



# It's SHO Time! Short-Sale Price-Tests and Market Quality

Karl Diether, Kuan Hui Lee, and Ingrid M. Werner  
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# Regulation SHO

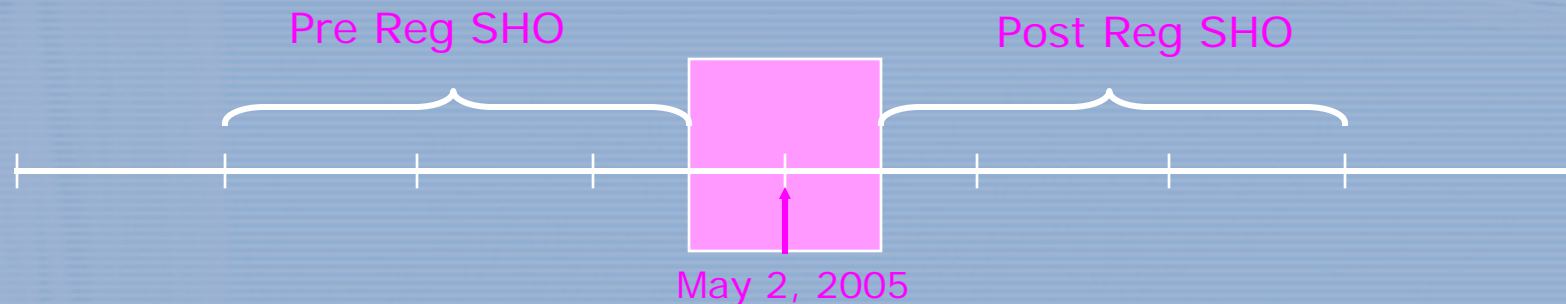
- Reg SHO is intended to:
  - establish uniform locate and delivery requirements,
  - create uniform marking requirements for sales of all equity securities,
  - and establish a procedure to temporarily suspend the “provision of Rule 10a-1 under the Securities and Exchange Act of 1934 and any short sale price test of any exchange or national securities association for short sales of certain securities for certain time periods” in order to “evaluate the overall effectiveness and necessity of such restrictions.”

# Experiment

- The Pilot Program (Rule 202T): Every third member of the Russell 3000 index ranked by average daily dollar volume (7/28/03-7/28/04) is a Pilot (A) stock.
  - Period 5/2/2005-4/28/2006 (extended to 8/6/2007)
- We also require that:
  - Stocks were members after the June 2004 index reconstitution, and remained members after the June 2005 index reconstitution
  - Stocks had an average price below \$100 and an average quoted spread less than \$1.00 in the pre-period
  - Sample stocks were NYSE or Nasdaq-listed (NM)
- The remaining qualified Russell 3000 securities are called Control stocks.

# Sample period

- We study market quality in a 6 month period surrounding 5/2/2005.
- In order to avoid the period of adjustment to the new rules, we exclude the four weeks surrounding the event.
- Hence, we have the following sample-periods:
  - Pre-period: February 1 – April 16, 2005
  - Post-period: May 16 – July 31, 2005



# Sample

	Pilot Stocks	Control Stocks	Total
NYSE	448	904	1,352
Nasdaq	376	757	1,133
Total	824	1,661	2,485

# Our measure of short-selling

- Our measure of short-selling activity is the number of shares sold short for a particular stock  $i$  during a day  $t$  relative to the day's reported share volume.

$$relss_{i,t} = \frac{\text{Shares sold short}_{i,t}}{\text{Reported share volume}_{i,t}}$$

- We calculate our short-sale measure daily.
- We do not distinguish between exempt and non-exempt short-sales (SEC no-action relief letters to SIA 1/2/2005 and 4/15/2005).

# Market quality measures

- We use a broad set of market quality measures:
  - Quoted spreads
  - Quoted depth at bid and ask
  - Effective half spreads
  - Realized half spreads
  - Buy order imbalance
    - Based on the Lee & Ready (1991) algorithm
  - Trade-based volatility measures
  - Quote-based volatility measures

# Price-tests and order strategies

- To comply with the Up-tick Rule, NYSE short-sellers have to rely heavily on limit orders, shadowing the last sale.
  - Produces asymmetries in order flow and quoted depth.
  - May reduce quoted and effective spreads.
  - May reduce volatility.
- Short-sellers on Nasdaq can use marketable limit orders and still be compliant.
  - If price-tests force short-sellers to use more passive strategies, the market quality patterns should be like those for NYSE stocks.
  - If price-tests do not restrict short-sellers' strategies, then there should be no effect of the bid-test on market quality.
- Short-sellers in Nasdaq-listed can also use, e.g., ArcaEx which does not enforce any bid-price tests.

