



Bank of Japan Working Paper Series

## Listing Change and Stock Price: Impact of Shareholder Diversification and Changes in Liquidity

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No.04-E-15  
November 2004

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# Listing Change and Stock Price: Impact of Shareholder Diversification and Changes in Liquidity<sup>1</sup>

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November 2004

## Abstract

When a firm switches its listing venue, there is often a significant increase in the number of shareholders and the trading activities. According to Merton [1987], an increased shareholder base improves diversification of risk, which has a positive impact on the stock price. Amihud and Mendelson [1986] state that improvement in liquidity also has a positive impact on stock price. Most existing research dealt with cases where NASDAQ-listed stocks migrated their listing to the New York Stock Exchange or other exchanges in the U.S.; however, in these cases, it is difficult to extract the pure impact resulted from the increase in the shareholder base because the switching trading mechanisms occur simultaneously. On Japan Securities Dealers Association automated Quotation (JASDAQ) and the Tokyo Stock Exchange (TSE), analyzed in this study, most of stocks are traded under the same order-driven mechanism in either exchanges, and therefore we don't have any effects originated from difference of trading mechanism.

This study measured cumulative abnormal returns (CARs) over the period between the listing change announcement date and the actual date of listing migration for stocks that moved from JASDAQ to the TSE from 1999 to 2002. Our findings confirmed a correlation between CARs and the effect of shareholder diversification. However, this relation is seen only in the stocks transferred to TSE Section I; such relation with the effect of shareholder diversification was not really evident for the stocks transferred to TSE Section II. For stocks transferred to TSE Section I, yen-based trading volume increased noticeably following announcement of listing change,

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suggesting that such a change is an important factor in stimulating trading that is consistent with current understanding. Also, relatively low abnormal returns were observed for stocks stocked by firms that carried out a public offering or secondary distribution concurrently with listing change in order to satisfy the required number of shareholders. This result shows that changes in abnormal returns and volume are not simply a result of the shift of listing from JASDAQ to the TSE, but are also stimulated by both the transfer process itself and post-transfer trading performance.

Empirical results of this study regarding the application procedure for listing change show that public offering/secondary distribution immediately before listing change tends to have a negative impact on the stock price and volume. This suggests the need for appropriate consideration of such impact when making an application for listing change without satisfying the required number of shareholders.

## **Section 1 Introduction**

Each year, a number of Japanese firms on the Japan Securities Dealers Association automated Quotation (JASDAQ) market switch their listing to the Tokyo Stock Exchange (TSE). This is a pattern that has carried over from the days when JASDAQ, the OTC market, was positioned as a step toward exchange listing. Even now, despite OTC's positioning as a competing market with established stock exchanges, many stocks are still being transferred to the TSE after the securities "Big Bang". Firms are said to select a listing venue based on longer-term benefits, including improvement of the firm's profile, strengthening of the firm's creditworthiness, and contribution to recruiting activity; therefore, the TSE's position as a status symbol is still well preserved.

When a firm switches its listing venue, there is often a significant increase in the number of shareholders. This is largely because of the difference between JASDAQ and the TSE in the number of shares issued and the number of shareholders required for listing. In addition, significant difference in composition of market participants of the new listing venue may improve liquidity.

According to Merton [1987], an increase in the shareholder base increases the effect of risk diversification by shareholders, which has a positive impact on stock prices. Amihud and Mendelson [1986] points out that increased liquidity also has a positive impact on stock prices, and empirical analyses of the U.S. markets identified a stock price behavior that is consistent with the above theory in terms of increases in shareholder base and liquidity.

This study analyzed 156 stocks that switched listing from JASDAQ to the TSE during the period from August 1999 to March 2002, and we will see cumulative abnormal returns (CARs) and trading volume associated with listing changes at the time of announcement ("announcement date") as well as the day of actual change ("transfer date") and examine the relationship between abnormal returns, liquidity measures and an increase of shareholders.

Existing researches have been focused on cases where NASDAQ-listed stocks changed listing to the New York Stock Exchange or other U.S. exchanges; Unfortunately in these cases trading mechanisms of each markets are different, it was difficult to extract the pure impact of increases in shareholder base. On JASDAQ and the TSE, analyzed in this study, there are many stocks to which the same trading mechanism is applied. Therefore, the study was able to observe the impact of the shareholder diversification effect and changes in liquidity on the stock price, independently from the effect of trading mechanism. It is ideal situation to confirm the robustness of the

empirical evidence.

Furthermore, because the stocks in our sample were transferred to either Section I or II of the TSE, we have been able to examine the impact of the difference in market participants by comparing the stocks transferred to Section I, which are potentially influenced by passive investors, with the stocks transferred to Section II.

Additional aspects of this study is that in about one-third of Japanese cases, a public offering (PO) or secondary distribution (SD) is carried out in order to satisfy the listing criteria, as a part of listing change process following announcement. When a PO or SD is carried out concurrently with listing change, what kind of impact does this have on the stock price formation? Sample stocks were grouped according to with or without PO or SD.

The rest of this study is organized as follows: Section 2 describes the current status of firms that changed listings to the TSE and revised listing requirements. Section 3 summarizes previous studies on listing changes to reveal the differences between the findings and the hypothesis examined in this study. Section 4 explains the empirical analysis framework, and Section 5 provides the results for abnormal returns measured upon announcement and transfer. Section 6 explores changes in volume and in liquidity. Section 7 examines the relationship between the abnormal return and volume or the listing venue to which the stock was transferred. Section 8 concludes the study with a summary and discussion of stocks for future study.

## **Section 2 Change of Listing to the TSE**

### **2.1 Trends in New Listing**

Even today, many firms that first went public on JASDAQ tend to move their listings to the TSE. In the early '90s, new listings on the TSE were quite few, involving only 15-32 firms per annum, but this increased to 75 listings in 1999, and doubled again to 158 in 2000; in 2001 and 2002, just over 90 firms went public on the TSE. Traditionally, 30-40% of new listings on the TSE were stocks transferred from JASDAQ; since 2000, an increasing number of firms have begun going directly to the TSE for their initial listing.

Behind this trend, there is apparently, an effect of a significant revision of the listing requirements, implemented by the TSE in August 1999. The TSE lifted or significantly relaxed requirements regarding per-share measures, dividends and location of principal office. As a result, more firms went to the TSE as shown in Figure 2.1.

## **2.2 Relaxation of Listing Requirement**

The TSE screens firms according to two types of listing criteria: quantitative and qualitative requirements. Numerical requirements are prerequisite for listing and consist of seven items, including the number of shares to be listed, the number of shares held by the “special few”, the number of shareholders, years elapsed since incorporation, market capitalization, shareholders’ equity (net assets), and profits. Qualitative screening is also conducted in the listing process. In August 1999, the TSE introduced a significant relaxation of its listing criteria, which can be summarized as follows:

