



An analysis of trade-size clustering and its relation to stealth trading[☆]

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Abstract

NYSE and Nasdaq trades increasingly cluster on multiples of 500, 1,000, and 5,000 shares. Such clustering varies over time and across stocks, and tends to increase with the level of trading activity. Furthermore, rounded trades tend to have more persistence both in occurrence and in trade initiation. Finally, medium-sized rounded trades tend to have greater relative price impact than large rounded trades. From these observations we surmise that trade-size clustering is consistent, at least in part, with the actions of stealth traders who tend to use medium-sized rounded transactions in an attempt to disguise their trades.

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1. Introduction

In this paper we examine the relatively unexplored area of trade-size clustering in financial markets. While several studies examine the relations between trade size and things such as prices, information, and spreads, our focus is different in that we seek to determine whether trade-size clustering exists for the typical NYSE or Nasdaq stock, and if so, its economic consequences.¹

Price clustering has been found in US stock markets and many other settings such as initial public offerings, seasoned equity offerings, foreign exchange markets, gold markets, derivatives markets, and bank deposit rates.² Various hypotheses have been proposed to explain such clustering. For instance, Ball, Torous, and Tschoegl (1985), Harris (1991), and Grossman, Miller, Cone, Fischel, and Ross (1997) develop the negotiations hypothesis. This hypothesis argues that while a more “precise” price that is mutually acceptable to both the buyer and the seller can be reached by continuing negotiations, the incremental benefit to each side decreases and the exposure of each side to reporting and price risk increases.³ Thus, the negotiations hypothesis suggests that a trade will take place when each party views the incremental risks from continuing negotiations as offsetting the incremental benefits. In this scenario, price clustering occurs naturally as agents try to simplify the negotiation process.

In a second line of reasoning, Wyckoff (1963, pp. 106–107) notes that “we think in round numbers and try to sell at round numbers.” Similarly, Niederhoffer and Osborne (1966, p. 914) state that “the tendency of traders to prefer integers seems to be a fundamental and stable principle of stock market psychology,” and Ikenberry and Weston (2003, p. 3), who cite previous studies of people having a preference for even numbers or numbers ending in a zero or five, argue that “price clustering may be a collective preference by investors to voluntarily trade at particular price levels in order to ... minimize cognitive processing costs.” We refer to this line of reasoning for price clustering as the behavioral hypothesis.

Third, Christie and Schultz (1994) hypothesize that the relative absence of odd-eighth quotes in the Nasdaq market was the result of implicit collusion among dealers for the purpose of increasing market-making revenues; the authors provide supporting evidence. Thus, the collusion hypothesis is a third hypothesis for price clustering.

Of these three explanations of price clustering, collusion is not likely to be applicable to trade-size clustering, as the gains from colluding are not apparent. However, the negotiations hypothesis is plausible, as using a rounded size may reduce reporting risk and speed up negotiations. The behavioral hypothesis is also plausible. Institutional investors, who have greater involvement relative to individuals as trade size increases (see, for example, Chakravarty, 2001, p. 300), may tend to favor rounded sizes because doing so is

¹See, for example, Easley and O’Hara (1987) and Brennan and Subrahmanyam (1998).

²See, for example, Ball, Torous, and Tschoegl (1985), Harris (1991), Christie and Schultz (1994), Grossman, Miller, Cone, Fischel, and Ross (1997), Gwilym, Clare, and Thomas (1998), Kahn, Pennachi, and Sopranzetti (1999), Chen and Ritter (2000), Yeoman (2001), Sopranzetti and Datar (2002), Ikenberry and Weston (2003), Mola and Loughran (2004), and Moulton (2005).

³*Reporting risk* refers to an error in reporting the agreed-upon price that subsequently leads to costs being incurred in resolving the dispute; it is more likely to occur when the agreed-upon price is more “precise.” *Price risk* refers to the chance that the price will move away from the reservation price of one of the traders, and is increasingly likely to occur as negotiations continue.

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