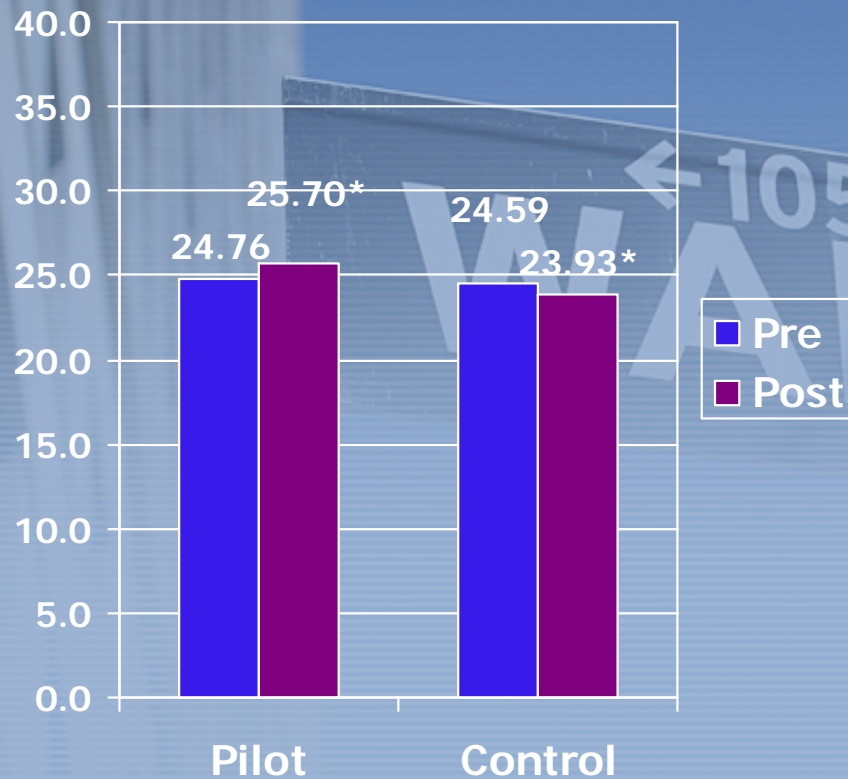


# Hypothesis I

- Do price-tests (NYSE Up-tick Rule and Nasdaq Bid-price Rule) make it more difficult for short-sellers to execute their orders?
- If so, the suspension of price-tests will be associated with an increase in short-selling activity in Pilot stocks (no price-tests) relative to Control stocks (old price-tests).

# Did *relss* increase?

## NYSE



## Nasdaq



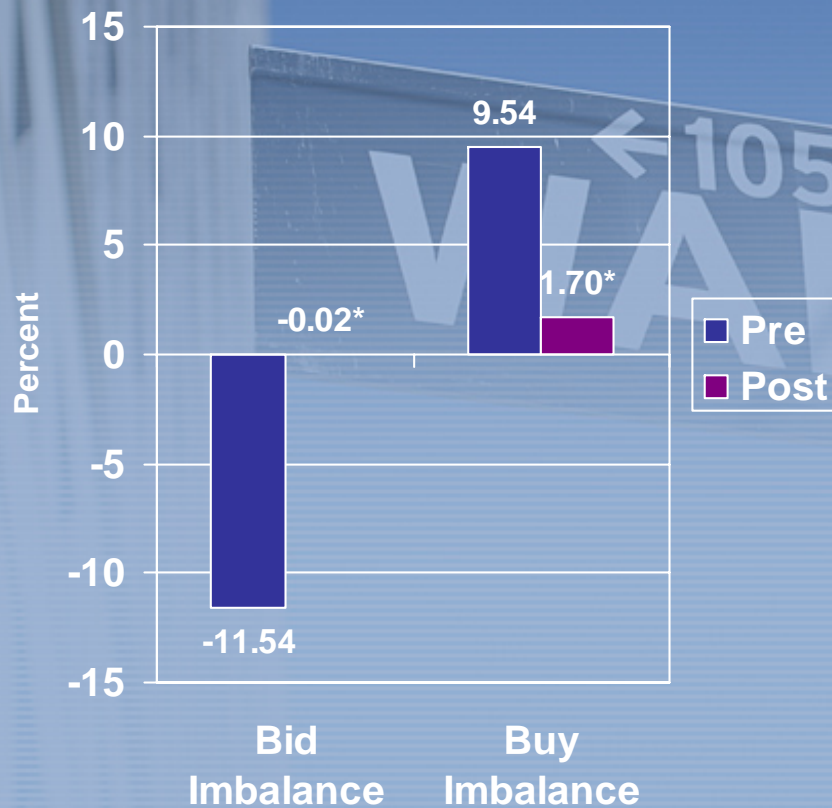
\*An asterisk means that the Post period is significantly different from the Pre period.

