Transaction costs and market efficiency: Evidence from commission deregulation[☆]

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ABSTRACT

This study analyzes the impacts of explicit transaction costs on weak-form market efficiency within the context of the brokerage commission deregulation in Japan in October 1999, which led to lower commission rates across the market. Applying two alternative statistical tests to both daily and weekly data, we find that return randomness (unpredictability) increases significantly for stocks listed in Japan, but not for the Japanese stocks dually listed in the United States, which are immune to the deregulation. These results suggest an inefficiency loss or an efficiency gain in the Japanese equity market following the deregulation, insofar as randomness proxies for efficiency.

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1. Introduction

Previous studies of explicit transaction costs, such as brokerage commissions, have largely focused on the liquidity and volatility impacts, as prompted by concerns from regulators about the potential destabilizing effect. Overall, existing evidence points to a negative (positive) relationship between transactions costs and liquidity (price volatility).[2] However, transaction costs may also affect other important dimensions of market quality, such as market informational efficiency.

Indeed, transaction costs should be important determinants of informational efficiency, according to the definition of an efficient market, which *fully* reflects all available information *promptly* when there are no information and transaction costs and when investors hold homogeneous beliefs (Fama, 1970, 1991).[3] To the extent that market transactions are not frictionless, market informational efficiency may not hold (Grossman & Stiglitz, 1980; Jensen, 1978). The reason is that high transaction costs discourage information trading and arbitrage trading, resulting in less information being revealed and impounded into stock prices. In a similar vein, the burgeoning behavioral finance literature cites transaction costs as a main source of market inefficiency (Barberis & Thaler, 2001). As such, the major goal of research in this area is to measure the impacts of these market imperfections on efficiency (Fama, 1970).

Furthermore, a study of the efficiency impacts of transaction costs may also offer valuable empirical evidence to policy makers in their debates about important issues such as securities transaction tax (STT). There has been a debate on the efficiency impact of introducing an STT, the opposite of brokerage commission deregulation. On the one hand, an STT could discourage information and arbitrage trading by increasing transaction costs, leading to lower market informational efficiency (see, e.g., Schwert & Seguin, 1993). On the other hand, an STT should enhance market informational

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[3] Fama (1970, 1991) summarizes the literature for three forms of market efficiency: the weak form, the semi-strong form, and the strong form.

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efficiency by reducing noise trader risk and increasing arbitrage efficiency (see, e.g., De Long, Shleifer, Summers, & Waldman, 1990; Shleifer & Vishny, 1997; Summers & Summers, 1989).[4] Together, these opposing arguments leave the efficiency effect ambiguous, *ex ante*. An empirical investigation of the efficiency effect from the opposite should help resolve the controversy. Examining the changes in STT and capital gains tax in Japan on April 1, 1989, Liu (2007) provides direct evidence for the first time in the literature that lower exogenous transaction costs help to enhance market informational efficiency, as measured by lower first-order autocorrelation in stock returns.

The purpose of this study is to further investigate the effects of explicit transaction costs on the weak-form market efficiency, making use of the brokerage commission deregulation in Japan in October 1999. Such an effort is worthwhile for at least three reasons. First of all, in view of the theoretical importance of the determinants of market efficiency in the finance literature, further evidence should help to generalize the conclusions drawn from a single clinical data point. Moreover, as Jones and Seguin (1997, p. 729) point out, avenues other than transaction taxes have been proposed to curb the undesirable effects of noise trading. Results from an investigation of the commission deregulation should complement those from the STT changes, helping to generalize the policy implications of different types of transaction costs. Finally, the current study employs more statistical tests and additional data to ensure the robustness of results. Specifically, besides the first-order autocorrelation test and daily data employed by Liu (2007), we also use the nonparametric runs test and weekly data in the current study to measure the efficiency impact of brokerage commission rates.

With the brokerage commission deregulated, competition among brokerage houses should reduce the commission rates paid by investors, large or small, as reported in the following section, leading to more active trading and speedier incorporation of the same relevant information, private or public, and enhancing informational efficiency. That is, according to the definition of market efficiency, lower transaction costs should boost market efficiency by incorporating relevant information into prices *more promptly* through more active trading, *if not more fully* in the case where there is no change in the information content of trading. Actually, more informative trading could result from more active institutional trading, which is likely to be informational.[5] Together, market informational efficiency should increase owing to *faster* incorporation of the same, or *possibly more*, information into prices following the commission deregulation.