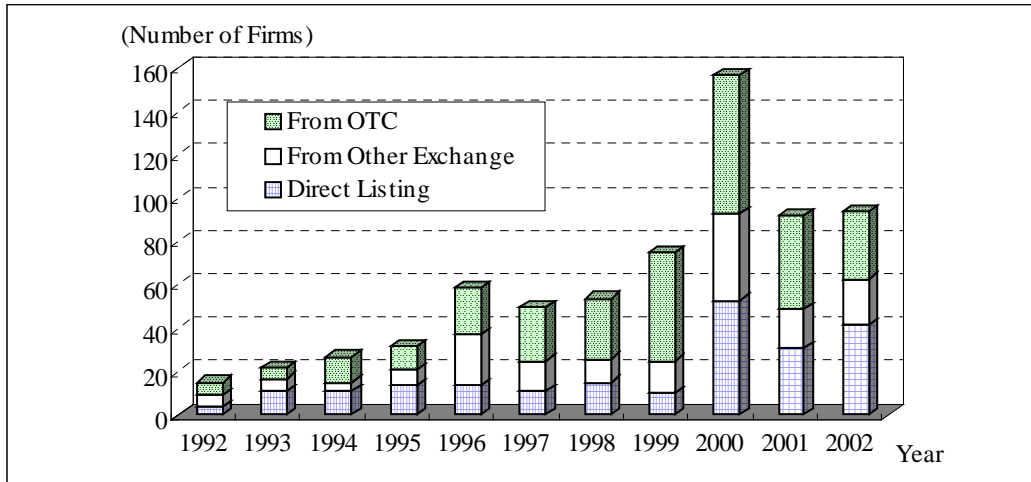
- (1) Relaxation of the requirement regarding the number of shares to be listed (the minimum requirement for firms outside the Tokyo metropolitan area of 20 million shares outstanding was abolished, and is now at least 4 million for all firms)
- (2) Increase in the percentage of stocks held by the “special few”
- (3) Shortening of the years required to have elapsed since incorporation from five to three years
- (4) Abolition of the per-share net asset requirement
- (5) Abolition of the per-share profit requirement
- (6) Abolition of the dividend requirement

This relaxation made it easier for firms to meet listing requirements. Before revision, requirements regarding the number of shareholders and per-share profit represented the highest hurdles that had to be cleared for TSE listing. Satisfying these requirements became easier following the relaxation. This was effective in expanding the range of eligible stocks, as the rule concerning firms with head registered offices outside Tokyo was relaxed to the same level as for those headquartered in Tokyo<sup>2</sup>. Shown in Figure 2.1 is the time series variation of firms recently listed on the TSE, categorized by previous listing status: the OTC market (current JASDAQ), other markets (exchanges), or direct listing (previously unlisted); in 2000, following relaxation, something like twice as many firms across all categories listed their stocks on the TSE than did in the previous year.

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<sup>2</sup>Following this relaxation of listing criteria, 27 stocks are estimated to have automatically satisfied the numerical requirements after revision.

Figure 2.1 Number of Firms Newly Listed on TSE

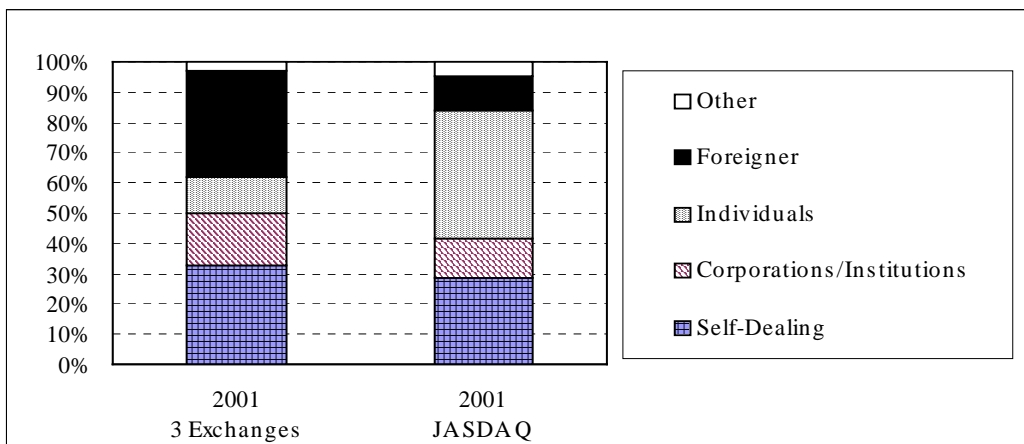


Source: Tokyo Stock Exchange

### 2.3 Characteristics of Market Participants

JASDAQ differs considerably from the TSE in composition of market participants. Shown in Figure 2.2 is the volume composition by types of investors, based on volume data by entity from established stock exchanges and JASDAQ. For stocks traded on exchanges, the percentage of foreign and corporate/institutional investors is relatively high, while individual investors make up a larger proportion in JASDAQ. Therefore, when stocks are transferred from JASDAQ to the TSE, the main participants shift from individuals to foreigners and institutions. Consequently, even for the same stock, differences in trading interests among participants such as choice of stocks and investment styles, may be reflected in the stock price formation and trading volume.

Figure 2.2 Volume Composition by Types of Investors (Exchanges vs. JASDAQ)



Note: "3 Exchanges" represents the composition of total buying orders on Tokyo, Osaka and Nagoya Stock Exchanges; composition of total buying and selling orders for JASDAQ.

Source: TSE FACT BOOK, OTC Year Book

### **Section 3 Previous Studies and Hypotheses to be examined**

Kadlec and McConnell [1994] studied listing change events of NASDAQ-listed stocks with respect to the investor recognition hypothesis (hereafter, we call this as “the effect of shareholder diversification”), and the liquidity effect. Their objective was to examine Merton’s hypothesis [1987] that “when the shareholder base broadens, risk-sharing improves, bringing about a positive impact on stock prices”<sup>3</sup>. Kadlec and McConnell [1994] jointly verified the hypothesis by Amihud and Mendelson [1986] that “improved liquidity has a positive impact on stock prices”. According to the results of these analyses, abnormal returns are positively correlated with changes in the shareholders’ structure and liquidity improvement; therefore, the results they obtained supports both hypotheses.

In existing analyses on the U.S. markets, difference in liquidity was often measured by spreads that reflect difference of trading mechanism between the NYSE and NASDAQ. Christie and Huang [1994] reported that considerable reduction in spreads was observed when NASDAQ stocks moved to the NYSE or the AMEX<sup>4</sup>. Also, Bessemberger [1998] identified a significant narrowing in spreads and reduction of price volatility among NASDAQ stocks that moved to the NYSE between 1996 and 1997.

In case of the U.S. markets, differences in trading mechanisms such as the market maker or the specialist system should be taken into consideration when the listing is changed from NYSE to NASDAQ, or vice versa. Since such difference in liquidity may exist, it is difficult to separate the effect of the trading system from those caused by the difference in the investor base or other factors.

For listing changes in Japan, where the same trading mechanism is applied to most stocks following a change of listing venue<sup>5</sup>, it is possible to examine the impact on stock prices caused by shareholder diversification and liquidity improvement, while the

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<sup>3</sup> Merton’s imperfect information model demonstrated that not all investors are aware of every investable stock, and in the actual markets risk-return balance can only be achieved incompletely through stock portfolio diversification. Not all investors make investments in every investable stock, a degree of unsystematic risk remains, and a decline in the stock price due to risk burden, which is unsolved by portfolio diversification, represents a shadow cost. This may be caused by clientele (investors) effects, as sometimes investors themselves place limits on the investment universe in accordance with their investment policies. Merton’s model demonstrated a quantitative relationship, in that the relation between the degree of investors’ indifference to the stock and the stock’s market capitalization determines the degree of discount in stock price. Verified by Kadlec and McConnell [1994].

<sup>4</sup> In addition, Sapp and Yan [2000] reported the results of their follow-up analyses, which found that, for stocks, which changed listing from NASDAQ to the AMEX the reduction effect on trading costs was significantly reduced after the market reform in 1998.

<sup>5</sup> See Section 4 for details



trading system remains unchanged. Furthermore, as these stocks are transferred to either Section I or II of the TSE, it is also possible to identify the impact from differences in market participants. For example, stocks transferred to Section I, has more opportunity to be traded by institutional investors such as passive investors. Here, it should be noted that passive investment has a demand for including newly listed stocks into index portfolio immediately. This should be measured by changes in trading volume, and should be distinguished from permanent increase in liquidity.

