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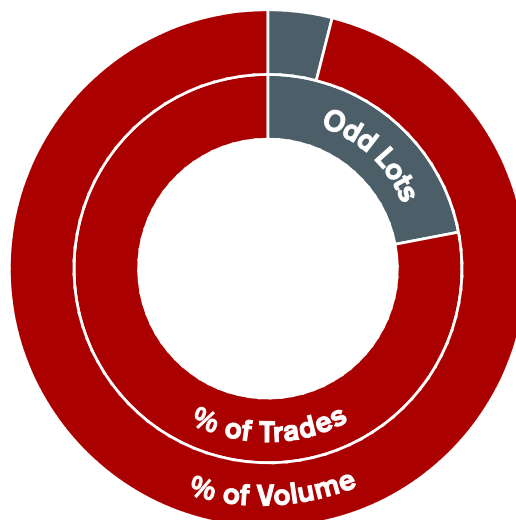
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Odd Lots Revisited



Introduction

Nearly one year ago, with a good amount of fanfare, odd lot trade reports were added to the consolidated tape in the United States. In a previous note [\[1\]](#) we highlighted various characteristics of odd-lot usage during that first week of transparency. We have subsequently followed, with interest, the evolution of odd-lot trading. In particular, we wanted to see how participants might adjust their behavior now that odd lots no longer provide the same benefits of stealth.

Odd Lots Go Mainstream

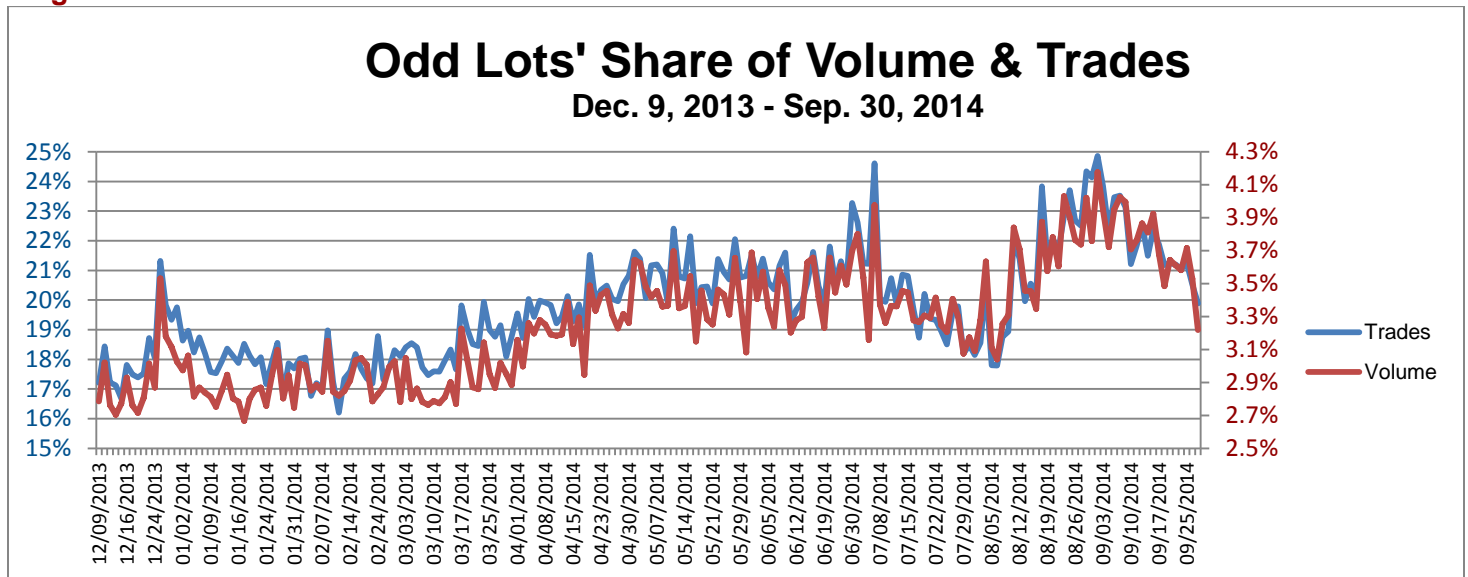
For years, material use of odd lots to trade larger orders was actively discouraged by the exchanges. As pointed out by an influential academic paper [\[2\]](#) this did not prevent odd lots from becoming a large percentage of US equity market activity. And now that odd lot activity has been fully visible on the consolidated tape, we have noticed some changes to the patterns that we first documented a year ago.