# Hypothesis II

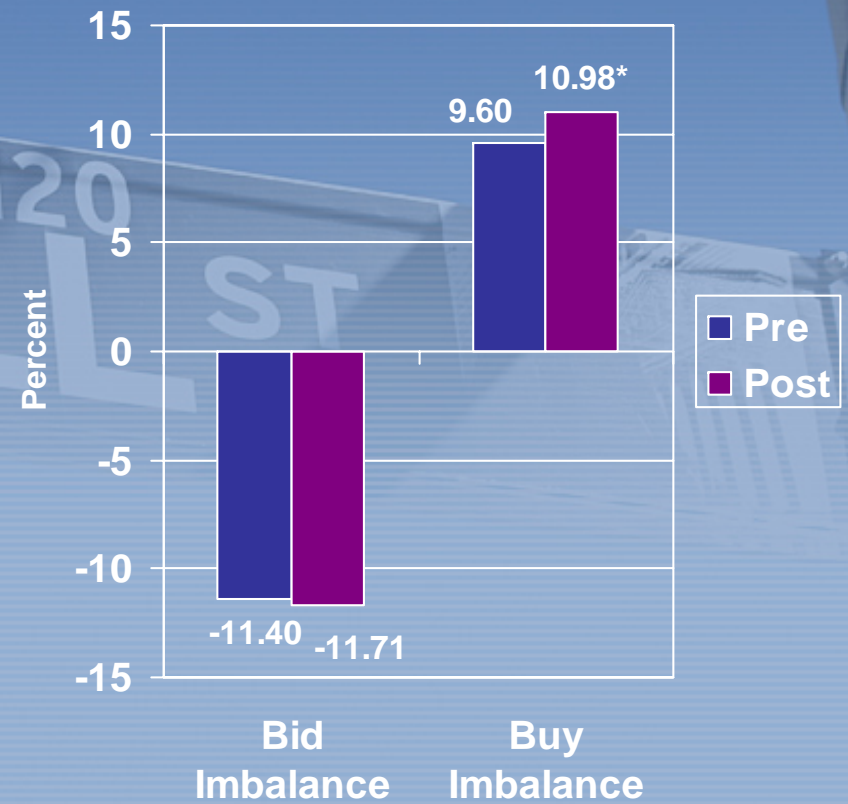
- The suspension of the up-tick rule allows NYSE short-sellers to use marketable orders.
  - quote and order-flow asymmetries disappear
  - quoted and effective spreads may widen
  - short-term volatility may increase
- The suspension of the bid-price test does not significantly change order-submission strategies of Nasdaq short-sellers.
  - no change in quote and order-flow patterns
  - no change in quoted and effective spreads
  - no change in volatility

