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Two Essays on Analyst Response to Stocks Index Adjustments

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指 導 教 授 ：張元晨

博 士 生 ：杜佳蓉

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國立政治大學博士學位證書

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學生　　杜佳蓉　　生於中華民國　陸拾捌(西元1979) 年　捌　月　　陸　日

在本校　商學院　　財務管理學系

修業期滿成績及格准予畢業依學位授予法之規定

授予　財務管理博士　學位

院長　薛 仙 藤

校長　吳思華

中　　華　　民　　國　　九十八　年　　六　月

國立政治大學
NATIONAL CHENGCHI UNIVERSITY

The President of National Chengchi University
on the Recommendation of the Faculty of

FINANCE
COLLEGE OF COMMERCE

Has Conferred upon

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Who Has Satisfactorily Fulfilled All Requirements the Degree of

Doctor of Philosophy

With all the Rights Privileges and Honors Thereunto Appertaining
in Witness Whereof the Seal of the University and the Signature of the
Proper Authority Is Hereunto Affixed Given at Taipei City, Republic of China
THIS MONTH OF JUNE, TWO THOUSAND AND NINE.

PRESIDENT ScHwa Wu

Chapter I

Introduction

The categorization of stock index has a long history. The most famous and representative is Dow Jones Industrial Average, which was categorized by Dow Jones Company in 1928. The whole market performance is presented by the ups and downs of the index. However, investors paid little attention to the indicator meaning of the index at that time, and they didn't use it as investing reference in early years. After being adjusted for several times, it was affirmed to be better presenting the whole market and was thus noticed by stock market investors.

The S&P 500 is also a widely watched index of large-cap US stocks. The S&P 500 is designed to be a leading indicator of U.S. equities and is meant to reflect the risk/return characteristics of the large-cap universe. Companies included in the index are selected by the S&P Index Committee, a team of analysts and economists at Standard & Poor's.

The S&P 500, which was previously a market-value weighted index, is converted to float weighted now. The S&P 500 is one of the most commonly used benchmarks for the overall U.S. stock market. The Dow Jones Industrial Average (DJIA) was at one time the most renowned index for U.S. stocks. However, most people agree that the S&P 500 would be a better representation of the U.S. market since the DJIA contains only 30 companies. In fact, many consider it to be the definition of the market.

Unlike the S&P 500, the Nikkei 225 Stock Average is a price-weighted average of 225 top-rated Japanese companies listed in the First Section of the Tokyo Stock Exchange. It has been calculated daily by the Nihon Keizai Shinbun (Nikkei) newspaper. Although the composite stocks of Nikkei 225 occupies only 20% fraction of the First Section of the Tokyo Stock Exchange, it represents nearly 60% trading

volume as well as nearly 50% total market value of the First Section of the Tokyo Stock Exchange. Nikkei 225, thus, is widely deemed as a representative index of Japan large-cap stocks. (It is similar to S&P 500 Index.)

The economic development in Taiwan has been internationalized and thus drawn the attention from the whole world. In 1988, the Morgan Stanley Capital International (MSCI), which has been prestigious in categorizing the indices of stock price, started to categorize the index of Taiwan. But it belonged to non-free float[1] index. In September 2, 1996, MSCI affirmed the liberalization and internationalization of Taiwan and adopted the index of Taiwan into Emerging Market free float[2] indices. The composite stocks of MSCI indices are considered the indicators of representative and the important references of global fund managers.

This dissertation aims at examining the effects of changes in price and the earnings forecast responses of analysts to stocks indices adjustments. There are a lot of studies examining the price change effects of stocks index adjustments. Some competing hypotheses have been proposed as possible explanations for the stocks index adjustments. In the first essay, the focus is on examining the price effects associated with changes in the composition of the Nikkei 225 and MSCI Taiwan lists. Besides dividing the sample period into two sub-periods, we also categorize the stocks depending on the scale, industry and upwards and downwards of analysts earnings forecasts to explore the price responses of different types of composite stocks.

The nature of stock markets varies from one country to another. The U.S and Japanese stock markets are considered developed, and are dominated by institutional investors. In contrast, the Taiwanese stock market is classified as an emerging market,

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[1] The definition of "**non-free float**" – irrespective of the size of a shareholding – covers any shareholding of an owner that is subject to a statutory or contractual qualifying period of at least six months with regard to its disposal by the owner.

[2] The "**free float**" is generally defined as the number of outstanding shares minus shares that are restricted from trading.

and is dominated by individual investors. The difference between the Taiwan, Japanese and U.S. stock markets, and the characteristics of stock indices may generate different results in analysts' forecast when stocks are added to or deleted from major stock indices. The second essay examines the responses of analysts to Nikkei 225 Index and MSCI Taiwan Index inclusions. We intend to analyze whether earnings forecasts for the analysts of the S&P 500 Index differ from the analysts of the Nikkei 225 Index and MSCI Taiwan Index.

This dissertation is the first study to compare the prices change effects of stocks that experienced index changes from the MSCI Taiwan index and Nikkei 225 index. Moreover, this is also the first study to examine whether local or foreign analysts outperform one the other in their forecast accuracy on indices changes. We anticipate the results can provide better information for investors and management to make better decisions.

The remainder of this dissertation is organized as follows. Chapter II examines the effects of change in price to the stocks indices adjustments. Chapter III explores the analyst responses to the changes in the composition of the Nikkei 225 Index and MSCI Taiwan Index adjustments. Chapter IV concludes the dissertation.

Chapter II

The Effects of Changes in Price to Stocks Indices Adjustments

1. Introduction

We examine the effects of changes in price on stocks indices adjustments. Numerous studies have examined the price effects of stocks index adjustments, such as those of Harris and Gurel (1986), Shleifer (1986), Wurgler and Zhuravskaya (2002) and Chen et al. (2004, 2006) examined the change in the composition of the S&P 500 Index. Some studies focused on non-U.S. stock indices. For instance, Chakrabarti et al. (2005) applied a widely used set of country equity indices－the MSCI country indices for 29 countries－to the returns of stocks added to or removed from these indices around the event dates. They found that stocks being added to the indices experience sharp price rise after the announcement date, followed by a further rise during the period preceding the effective change date.

The Japanese stock market has the second largest market capitalization in the world, with the Tokyo Stock Exchange being second only to the New York Stock Exchange (NYSE) in terms of aggregate market value and trading volume. However, little attention has focused on the changes in the composition of the most broadly quoted Japanese stock index－ Nikkei 225 Index. Hanaeda and Serita (2003) examine large composite change in the Nikkei 225 Index that occurred on April, 2000, but they only consider a single event change. Meanwhile, Okada et al. (2006) used a relatively large sample of Nikkei 225 Index from 1991 to 2002 to investigate the stock price and volume behavior of firms around the time of their addition to the index, but they did not consider the stock price and volume behavior of deleted firms. In the same way, few studies examined the stock price behavior reactions of firms added to or deleted from the MSCI Taiwan Index.

The nature of stock markets varies from one country to another. The Japanese

stock market is considered developed, and is dominated by institutional investors. In contrast, the Taiwanese stock market is classified as an emerging market, and is dominated by individual investors. Sias (1997) found that individual investors are more responsive than institutional investors to changes in market conditions. The investment strategy is also different to the two types of investors. Grinblatt et al. (1995) documented institutions are momentum investors and tend to follow past prices. Odean (1998) and Kaniel et al. (2008) found that individual investors sell stocks that were past winners and hold on to past losers. Similarly, Barber and Odean (2000) find that individual investors are ‘‘anti-momentum’’ investors. Grinblatt and Keloharju (2000) found that Finnish individuals and institutions are contrarian investors. The differences between the Taiwanese and Japanese stock markets and the responses of market conditions and investment strategies for institutional investors and individual investors are different, which may generate different results in the price reactions. This chapter thus uses the composition changes in the Nikkei 225 Index and MSCI Taiwan Index to study the effects of changes in price.

Liu (2000) examined the effects of changes in the Nikkei 500 Index on stock price and trading volume. He found significantly price increases (decrease) for added (deleted) stocks with no post-event reversal[3]. Furthermore, Okada et al. (2006) used the Nikkei 225 Index to investigative the stock price and volume behavior of firms around the time of their addition to the index. They found the stock prices of firms added to the Nikkei 225 increase on the announcement date, continue to increase until the day before the effective change date, and then decrease on and immediately after the change date[4]. The Nikkei 225 and 500 Indices are price-weighted average of 225 and 500 actively traded stocks on the first section of the Tokyo Stock Exchange. Why different studies have obtained different empirical results is unclear, but possibly the

[3] The event window is -15 to +15 days.
[4] On average, approximately five business days between the announcement date and the actual change date.

reason is that the Nikkei 500 includes more small-cap stocks than the Nikkei 225. Consequently, this study attempts to separate the added and deleted stocks into two types depending on the market value and to examine which firm types exhibit larger price responses.

Taiwan Stock Exchange market includes cement, food, plastic, textile, electronic, electric machinery, electrical & cable, chemical, glass, paper, iron & steel, rubber, automobile, construction, transportation, tourism, financial, consumers goods and others industries. The electronic industry, it represents 70 % total market value as well as 50 % trading volume of the Taiwan Stock Exchange from 1999. Also, it is the most dazzling sector of the whole market. The fluctuation of its price hauls the price trend of Taiwanese stock market and affects the profit conditions of investors. Recently years, firms included in the MSCI Taiwan Index are almost exclusively from the electronic sector. (There are five ninths in 2005, seven eighths in 2006, and 100% in 2007.) Consequently, this study is interested in exploring the effects of price changes in the composition stocks on electronic and non-electronic sectors. We conjecture the price response of electronic sector is bigger than the one of non-electronic sector. Besides categorizing composite stocks into different types depending on market value and industry, this study also classifies firms using analyst earnings forecasts to explore the price reactions of upwards or downwards earnings forecast revisions of firms added to the Nikkei 225 and MSCI Taiwan indices[5]. Finally, this study separates the sample period into two sub-periods by the Internet bubble suddenly bursting to investigate the price responses of composite stocks around the two sub-periods[6].

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[5] For the deleted firms from the Nikkei 225 Index and MSCI Taiwan Index, the earnings forecast data is few for the identical analysts simultaneously make the forecasts around the announcement date. This study thus only discusses the earnings data of added firms.

[6] The influence of Internet bubble burst is global, moreover its influence speed unusual quick. Therefore we want to understand that it besides creates the network stock disaster, regarding other events and stock reward whether can also be influential.

The analytical results show that the price effects on stocks experiencing adjustments in the Nikkei 225 are consistent with the price pressure hypothesis. The price effects of composite stocks changed for the MSCI Taiwan Index are consistent with the downward sloping demand curve hypothesis. Based on classifying the characteristics of composite stocks into three categories, we find that large-scale added stocks dominate the price trend of the whole added sample in the Nikkei 225 Index. Also, added stocks with upwards revision earnings forecasts make more abnormal returns than the added stocks with downwards revision earnings forecasts in the Nikkei 225 Index during the post-announcement period. The electronic stocks earn larger abnormal returns than non-electronic stocks in the MSCI Taiwan Index. That can enable investors to profit by buying electronic stocks and added stocks with upwards revision earnings forecasts. The price reactions for the composite stocks in the Nikkei 225 Index and MSCI Taiwan Index around the two sub-periods have significant difference.

The remainder of this chapter is organized as follows. Section 2 discusses the literature review. Section 3 describes our sample and the methodology that we use. Section 4 presents and discusses the empirical results. Section 5 concludes the chapter.

2. Literature review

The literature on studying the effects of return changes on the additions and deletions of stocks to major stock indices is sizeable. Harris and Gurel (1986), Shleifer (1986), Dhillon and Johnson (1991), Wurgler and Zhuravskaya (2002) found strong price effects for S&P 500 inclusions. Kaul et al. (2000) and Okada et al. (2006) found similar effects in Toronto Stock Exchange TSE 300 and Nikkei 225 indices, respectively.

Harris and Gurel (1986) found strong effects for S&P 500 inclusions, but unlike the permanent volume effect, the price effect is reversed over time. They therefore summarized that these effects are due to price pressures. Shu et al. (2004) found additions (deletions) to the MSCI free indices have a positive (negative) abnormal return in the run-up window from the announcement day up to one day before the change was implemented. This was followed by a significant reversal on the change day. Shankar and Miller (2006) found that firms added to the S&P 600 index experience a significant price increase at announcement. However, the price and volume effects are temporary and are fully reversed within 60 days. Okada et al. (2006) found the stock prices of firms to be added rise on the announcement date, continue to rise until the day before the effective change date, and subsequently decline beginning on the change date. Hence their results also support the temporary price-pressure hypothesis.

On the other hand, Shleifer (1986) found more permanent price changes and attributes them to the downward sloping demand curve for stocks—the fact that stocks are imperfect substitutes for one another. Wurgler and Zhuravskaya (2002) witnessed that stocks with no close substitutes experience a higher rise in returns on inclusion in the S&P 500 index, it strongly corroborates evidence for the downward sloping demand curve view. Kaul et al. (2001) also reported results consistent with the downward sloping demand curve hypothesis but based on weight changes in the Toronto Stock Exchange, TSE 300. Dhillon and Johnson (1991) argued that there may be an information effect in the inclusion or exclusion of stocks to a major index.