¹ Special days, such as derivatives expiration-days and major index-rebalance days, have been removed from the data sample used in this report.

One of the first things that we wanted to see is whether the increased visibility of odd lots would reduce their overall usage. On the contrary, odd-lot prints increased from 18% of trades (3% of volume) during December 9th-31st, 2013, to 22% of trades (4% of volume) in September 2014.¹ The growth in odd-lot trading has contributed to the continued decline in trade sizes overall; the average trade size during the full-transparency period in December 2013 was 216 shares, as compared to 209 shares in September 2014. Figure 1 traces the complete history of odd-lots' share of trades and volume during the period of full transparency.

Figure 1

Source: Instinet

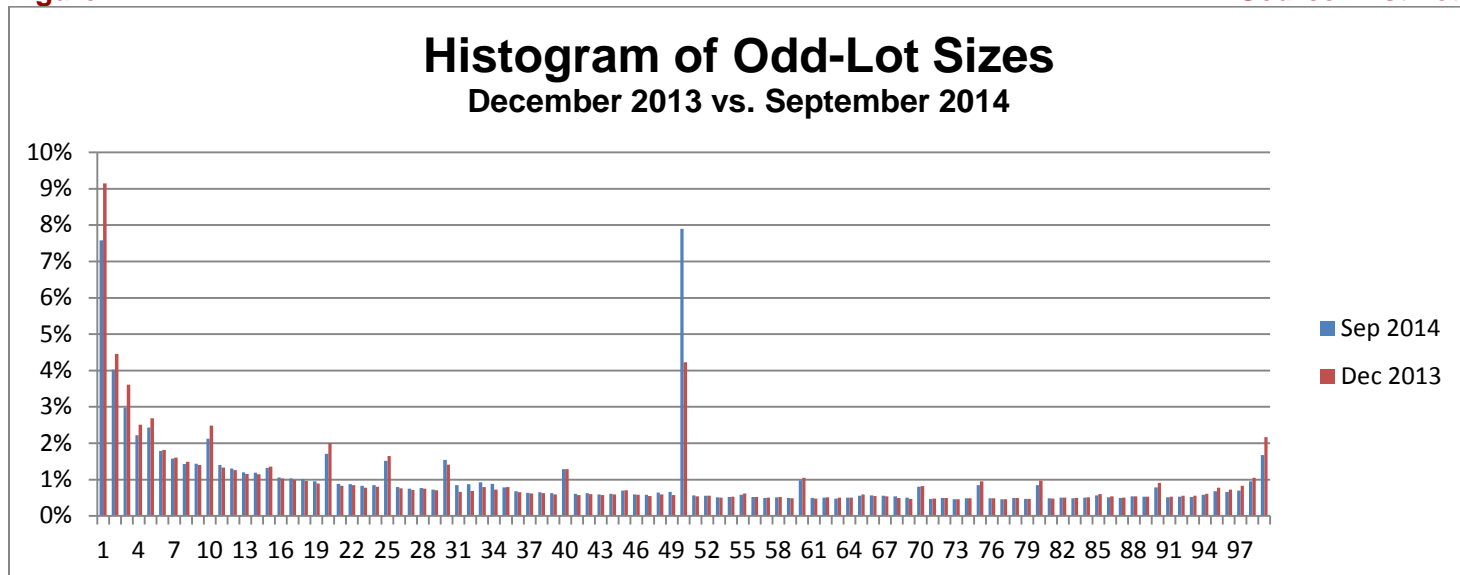


Patterns in Odd-Lot Usage

Let's turn now to a more forensically-oriented look at odd-lot usage, starting with a look at the most heavily used trade sizes. We see that trade sizes of one, 50 and 99 shares occur most frequently, followed by multiples of ten and twenty-five. Figure 2 overlays the December 2013 data with those of September 2014, showing a decrease in the usage of 1-share and 99-share odd-lots, while 50-share odd lots almost doubled their share from the earlier period.

Figure 2

Source: Instinet



As shown in [2], 50-share odd-lots predominated during the 2008 and 2009 pre-transparency period studied in academic research. During the first month of odd-lot transparency, one-share odd-lots held the top spot, but they have since ceded back market share to the 50-share variety.

As [2] also noted, there is a purely mechanical connection between some of the odd lot sizes. For instance, a 1-share odd-lot trade interacting with a 100 share quote will leave a 99-share stub. In this way odd lots beget odd lots (or mixed lots). This mechanism partially explains the high incidence of 50-share odd-lots, as a 50-share trade creates a 50-share stub.