As a listing change procedure, which is unique to Japan, in about one third of cases a PO or SD is conducted to satisfy listing requirements after announcement of a listing change<sup>6</sup>. When a PO or SD is carried out concurrently with process of listing change, what kind of impact does this have on stock price formation? We separate sample stocks that carried out a PO/SD and those that did not ("pure transferred"), and studied to identify any impact from application of the system.

The hypotheses examined in this study can be summarized as follows:

- (1) Previous studies conducted in the U.S. confirmed that announcement of listing change has a positive impact on stock price formation, and positive abnormal return is observed. In the U.S., this is explained as the impact of two factors: the effect of shareholder diversification and difference in liquidity resulting from different trading mechanisms; this study examines whether the same result can be obtained in cases where the trading mechanisms are unchanged.
- (2) Stocks transferred to TSE Section I, which are potentially influenced by institutional investors' passive investment, are compared with stocks transferred to TSE Section II, to determine whether any difference can be observed in correlation between changes in volume and abnormal returns in the short-term period.
- (3) This study examines whether there is any difference in impact on stock price formation between listing changes, with or without a PO/SD being carried out after announcement of a listing change.

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<sup>6</sup> In the case of the New York Stock Exchange, firms must satisfy all requirements at the time of application (confirmed by the author with the director responsible executive of the NYSE, as of September 2003).

## Section 4 Design of Empirical Analysis

### 4.1 Stocks Analyzed

We conducted an empirical analysis of 156 JASDAQ-listed stocks transferred to the TSE between August 1999 and March 2002. Of these, 30 stocks listed on TSE Section I, and the remaining 126 on Section II. These included 27 market maker stocks on JASDAQ (breakdown shown in Table 4.1). This study focuses on the analysis of 129 stocks for which the trading mechanisms were unchanged.

Of these 129 stocks, 55 conducted either a PO or SD of outstanding stocks over a period of about 20 days from the announcement date to the transfer date, in order to satisfy listing requirements regarding the number of shareholders and the number of shares. Given that PO and SD essentially are events which have the potential to impact on stock prices, in these samples the effects of listing changes examined by this study are co-mingled with the effects of PO/SD distribution; therefore, these stocks listed without PO or SD are referred to as “pure transferred”, in order to distinguish them from “public offering/secondary distribution stocks”. As there is a significant difference in the schedule from listing announcement to listing change between stocks for PO/SD and pure transferred stocks, interesting conclusions may be drawn in terms of the effects of institutional difference.

Stock price and volume for each stock, volume of the market as a whole, and stock index data used for empirical analysis was obtained from the QUICK-AMSUS Service.

Table 4.1 Breakdown of Stocks that Changed Listing Venue

	JASDAQ to TSE	JASDAQ to TSE Section I	JASDAQ to TSE Section II	Pure transferred Stocks	Public Offering/ Secondary Distribution Stocks
Order-driven Stocks	129	28	101	74	55
Market-maker Stocks	27	2	25	19	8
Total Number of Stocks	156	30	126	93	63

## **4.2 Increase in the Number of Shareholders and Public Offering/Secondary Distribution (PO/SD)**

Among all the requirements for listing change, firms are permitted to satisfy the requirement regarding the number of shareholders up to and on the day of listing change. Therefore, many firms conduct a PO or SD of stocks during the period between announcement and the actual transfer date, in order to satisfy this requirement. In our sample stocks analyzed in this study, approximately one-third conducted a PO/SD after announcement of listing change.

Shown in Table 4.2 is the ratio of the number of shareholders to the TSE's listing requirement, calculated from the number of shareholders at the accounting year-end, before or after the date of listing change<sup>7</sup>. These ratios represent the ratio of full-year accounting figures immediately before or after listing change to the number of shareholders required for listing. For the stocks analyzed, it appears that most PO/SD were conducted in order to satisfy the number of shareholders requirement for listing; among the stocks analyzed in this study, the need for such transactions must differ between the stocks that had already satisfied the requirement and those that had not. Therefore, we compared the number of shareholders at the accounting year-end before listing change with the listing requirement, in order to distinguish the stocks that satisfied the requirement from those that did not. The results are compiled in Table 4.2 (A) and (B).

At the last accounting year before listing change, for stocks that had not satisfied the requirement, the filling ratio for the PO/SD stocks fell below 1 on average, but increased to 2.1 at the first accounting year after listing change. The ratio for stocks transferred to TSE Section I was as low as 0.2-0.5 relative to the number required for listing before the application, so they had to increase the number of shareholders by at least two to five times until the transfer date. For pure transferred stocks, the number of shareholders increased to 0.7-1.3 and 0.8-1.5 for TSE Section I and Section II, respectively. Among the stocks shown in Table 4.2(B) that had satisfied the listing requirement at the accounting year-end before transfer, some stocks that went through PO/SD were included, although they were few, for most the ratio increased during this period.

Process of a PO/SD also serves as a factor in producing a difference in the number

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<sup>7</sup> The ratio of change in the number of shareholders was calculated as follows: the number of shareholders from the accounting data was used to calculate the ratio to the required number of shareholders at the accounting year-end before and after listing change. When the time of listing change and the accounting year-end overlaps, the accounting data before and after that time of point was used.

of days elapsed between the announcement date and the transfer date. For stocks that conduct a PO/SD, a greater number of days elapse between announcement and transfer compared to pure transferred stocks. In contrast, for pure transferred stocks the period from announcement to transfer is extremely short.

Shown in Figure 4.1 is the number of days plotted for the period between the announcement date and the transfer date. This period is short for pure transferred stocks that did not conduct a PO/SD: the shortest example was one day and the longest was seven days. Among these, sixty stocks took three days, which is the most common period. On the other hand, for stocks involving a PO/SD, the shortest was twelve and the longest was twenty-eight. By frequency, eight stocks took twenty days. Among SD and PO, the number of days to actual listing is slightly lower for stocks that conducted SD only. As this is the period used in the following section to measure cumulative abnormal return between the announcement date and the eve of the transfer date, such difference in the number of days may be reflected in the measurement results. For TSE Section I-listed stocks that are subject to indexing, for which short-term concentration of anticipatory demand is expected, these factors should also be taken into consideration when making an empirical analysis.

Table 4.2 Number of Shareholders

(Accounting Year-end Immediately before/after Date of Listing Change)

(A) Stocks that did not satisfy the number of shareholders requirement as of the accounting year-end before listing

TSE Section I	Pure transferred Stocks	Public Offering	Secondary Distribution	Both
<Accounting year-end before listing>				
Mean	0.742	-	0.488	0.198
Median	0.742	-	0.488	0.198
Standard Deviation	0.188	-	0.149	-
<Accounting year-end after listing>				
Mean		-	2.107	
Median	1.259	-	2.107	1.549
Standard Deviation	0.173	-	0.994	-
Number of Stocks	2	0	2	1

TSE Section II	Pure transferred Stocks	Public Offering	Secondary Distribution	Both
<Accounting year-end before listing>				
Mean	0.832	0.843	0.698	0.590
Median	0.904	0.843	0.719	0.583
Standard Deviation	0.222	-	0.174	0.155
<Accounting year-end after listing>				
Mean	1.495	1.158	1.558	1.765
Median	1.035	1.158	1.357	1.691
Standard Deviation	1.367	-	0.667	0.657
Number of Stocks	7	1	8	9