Chen et al. (2004, 2006) studied the price effects of changes to the S&P 500 Index and witnessed an asymmetric price response. Consistent with prior work, they found a permanent price increase for firms added to the S&P 500 Index. However, they found that the firms deleted from the index do not experience a permanent negative price effect. They explained the possible reason for asymmetric price

response effects arising from the changes in investor awareness. Shankar and Miller (2006) witnessed similar effects in S&P 600 and found institutional ownership decreases following index deletions.

3. Data and methodology description

3.1 Data description

We use stocks either added to or removed from the Nikkei 225 Index and MSCI Taiwan Index to study the effects of price changes during the periods from September 1991 to March 2008 and May 1999 to May 2007[7], respectively. Table 2.1 summarizes the information of our sample. Excluding insufficient price data during the event periods, the final samples comprised 88 and 102 firms added to the Nikkei 225 Index and MSCI Taiwan Index, respectively. The final samples of firms deleted from the Nikkei 225 Index and MSCI Taiwan Index comprise 51 and 58 firms, individually.

[Insert Table 2. 1 here]

Besides dividing the sample period into two sub-periods, this study also used the characteristics of composite stocks as a basis for dividing the sample firms into three categories. Category 1 separates composite stocks into large scale and small scale firms depending on their market capitalization. Furthermore, category 2 separates composite stocks into electronic and non-electronic stocks. Finally, category 3 classifies newly added firms based on analyst earnings forecasts into upwards forecast earnings adjustment and downwards forecast earnings adjustment groups.

Earnings per share forecasts are obtained from the I/B/E/S database. The price

[7] We do not have the data of announcement date for the Nikkei 225 Index before 1990, and therefore we start from 1991. The update speed of IBES database for non-U.S. firms is slow, we do not have completely earnings forecast data for Taiwan stocks after 2008 at the time of running the empirical results. In order to match with the data of IBES earnings forecast in Chpater III, hence we end in 2007.

and market value of Japanese stocks are obtained from the Datastream. Information on announcement dates for Nikkei 225 Index adjustment is obtained from the Nikkei Interactive website. This study uses the TOPIX index as the Japanese market index and the Taiwan Stock Exchange (TSE) index as the Taiwanese market index[8]. Price and market value data for Taiwanese stocks are obtained from the TEJ (Taiwan Economic Journal). Furthermore, announcement date information for MSCI Taiwan Index adjustment is obtained from the UDN (United Daily News) data.

3.2 Methodology

An event study approach is applied in this study. Using the market model, the return of stock *i* on day *t*, denoted as R_{it}, is calculated as:

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it} \tag{1}$$

where R_{mt} is the return of the Japan and Taiwan market on day *t*. The parameters of the market model are estimated using a Ordinary Least Squares (OLS) regression. These parameters are then used to calculate abnormal returns associated with the event examined. We choose an estimation period of -120 to -11 days and an event window of -10 to 30 days. Abnormal return of stock *i* on day *t*, denoted as AR_{it}, is calculated as:

$$AR_{it} = R_{it} - \hat{R}_{it} = R_{it} - (\hat{\alpha}_i + \hat{\beta}_i R_{mt}) \tag{2}$$

where $\hat{R}_{it}$ is the expected return of stock *i* on day *t.*

The mean abnormal return across the sample, denoted as MAR_t ,is defined as:

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[8] Liu (2000) used TOPIX index as market index to investigate the price and trading volume effects of changes in the Nikkei 500. Okada et al. (2006) used TOPIX index as market index to study the stock price and volume behavior of firms around the time of their addition to the Nikkei 225 Index. Shu et al. (2004) used TSE capitalization-weighted market index to analyze price-volume relation for Taiwanese listed firms that are added to or deleted from the MSCI free indices. This study follows the practices of using TOPIX as Japan market index and TSE as Taiwan market index.

$$MAR_t = \sum_{t=1}^{N} \frac{AR_{it}}{N} \tag{3}$$

We then compute the cumulative abnormal return (CAR_i) for stock *i* for various event windows from $t = j$ to $t = k$ as

$$CAR_i = \sum_{t=j}^{k} AR_{it} \tag{4}$$

The mean cumulative abnormal return (CAR) of *N* stocks is

$$CAR = \frac{\sum_{i=1}^{N} CAR_i}{N} \tag{5}$$

The corresponding *t-statistics* that measure whether the CAR is significantly different from zero is

$$t(CAR) = \frac{CAR}{\sqrt{\frac{Var(CAR_i)}{N}}}, \tag{6}$$

where $Var(CAR_i)$ is the variance of CAR_i among *N* stocks.

We also use a two-sample *t-statistics* to test whether different CARs in two subsamples are equal to each other. The *t-statistics* of two-sample mean cumulative abnormal return is as follows:

$$t = \frac{CAR_{S1} - CAR_{S2}}{\sqrt{\frac{S_{S1}^2}{N_{S1}} + \frac{S_{S2}^2}{N_{S2}}}}, \tag{7}$$

where S_1 is the subsample 1, S_2 is the subsample 2, CAR_{S1} (CAR_{S2}) is the CAR of subsample 1(subsample 2), S_{S1}^2 (S_{S2}^2) is the variance of CAR_i in subsample 1(subsample 2), and N_{S1} (N_{S2}) is the number of stocks in subsample 1(subsample 2).

4. Empirical results

4.1 Price effects displayed by stocks added to the Nikkei 225

Mean abnormal returns (MAR) and mean cumulative abnormal returns (CAR)

are listed in Table 2.2 (Panel A) and Table 2.3 (Panel A). Figure 2.1 shows the trend of mean cumulative abnormal returns for 88 added stocks in the event-period. This study first focuses on the price effects of added stocks as reported in Table 2.2 (Panel A) and make three observations with respect to the abnormal returns. The first observation relates to the pre-announcement period abnormal returns. During the period from day -10 to day -1, the mean abnormal returns are not significantly different from 0. The second observation relates to the announcement day abnormal return. The mean abnormal return of announcement day is 1.81%, which is significant at 1% level. This result is similar to those found in earlier studies.

[Insert Table 2.2, Table 2.3 and Figure 2.1 here]

The third observation relates to the post-announcement period abnormal returns. The results show the abnormal returns are still positive significantly from day 1 to day 4. However, after day 4, the added firms experience significant negative abnormal returns of -2.01%, with a *t*-value of -4.41 on day 5. The negative abnormal returns continue for several days. Also, Table 2.3 (Panel A) displays the mean cumulative abnormal returns for 88 added stocks fully reversal from day 2 to day 20. The result suggests that the price effect of added firms in the Nikkei 225 Index is consistent with the price pressure hypothesis. These results for the Nikkei 225 Index are similar to those of Harris and Gurel (1986), Shu et al. (2004) and Okada et al. (2006).

4.1.1 Price responses of large-scale and small-scale stocks added to the Nikkei 225

The scale differences of the composite stocks make the findings of Liu (2000) and Okada et al. (2006) are diverse although both of them use stocks listed on the first section of the Tokyo Stock Exchange. Hence, this study tries to divide the composite stocks into large-scale and small-scale depending on their market value, and examines whether the stock price responses of the two subsamples are the same.

[Insert Table 2.4 and Figure 2.2 here]

Table 2.4 shows the mean cumulative abnormal returns for 44 large-scale stocks and 44 small-scale stocks in various event periods. Figure 2.2 shows the trend of mean cumulative abnormal returns of the two subsamples of added stocks in the event-period. The red line represents the large-scale stocks and the black line depicts the small-scale stocks. Large capitalization stocks achieve a significant abnormal return of 2.73 % on the announcement day and significant CARs for the periods from day 1 to day 5, day -10 to day 15 and day -10 to day 30. Small capitalization stocks also show a significant positive abnormal return on the announcement day, but of a lower magnitude (0.88%). CARs of small capitalization stocks are positive and significant in the other five event periods. The two-sample *t-statistics* indicate the difference in CARs between large and small capitalization stocks, and demonstrate a significantly different on the announcement day. In other event periods, the CARs for small-scale stocks are bigger than those of large-scale stocks, although they are not statistically significant. Figure 2.2 illustrates that the trend of mean cumulative abnormal returns for the large-scale added stocks closely resemble those of the whole added sample.

4.1.2 Price responses of electronic and non-electronic stocks added to the Nikkei 225

This study tries to divide the composite stocks of Nikkei 225 Index into electronic stocks and non-electronic stocks, and examines whether the stock price responses of the two subsamples are the same.

[Insert Table 2.5 and Figure 2.3 here]

Table 2.5 lists the mean cumulative abnormal returns for 25 electronic stocks and 63 non-electronic stocks during various event periods. Figure 2.3 illustrates the trend of mean cumulative abnormal returns for the two subsamples of stocks added to the index during the event-period. The red line represents the electronic stocks and the

black line depicts the non-electronic stocks. Electronic stocks achieve a significantly positive abnormal return of 2.01 % on the announcement day and a significant CAR of 7.00% for the period from day 1 to day 5. Companies of non-electronic also show significant positive return on the announcement day, but of a lower magnitude (1.73%). CARs of non-electronic stocks are positive and significant in the other seven event periods. The two-sample *t-statistics* indicate the difference in CARs between electronic stocks and non-electronic stocks. The analytical results reveal that the CAR for the electronic stocks is significantly greater than the CAR for the non-electronic stocks for the event period for day -10 to day 15. In other event periods, the differences are not statistically significant.

4.1.3 Price responses of upwards and downwards revisions of earnings forecasts for stocks added to the Nikkei 225

There are 61 stocks that were added to the index during the study period for which analysts had made earnings forecasts. Stocks for which insufficient price data exists during the event periods are excluded. The final sample comprises 59 stocks from the Nikkei 225 Index for which analysts have made earnings forecasts. This study calculates changes in earnings forecasts for the stocks by subtracting the pre-announcement earnings forecast from the post-announcement earnings forecast[9]. If the value is bigger than or equal to zero the stock is assigned to the upwards revision of earnings forecast group, while if the value is less than zero, it is assigned to the downwards revision of earnings forecast group.

[Insert Table 2.6 and Figure 2.4 here]

Table 2.6 lists the mean cumulative abnormal returns for 29 upwards earnings forecast revision stocks and 30 downwards earnings forecast revision stocks during various event periods. Figure 2.4 shows the trend of the mean cumulative abnormal

[9] See Chapter III for the detail computing mode.

returns for the two subsamples of added stocks during the event-period. The red line represents upwards earnings forecast revision stocks and the black line represents downwards earnings forecast revision stocks. Downwards revised earnings forecast stocks earn a significant abnormal return of 1.11 % on the announcement day. Companies undergoing upwards revisions of earnings forecasts also show a significant positive return on the announcement day, but with a lower magnitude (0.95%). The CARs for the other four event periods are all positive and significant. The two-sample *t-statistics* indicate the difference in CARs between upwards and downwards revision of earnings forecast stocks. The CARs for the upwards revision of earnings forecast stocks are considerably greater than those for the downwards revision of earnings forecast stocks for the event periods for day 1 to day 10 and day 1 to day 15. Investors can benefit by purchasing upwards revision of earnings forecast stocks.

4.1.4 Price responses for stocks added to the Nikkei 225 before and after the Internet bubble burst

There are 19 and 69 stocks that were added to the index before and after the Internet bubble burst, respectively. This study tries to examine whether the stock price responses of the two sub-periods are the same.

[Insert Table 2.7 and Figure 2.5 here]

Table 2.7 lists the mean cumulative abnormal returns for stocks added to the Nikkei 225 Index before and after the Internet bubble burst in various event periods. Figure 2.5 shows the trend of the mean cumulative abnormal returns for stocks added to the Nikkei 225 Index in the two sub-periods. The black and red line represent the mean cumulative abnormal returns for stocks added to the Nikkei 225 Index before and after the Internet bubble burst, respectively. The added stocks before the Internet bubble burst do not show a significant abnormal return on the announcement date, but

show significantly and positively CARs in the other six event periods. The added stocks after the Internet bubble burst achieve a significant abnormal return on the announcement day of 2.53%, and significantly positive CARs for the periods from day 1 to day 5, day 1 to day 10, day -10 to day 15 and day -10 to day 30.

The pairwise *t-statistics* indicate the difference in CARs for added stocks in the two sub-periods. The analytical results reveal that the CARs for the added stocks before Internet bubble burst are significantly greater than those for the added stocks after Internet bubble burst for the event periods for day 1 to day 5, day 1 to day 10 and day 1 to day 15. These results show added stocks before the Internet bubble burst achieve higher abnormal returns after the announcement day than those for added stocks after the Internet bubble burst.

