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Little guys, liquidity, and the informational efficiency of price: Evidence from the Tokyo Stock Exchange on the effects of small investor participation

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ABSTRACT

This paper provides an analysis of the equity-market effects of a substantial increase in individual shareholder participation in the market for a firm. The data are based on reductions in lot sizes or Minimum Trade Units (MTUs) on the Tokyo Stock Exchange (TSE). There is a shift in order flow from large to small trades after MTU reductions. Since small, individual investors are generally thought to be noise traders, it may be expected that greater individual investor participation creates greater liquidity, but adds noise to prices, lowering the informativeness of prices and increasing return volatility, as found in studies of stock splits. However, the influx of individual investors, while associated with the presence of more noise traders, lowers the probability of informed trades and results in greater liquidity. Results suggest that greater noise trading induces the informed to trade more aggressively and makes price more informative. Finally, given the benefits of MTU reduction, we ask why all firms do not lower their MTU. The answer appears to be that some firms have characteristics making them better off without an MTU change. For example, firms having strong cross-holdings with other firms, as in keiretsu, value strong relationships with a few suppliers and customers so that having a

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larger individual shareholder base is not as attractive. In addition, firms that have not experienced a significant increase in their share price have less incentive to lower their MTU.

1. Introduction

What happens in an equity market when there is a discrete increase in the participation of small individual investors? Such investors are typically thought of as noise traders and, as such, it is often thought that they contribute to prices being less efficient records of information. Black (1986) in his article "Noise" states that "What's needed for a liquid market causes prices to be less efficient" (p. 532). But is it necessary that an increase in noise traders be associated with greater volatility and less efficient pricing? A goal of this paper is to examine the effect of a substantial increase in individual investor participation on stock price dynamics. A natural laboratory experiment is provided by changes in the minimum trade unit (MTU) for a stock on the Tokyo Stock Exchange. Such changes typically result in a discrete change in the composition of investors away from larger, institutional investors towards smaller, individual investors while leaving the overall volume traded relatively constant. The major question addressed in this paper is what are the implications of a change in the composition of the investor base when other aspects of firm valuation are unchanged? This paper examines such implications with respect to changes in liquidity in terms of quoted bid–ask spreads, effective spreads, number of quotes and trades, and the probability of informed trading. Finally given the benefits of MTU reduction, the question of why all firms don't lower their MTU is addressed.

The literature most closely related to this paper has focused on Merton's (1987) "investor recognition hypothesis" where an increase in a firm's investor base leads to a higher stock price. Amihud et al. (1999) investigated the impact of MTU changes on the Tokyo Stock Exchange (TSE) over 1991–1996 and found that the individual investor base increased significantly along with the stock prices of firms instituting such changes. In another market setting, Hauser and Lauterbach (2003) studied the Tel-Aviv stock exchange where changes in MTU were mandated for all stocks. In this setting, they found that a decrease in MTU was associated with increases in firm value for all but the most thinly traded stocks. Our paper answers the call in the last line of their paper that "Future studies should try to identify the mechanism by which MTU change affects price noisiness and stock value" (Hauser and Lauterbach, p. 588). Our evidence suggests that MTU reduction results in an increase in individual investors as a fraction of total shareholders.

Beyond the effects of MTU change on share prices, our paper extends the literature on MTU changes in important ways. Previous papers used data sets based upon one observation per day, while we utilize a data set of intra-daily real-time trade and quote data from 1996 to 2005 to analyze aspects of liquidity and market dynamics that could not be addressed with daily prices. A particularly interesting finding is that the entry of large numbers of noise traders is associated with more informative prices. Our findings are consistent with models where the influx of noise traders leads informed investors to trade more aggressively so that price adjusts faster to new information.

The paper proceeds as follows: the next section reviews the effects of MTU changes and the theoretical frameworks within which MTU changes may be relevant. Section 3 introduces the data and descriptive statistics. The empirical work beginning in Section 4 proceeds in stages. First, the effect of MTU change on the participation of small investors is established. Second, the associated liquidity effects are presented in terms of spreads, quote frequency and trades. Next, the probability of informed trading before and after MTU reduction is estimated in Section 5. Section 6 examines the effect of MTU reductions on return volatility. In Section 7, the question of what leads some firms to change their MTUs while others choose no change is addressed. Finally, Section 8 offers a summary and conclusions.

2. The importance of minimum trade units

Price and quantity are the two dimensions that every investor considers when trading stocks. Most exchanges in the world impose a minimum price increment or tick size. At the same time, exchanges also impose a lot size or a minimum unit of trading that investors are allowed. Following the tick size reduction