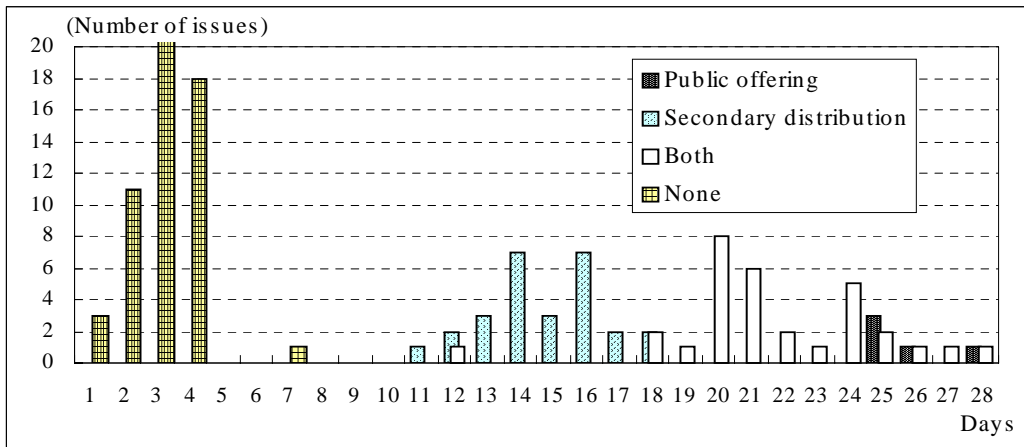
(B) Stocks that satisfied the number of shareholders requirement as of the accounting year-end before listing

TSE Section I	Pure transferred Stocks	Public Offering	Secondary Distribution	Both
<Accounting year-end before listing>				
Mean	2.366	-	1.102	1.071
Median	1.768	-	1.075	1.071
Standard Deviation	1.605	-	0.094	-
<Accounting year-end after listing>				
Mean	4.114	-	1.950	1.275
Median	3.345	-	2.106	1.275
Standard Deviation	2.833	-	0.808	-
Number of Stocks	10	0	3	1

TSE Section II	Pure transferred Stocks	Public Offering	Secondary Distribution	Both
<Accounting year-end before listing>				
Mean	2.404	1.136	1.180	1.436
Median	1.633	1.136	1.099	1.349
Standard Deviation	1.775	0.021	0.228	0.499
<Accounting year-end after listing>				
Mean	2.792	1.367	1.606	2.324
Median	2.154	1.367	1.231	2.228
Standard Deviation	1.883	0.262	0.905	0.623
Number of Stocks	44	2	4	4

Note: Number of shareholders required for listing = 1

Figure 4.1 Number of Days Elapsed from the Announcement Date to the Transfer date

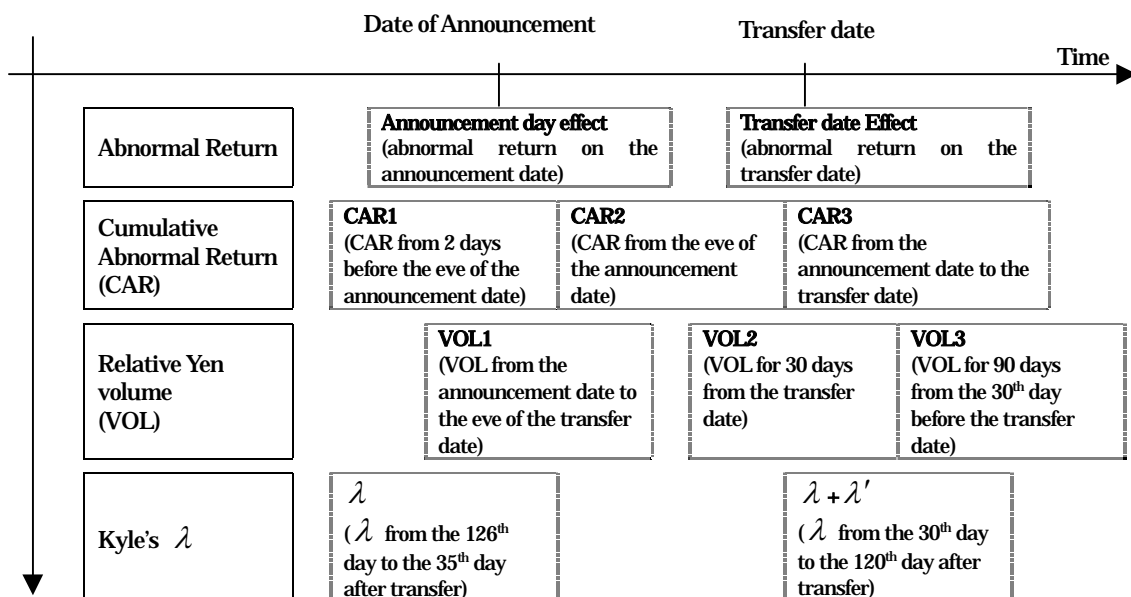


Note: The number of stocks, which took three days, is 60.

### 4.3 Design of Empirical Analysis

In the empirical analysis shown in the following sections, the impact of listing change such as abnormal returns (Section 5) and the impact of listing change on liquidity (Section 6) are examined for stocks listed on TSE Section I/Section II and experience in PO/SD, using as a model from the empirical analyses of Sanger and McConnell [1986] and Kadlec and McConnell [1994]. In addition, Section 7 examines the hypothesis regarding abnormal return at the time of listing change, and the effects of shareholder diversification, liquidity and indexing. Key indicators examined in sections 5-7 are as follows:

Table 4.3 Key Indicators Examined in the Empirical Analysis



## Section 5 Abnormal Return

In this section, we measure abnormal return (AR) generated on both the listing change announcement date and the transfer date, and then we estimate through event studies the cumulative abnormal return (CAR), covering the period between the announcement date and the transfer date.

### 5.1 Effect of the Announcement Date and the Transfer Date

First, abnormal return is measured during the “event window” which is defined as the date of the announcement to that of transfer. Abnormal returns is measured by a market model and stocks’ beta, which is adjusted according to our situation specified as below. Stock indices used for the market model are JASDAQ Index and TSE1 or TSE2 Index, most commonly used stock price index, depending upon the section each stock moved. When a firm changes the listing venue of its stock, there should be a corresponding change in trading volume and the composition of market participants, and the risk characteristics of the stock are also expected to change, so an estimation of the market model parameters was made for the post event period<sup>8</sup>.

Estimated abnormal return is calculated by formula (1) as follows:

$$R_{i,t} = \alpha_i + \beta_{1,i}R_{tse,t} + \beta_{2,i}R_{jst,t} + \varepsilon_{i,t}, \quad t = T + 31, \dots, T + 160 \quad (1)$$

$R_{i,t}$  represents the daily return on the closing price of stock  $i$  during term  $t$ ;  $R_{tse,t}$  represents the daily return on the TSE’s stock price index (TOPIX) during term  $t$ , which is the daily return on TOPIX if the stock is transferred to TSE Section I, and the daily return on TSE Section II Index closing if the stock is listed on TSE Section II.  $R_{jst,t}$  represents the daily return on the JASDAQ Index at the date of  $t$ ,  $\varepsilon_{i,t}$  represents the error term of the stock  $i$ , and  $T$  represents the transfer date. Then,  $\alpha_i, \beta_{1,i}, \beta_{2,i}$  are parameters to be estimated. For each stock, formula (1) is estimated using the data during the period from  $T+31$  to  $T+160$  to obtain estimates for  $\alpha_i, \beta_{1,i}, \beta_{2,i}$ :  $\hat{\alpha}_i, \hat{\beta}_{1,i}, \hat{\beta}_{2,i}$ . These estimates are used to calculate the daily abnormal return from  $T-5$  to  $T+30$ :

$$AR_{i,s} = R_{i,s} - \hat{\alpha}_i - \hat{\beta}_{1,i}R_{tse,s} - \hat{\beta}_{2,i}R_{jst,s} \quad s = T - 5, \dots, T + 30 \quad (2)$$

Based upon formula (2) abnormal return is measured at the announcement date and the transfer date. The former is referred to as the “announcement day effect”, and the latter “transfer day effect”. Averages and standard deviations calculated for stocks with/without PO/SD are shown in Table 5.1.