4.2 Price effects displayed by stocks deleted from the Nikkei 225

Sufficient price data is available to conduct analysis for 51 stocks deleted from the Nikkei 225 Index. Table 2.2 (Panel B) and Table 2.3 (Panel B) lists the results for the deletions sample. Figure 2.6 shows the trend of the mean cumulative abnormal returns of deleted stocks during the event-period. This study makes three observations. First, the abnormal returns during the pre-announcement period are significantly positive at the 1 % and 10 % levels on four days (day -9, -7, -4, -3).

[Insert Table 2.2, Table 2.3 and Figure 2.6 here]

Second, as with added stocks, a growing announcement reaction (albeit negative) is observed to deleted stocks on the announcement day. The abnormal return is -13.13% which is significantly negative at the 1 % level. Third, abnormal returns during post-announcement period are still significantly negative from days 1 to day 3. However, after day 3, the deleted firms experience a significantly positive abnormal return of 4.20% with a *t*-value of 4.761 on day 4. Abnormal returns thus are sometimes positive and sometimes negative during the post-event period. The mean

cumulative abnormal return for 51 deleted stocks is no significant reversal in the event period. But from day 2 to day 48, it is fully reversal. (This does not show in Table 2.3.) The result suggests that the price effect of deleted firms in the Nikkei 225 Index is also consistent with the price pressure hypothesis. This study has confirmed the price behavior of firms deleted from the Nikkei 225 Index that are not reported in the paper of Okada et al. (2006).

4.2.1 Price responses of large-scale and small-scale stocks deleted from the Nikkei 225

There are 51 deleted stocks in Nikkei 225 Index for which sufficient price data is available to examine the responses of price changes. This study classifies 26 stocks as large-scale deleted stocks and 25 stocks as small-scale deleted stocks.

[Insert Table 2.8 and Figure 2.7 here]

Table 2.8 shows the mean cumulative abnormal returns for large-scale deleted stocks and small-scale deleted stocks in various event periods. Figure 2.7 shows the trend of mean cumulative abnormal returns for the two subsamples of deleted stocks during the event-period. The red line represents the large-scale deleted stocks and the black line depicts the small-scale deleted stocks.

Large-scale deleted stocks and small-scale deleted stocks respectively experience significant negative CARs in the six event periods. The two-sample *t-statistics* indicate the difference in CARs between large-scale deleted stocks and small-scale deleted stocks. The CARs differ markedly among the four event periods (days -10 to -1, day 0, days -10 to 15, days -10 to 30). The analytical results reveal that the CARs for large-scale deleted stocks are bigger than those of small-scale deleted stocks.

4.2.2 Price responses of electronic and non-electronic stocks deleted to the Nikkei 225

Table 2.9 lists the mean cumulative abnormal returns for 4 electronic stocks and 47 non-electronic stocks during various event periods. Figure 2.8 illustrates the trend of mean cumulative abnormal returns for the two subsamples of stocks deleted from the index during the event-period. The red line represents the electronic stocks and the black line depicts the non-electronic stocks.

[Insert Table 2.9 and Figure 2.8 here]

Electronic deleted stocks experience a insignificantly negative abnormal return of -8.68% on the announcement day. Companies of non-electronic display a significant negative return on the announcement day, with a higher magnitude (-13.51%). Non-electronic deleted stocks experience significant negative CARs in the other six event periods. The two-sample *t-statistics* indicate the difference in CARs between electronic deleted stocks and non-electronic deleted stocks. The CARs for the electronic stocks are greater than those for the non-electronic stocks for the event periods for day 1 to 15 and day -10 to 15.

4.2.3 Price responses for stocks deleted from the Nikkei 225 before and after the Internet bubble burst

There are 8 and 43 stocks that were deleted from the index before and after the Internet bubble burst, respectively. This study tries to examine whether the stock price responses of the two sub-periods are the same.

[Insert Table 2.10 and Figure 2.9 here]

Table 2.10 lists the mean cumulative abnormal returns for stocks deleted from the Nikkei 225 Index before and after the Internet bubble burst in various event periods. Figure 2.9 shows the trend of the mean cumulative abnormal returns for stocks deleted from the Nikkei 225 Index in the two sub-periods. The black and red line represent the mean cumulative abnormal returns for stocks deleted from the Nikkei 225 Index before and after the Internet bubble burst, respectively. The

deleteded stocks before the Internet bubble burst do not show a significant abnormal return on the announcement date, but show significantly and negatively CARs for the periods from day -10 to day -1, -10 to day 15 and day -10 to day 30. The deleted stocks after the Internet bubble burst achieve a significantly negative abnormal return on the announcement date of -15.60%, and show significantly and negatively CARs in the other six event periods.

The pairwise *t-statistics* indicate the difference in CARs for deleted stocks in the two sub-periods. The analytical results reveal that the CARs for the deleted stocks before Internet bubble burst are significantly greater than those for the deleted stocks after Internet bubble burst in the event periods for day 0, day 1 to day 15, day 1 to day 30, day -10 to day 15 and day -10 to day 30. These results show deleted stocks after the Internet bubble burst achieve greater negative abnormal returns after the announcement date than those for deleted stocks before the Internet bubble burst.

4.3 Price effects displayed by stocks added to the MSCI Taiwan Index

MAR and CAR are listed in Table 2.11 (Panel A) and Table 2.12 (Panel A) for 102 stocks added to the MSCI Taiwan Index. Figure 2.10 shows the trend of mean cumulative abnormal returns for added stocks in the event-period. This study first focuses on the price effects exhibited by added stocks, as reported in Table 2.11(Panel A). During the pre-event period, the mean abnormal return of added stocks is -0.80% on day -7, which is significantly negative at the 1% level. The mean abnormal return for the announcement day is 1.07%, which is significant at the 1% level. This result also resembles the findings of earlier studies.

[Insert Table 2.11, Table 2.12 and Figure 2.10 here]

The post-event period abnormal returns remain significantly positive from day 2 to day 3. However, after day 3, the added firms experience a significant negative abnormal return of -0.44%, with a *t*-value of -2.603 on day 4. Hereafter, abnormal

returns are sometimes positive and sometimes negative during the post-event period. Table 2.12 (Panel A) exhibits that the mean cumulative abnormal returns of added stocks from day 2 to day 30 is -1.58% (p-value = 0.230). There is no significant price reversal in the event period. The price effect exhibited by added firms in the MSCI Taiwan Index is consistent with the downward sloping demand curve hypothesis. These results for the MSCI Taiwan Index are not consistent with the findings of Shu et al. (2004).

4.3.1 Price responses of large-scale and small-scale stocks added to the MSCI Taiwan Index

This study tries to divide the composite stocks of MSCI Taiwan Index into large-scale and small-scale depending on their market value, and examines whether the stock price responses of the two subsamples are the same.

[Insert Table 2.13 and Figure 2.11 here]

Table 2.13 shows the mean cumulative abnormal returns for 51 large-scale added stocks and 51 small-scale added stocks in various event periods. Figure 2.11 shows the trend of mean cumulative abnormal returns of the two subsamples of added stocks in the event-period. The red line represents the large-scale added stocks and the black line depicts the small-scale added stocks. Large capitalization stocks achieve a significantly positive abnormal return of 0.85 % on the announcement day. CARs of large-scale stocks are positive but insignificant in the other six event periods. Small capitalization stocks also show a significant positive abnormal return on the announcement day, but of a higher magnitude (1.28%). CARs of small-scale stocks is negative and significant in the event period from day -10 to day -1. The two-sample *t-statistics* indicate the difference in CARs between large and small capitalization stocks. Before the announcement day, the CAR for small-scale added stocks is bigger than the one of large-scale added stocks, it is statistically significant at 5% level. On

the announcement day and the post-event period, there are no statistically significant differences of CARs for large-scale added stocks and small-scale added stocks.

4.3.2 Price responses of electronic and non-electronic stocks added to the MSCI Taiwan Index

Electronic stocks dominate the capitalization of the Taiwanese stock market, and recently firms included in the MSCI Taiwan Index are almost exclusively from the electronic sector. This study thus tries to divide the composite stocks of MSCI Taiwan Index into electronic stocks and non-electronic stocks, and examines whether the stock price responses of the two subsamples are the same.

[Insert Table 2.14 and Figure 2.12 here]

Table 2.14 lists the mean cumulative abnormal returns for 67 electronic added stocks and 35 added non-electronic stocks during various event periods. Figure 2.12 shows the trend of mean cumulative abnormal returns for the two subsamples of stocks added to the index during the event-period. The red line represents the electronic stocks and the black line depicts the non-electronic stocks. Electronic stocks achieve a significantly positive abnormal return of 1.09 % on the announcement day. Companies of non-electronic also show significant positive return on the announcement day, but of a lower magnitude (1.02%). CARs of non-electronic stocks are negative and significant in the other three event periods (days 1 to 15, days -10 to 15 and days -10 to 30). The two-sample *t-statistics* indicate the difference in CARs between electronic added stocks and non-electronic added stocks. The analytical results reveal that the CARs for the electronic added stocks are significantly greater than those for the non-electronic added stocks for the event periods for day 1 to day 10, day 1 to day 15 and day -10 to day 15. The finding provides evidence to our inference that the price response of electronic sector is bigger than the one of non-electronic sector. Also, investors can benefit by buying the electronic added

stocks.

4.3.3 Price responses of upwards and downwards revisions of earnings forecasts for stocks added to the MSCI Taiwan Index

There are 50 stocks that were added to the index during the study period for which analysts had made earnings forecasts. Stocks for which insufficient price data exists during the event periods are excluded. The final sample comprises 48 stocks from the MSCI Taiwan Index for which analysts have made earnings forecasts. This study calculates changes in earnings forecasts for the stocks by subtracting the pre-announcement earnings forecast from the post-announcement earnings forecast. If the value is zero or above the stock is assigned to the upwards revision of earnings forecast group, while if the value is below zero, it is assigned to the downwards revision of earnings forecast group.

[Insert Table 2.15 and Figure 2.13 here]

Table 2.15 lists the mean cumulative abnormal returns for upwards earnings forecast revision stocks and downwards earnings forecast revision stocks in various event periods. Figure 2.13 shows the trend of the mean cumulative abnormal returns for the two subsamples of added stocks during the event-period. The red line represents upwards earnings forecast revision stocks and the black line represents downwards earnings forecast revision stocks. Upwards earnings forecast revision stocks earn a significant positive abnormal return of 1.29 % on the announcement day. Companies of downwards earnings forecast revision show no significant CARs in any event periods. The two-sample *t-statistics* indicate the difference in CARs between upwards earnings forecast revision stocks and downwards earnings forecast revision stocks. The analytical result reveals that there is no significant difference between the two types of stocks. Investors can not benefit by buying the upwards earnings forecast revision stocks in Taiwanese market.

4.3.4 Price responses for stocks added to the MSCI Taiwan Index before and after the Internet bubble burst

There are 13 and 89 stocks that were added to the index before and after the Internet bubble burst, respectively. This study tries to examine whether the stock price responses of the two sub-periods are the same.

[Insert Table 2.16 and Figure 2.14 here]

Table 2.16 lists the mean cumulative abnormal returns for stocks added to the MSCI Taiwan Index before and after the Internet bubble burst in various event periods. Figure 2.14 shows the trend of the mean cumulative abnormal returns for stocks added to the MSCI Taiwan Index in the two sub-periods. The black and red line represent the mean cumulative abnormal returns for stocks added to the MSCI Taiwan Index before and after the Internet bubble burst, respectively. The added stocks before the Internet bubble burst do not show a significant abnormal return on the announcement day, but show significantly and positively CARs in the other seven event periods. The added stocks after the Internet bubble burst achieve a significant abnormal return on the announcement date of 1.19%, and a significantly negative CAR for the periods from day -10 to day -1.

The pairwise *t-statistics* indicate the difference in CARs for added stocks in the two sub-periods. The analytical results reveal that the CARs for the added stocks before Internet bubble burst are significantly greater than those for the added stocks after Internet bubble burst for the six event periods. These results show added stocks before the Internet bubble burst achieving higher abnormal returns than those for added stocks after the Internet bubble burst.

4.4 Price effects displayed by stocks deleted from MSCI Taiwan Index

Sufficient price data is available to conduct analysis for 58 stocks deleted from the MSCI Taiwan Index. Table 2.11 (Panel B) Table 2.12 (Panel B) list the results for

the deletions sample. Figure 2.15 shows the trend of the mean cumulative abnormal returns of deleted stocks during the event-period. This study makes three observations. First, the abnormal returns during the pre-announcement period are significantly negative at the 1 % and 5 % levels on four days (day -10, -5 to -3), suggesting the existence of market anticipation.

[Insert Table 2.11, Table 2.12 and Figure 2.15 here]

Second, as with added stocks, a growing announcement reaction (albeit negative) is observed to deleted stocks on the announcement day. The abnormal return is -2.27% which is significantly negative at the 1 % level, further confirming the existence of market anticipation. Third, abnormal returns are sometimes positive and sometimes negative during the post-event period. Table 2.12 (Panel B) shows that the mean cumulative abnormal return from day 2 to day 30 is -2.07% (p-value = 0.294). There is no significant price reversal in the event period. The price effect exhibited by deleted firms for the MSCI Taiwan Index is also consistent with the downward sloping demand curve hypothesis.

