Which institutions matter to short-term market efficiency in Japan?

Anxing Wang [a], Jimei Zhou [b,*], Tao Chen [c]

[a] School of Finance, Shanghai University of Finance & Economics, China
[b] International Business School, Sun Yat-sen University, No.135, Xingangxi Rd, Guangzhou, China
[c] Lee Shau Kee School of Business & Administration, Open University of Hong Kong, Hong Kong

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ABSTRACT

Recent work suggests that institutional investors play an important role in short-term market efficiency. This study provides new evidence for the prevalence of this efficiency-enhancing effect by categorizing institutions into different types: foreign institutions, financial institutions, securities companies, government and regional public authorities, and other institutions. Looking at the Japanese market, we find that the presence of institutional investors, financial institutions in particular, improves the information environment. With respect to foreign institutions, this efficiency-enhancing effect is most clearly seen in trading costs and order imbalances. Robustness checks confirm that our findings are not driven by the endogeneity and time variation of ownership structure.

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1. Introduction

Market efficiency describes the degree to which available information is swiftly and accurately translated into stock price. There is a vast literature debating the influence of institutional ownership on information efficiency on the US market. Comparatively little is known about the specific role of different institutions on the efficiency of the Japanese market. This paper makes an important contribution to the literature by providing evidence for the effect institutional investors have on market efficiency while simultaneously taking into account institutional type.

Using a broad cross-section of NIKKEI 500 component stocks on the Tokyo Stock Exchange (TSE) for the period from Jan 2005 to Dec 2005, this study is the first of its kind to investigate the relationship between institutional ownership and information efficiency in Japan. Looking at measures related to efficiency, such as trading costs and market synchronicity, we present new evidence for the role of institutions in producing efficient prices. Our primary focus is on short-term information efficiency, following the work of Chordia et al. (2005). They find that new information is incorporated into price within thirty minutes and attribute this quick price adjustment to the participation of "astute traders". These traders are likely to be institutions which are capable of moving prices towards their fundamental values through their trading activities. Taking this into account, we assess multiple aspects of short-term efficiency at the firm level using intraday transaction data, which captures institutional trading activities. In addition, intraday data somewhat mitigates concerns that efficiency measures merely reflect time-variant expected returns.

As suggested by a growing literature, there is a difference between informed institutional investors who are simply profiting by trading on private information (O'Brien and Bhushan, 1990; Walther, 1997; Bushee and Noe, 2000), and owners, who use that same information to monitor their firms (Ali et al., 2004; Ke and Petroni, 2004; Pinnuck, 2005; Ke et al., 2006). In other words, some institutions are likely to prefer information gathering, processing, and trading rather than

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* Corresponding author.
  E-mail address: zhoujmei@mail.sysu.edu.cn (J. Zhou).

simply monitoring management. Considering this possibility, Bushee and Goodman (2007) classify institutions into different categories based on their fiduciary obligations, investment style, trading behavior, and resources available to collect and process private information. In addition, (Boehmer and Kelley, 2009) predict that prices adjust to information-motivated order flow by institutional investors and that improvement in efficiency arises from this type of institutional trading. Taken together, we expect that certain types of institutional investors are able to enhance price efficiency given access to private information.

Prior to beginning our analysis, we construct several measures of information efficiency. The first is trading costs. Although this is not a direct measure of efficiency, it is a commonly held belief that frictions to trade (e.g. bid–ask spreads and brokerage commissions) prevent arbitrageurs from discovering discrepancies between true and efficient prices. Following Rubin (2007), we compute trading cost and subsequently treat it as a regressor when assessing the role of institutions in market efficiency. Specifically, yen depth (YD, the number of shares at the bid and ask multiplied by their respective prices), quoted spread (QS, the ask price minus the bid price, scaled by the quote midpoint), effective spread (ES, the absolute difference between the trade price and the quote midpoint at the time of the trade, scaled by the quote midpoint), and realized spread (RS, the signed[1] difference between the trade price and the quote midpoint five minutes after the trade, scaled by the quote midpoint) are included as measures of trading costs.

According to Chordia et al. (2005), as the serial dependence in returns approximates to zero for active stocks on a daily horizon, it is necessary to look at intraday trading in order to examine the relation between institutional ownership and efficiency-enhancing processes. To better capture intraday market efficiency, we build two corresponding proxies of market quality. As in (Boehmer and Kelley, 2009), we employ a VAR model (Hasbrouck, 1993) to disentangle the variation of a stock's efficient price from the variation of pricing error. The standard deviation of the pricing error depicts the randomness of transaction price over time and can therefore be interpreted as a measure of information efficiency. To study order imbalances, we follow the approach specified in Chordia et al. (2008). After considering the length of the intraday span within which order imbalances are gauged,[2] we apply the Lee and Ready (1991) method to the matched trade-quote sample and calculate order imbalances on five-, ten-, and thirty-minute intervals, respectively.

To test longer-term efficiency, we extend three sets of measures employing intraday to interday horizons to quantify information efficiency. The first measure reflects the extent to which security prices have a delayed response to the market and is analogous to the delay measure proposed recently by Griffin et al. (2007). The second is a delay measure developed by Chordia and Swaminathan (2000). Both of these measures rely on the hypothesis that prices absorbing information rapidly are more efficient than those absorbing information slowly. The final measure we consider is suggested by Morck et al. (2000), who advocate the market model R^2 as a measure of firm-specific information production. Generally speaking, a higher R^2 corresponds to more informative stock prices and therefore more efficient pricing.

Our results are consistent with those found on the US market. Institutional investors play a significant role in enhancing price efficiency in Japan. If the type of institution is taken into account, the regression analysis suggests that concentrated holdings by financial institutions are associated with more information efficiency regardless of which measure of efficiency is adopted. This is somewhat attributable to the close relationship, many firms in Japan benefit from, with financial institutions (Fama, 1985; Diamond, 1991; Hoshi et al., 1991; Kaplan, 1994; Kaplan and Minton, 1994; Kang and Shivdasani, 1995). Moreover, we find that foreign institutional holdings have predictive power for trading costs and intraday market efficiency. No evidence, however, is found for improving interday market efficiency.

The remainder of this paper is organized as follows. In the next section, we review the literature and develop testable hypotheses. Section 3 describes the methodologies behind the efficiency measures. Section 4 presents the sample and descriptive statistics on the variables used in the empirical tests. The empirical results are provided in Section 5. Section 6 summarizes and concludes the paper.

2. Hypothesis development

2.1. Prior literature

Theoretical and empirical work by Beaver (1968), Atiase and Bamber (1994), Bamber et al. (1997), and Barron et al. (2005) highlights that investors access private information by exploring trading volume around earnings announcements. That is, changes in the proportion and composition of institutional ownership are closely related to trading volume around information events. Furthermore, Utama and Cready (1997) find that institutional investors have distinct amounts of superior information. Additionally, previous literature shows that institutional holdings are positively associated with the level of private information in price, which indicates institutional trading on valuable private information (Jiambalvo et al., 2002; Piotroski and Roulstone, 2004). Surprisingly, some studies emphasize the role of institutional investors in the accrual anomaly (Collins et al., 2003), firms' discretionary earnings management strategies (Koh, 2007), financial

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[1] It is positive for buyer-initiated and negative for seller-initiated trades. The Lee and Ready (1991) algorithm is used to classify trades into buy and sell.

[2] On the one hand, if shorter intervals are selected, non-trading becomes a concern. On the other hand, if longer intervals are chosen, short-lived information inefficiency is likely to be less pronounced.