# NYSE asymmetries

## Pilot



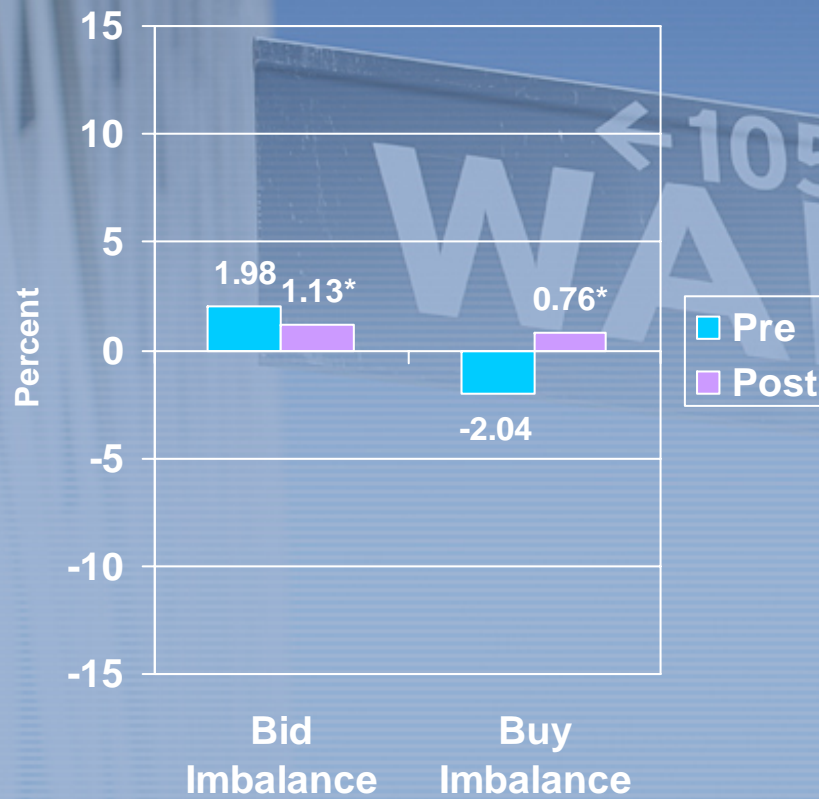
## Control



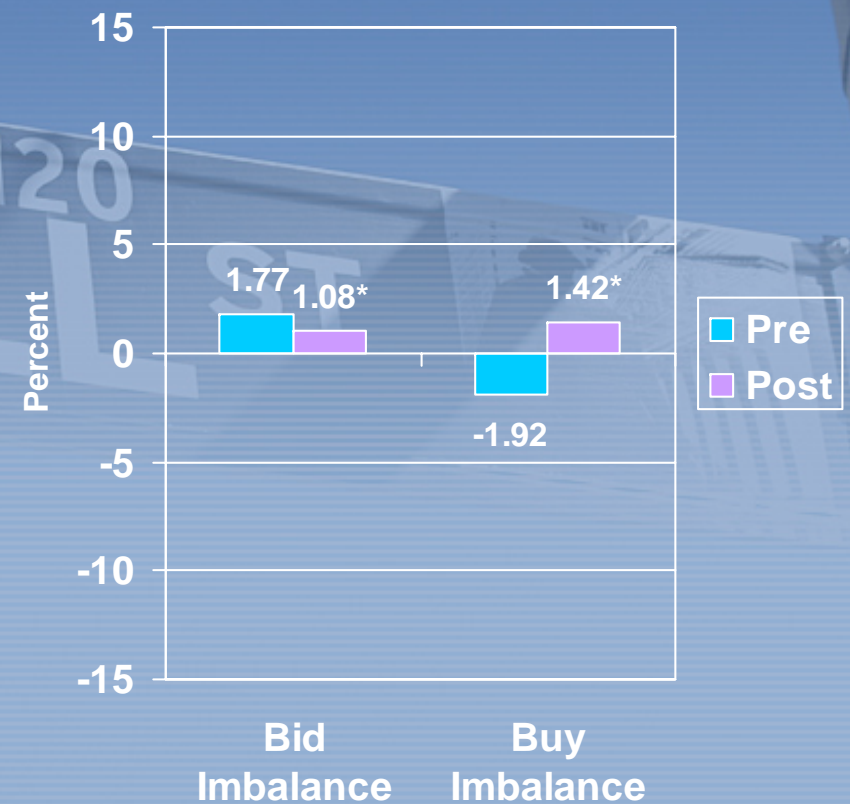
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# Nasdaq asymmetries