4.4.1 Price responses of large-scale and small-scale stocks deleted from the MSCI Taiwan Index

This study tries to divide the composite stocks of MSCI Taiwan Index into large-scale and small-scale depending on their market value, and examines whether the stock price responses of the two subsamples are the same.

[Insert Table 2.17 and Figure 2.16 here]

Table 2.17 shows the mean cumulative abnormal returns for 29 large-scale deleted stocks and 29 small-scale deleted stocks in various event periods. Figure 2.16 shows the trend of mean cumulative abnormal returns of the two subsamples of deleted stocks in the event-period. The red line represents the large-scale deleted stocks and the black line depicts the small-scale deleted stocks. Large capitalization

stocks achieve a significantly negative abnormal return of -2.00 % on the announcement day. CARs of large-scale deleted stocks are negative and significant in the other five event periods. Small capitalization deleted stocks also show a significantly negative abnormal return on the announcement day, but of a higher magnitude (-2.50%). CARs of small-scale deleted stocks are negative and significant in the event periods from day -10 to day -1, day -10 to day 15 and day -10 to day 30. The two-sample *t-statistics* indicate the difference in CARs between large and small capitalization deleted stocks. The CAR for the large-scale deleted stocks is smaller than the one for the small-scale deleted stocks in the event period from days 1 to 30. There are no statistically significant differences of CARs for large-scale deleted stocks and small-scale deleted stocks in the other event periods.

4.4.2 Price responses of electronic and non-electronic stocks deleted from the MSCI Taiwan Index

Table 2.18 exhibits the mean cumulative abnormal returns for 11 electronic deleted stocks and 47 non-electronic deleted stocks in various event periods. Figure 2.17 shows the trend of mean cumulative abnormal returns for the two subsamples of deleted stocks in the event-period. The red line represents the electronic deleted stocks and the black line depicts the non-electronic deleted stocks.

[Insert Table 2.18 and Figure 2.17 here]

Electronic deleted stocks experience a significantly negative abnormal return of -1.40% on the announcement day. Companies of non-electronic also display a significant negative return on the announcement day, but with a higher magnitude (-2.50%). Non-electronic deleted stocks experience significant negative CARs in all the event periods. The two-sample *t-statistics* indicate the difference in CARs between electronic deleted stocks and non-electronic deleted stocks. The CARs for the electronic deleted stocks are significantly greater than those for the non-electronic

deleted stocks in the event periods for days 1 to 5, days 1 to 10, days 1 to 15, days -10 to 15 and days -10 to 30. The finding also provides evidence to our inference that the price response of electronic sector is bigger than the one of non-electronic sector.

4.4.3 Price responses for stocks deleted from the MSCI Taiwan Index before and after the Internet bubble burst

There are 15 and 43 stocks that were deleted from the index before and after the Internet bubble burst, respectively. This study tries to examine whether the stock price responses of the two sub-periods are the same.

[Insert Table 2.19 and Figure 2.18 here]

Table 2.19 lists the mean cumulative abnormal returns for stocks deleted from the MSCI Taiwan Index before and after the Internet bubble burst in various event periods. Figure 2.18 shows the trend of the mean cumulative abnormal returns for stocks deleted from the MSCI Taiwan Index in the two sub-periods. The black and red line represent the mean cumulative abnormal returns for stocks deleted from the MSCI Taiwan Index before and after the Internet bubble burst, respectively. The deleted stocks before the Internet bubble burst achieve a significantly negative abnormal return on the announcement day, and also show significantly and negatively CARs in the other seven event periods. The deleted stocks after the Internet bubble burst achieve a significantly negative abnormal return on the announcement date of -2.60%, and a significantly negative CARs for the periods from day -10 to day -1 and day -10 to day 15.

The pairwise *t-statistics* indicate the difference in CARs for deleted stocks in the two sub-periods. The analytical results reveal that the CARs for the deleted stocks after Internet bubble burst are significantly greater than those for the deleted stocks before Internet bubble burst for the six event periods excluding the period for day -10 to day -1. These results show deleted stocks after the Internet bubble burst achieving

higher abnormal returns than those for deleted stocks before the Internet bubble burst.

5. Conclusion

The responses of market conditions and investment strategies for institutional investors and individual investors are different while the nature of stock markets for Taiwan and Japan is diverse. Hence this chapter examines price effects associated with changes in the composition of the Nikkei 225 Index and MSCI Taiwan Index. The stock prices of firms added to and deleted from the Nikkei 225 Index respectively rise and fall on the announcement day. These price trends then reverse during the post-announcement period. These observation results are consistent with the price pressure hypothesis. The stock prices of firms added to and deleted from the MSCI Taiwan Index respectively rise and fall on the announcement day. But, these price trends do not reverse during the post-announcement period. These observation results are consistent with the downward sloping demand curve hypothesis.

Besides dividing the sample period into two sub-periods, this study also categorizes the composite stocks depending on the market value, industry and upwards and downwards revisions of analyst earnings forecasts to explore the price responses of different types of composite stocks. Following categorization, large-scale added stocks dominate price trend in the whole added sample for the Nikkei 225 Index. The price trends of large and small deleted stocks are similar to the price trend in the whole deleted sample for the Nikkei 225 Index. Additionally, the added stocks with upwards revisions in earnings forecasts can earn greater abnormal returns than those with downwards revisions in earnings forecasts for the Nikkei 225 Index during the post-announcement period. This study presents information that investors can use to their advantage by purchasing upwards revision in earnings forecasts stocks added to the Nikkei 225 Index. To divide the sample period into two sub-periods showing added stocks before the Internet bubble burst achieve higher abnormal returns after

the announcement day than those for added stocks after the Internet bubble burst. Also, the deleted stocks after the Internet bubble burst achieve greater negative abnormal returns after the announcement date than those for deleted stocks before the Internet bubble burst.

The analytical results for stocks added to or removed from the MSCI Taiwan Index during the study period show that electronic stocks display larger abnormal returns than non-electronic stocks, which is consistent with our inference. Also, it give an information for the investors in Taiwan to make benefit. The CARs of upwards revision in earnings forecast stocks that are added to the index and downwards revision in earnings forecast stocks added to the MSCI Taiwan Index do not differ significantly. This result differs from that found in the Nikkei 225 Index. The added (deleted) stocks before the Internet bubble burst achieve higher magnitude positive (negative) abnormal returns than those for added (deleted) stocks after the Internet bubble burst.

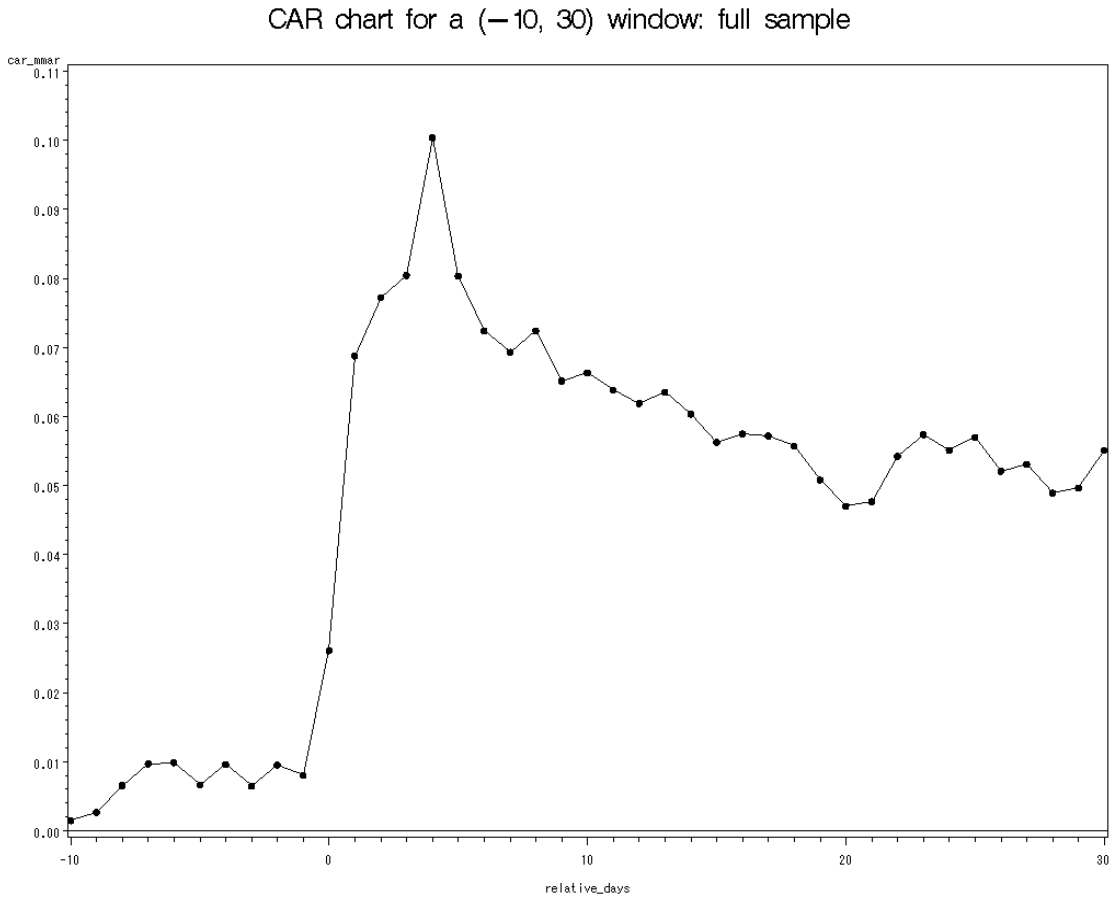

Figure 2.1 Mean cumulative abnormal returns for stocks added to the Nikkei 225, 1991- 2008.

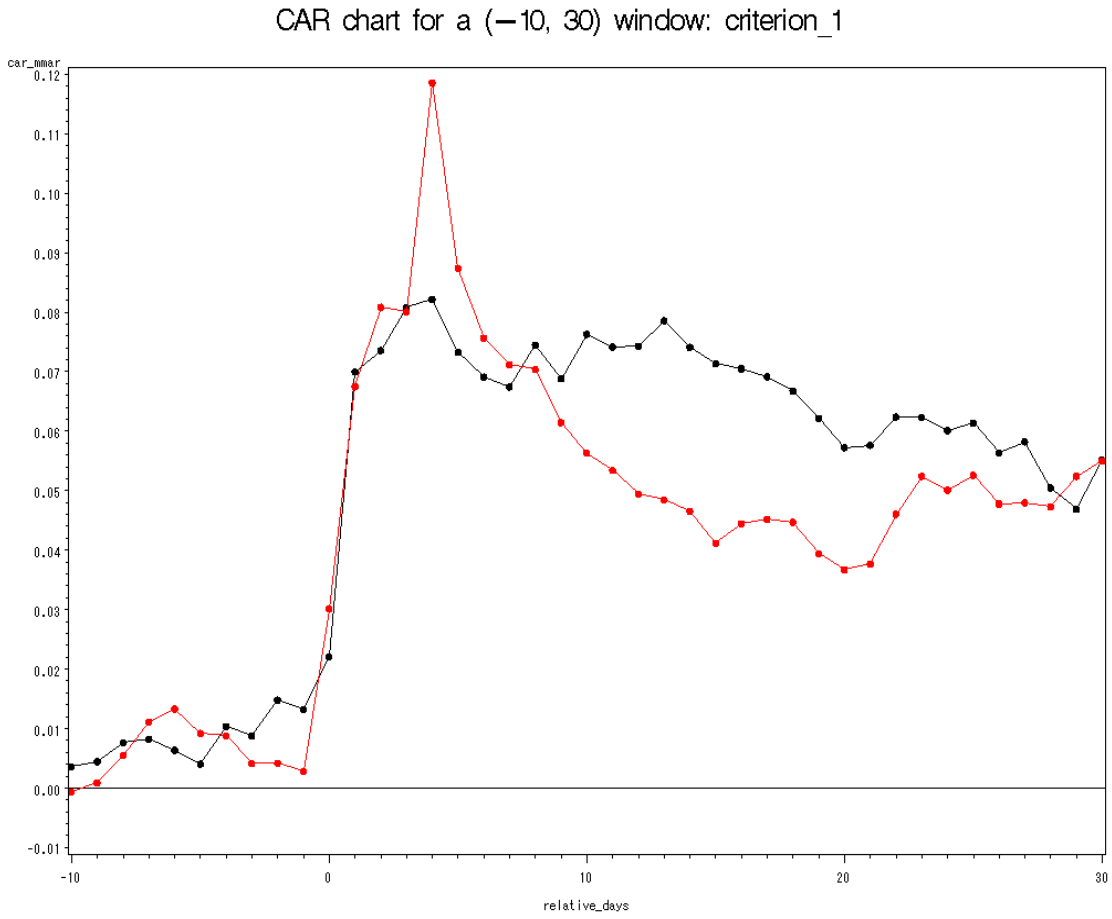

Figure 2.2 Mean cumulative abnormal returns for large-scale and small-scale stocks added to the Nikkei 225, 1991- 2008. The red line represents the large-scale added stocks and the black line depicts the small-scale added stocks.