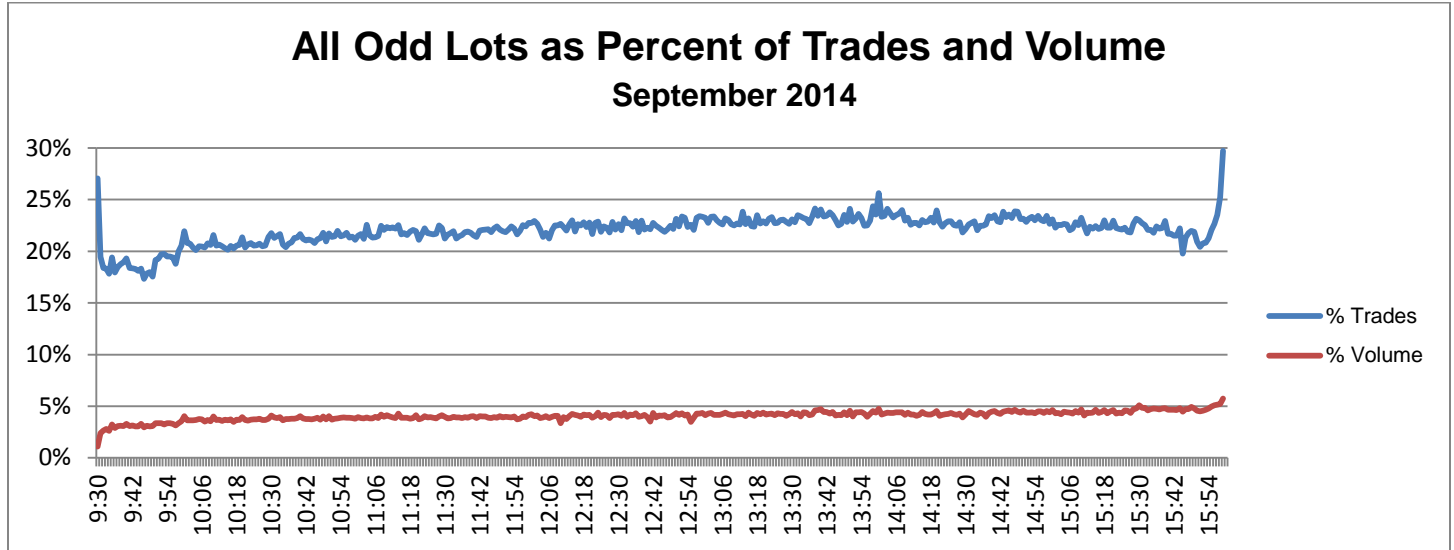
To get some sense of how much of the 99-share activity is due to this mechanism, we looked at the frequency of 99-share prints immediately following a one-share print for a given symbol, price and venue. For September we found that 10 percent of trades following a 1 share print were 99 share prints.

Intra-day Variations in Odd-Lots

It is highly illuminating to look at how odd-lot usage evolves over the trading day. Excluding open and closing spikes, odd lot use, as a percent of all trades, marches steadily upward during the trading day, peaking at around 2:00 before winding down (Figure 3). The inverted U-shape of odd-lot usage suggests to us that odd lots of all sizes play an important role in seeking out liquidity, especially during the middle of the trading day when liquidity is scarce. Further clues as to the role of odd lots in liquidity-seeking behavior emerge when we look past the aggregate profile in Figure 3 to focus on 1-, 50- and 99-share odd lots over the course of the trading day in Figure 4.