## Pilot



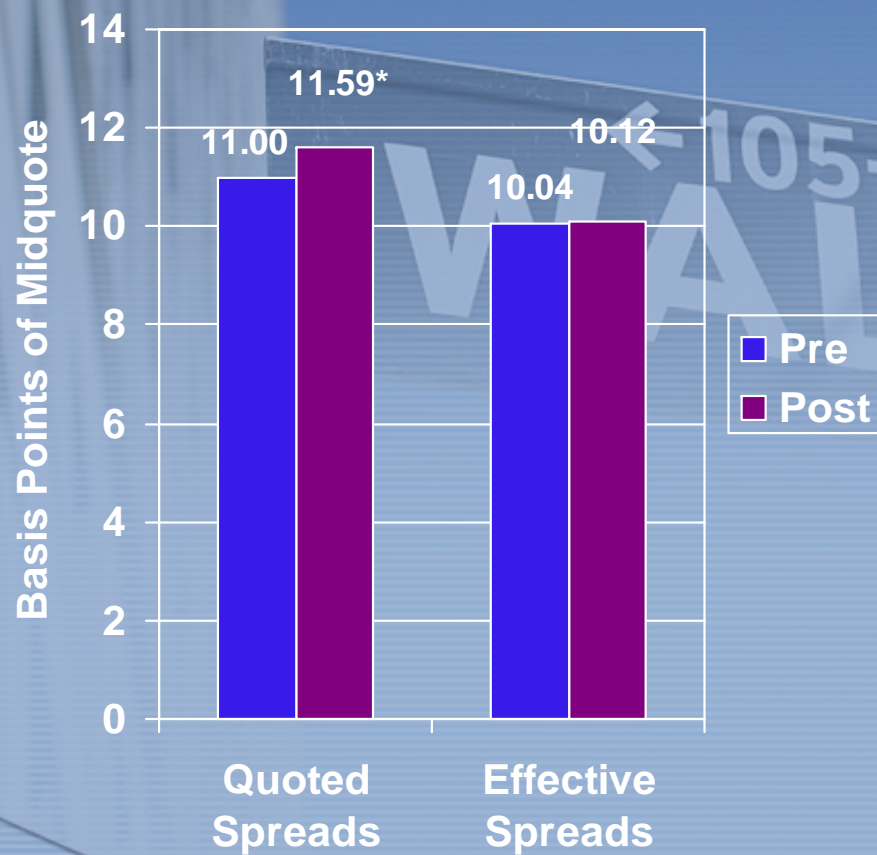
## Control



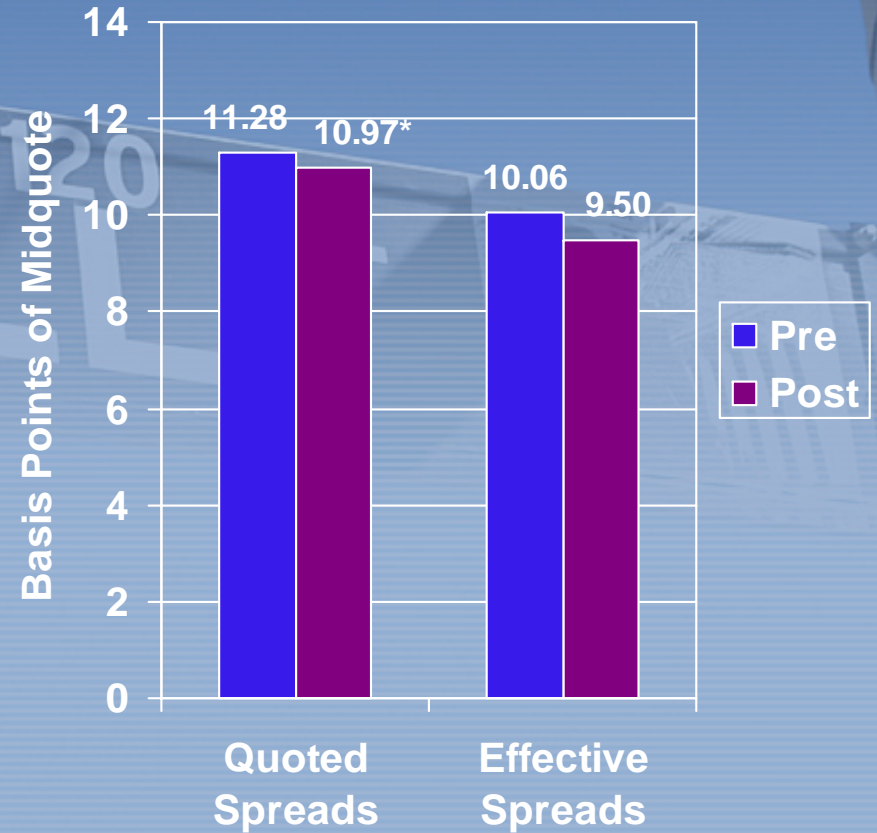
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# NYSE spreads