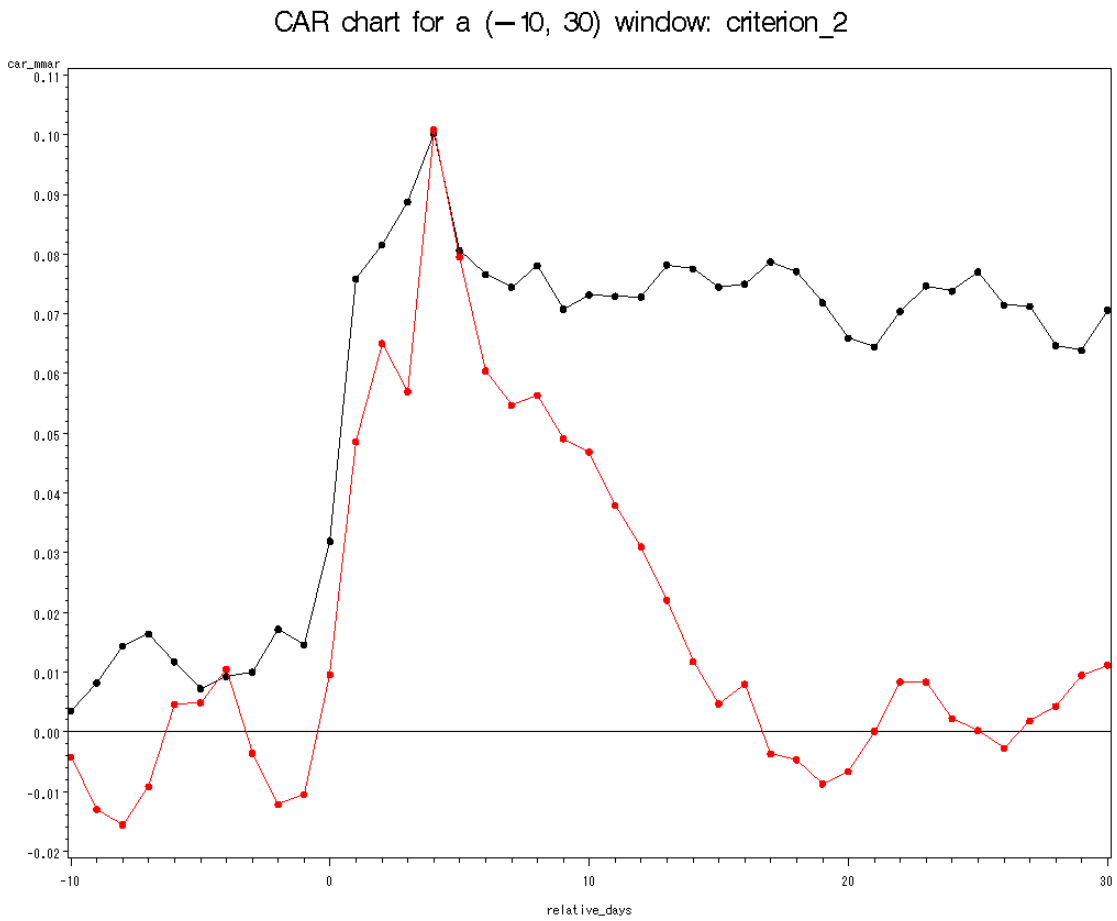

Figure 2.3 Mean cumulative abnormal returns for electronic and non-electronic stocks added to the Nikkei 225, 1991- 2008. The red line represents the electronic added stocks and the black line depicts the non-electronic added stocks.

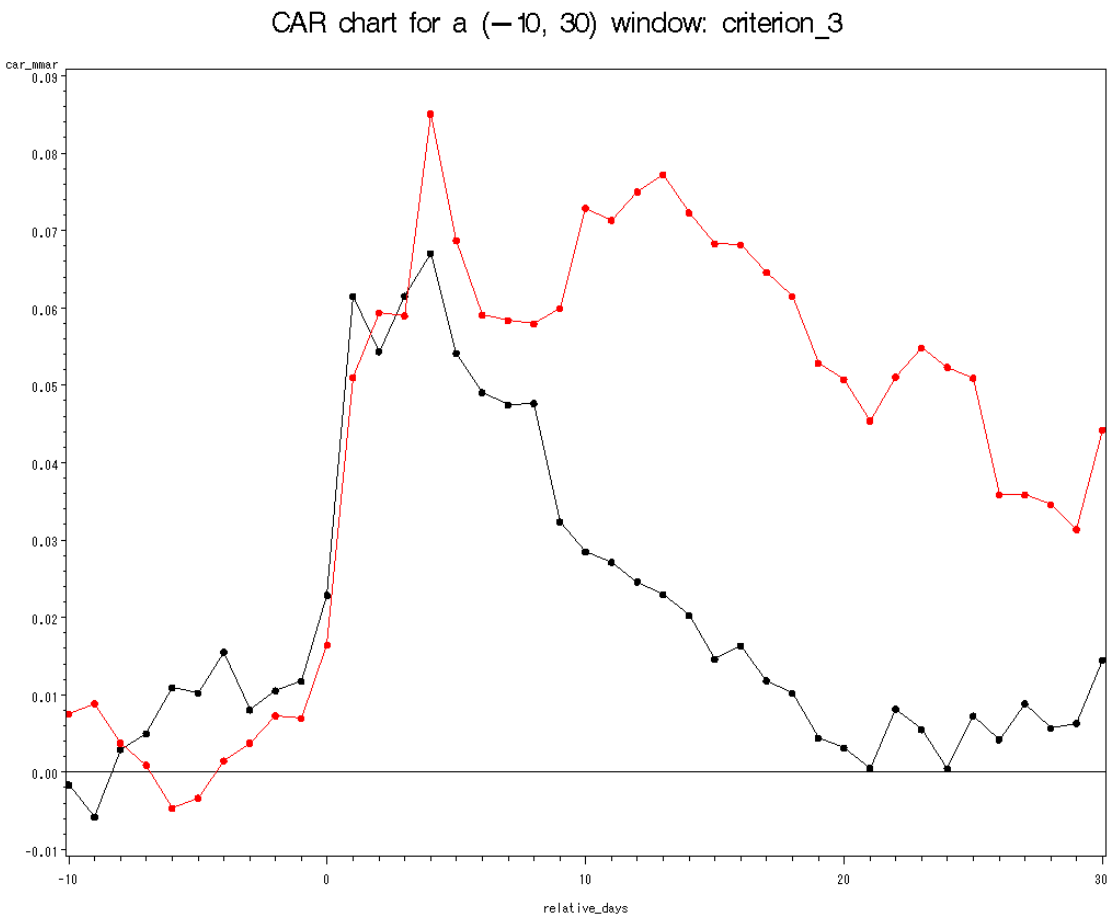

Figure 2.4 Mean cumulative abnormal returns for upwards and downwards earnings forecast revision stocks added to the Nikkei 225, 1991- 2008. The red line represents upwards earnings forecast revision stocks and the black line depicts downwards earnings forecast revision stocks.

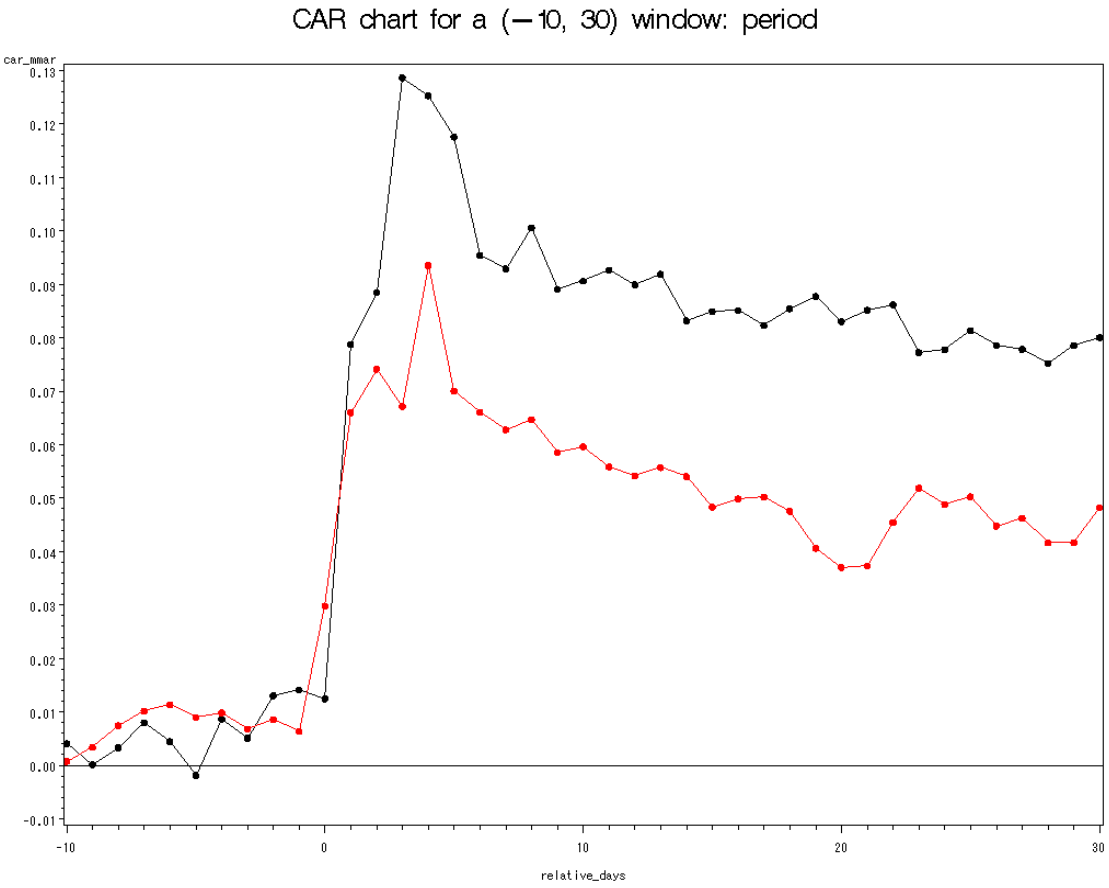

Figure 2.5 Mean cumulative abnormal returns for stocks added to the Nikkei 225 Index before and after the Internet bubble burst. The black and red line represent the mean cumulative abnormal returns for stocks added to the Nikkei 225 Index before and after the Internet bubble burst, respectively.

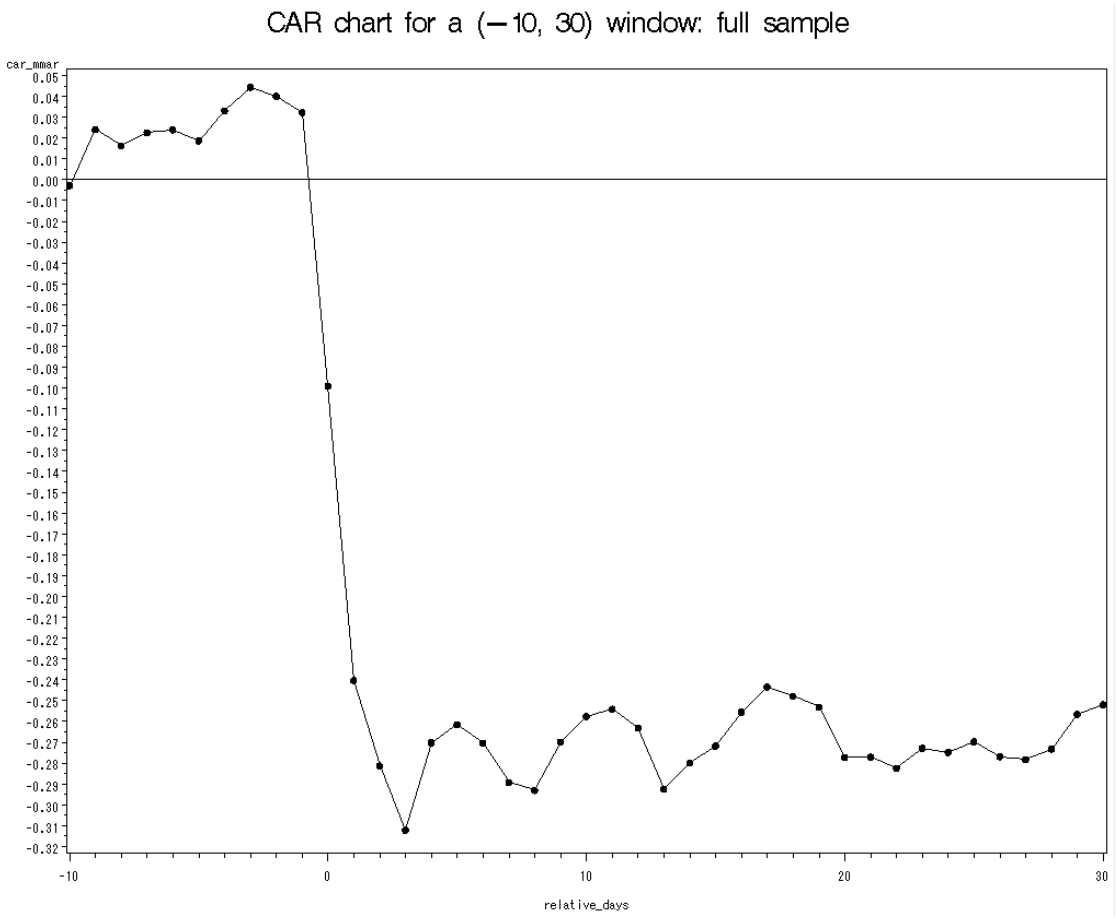

Figure 2.6 Mean cumulative abnormal returns for stocks deleted from the Nikkei 225 Index, 1991- 2008.