<sup>8</sup> Estimates for the market model were made for the period after listing, following an example from Kadlec and McConnell [1994] and Amihud, Mendelson and Lauterbach [1997]. In these studies, parameters were estimated for the post-factum period, as the risk characteristics of the stock may change after listing.

First, for the announcement day effect of the pure transferred stocks, 6.3% for stocks transferred to TSE Section I and 4.8% for Section II; in both cases, abnormal return observed was positive and significant (at 1% level).

Next, for the transfer day effect of the pure transferred stocks, abnormal return for the stocks transferred to TSE Section I was positive at 2.7%; however, abnormal return for the stocks transferred to TSE Section II turned out to be negative, -0.3%. However, these results are statistically insignificant.

On the other hand, for the stocks with PO/SD, although the announcement day effect (abnormal return) was positive, the average value was low. Only the abnormal return for stocks transferred to TSE Section I with both of PO and SD was statistically significant at 4.8%. Then, for the transfer day effect, positive and significant abnormal return of 7.2% was observed for the stocks on TSE Section I with SD only. The abnormal return for TSE Section I stocks with a PO and SD transactions was also positive. In contrast, the abnormal return for the stocks transferred to TSE Section II turned out to be negative.

To summarize the results: In the case of the announcement day effect, abnormal return observed tends to be positive for all classes of stocks. In the case of the transfer day effect, abnormal return observed tends to be positive for the stocks transferred to TSE Section I, which is a result consistent with the analyses of the U.S. market by Sanger and McConnell [1986], and Kadlec and McConnell [1994]. In contrast, for the transfer day effect of the stocks transferred to TSE Section II, abnormal return observed generally tends to be negative. According to this result, abnormal return for these stocks turned negative earlier than those observed by Sanger and McConnell [1986], and Kadlec and McConnell [1994], as those researchers noted positive abnormal return even as late as the week of the transfer date.



Table 5.1 Announcement day effect and Transfer date Effect (Abnormal Return)

(A) Pure transferred Stocks

	TSE Section I			TSE Section II		
	Number of Stocks	Average AR	Standard Deviation	Number of Stocks	Average AR	Standard Deviation
Announcement day effect of Pure transferred Stocks	16	6.252 ***	1.161	58	4.831 ***	0.765
Transfer date effect of Pure transferred Stocks	16	2.743 *	1.539	58	-0.251	0.650

(B) Public Offering/Secondary Distribution Stocks

Classification by Type of Transaction: Public Offering/Secondary Distribution	TSE Section I			TSE Section II		
	Number of Stocks	Average AR	Standard Deviation	Number of Stocks	Average AR	Standard Deviation
Announcement day effect						
Public Offering	-	-	-	4	4.964	3.001
Second Distribution	6	1.883	1.791	18	2.734 *	1.308
Both	6	4.796 **	1.926	21	1.286	1.243
Transfer date effect						
Public Offering	-	-	-	4	0.319	1.371
Second Distribution	6	7.191 ***	0.900	18	-3.807	2.227
Both	6	1.568	3.242	21	-5.108 ***	1.752

Notes:

- 1): \*Confidence level 10%, \*\*5%, \*\*\*1% and not significantly zero
- 2): Standard deviation of averages
- 3): Public Offering: stocks with public offering. Secondary Distribution: stocks with secondary distribution. Both: stocks with both public offering and secondary distribution.

## 5.2 Cumulative Abnormal Return (CAR)

This section looks at cumulative abnormal return (CAR), or accumulated price impact generated during the period between the announcement of listing change and implementation.

Cumulative abnormal return is measured for the following three periods: cumulative abnormal return for two days before the announcement date to the day before the announcement (CAR1), that from the announcement day to the day before the transfer (CAR2), and that from the announcement day to the transfer date (CAR3). If the market is completely informationally efficient, its reaction to new information should be revealed on the day of the event; however, if market participants are slow to react, a positive or negative

impact on stock price may continue, even after the announcement.

By applying the cumulative abnormal return formula, CAR2 is defined as formula (3)<sup>9</sup>:

$$CAR2_i = \sum_{t=0}^{T-1} AR_{it} \quad (3)$$

i refers to the stock and t refers to the date. t = 0 is the date when the listing change is announced, and t = T describes the transfer date.

Averages and standard deviations from CAR1 to CAR3 are shown in Table 5.2. Nothing in CAR1 was statistically significant, so the impact on the stock price before the announcement date is considered to be negligible, and we can proceed to examine CAR2 and CAR3 in more detail.

First, for the pure transferred stocks, CAR2 (from announcement date to the day before the transfer) shows positive and significant abnormal return: 5.6% for TSE Section I stocks, and 5.2% for TSE Section II stocks. Compared to AR on the announcement date, CAR2 decreased slightly for TSE Section I stocks and showed a slight increase for TSE Section II stocks. The market reacted quickly to TSE Section I stocks. In the case of TSE Section II stocks, reaction to information continued after the announcement date. However, in both cases the difference from AR on the announcement date is not significant.

Moving now to CAR3, abnormal return on the listing change date is added-on, in order to examine total abnormal return from the announcement date to the date on which the listing venue is actually changed. In the case of TSE Section I stocks, abnormal return further increased by 2.7% on the listing change date, to produce a cumulative abnormal return of 8.3%. For the stocks transferred to TSE Section II, CAR3 is slightly lower than CAR2, demonstrating different market reaction from that of TSE Section I stocks.

Conversely, for CAR2 and CAR3 of the PO/SD stocks, TSE Section I stocks contrasted with TSE Section II stocks in results. CAR2 of TSE Section I stocks averaged 7.5% for SD offerings and 15.2% for stocks with both transactions (PO and SD). CAR3 was 14.7% and 16.7% respectively, showing an increase in cumulative abnormal returns on the transfer date. However, for CAR2 of TSE Section II stocks, cumulative return was negative for all groups (PO only, SD only, and both transactions), and the negative value is larger in CAR3 than in CAR2 - a different reaction from even the pure transferred stocks moved to TSE Section II.

The above results can be summarized as follows: As seen in the previous section, on the announcement date positive abnormal return is observed in all categories. For the stocks transferred to TSE Section I, regardless of association of PO/SD, and for the pure transferred

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<sup>9</sup> See Amihud, Mendelson and Lauterbach [1997], and Amihud, Mendelson and Uno [1999].

stocks moved to TSE Section II, positive abnormal return is maintained or even increased, even after the period between the announcement date and the transfer date. Conversely, for TSE Section II stocks, which experienced PO/SD, abnormal return begins to decrease and cumulative abnormal return tends to turn negative as the transfer date approaches.