## Pilot



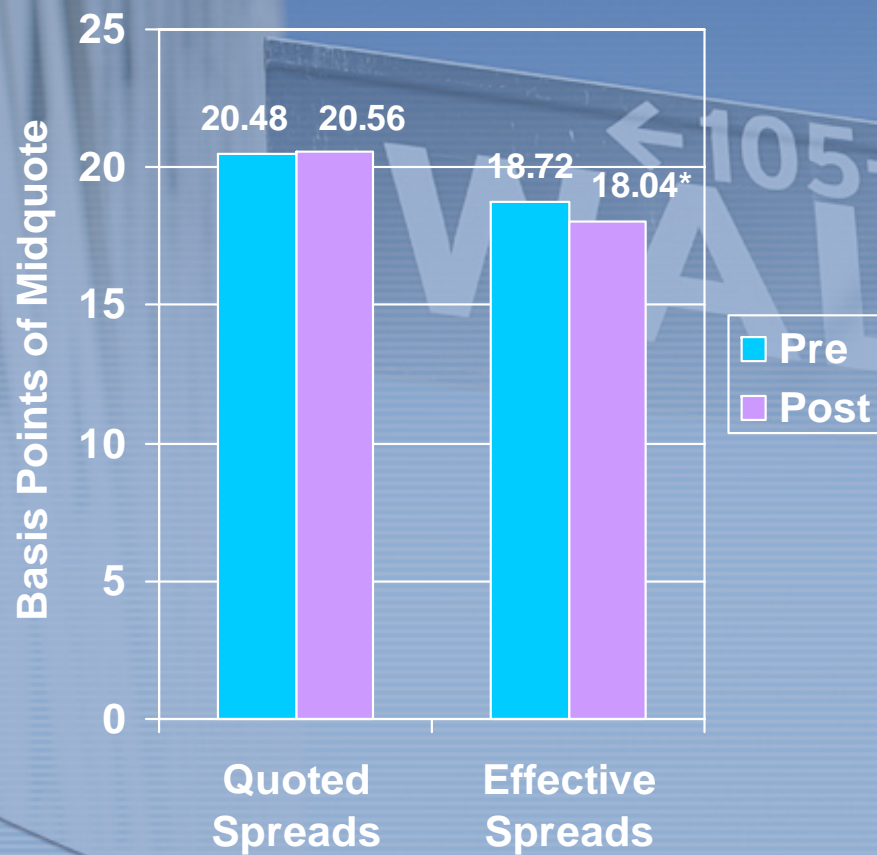
## Control



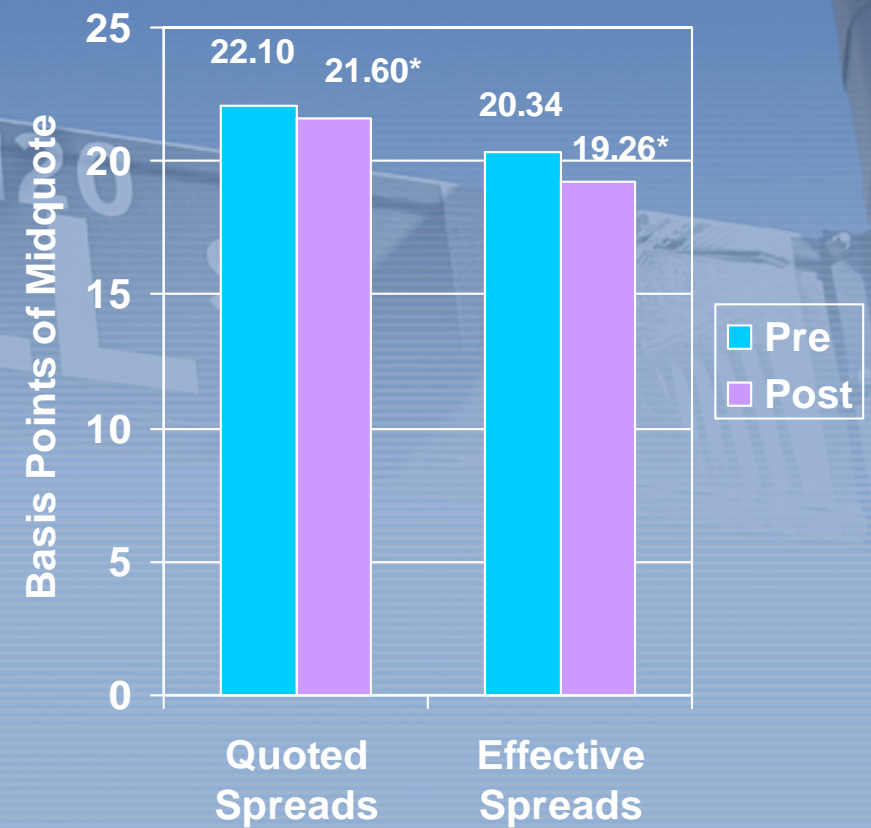
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# Nasdaq spreads

## Pilot



## Control



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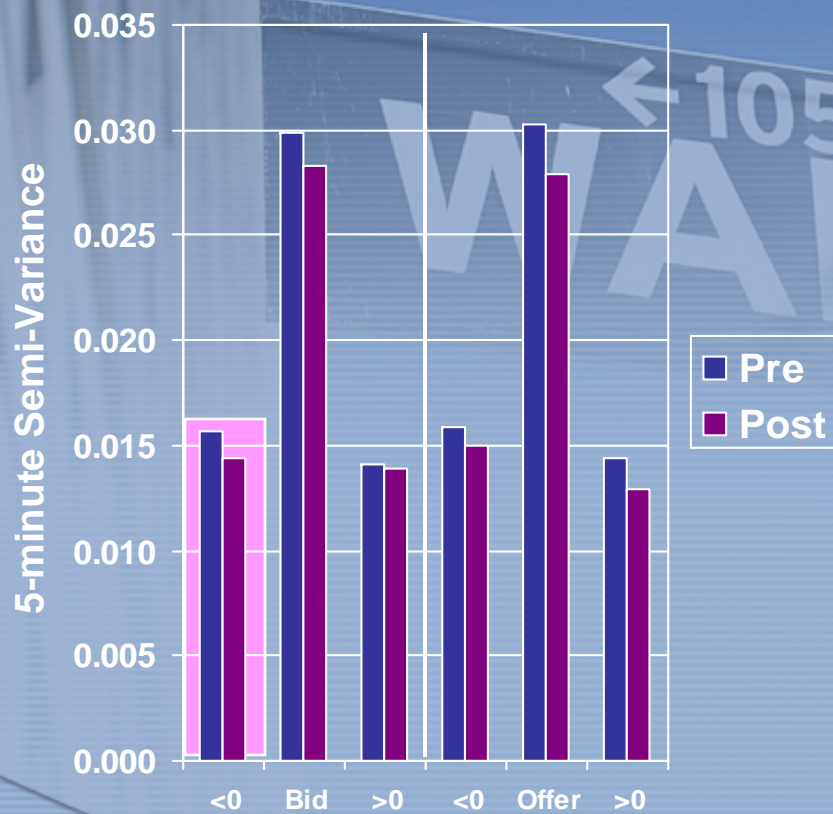
# Comparing changes for Pilot and Control

- NYSE pilot stocks experience a significant change in
  - bid imbalance of 11.8%
  - buy imbalance of -9.22%
  - quoted spread of 0.18 cents (0.89 bps)
  - effective spreads of 0.07 cents (0.29 bps)relative to NYSE pilot stocks.
- Nasdaq pilot stocks experience no significant changes in market quality statistics relative to controls.