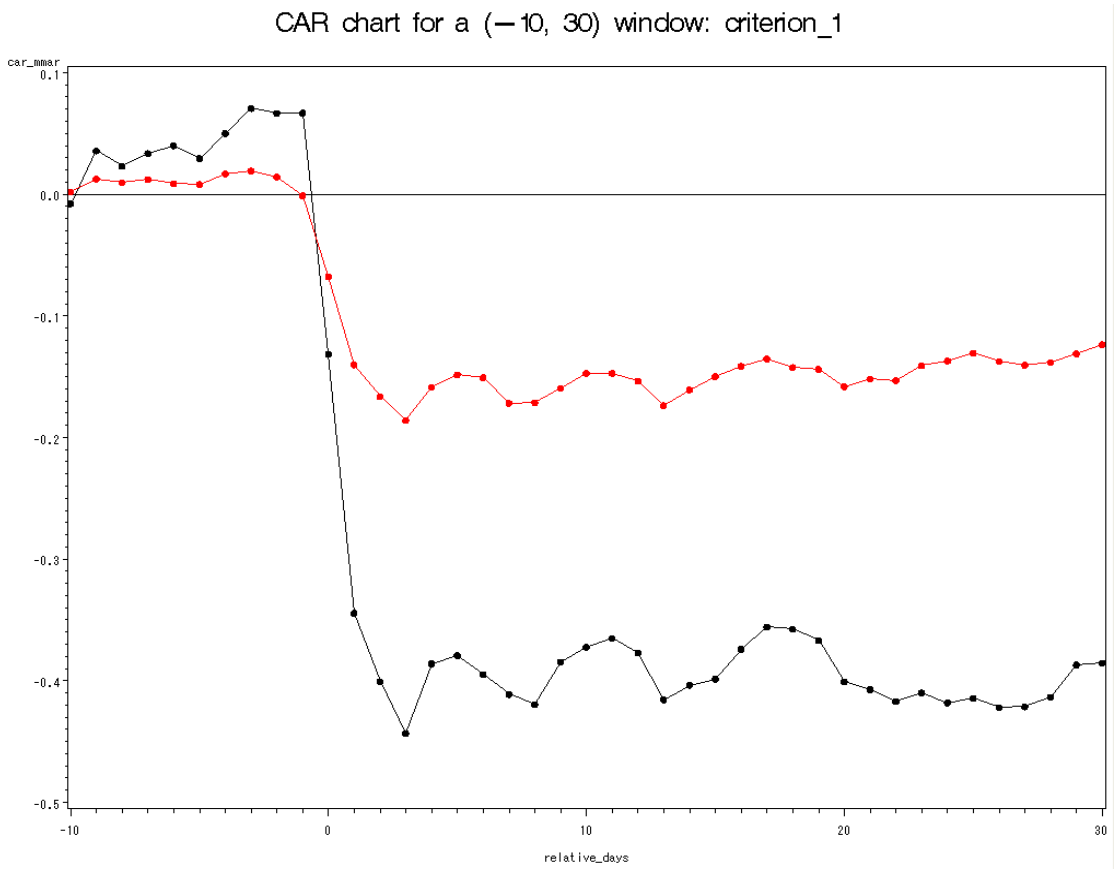

Figure 2.7 Mean cumulative abnormal returns for large-scale and small-scale stocks deleted from the Nikkei 225 Index, 1991- 2008. The red line represents the large-scale deleted stocks and the black line depicts the small-scale deleted stocks.

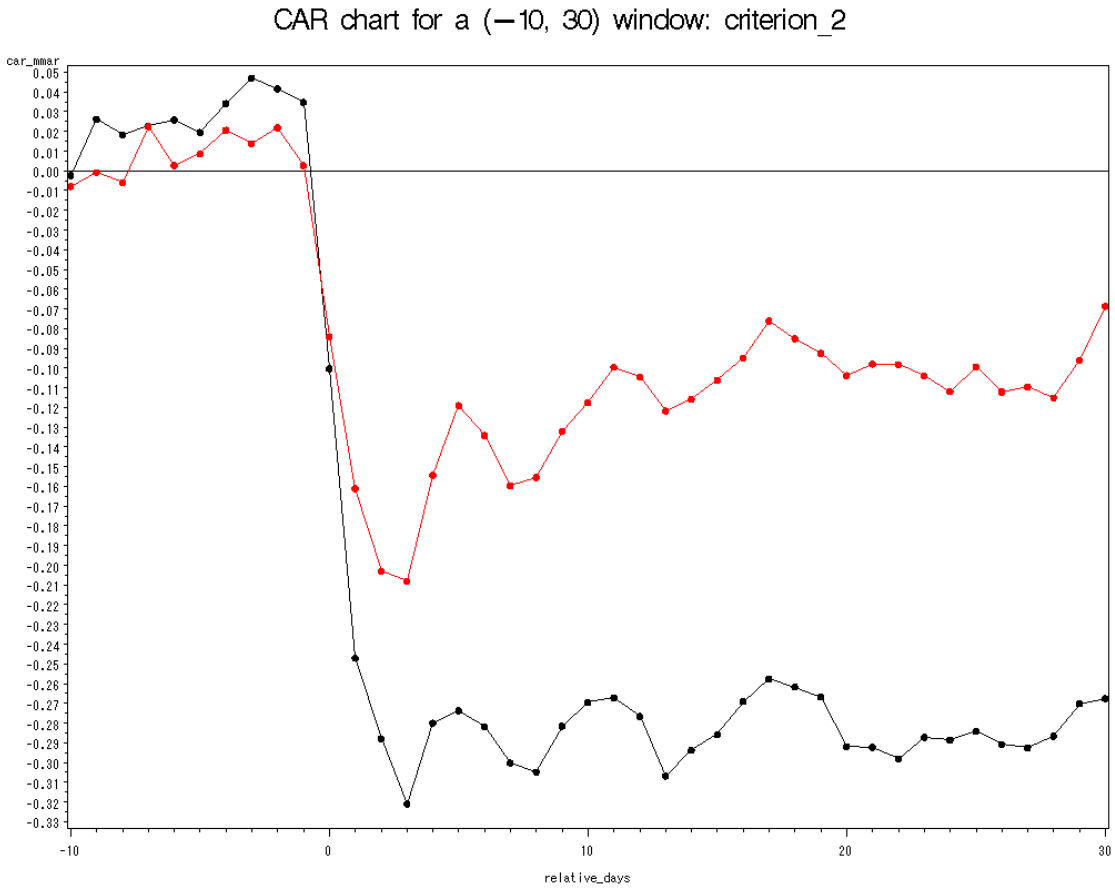

Figure 2.8 Mean cumulative abnormal returns for electronic and non-electronic stocks deleted to the Nikkei 225, 1991- 2008. The red line represents the electronic deleted stocks and the black line depicts the non-electronic deleted stocks.

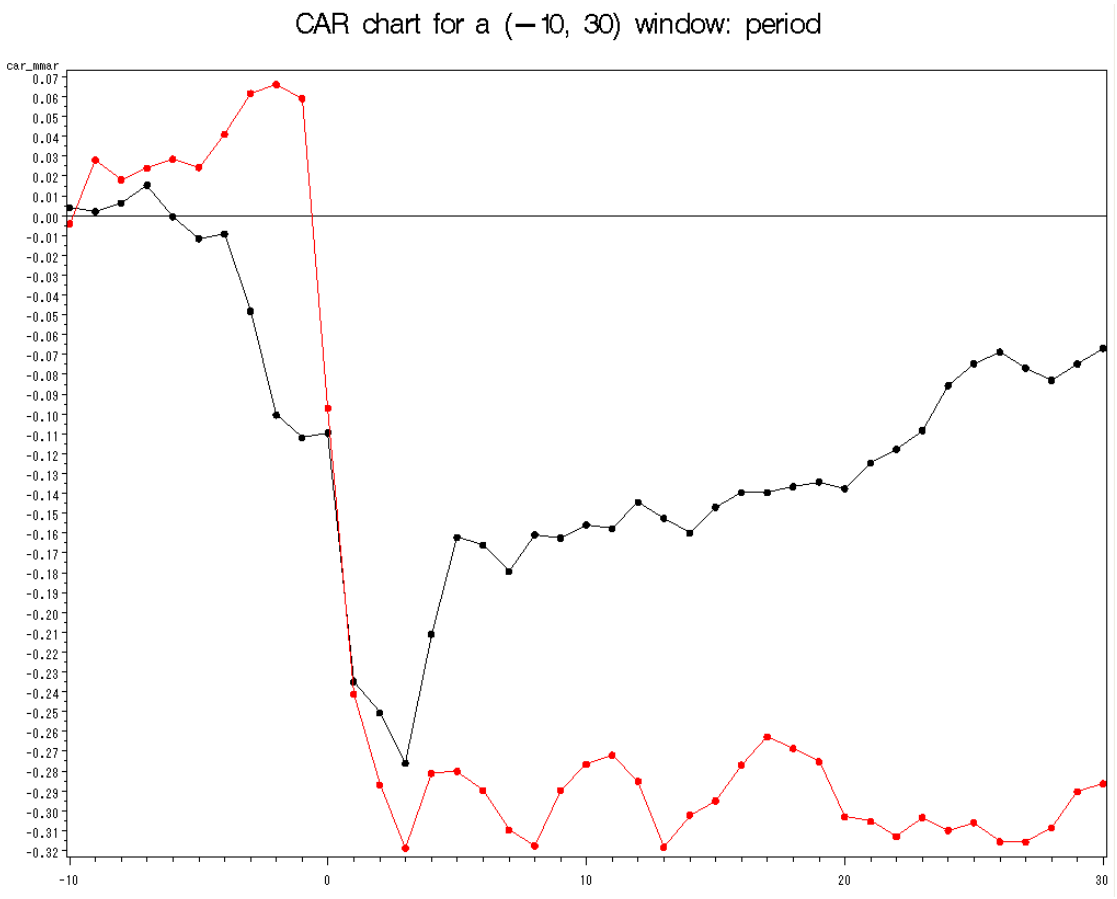

Figure 2.9 Mean cumulative abnormal returns for stocks deleted from the Nikkei 225 Index before and after the Internet bubble burst. The black and red line represent the mean cumulative abnormal returns for stocks deleted from the Nikkei 225 Index before and after the Internet bubble burst, respectively.

