Tick Size Wars: Competitive Tick Size Regimes and Trader Behavior
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Abstract
We examine the impacts of stock exchanges vying for market share by competing on tick sizes, where three pan-European exchanges unexpectedly reduced their tick sizes relative to the national listing exchanges. Their tick size competition earned them a significant market share gain, both in terms of volume, and in terms of best quotes. Trading costs fell on both the entrant exchanges and the major exchanges. The quoting behaviour of traders on the small tick exchanges is such that they undercut the large tick exchanges by one tick, traders do not compete on the small tick exchange. Our results have implications not only for optimal tick size regimes, but also for exchange price competition, including dark pools and inverted fee structures.

The tick size in equity market design
- Tick size: the grid of possible price increments on a stock exchange.
- Choice variable in the design of a limit order market.
- World-wide trend towards smaller tick sizes

Resulting tick size changes
Example: Relative tick size changes in Oslo

Does tick sizes constrain?
Tick sizes lower bound on bid/ask spread. If trading at one tick, trading costs can’t go lower.
Were these markets constrained?
Illustrate: Stockholm: Fraction of the day index stocks are quoting at one tick.

Market Fragmentation
- Tick sizes fix terms of trade in an exchange.
- Competing exchanges “improve” on fixed tick sizes by e.g.
  - midpoint execution
  - fee structure changing implied ticks (maker-taker vs taker-maker).

This paper
Investigate 2009 “tick size war” between
- Established Exchanges: LSE, Copenhagen, Oslo, Stockholm
Unique case of using tick size lowering as a competitive move to gain market share. (Most tick size changes are imposed by regulators, and common across exchanges.)

Events of War
- June 2009: Chi-X, BATS, Turquoise reduces tick sizes selected LSE, Scandinavian stocks.
- Later that month: LSE reacts, all exchanges trade London shares on new lower tick.
- Early July: OSE reacts, competitive lowering of tick sizes, but still higher than competitors.
- Fall: Pan-European agreement on common tick sizes across all exchanges.

Effect on Market Shares
Scandinavian exchanges overnight
- lose about 3% of trading volume
- go from quoting the best price all the time to 50% of the time.
Example: Fraction of day each exchange is quoting best price (Oslo):

Effect on Market Quality of June event
- Spreads (transaction costs) fall in both away and home markets
- Depth is unchanged
- Volume increases in both home and away markets.

Total effects – pre to post harmonization
- Spreads (transaction costs) fall in both away and home markets
- Depth falls
- Volume
  - decreases in home markets.
  - increases in away markets.