than demand it.
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Meta-analysis

- Combining the two tick restrictions into a single statistical test:
 - Strengthens conclusions about effect on liquidity
 - Combined t-statistic is 4.21.

 - Combining the three shorting restrictions into a single statistical test:
 - Avg. DJIA announcement-date return: 6.10%
 - p-value < 0.001
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Summary and conclusions

- Prices seem to rise whenever shorts are restricted.
 - Tick restrictions on shorting seem to improve liquidity.
 - Caveats for extrapolating to today:
 - Minimum tick during this period was $1/8$; uptick rule is much less onerous under pennies, so we'd expect much smaller effects.
 - Few ways to avoid the uptick rule in the 1930's. Alternatives now include offshore trades, puts, total return swaps, and other derivatives.
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