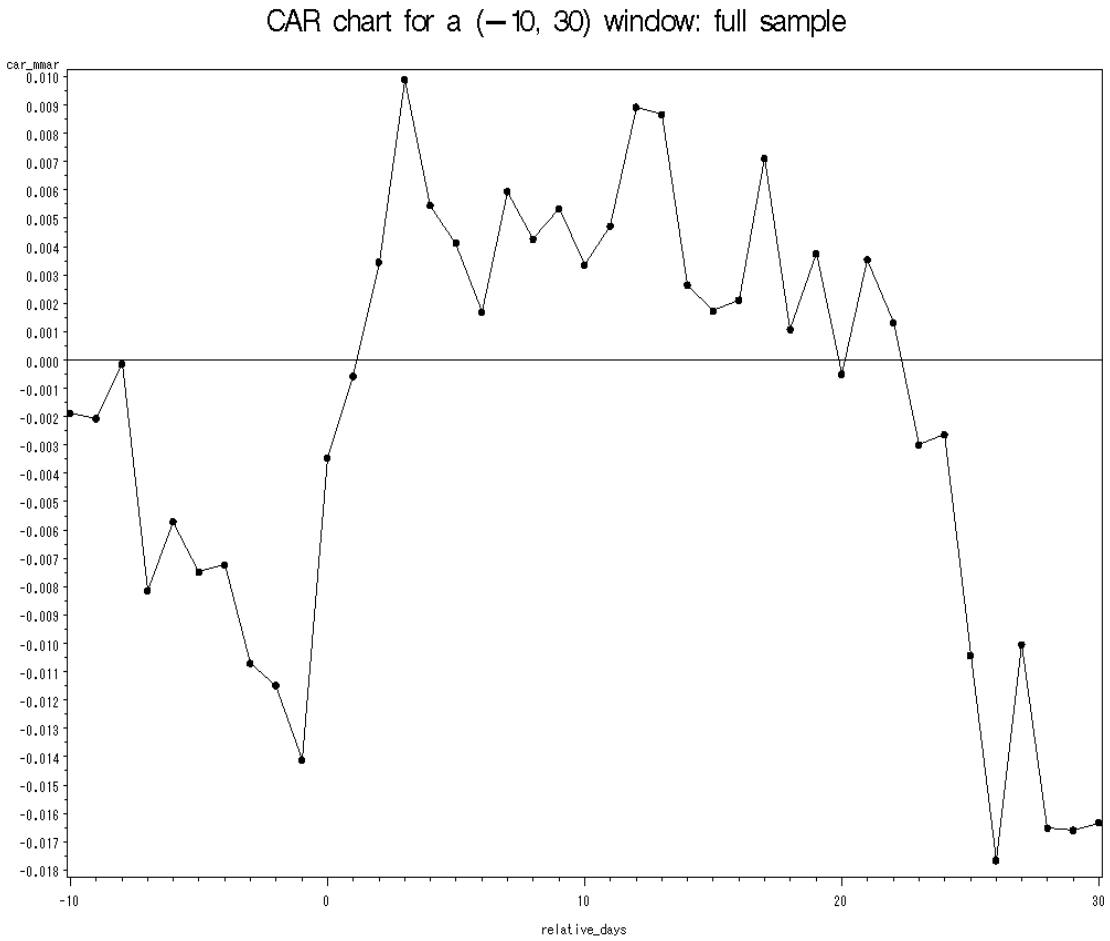

Figure 2.10 Mean cumulative abnormal returns for stocks added to the MSCI Taiwan Index, 1999- 2007.

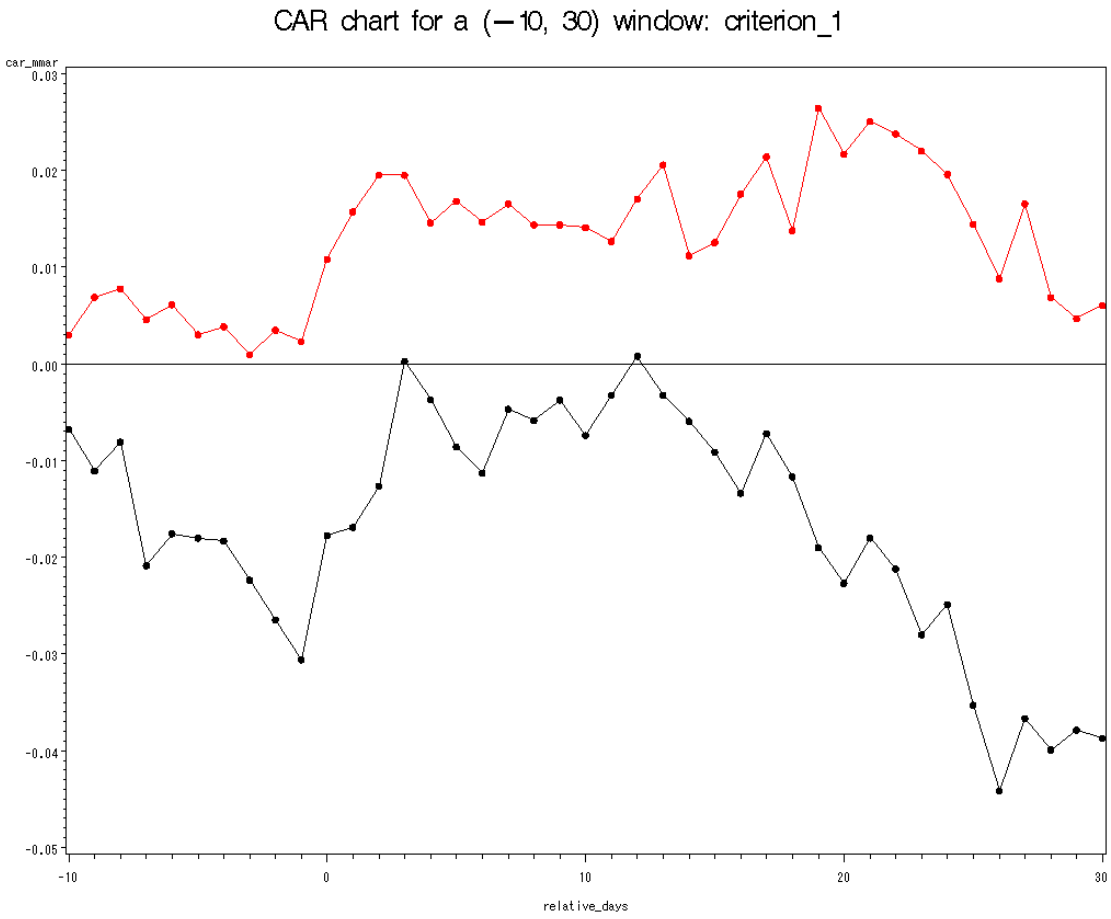

Figure 2.11 Mean cumulative abnormal returns for large-scale and small-scale stocks added to the MSCI Taiwan Index, 1999- 2007. The red line represents the large-scale added stocks and the black line depicts the small-scale added stocks.

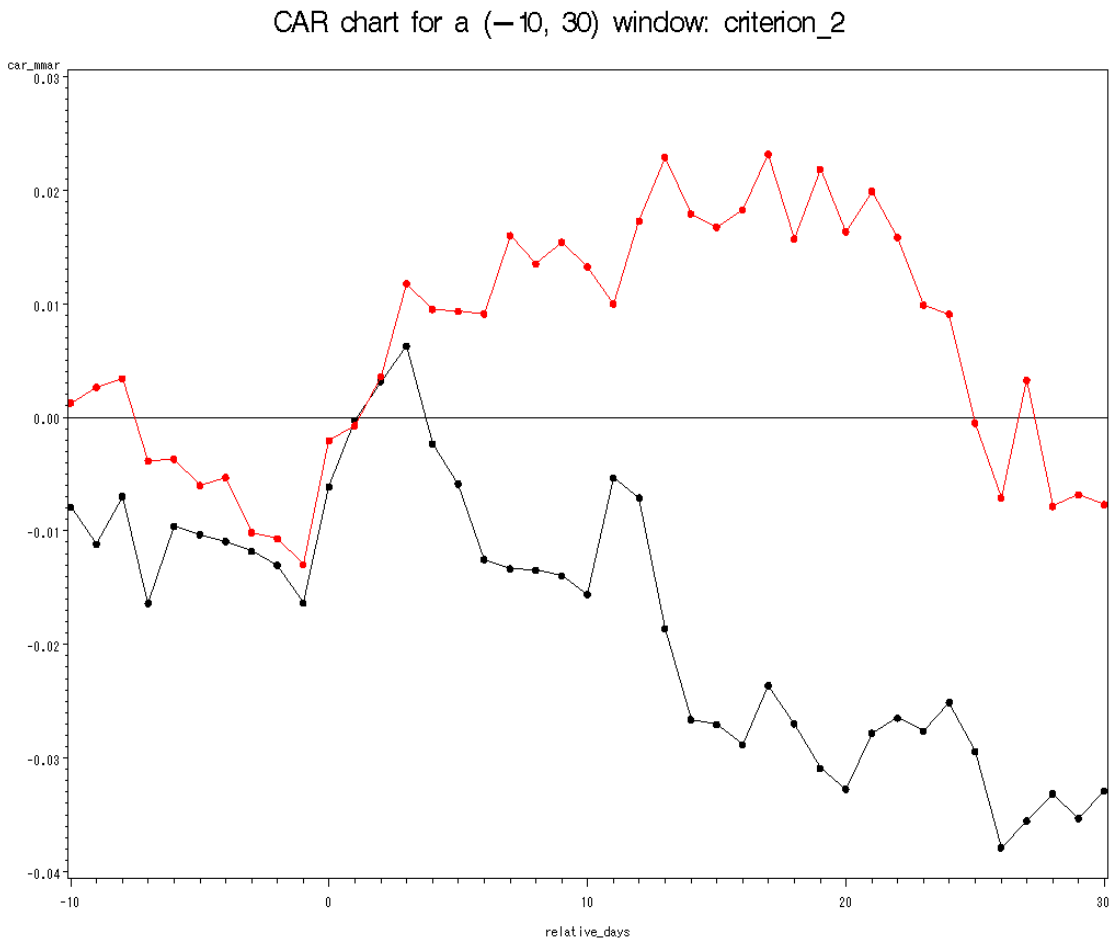

Figure 2.12 Mean cumulative abnormal returns for electronic and non-electronic stocks added to the MSCI Taiwan Index, 1999- 2007. The red line represents the electronic added stocks and the black line depicts the non-electronic added stocks.

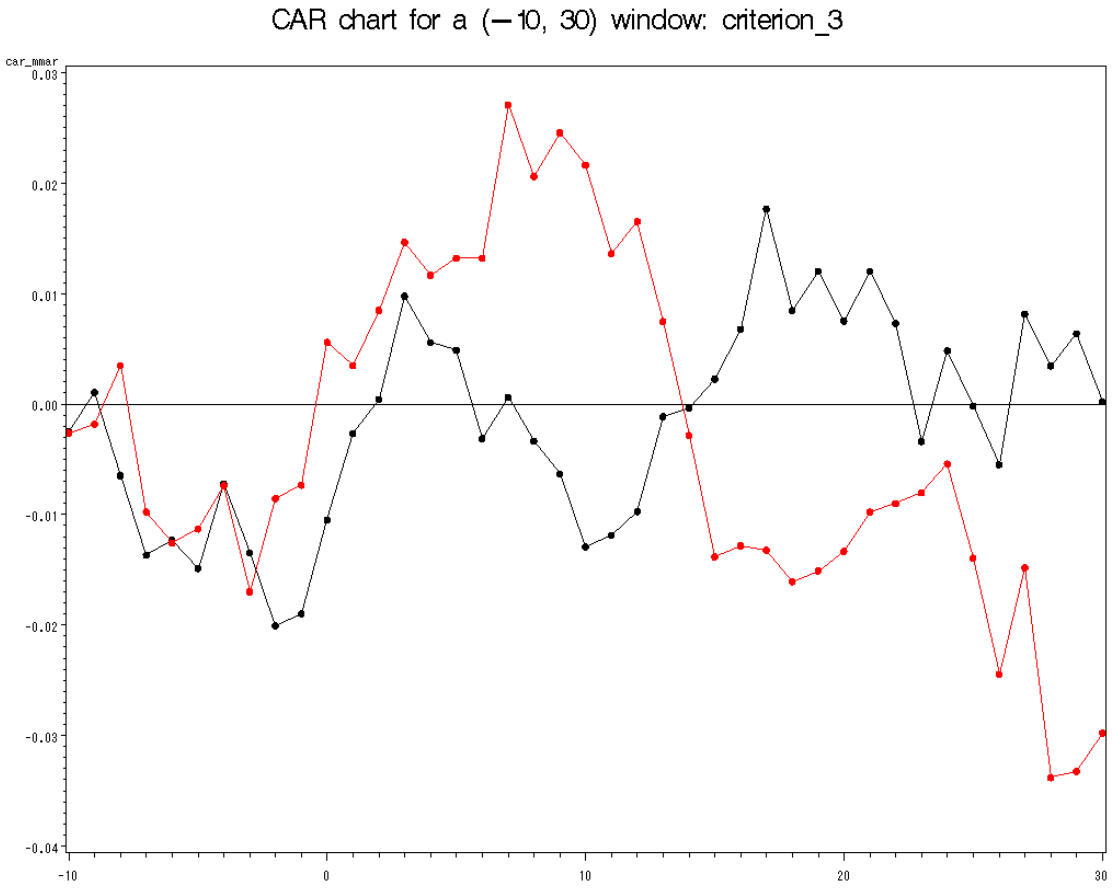

Figure 2.13 Mean cumulative abnormal returns for upwards and downwards earnings forecast revision stocks added to the MSCI Taiwan Index, 1999- 2007. The red line represents upwards earnings forecast revision stocks and the black line depicts downwards earnings forecast revision stocks.