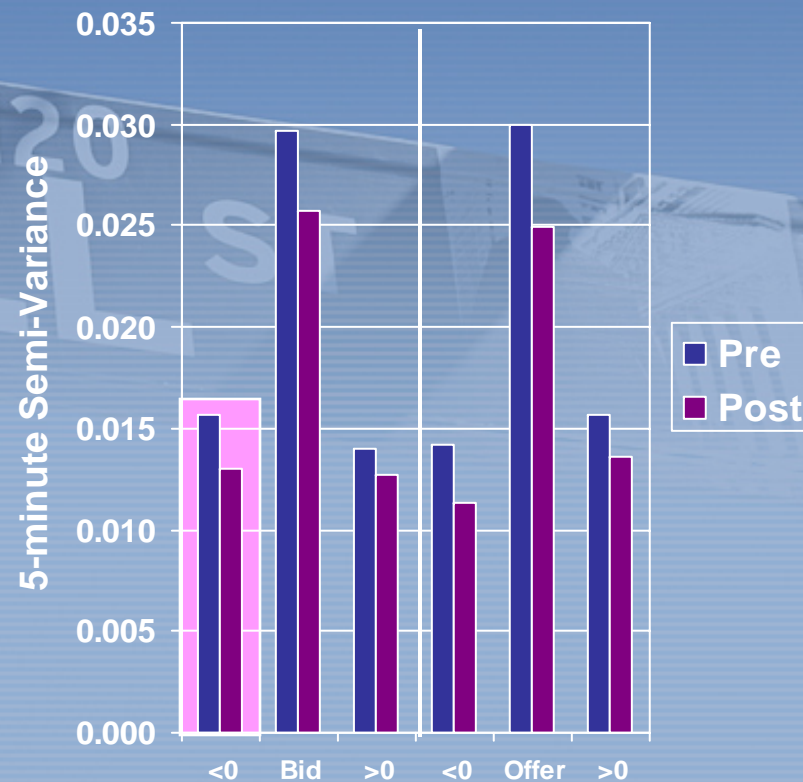


# NYSE 5-min quote semi-variance

## Pilot Stocks

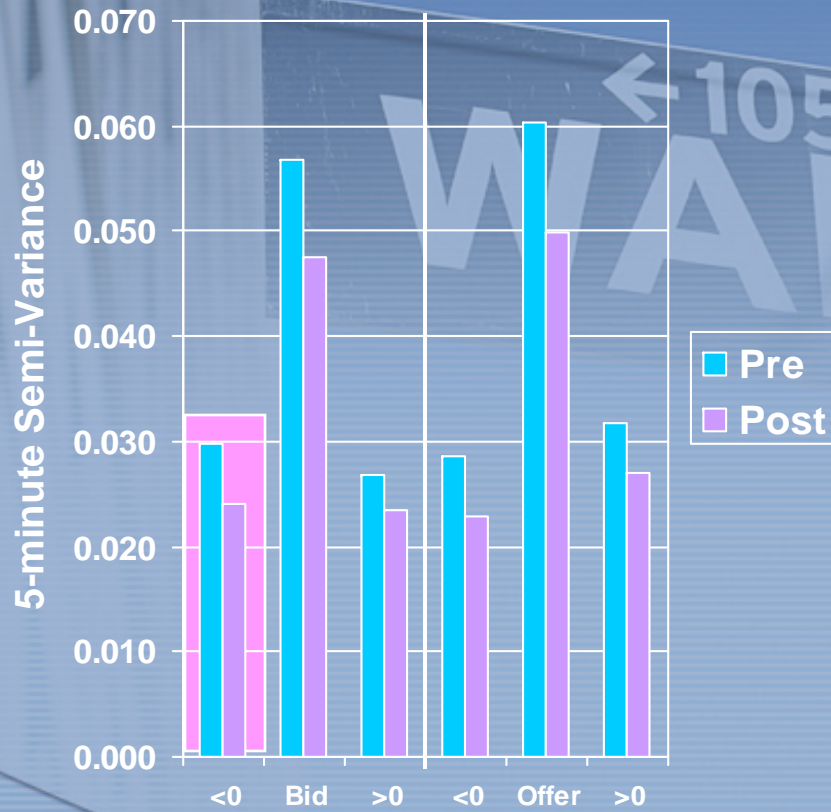


## Control Stocks

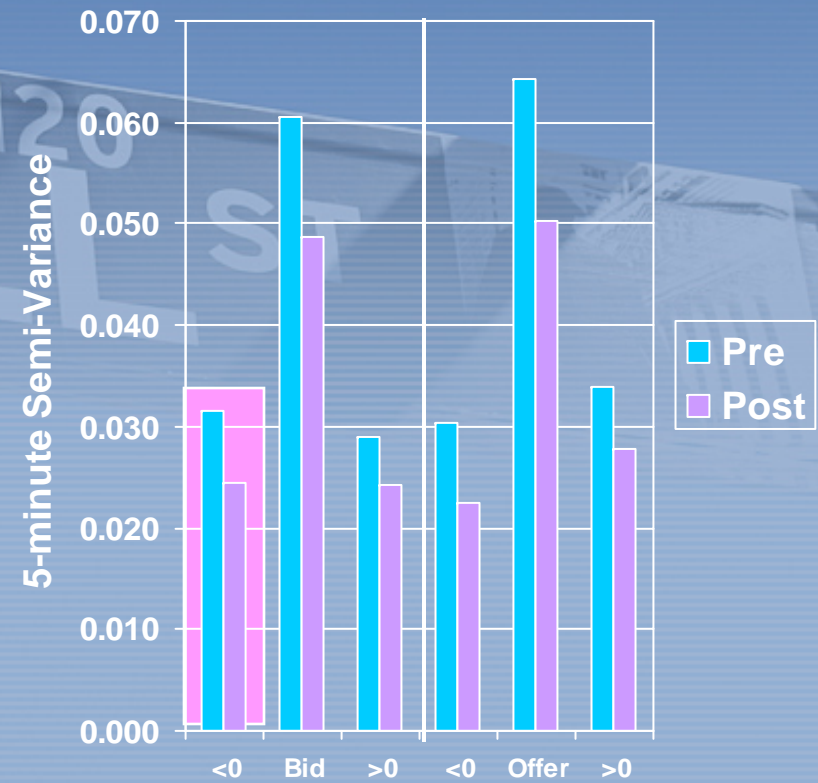


# Nasdaq 5-min quote semi-variance

## Pilot Stocks



## Control Stocks



# Comparing changes for Pilot and Control

- NYSE pilot stocks experience a significant increase in
  - Trade to trade return volatility 0.005
  - Offer quote update return volatility 0.001
    - Bid quote update return volatility increase is insignificant
  - Five-minute quote return volatility
    - bid quote 0.005
    - offer quote 0.006relative to NYSE pilot stocks.
- Nasdaq pilot stocks experience no significant increases in volatility relative to controls.

# Conclusions

- The NYSE Up-tick Rule restricts short-sale order strategies significantly.
  - The rule forces short-sellers to use passive limit order strategies.
    - Causes asymmetries in order flow and depth at the quotes, narrows spreads, and reduces short-term volatility.