Table 5.2 Cumulative Abnormal Return (CAR) on Announcement/Listing Change

(A) Pure transferred Stocks

TSE Section I			TSE Section II		
	Average CAR	Standard Error		Average CAR	Standard Error
CAR1	2.132	1.227	CAR1	0.314	0.915
CAR2	5.552 ***	1.894	CAR2	5.246 ***	1.103
CAR3	8.295 ***	2.302	CAR3	4.995 ***	1.263
Number of Stocks	16		Number of Stocks	58	

(B) Public Offering/Secondary Distribution Stocks

TSE Section I			TSE Section II		
	Average CAR	Standard Error		Average CAR	Standard Error
Public Offering					
CAR1	-	-	CAR1	-1.366	3.266
CAR2	-	-	CAR2	-4.030	8.639
CAR3	-	-	CAR3	-3.711	9.088
Number of Stocks	0		Number of Stocks	4	

Secondary Distribution					
	Average CAR	Standard Error		Average CAR	Standard Error
CAR1	1.854	1.114	CAR1	-1.296	1.268
CAR2	7.470 *	3.126	CAR2	-5.233 *	2.690
CAR3	14.662 ***	2.747	CAR3	-9.040 ***	3.130
Number of Stocks	6		Number of Stocks	18	

Both					
	Average CAR	Standard Error		Average CAR	Standard Error
CAR1	2.874	1.978	CAR1	1.566	1.488
CAR2	15.182	10.377	CAR2	-7.810 **	3.684
CAR3	16.749	9.821	CAR3	-12.918 ***	3.868
Number of Stocks	6		Number of Stocks	21	

Notes:

- 1): \*Confidence level 10%, \*\*5%, \*\*\*1% and not significantly zero
- 2): Standard deviation of averages
- 3): Public Offering: stocks with public offering. Secondary Distribution: stocks with secondary distribution. Both: stocks with both public offering and secondary distribution.

## **Section 6 Volume and Liquidity**

This section examines the trading behavior of investors during the period before the announcement and at the actual listing change. In case of stocks that transfer to TSE Section I, which means that the stocks are to be included in the TOPIX index as of the transfer date, they are expected to show a trading pattern different from those transferred to Section II stocks.

### **6.1 Relative volume**

For each stock, daily changes in volume following announcement of the transfer to the TSE were compared with volume during a normal period prior to the transfer. Volume outside of the event window (before the announcement) over 90 days from T-35 to T-124 (T = transfer date) is used as a reference volume. Taking the maximum number of days existed between the announcement date to the transfer date into consideration in our sample, 90 days prior to the 35<sup>th</sup> day before the announcement date is selected as a period to provide an average volume before-the-event, as it falls before the announcement date for all firms. Another consideration when we compare trading activity, volume of each stock is greatly affected by trading conditions in the market as a whole. Therefore in order to adjust different market conditions surrounding each event, the ratio of volume of individual stocks to market volume ("relative volume") is used for comparison. For market volume, we use total daily volume of JASDAQ and TSE Sections I and II. The periods used for comparison were: (A) from the announcement date to the eve of the transfer date (VOL1); (B) 30 days from the transfer date (VOL2); and (c) 90 days from the 30<sup>th</sup> day of the transfer date (VOL3).

Following the discussion in Section 5, changes in volume of the pure transferred stocks, which are unaffected by PO/SD factor, are first examined here. Changes in volume after announcement (VOL1) are shown in Table 6.1(A). For 16 stocks transferred to TSE Section I, VOL1 exceeded the reference value by 107%. For 58 stocks transferred to TSE Section II, VOL1 increased by 68%. In both cases, striking increases in volume are observed. The same stocks were examined for 30 days from the transfer date (Table 6.1 (B)); Growth rate of VOL2 for TSE-I stocks is slow down by about 50% from that of VOL1, but remains at a high level, showing an increase of 57%. On the other hand, there was a negative growth rate showing for TSE-II stocks, at -12%. In addition, as shown in Table 6.1 (C), for 90 days from the 30<sup>th</sup> day of the transfer date, relative volume of TSE Section I stocks increased by 17%, and that of TSE Section II stocks decreased to -24%.

How changes the volume of stocks with PO/SD? For TSE Section I stocks, VOL1

increased by 64% for the stocks with PO/SD, and 14% for the stocks with only SD. Thus, the rate of increase is significantly lower than that of the pure transferred stocks in the corresponding period. For stocks transferred to TSE Section II, VOL1 remained unchanged or decreased. Then, after change of listing, relative volume measured by VOL2 is higher than that for VOL1 and PO/SD stocks show a higher rate of increase than the pure transferred stocks. However, the increase in volume is not maintained; VOL3 of the stocks transferred to TSE Section II declined to approximately -30%. In other words, relative volume decreased by 30% from the time that they were listed on JASDAQ.

The patterns in volume changes clearly differ, depending on with/without PO/SD, and on markets to which stocks are transferred. For the pure transferred stocks, volume tends to decrease after peaking in the period from the announcement date to the transfer date; for the stocks with PO/SD, volume tends to reach a peak right after the transfer, regardless of the market to which they are transferred. Such a difference between the patterns in volume changes may be caused by the restriction on dealing activity of underwriting security firms during the period of PO/SD. When JASDAQ-listed stocks are transferred to TSE Section I, volume increased partly because of the increase in trading demand by index-based funds. Stocks transferred to TSE Section II, did not show any increase in volume, because stocks listed to TSE Section II are scarcely included indexes used by institutional investors.

**Table 6.1 Changes in Relative Volume**

**(A) From the announcement date to the eve of the transfer date (VOL1)**

VOL1	Number of Stocks	Rate of Change in Market-Adjusted Relative Volume (%)	Market-Adjusted Standard Deviation	Rate of Change in Relative Volume (%)	Standard Deviation
TSE Section I	28	77.7	13.1	85.0	12.6
Direct Transfer	16	106.5	15.9	100.3	17.1
Secondary Distribution	6	14.4	24.3	36.5	22.7
Both	6	64.0	20.3	92.5	23.4
TSE Section II	101	36.0	8.9	43.2	9.1
Direct Transfer	58	68.4	12.3	69.7	13.1
Public Offering	4	0.1	24.8	-3.0	310
Secondary Distribution	18	-11.9	15.7	1.9	13.9
Both	21	-5.5	13.7	14.4	15.3

**(B) 30 days after the date of listing change (VOL2)**

VOL2	Number of Stocks	Rate of Change in Market-Adjusted Relative Volume (%)	Market-Adjusted Standard Deviation	Rate of Change in Relative Volume (%)	Standard Deviation
TSE Section I	28	68.5	12.8	74.1	15.4
Direct Transfer	16	57.3	19.1	51.1	22.1
Secondary Distribution	6	84.9	23.1	103.1	22.9
Both	6	81.7	22.7	106.2	29.4
TSE Section II	101	2.6	8.1	9.0	8.7
Direct Transfer	58	-11.8	10.2	-6.7	10.3
Public Offering	4	52.8	28.1	44.3	17.3
Secondary Distribution	18	13.5	24.0	20.9	20.6
Both	21	23.5	14.8	35.1	22.3

**(C) 90 days after the 30<sup>th</sup> day following the date of listing change (VOL3)**

VOL3	Number of Stocks	Rate of Change in Market-Adjusted Relative Volume (%)	Market-Adjusted Standard Deviation	Rate of Change in Relative Volume (%)	Standard Deviation
TSE Section I	28	16.8	18.4	23.0	20.8
Direct Transfer	16	17.0	28.6	12.1	30.6
Secondary Distribution	6	-7.1	18.4	14.7	22.3
Both	6	40.1	37.7	60.3	510
TSE Section II	101	-26.6	8.8	-21.6	8.7
Direct Transfer	58	-24.2	11.2	-19.8	11.5
Public Offering	4	9.4	30.9	1.45	33.7
Secondary Distribution	18	-29.1	28.2	-24.5	26.3
Both	21	-37.9	16.3	-28.4	15.7

Note: Rate of change in relative volume =  $\log(\text{average daily volume during the event period}/\text{average daily volume during the reference period})$ . Rate of Change in Market-Adjusted Relative Volume =  $\log(\text{the ratio of average daily volume to market volume during the event period}/\text{the ratio of average daily volume to market volume during the reference period})$ . Here, market volume = daily JASDAQ volume + daily TSE Section I volume + daily TSE Section II volume. The reference period is 90 days from T-35 to T-124 (T = the date of listing change).