As noted by Lo and MacKinlay (1988), while a precise test of the weak-from market efficiency necessitates an explicit economic model and, thus, is subject to the joint-hypothesis problem, the prior literature has conventionally couched the test within the framework of predictability of stock returns, or, more specifically, the random walk hypothesis. We follow this convention in our exploration of the impacts of the commission deregulation in Japan on the weak-form efficiency in the Japanese equity market, and document the following major findings.

Using the runs test and the alternative autocorrelation test applied to both daily and weekly data, we find that equity return in

Japan becomes significantly less non-random and, thus, less predictable following the commission deregulation. Meanwhile, no such change accrues to a control portfolio of Japanese stocks dually listed in the U.S. as American Depository Receipts (ADRs), which should be subject to the same marketwide economic forces in Japan except the deregulation under study. These findings indicate that, as anticipated, inefficiency (efficiency) decreases (increases) in the Japanese equity market following the commission deregulation, to the extent that return randomness suggests informational efficiency, as conventionally assumed in the prior literature. These results together with those from Liu (2007) imply that policies that help to reduce transaction costs should enhance market efficiency.

The remainder of the paper proceeds as follows. The next section provides a brief background for the brokerage commission deregulation in Japan and formulates the hypothesis. Section 3 discusses the data and sample construction. Section 4 describes the empirical methods and reports the main efficiency impacts from daily data. Section 5 presents the findings from some robustness tests, including the efficiency effects from weekly data and the trading volume effects from daily data. The final section summarizes and concludes.

2. The commission deregulation in Japan and the hypothesis

Brokerage commission rates in Japan had remained fixed[6] till April 1, 1994 when the commission rates for transactions over 1 billion yen were deregulated. That means, since then brokerage houses could negotiate with customers the commission rates on the portion of a trade over 1 billion yen while the commission rates for the portion up to 1 billion yen remained fixed by the stock exchange. The deregulation was then extended to transactions over 50 million yen on April 1, 1998. The final phase of the deregulation came into effect on October 1, 1999 when commission rates became negotiable on all transactions.[7] The main reasons for the deregulation can be summarized as follows.

Two factors contributed to the commission deregulation. First, commission rates in the U.S. and U.K., two major competitors, were fully deregulated in 1975 and 1986, respectively. The popularity of the Japanese financial markets had been waning owing to high transaction costs and excessive regulations. Deregulating brokerage commissions should help reduce stock transaction costs, enhancing the global competitiveness of the Japanese stock market. Second, fixed commission rates discouraged price competition in the securities industry and led some big Japanese brokerages to compete by improper business practices such as compensating institutional investors for their investment losses.[8] Deregulation of commissions should help intensify competition in the securities industry and increase transparency of securities trading.

In response, the Securities and Exchange Council (SEC), an advisory body to the Finance Minister of Japan, endorsed a partial deregulation plan in March 1993, recommending the deregulation of brokerage commission rates on transactions over 1 billion yen first and, depending on the effects of the initial deregulation on the market, further deregulation on smaller trades.[9]

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[4] In a controlled experimental study, Bloomfield, O'Hara, and Saar (2005) find that the presence of noise traders is detrimental to market informational efficiency and that imposing an STT results in less noise trading, but no change in market informational efficiency.

[5] On the other hand, as a result of lower commissions, brokers and dealers may curtail their services to customers, which may contain some useful information, and thus, lowering the information content of trading. This may be more likely for small investors. Nonetheless, one should not reasonably expect much non-public information in the services provided to small investors.

[6] As of March 28, 1994, commission rates were fixed by stock exchanges by transaction size, starting at 1.150% for trades under 1 million yen and declining with trade size to 0.075% for trades exceeding 1 billion yen (*The Nikkei Weekly*, March 28, 1994, Finance Section, p. 18).

[7] According to the *TSE Fact Book, 1994, 1998, and 1999*.

[8] The amount of loss compensation totaled an estimated 216 billion yen from the late 1980s and early 1990s (*Thompson's International Banking Regulator*, January 20, 1991, p. 6.).

[9] According to *Jiji Press Ticker Service*, March 10, 1993.