Figure 3

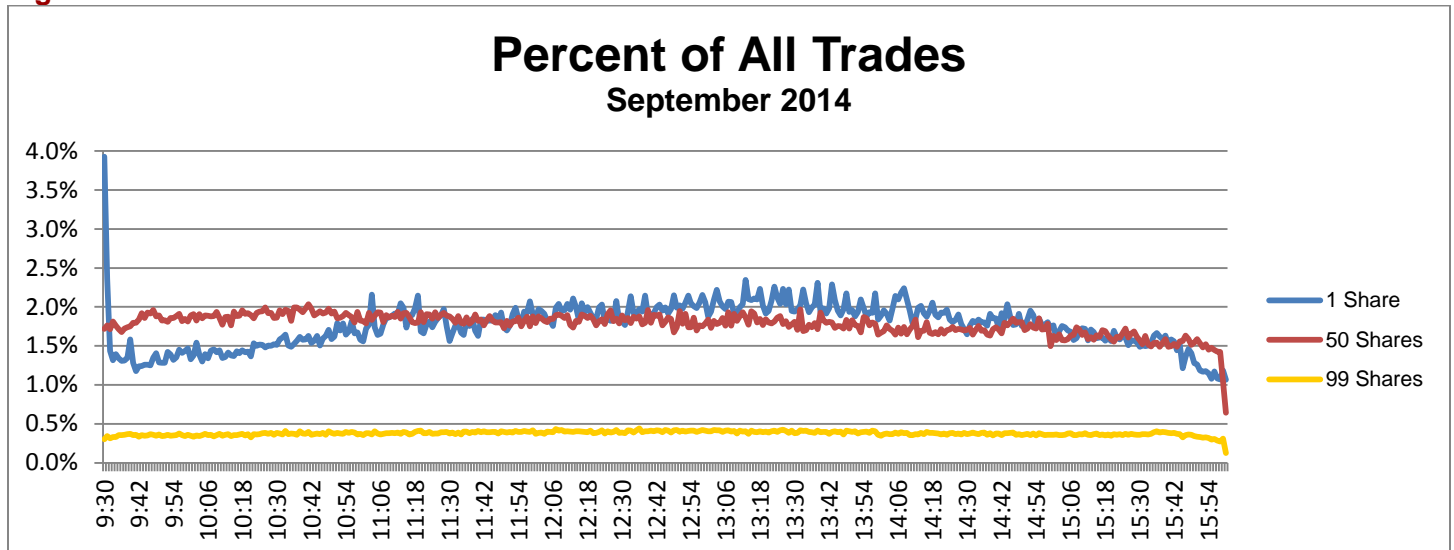
Source: Instinet



As we see in Figure 4, 50-share and 99-share odd lots don't vary a whole lot as a percent of all trades over the day. One-share odd lots, on the other hand, take on a pronounced inverted U-shape, consistent with the idea that one-share trades are especially important in the search for liquidity during the mid-day doldrums.

Figure 4

Source: Instinet



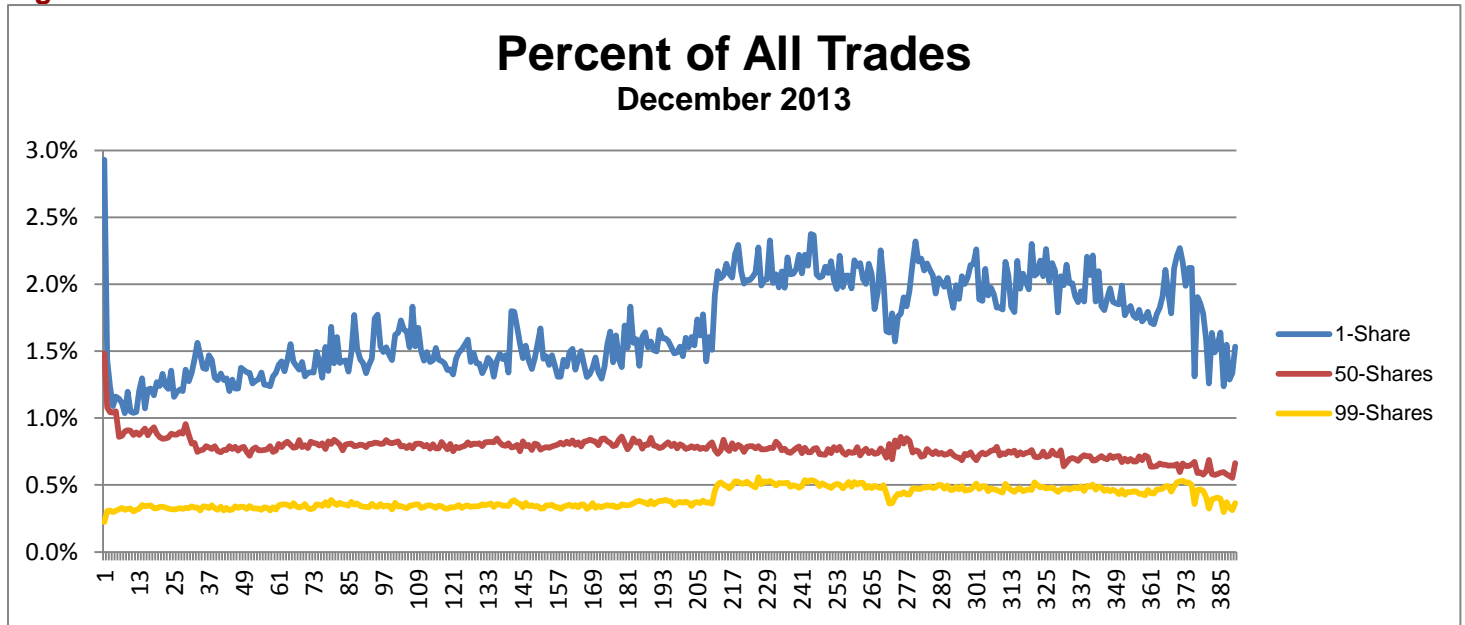
The fact that 99-share odd lots don't exhibit the same pronounced inverted U-shape pattern of the 1-share odd lots suggests that there is more going on with 99-share odd lots than a simple mechanical relation to 1-share odd lots.