## 6.2 Liquidity Measured by $\lambda$

In this section, changes in liquidity are examined. Changes in liquidity caused by listing change should be observed based on longer horizon than those used in the previous section. The degree of each stock's liquidity is often measured by spread, trading volume, or ratio of trading volume against outstanding amount. In this section, market impact, price sensitivity due to trading, is used as a liquidity measure. Spread is one of the most commonly used liquidity measures of trading cost for small size orders. With regard to large orders, however, spread may not be an appropriate measure because those orders are not always executed at the quoted price. Larger the trade size, more significant the price impact becomes. Therefore,  $\lambda$ , which shows a stock's price sensitivity caused by an unit of trade is the most appropriate measure in this study, because each analyzed market has own structure of participants.

In this study,  $\lambda$  is estimated from formula (4). Based on the estimation result, we can judge whether a change of listing improves liquidity of the stock. Decrease in  $\lambda$  means that the listing change can cut investors' trading cost.

$$|r_{i,t}| = \alpha_i + \lambda_i \ln Q_{i,t} + \eta_t \quad (4)$$

$|r_{i,t}|$  represents absolute value of return  $100 \times (\ln(P_t) - \ln(P_{t-1}))$ ,  $P_t$  represents the price at t,  $\ln Q_{i,t}$  represents the log of the number of stocks traded,  $\eta_t$  represents the error term, and  $\lambda_i$  represents the price sensitivity coefficient. To evaluate the difference in  $\lambda_i$  before and after listing change, a dummy variable was added to formula (4). Then formula (4)' is used for estimation. The dummy variable  $d_{i,t}$  is "0" before transfer and "1" after transfer about the stock  $i$ .

$$|r_{i,t}| = \alpha_i + \lambda_i \ln Q_{i,t} + d_{i,t} \lambda'_i \ln Q_{i,t} + \eta_t \quad (4)'$$

In this formulation,  $\lambda$  before transfer is  $\lambda_i$ , and  $\lambda$  after transfer is  $\lambda_i + \lambda'_i$ ; therefore, estimated  $\lambda'_i$  can be used to measure whether liquidity improved or deteriorated due to listing change. In other words, if estimated  $\lambda'_i$  is positive and significant, liquidity must be deteriorated; if it is negative and significant, liquidity must be improved; and, finally, if it is not significant, liquidity is not changed.

In setting an estimation period for formula (4)', it is necessary to compare the trading costs before and after listing change, because some stocks go through PO/SD between the announcement date and the transfer date, which could cause additional price. Also, stocks transferred to TSE Section I, may be subject to temporary effects,

caused by speculative trading based on the anticipation of demand by index-based investors. As the focus of this section is on liquidity change over longer term, the periods before and after the listing change have been eliminated from estimation. Specifically, using T as the transfer date, estimations are conducted for 90 days from T-126 to T-35 and for 91 days from T+30 to T+120.

The results in Table 6.3 exhibit an interesting pattern. Here, we can see that among the stocks transferred to TSE Section I, stocks that improved liquidity was the pure transferred stocks. In the case of stocks with PO/SD, even when they were transferred to TSE Section I, less than 40% of these stocks improved liquidity, suggesting that PO/SD transactions had a negative impact on liquidity. On the other hand, for stocks transferred to TSE Section II, even the pure transferred stocks, only 22% improved liquidity and as many as 70% experience no change in liquidity. Approximately 45% of those stocks with PO/SD improved liquidity. The ratio was slightly higher than that of the stocks with PO/SD transferred to TSE Section I.

Liquidity measurement by  $\lambda'$  also indicates that there is a difference in liquidity changes depending on PO/SD experience, and that these transactions may have a negative impact on medium-term liquidity, as well as short-term trading volume.



**Table 6.3 Public Offering/Secondary Distribution Experience upon Listing Change and Changes in Liquidity**

**(A)TSE Section I**

		Direct Transfer	Public Offering	Secondary Distribution	Both
1	Total number of stocks analyzed	17	-	5	7
2	$\lambda$ is significant	16	-	5	7
3	$\lambda$ is significant after transfer	10	-	2	2
4	2 and 3	10	-	2	2
5	Of 4, number of negative stocks	10	-	2	2
6	Of 4, number of positive stocks	0	-	0	0
7	Coefficient of determination (average)	0.135	-	0.125	0.167
8	Liquidity improved	62.5%	-	40.0%	28.6%
9	Liquidity unchanged	37.5%	-	60.0%	71.4%
10	Liquidity deteriorated	0.0%	-	0.0%	0.0%

**(B)TSE Section II**

		Direct Transfer	Public Offering	Secondary Distribution	Both
1	Total number of stocks analyzed	65	5	18	21
2	$\lambda$ is significant	50	3	11	18
3	$\lambda$ is significant after transfer	23	0	8	10
4	2 and 3	15	0	6	9
5	Of 4, number of negative stocks	11	0	5	8
6	Of 4, number of positive stocks	4	0	1	1
7	Coefficient of determination (average)	0.101	0.032	0.068	0.097
8	Liquidity improved	22.0%	0.0%	45.5%	44.4%
9	Liquidity unchanged	70.0%	100.0%	45.5%	50.0%
10	Liquidity deteriorated	8.0%	0.0%	9.1%	5.6%

Note 1:Public Offering: stocks conducted by public offering. Secondary Distribution: stocks conducted by secondary distribution. Both: stocks conducted by both public offering and secondary distribution.

## Section 7 Regression Analysis of Abnormal Return

Finally, we evaluate the complete picture of relationship between abnormal returns and other variables related to changes caused by the listing change. We examine hypotheses on abnormal return at the time of listing change, the effect of shareholder diversification and liquidity. The test is carried out by ordinary least square estimation (OLS) with an dependent variable, CAR3, which is cumulative abnormal return between the announcement date and the transfer date. The independent variables are the shareholder diversification,  $\lambda'$ , VOL1 (relative volume observed during the period the announcement date to the day before transfer, and the rate of increase in the number of issued stocks. For the effect of shareholder diversification and relative volume, we use a dummy variable that takes on the value of each variable when the stock is transferred to TSE Section I (TSE Section II), and otherwise has a “zero” value, in order to capture a different reaction to listing section of the TSE; the effect of shareholder diversification is defined as the following formula (5) according to Kadlec and McConnell [1994]<sup>10</sup>:

$$\text{The Effect of Shareholder Diversification} = \frac{\sigma_j \times V_j}{SHS_j^{TSE}} - \frac{\sigma_j \times V_j}{SHS_j^{JASDAQ}} \quad (5)$$

Here,  $\sigma_j$  is the residual variance of the stock  $j$  for estimated  $\beta$ ,  $V_j$  is the market capitalization of the stock  $j$ ,  $SHS_j^{TSE}$  is the number of shareholders after the transfer to the TSE, and  $SHS_j^{JASDAQ}$  is the number of shareholders when the stock was listed on JASDAQ.  $SHS_j^{TSE}$  and  $SHS_j^{JASDAQ}$  is the number of shareholders at the end of fiscal year before and after listing change, respectively. However, for those stocks that did not satisfy listing requirements at the year-end before listing change,  $SHS_j^{JASDAQ}$  is used as the reference value for listing, in order to eliminate the impact of shareholder increase resulting from PO/SD.