  - The bias in favor of passive short-sale orders hurts long limit sell order submitters and specialists ("pennying"), but helps market buy order submitters.
  - The bias against active short-sale orders hurts limit buy order submitters, but helps market sell order submitters.

# Conclusions

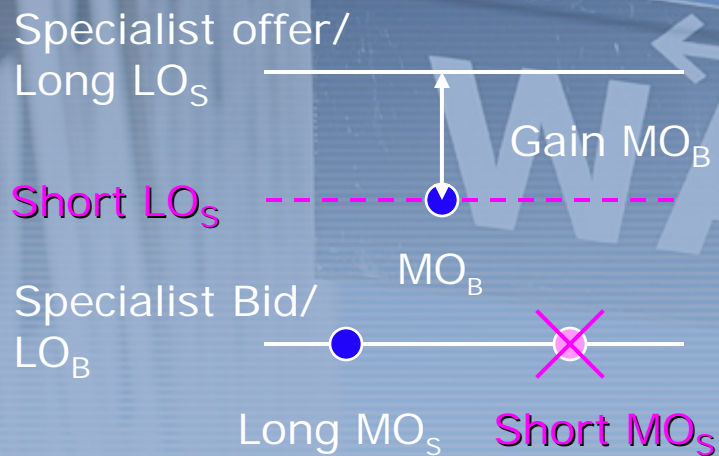
- By comparison, the Nasdaq bid-price test has a more limited impact on short-sale order strategies.
  - The rule permits short-sellers to use more active, marketable limit order strategies.
  - The resulting short-sale strategies are a more “natural” combination of passive and active strategies.
  - Short-sellers can also avoid the price-test by sending their orders to ArcaEX and Island/INET.

# Recommendation

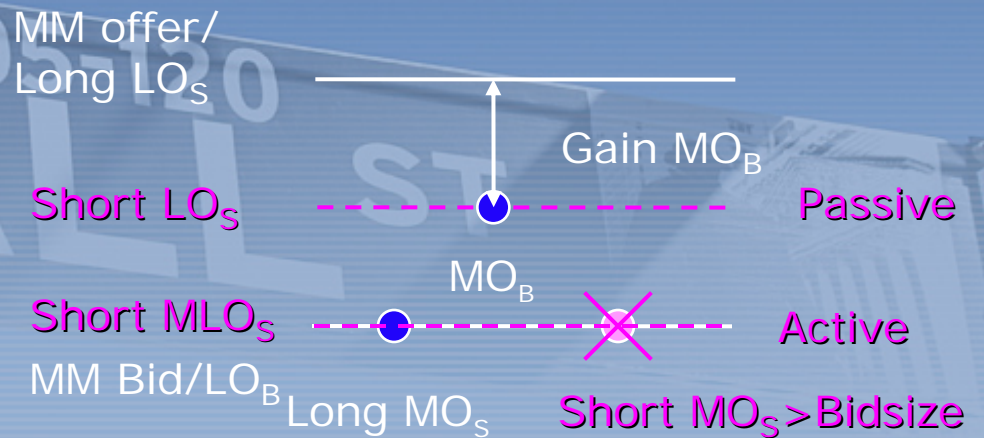
- Eliminate the NYSE Up-tick Rule and the Nasdaq bid-price Rule.
- These rules distort how short-sellers trade.
- The distorted trading strategies hurt liquidity providers and market makers help active long traders.
- May discourage liquidity provision.

# Illustration

## NYSE Up-tick Rule



## Nasdaq Bid-price Rule



N.B. Assuming last sale was at the Bid