Regime Change

September's intra-day pattern is broadly consistent with recent history. As we highlighted in [1], though, intraday odd-lot usage patterns did not always look like this. In that note, we drew attention to a remarkable consistency in the data: One-share odd-lot usage spiked at 1:00. We regularly observed this phenomenon in the post-transparency period from December 2013 (Figure 5) until sometime in May!

Figure 5

Source: Instinet



To drive home the striking consistency of the two distinct regimes, we separately plot all of the one-share profiles month-by-month for the post-transparency periods before and after May 2014.²

¹ Each profile has been normalized to have the same mean and standard deviation to make the plots clearer.

Figure 6

Source: Instinet

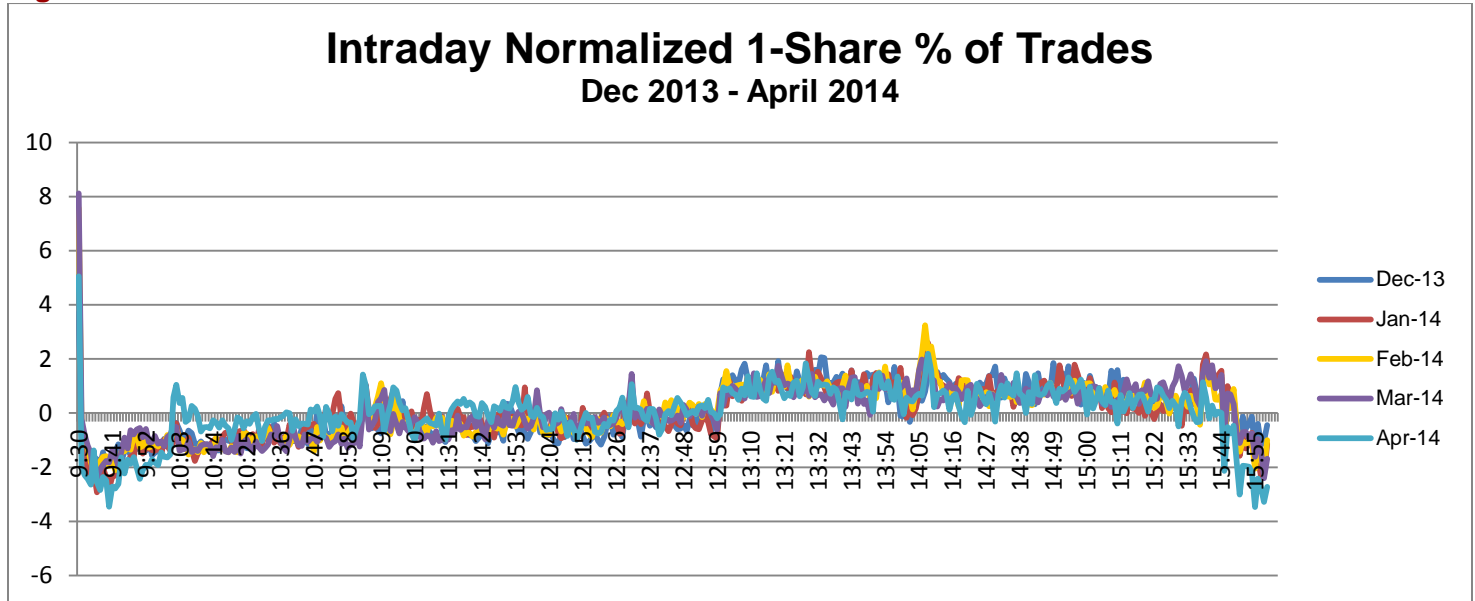
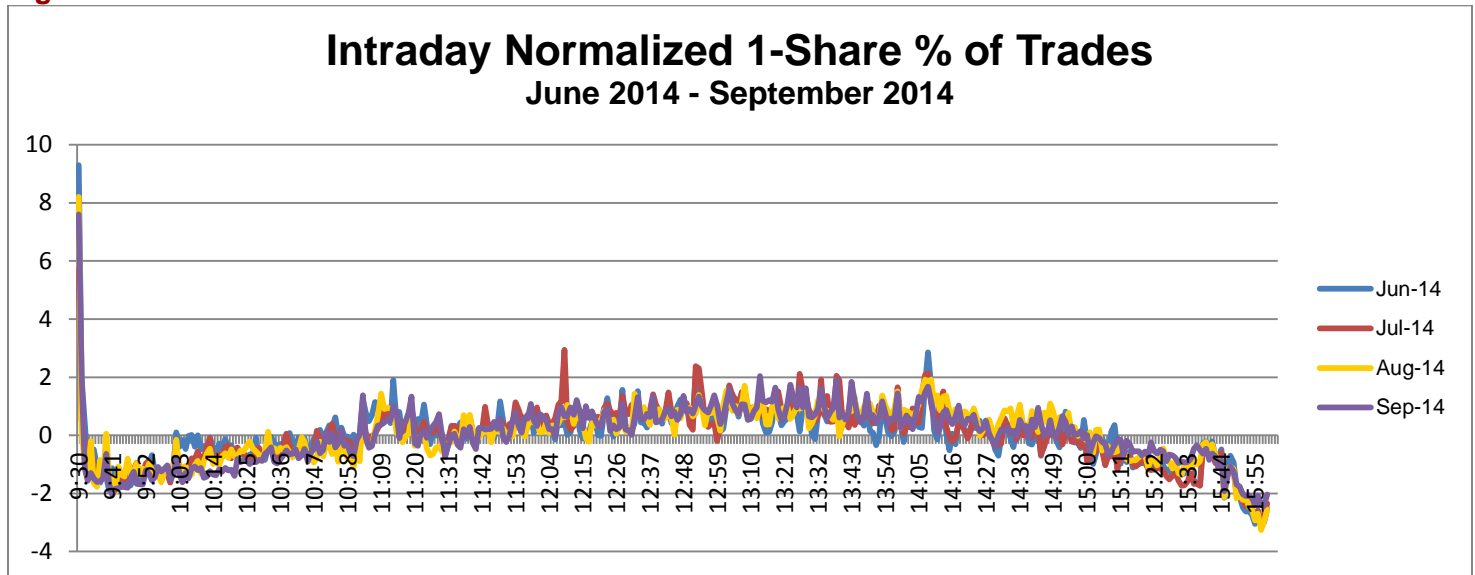


Figure 7

Source: Instinet



In our opinion, the sudden and persistent spikes in one-share odd-lot use at this conspicuously round-lot time of day early in the transparency period adds to the academic evidence in [\[2\]](#) and [\[3\]](#) of the important role of odd lots in algorithmic trading in the current market environment. Moreover, we are tempted to speculate that the disappearance of this behavior from the tape is a response to the greater transparency of odd-lot trading in the current environment.

Conclusion

In this note we have traced the strange and interesting evolution of odd-lot usage since odd lots began appearing on the consolidated tape. Odd lots afford an interesting and easily overlooked portal into current market microstructure trends. Like every other aspect of the US market, the humble odd lot has been swept into the algorithmic trading revolution.

References

- [1] John Comerford and Scott Lyden, "Lots of Oddities in Odd Lots." Instinet GTR Commentary, December 20, 2013. http://instinet.com/docs/msr/2013/Lots_of_Oddities_in_Odd_Lots.pdf
- [2] O'Hara, Maureen and Yao, Chen and Ye, Mao, What's Not There: The Odd-Lot Bias in TAQ Data (March 14, 2012). Forthcoming in Journal of Finance. Available at SSRN: <http://ssrn.com/abstract=2023821>
- [3] Davis, Ryan L. and Roseman, Brian S. and Van Ness, Bonnie F. and Van Ness, Robert A., Canary in a Coal Mine? One-Share Orders and Trades (October 10, 2014). Available at SSRN: <http://ssrn.com/abstract=2508352>