Main results are summarized in Table 7<sup>11</sup>. First, the effect of shareholder

<sup>10</sup> See Footnote for the brief summary for Merton [1987]. Kadlec and McConnell [1994] showed changes in the shadow cost brought about by changes in the number of shareholders between 2 points of time by formula (5), based on the Merton Model. This is an effect of increased number of shareholders that improves risk diversification between shareholders, which is referred to in this study as “the effect of shareholder diversification”.

<sup>11</sup> For the effect of an increased number of shareholders, in addition to the definition in formula (5) we analyzed the effect of shareholder diversification, using the number of shareholders at the accounting year-end before and after listing change, without considering satisfaction or non-satisfaction of the listing requirement, and obtained the qualitatively same result. We also conducted an analysis using the same definition to calculate the ratio of increase in the number of shareholders, but in this case no significant relation with abnormal return was achieved.

diversification is negative and significant only for TSE Section I stocks. This is a stable relation, which cannot be influenced by any changes in combination of explanatory variables. For TSE Section II stocks, the coefficient of the shareholder diversification effect was negative and consistent with the hypothesis; however, statistical significance is weak. In all cases, a positive correlation between increased shareholder base and abnormal return was obtained; therefore, we can conclude that the relationship in Japan is consistent with the Merton Model. The difference between TSE Section I and TSE Section II stocks must be a reflection of the difference in resulting increase in volume.

Next, for the liquidity indicator  $\lambda'$ , a positive relation with size of cumulative abnormal return is estimated. For the stocks with improved liquidity, negative  $\lambda'$  is obtained, however, as statistical significance of the estimated coefficient is low, there appears to be no clear relationship.

For the rate of change in relative volume, there is a positive correlation between the degree of trading increase and cumulative abnormal return. Only Case 3 in Table 7 reaches the 10% significance level. In other cases, statistical significance is low, due to the influence of multicollinearity between shareholder numbers and volume.

Except for these variables, the dummy for SD and the rate of increase in number of stocks in PO demonstrate strong explanatory power. For both, regardless of the combination of explaining variables, estimated coefficients are negative. It means that if a PO/SD transaction is conducted at the time of listing change, abnormal return decreases at the time of announcement.

To summarize the above results, a positive correlation is observed between abnormal return and the effect of shareholder diversification, only for the stocks transferred to TSE Section I. Correlation between  $\lambda$ , liquidity measure and abnormal return is weak, regardless of the market to which the stocks are transferred. For stocks transferred to TSE Section I, a positive correlation is observed between trading volume and abnormal returns. Such a correlation reflects dealers' action for anticipating demand increase by index-based funds. It means that abnormal returns are strongly related to the investor's interest to include a stock in their portfolio. A cosmetic increase in the number of shareholders for the purpose of meeting the listing requirement is not sufficient to boost returns, and the shareholder base should be expanded so that trading volume in the market will increase. In this regard, stocks transferred to TSE Section I, become targets of passive investors, and can enjoy increases in trading volume.

Table 7 Regression Analysis of Cumulative Abnormal Return

The Effect of Shareholder Diversification (Number of shareholders at the time of accounting end after listing change, listing requirement)

	Case 1		Case 2		Case 3	
Constant Term	6.902 ***	1.837	4.933 **	2.191	4.628 **	2.197
Effect of shareholder diversification (Section I)	-0.298 ***	0.069	-0.291 ***	0.068	-0.280 ***	0.068
Effect of shareholder diversification (Section II)	-0.111	0.284	-0.169	0.282	-0.170	0.282
Kyle's $\lambda$	4.227	16.184				
Relative Volume			2.409	1.783		
Relative Volume of Trading (TSE Section I)					5.833 *	3.273
Relative Volume of Trading (TSE Section II)					1.613	1.888
Offering dummy	-8.078 **	3.383	-6.516 *	3.527	-6.572 *	3.515
Number of publicly offered stocks/number of outstanding stocks	-0.091 ***	0.029	-0.092 ***	0.029	-0.090 ***	0.029
Observed value	86		86		86	
Coefficient of Determination	0.338		0.352		0.365	

Notes

- 1) The explained variable is AR for CAR2 + the transfer date. For the value of effect of shareholder diversification, the number required for listing and the number as of the accounting year-end after listing change are used. The same result was obtained from calculation using the numbers at the accounting year-end before and after the listing change.
- 2) \*Confidence level 10%, \*\*5%, \*\*\*1% and not significantly zero

## **Section 8 Conclusion and Institutional Implications**

When the listing venue is changed, what kind of impact will occur on stock prices and liquidity? According to previous studies, an increase in the number of shareholders resulting from listing change, and expansion of the shareholder base to include institutional investors serve as factors in producing positive abnormal returns. In addition, it is demonstrated that improved liquidity has a positive impact on stock prices.

This study analyzes JASDAQ-listed stocks transferred to the TSE, in order to examine the relation between the effect of shareholder diversification, improved liquidity, and abnormal returns on stock prices. The stocks analyzed in this study are in the same trading system in both original and transferred markets. This is one of the distinguished features of this study from previous studies in U.S. It enables us to examine the hypotheses without paying attention to the trading system of trading mechanisms effects. Furthermore, because the impact of index-based fund investors can be detected based on the difference in the results for stocks transferred to TSE Sections I and II, it is possible to extract the impact caused by difference in market participants.

As a result of the empirical analysis, pure transferred stocks show abnormal returns between the announcement date and transfer date. Compared to the previous studies in U.S., such a result is meaningful because we now find listing change itself causes abnormal return without an effect of trading system changes. As is the case with the U.S. markets, abnormal returns are correlated with the effect of shareholder diversification, but not with the liquidity indicator.

On the other hand, stocks with PO/SD show that abnormal returns are positive on the announcement date to decline toward the transfer date. In most cases, cumulative abnormal return result in negative, but starts by the transfer date. Most of these stocks did not satisfy the TSE's listing requirement for the number of shares at the time of filing an application for listing change.

In addition to an increase in shareholder diversification, we observed the relevance of trading volume after listing change as a factor, which cause abnormal return. For changes in relative volume due to listing change, in the case of pure transferred stocks, regardless of section, it is observed that volume tends to decrease after peaking during the period between the announcement date and the transfer date. In the case of stocks with PO/SD, volume tends to reach a peak during 30 days after the transfer date regardless of the section. This may be due to the impact of

restrictions on self-account dealing by broker/dealer during the period of PO/SD. When JASDAQ-listed stocks are transferred to TSE Section I, volume increased partly because of demand from index-based investors. Conversely, the results indicated that stocks transferred to TSE Section II, where no demand from index-based investors can be expected, change of listing do not necessarily boost trading volume.

Those analytical results tell that changes in abnormal returns and volume do not arise simply because of listing change from JASDAQ to the TSE, but of transferring conditions and the trading status in the new market. Japanese exchanges adopt procedures that are different from those of the U.S. exchanges, and are unique in that firms are allowed to meet the requirement on the number of shareholders by conducting a PO or SD of stocks after the announcement date by the transfer date. These results indicate that such PO/SD transactions just before listing change have an impact on stock price formation. For pure transferred stocks, if the period between announcement date and the transfer date is extremely short, speculative demand by index-based or other types of investors is concentrated into the short period. Such a concentration of demand could cause stock price overshooting. Since Assets under indexing-based funds and pension funds, are increasing, a period from announcement to transfer should not be too short for avoiding overshooting price.

The empirical results of this study regarding listing change demonstrate that, PO/SD immediately before the listing change has side effects. Therefore, this study suggests that, if one applies for listing change without satisfying the listing requirement for the number of shareholders, she should take possible side effect into consideration.

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