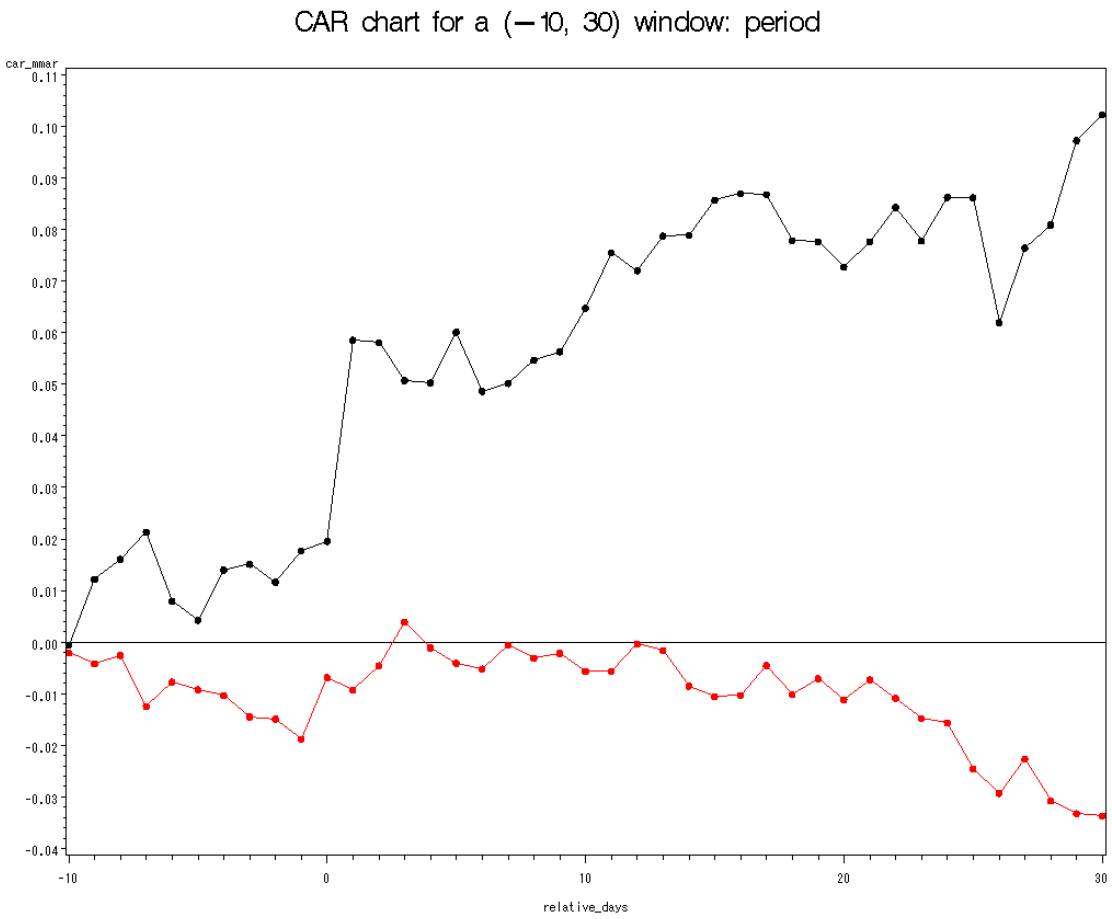

Figure 2.14 Mean cumulative abnormal returns for stocks added to the MSCI Taiwan Index before and after the Internet bubble burst. The black and red line represent the mean cumulative abnormal returns for stocks added to the MSCI Taiwan Index before and after the Internet bubble burst, respectively.

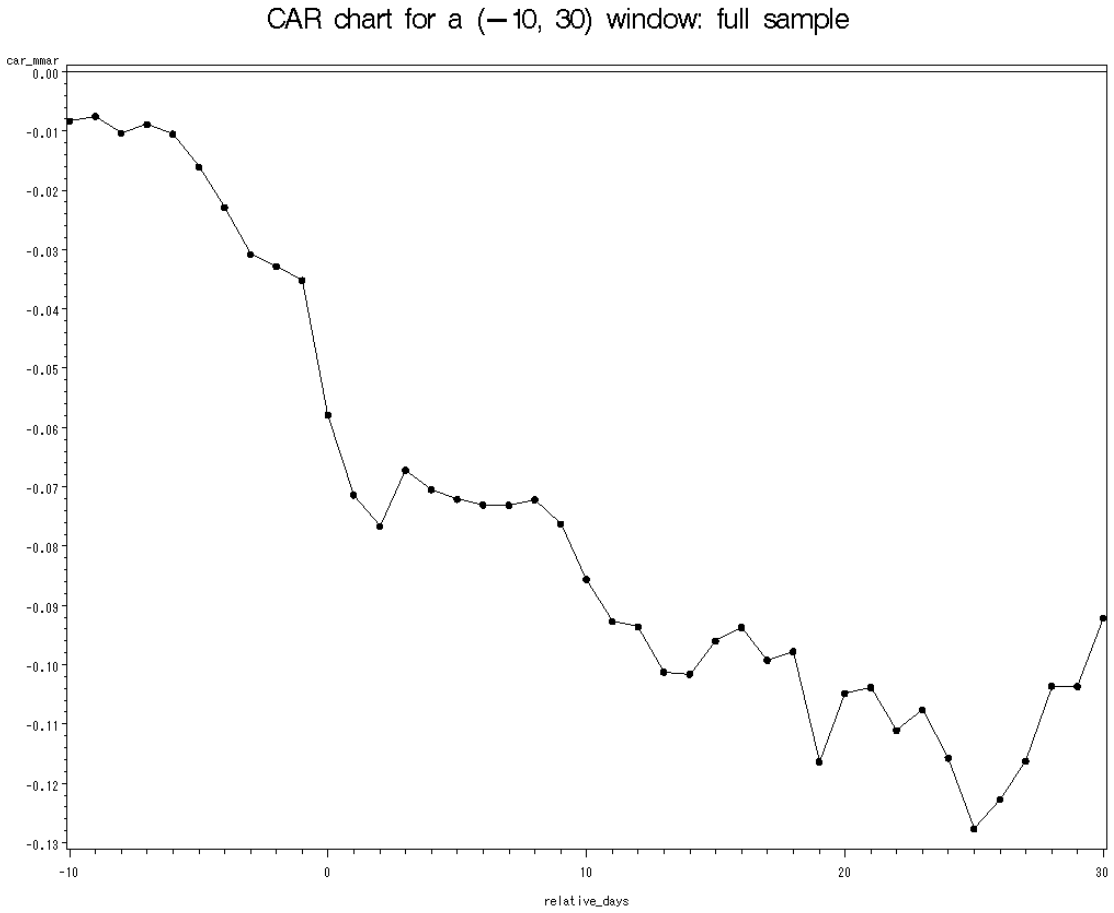

Figure 2.15 Mean cumulative abnormal returns for stocks deleted from the MSCI Taiwan Index, 1999- 2007.

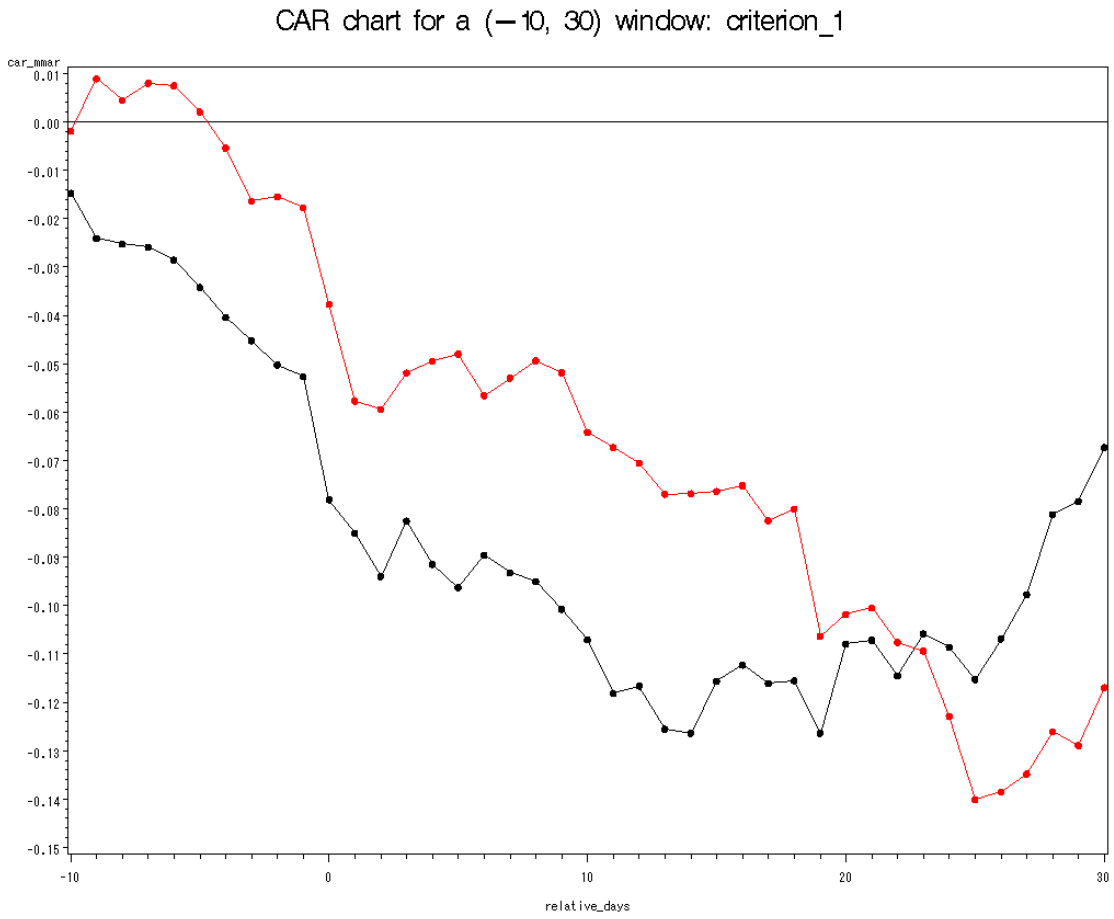

Figure 2.16 Mean cumulative abnormal returns for large-scale and small-scale stocks deleted the MSCI Taiwan Index, 1999- 2007. The red line represents the large-scale deleted stocks and the black line depicts the small-scale deleted stocks.

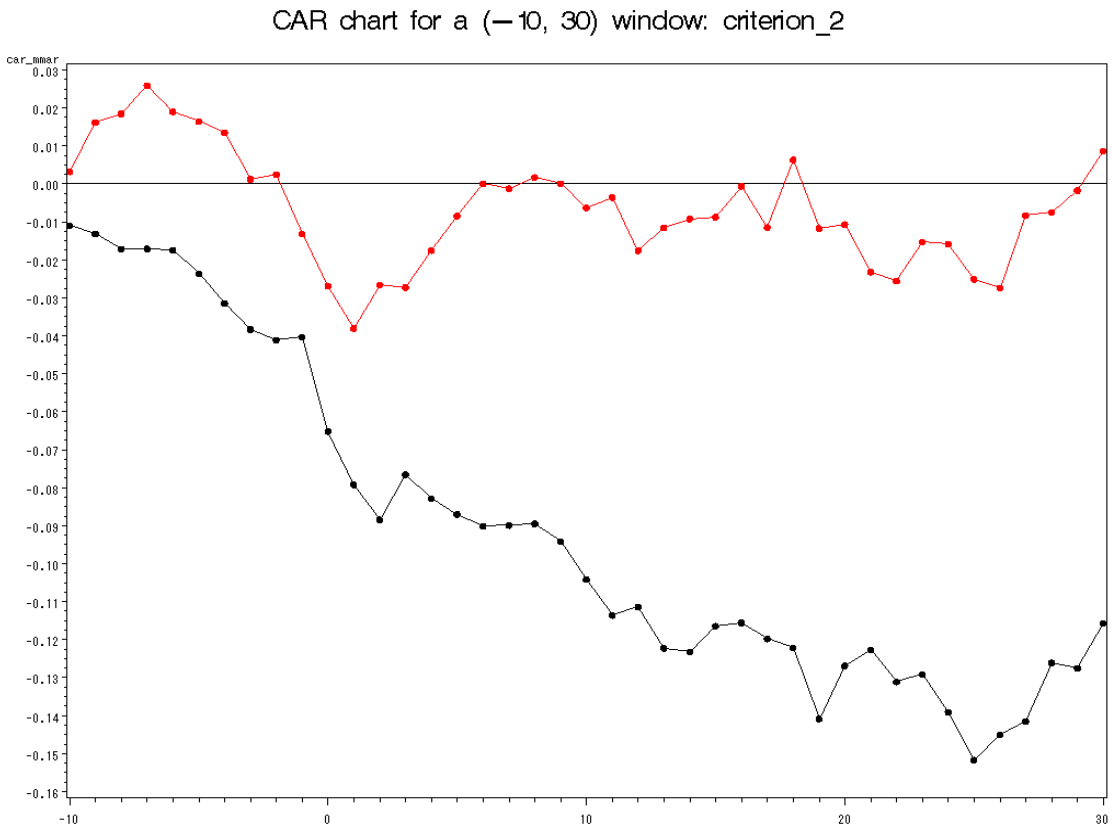

Figure 2.17 Mean cumulative abnormal returns for electronic and non-electronic stocks deleted from the MSCI Taiwan Index, 1999- 2007. The red line represents the electronic deleted stocks and the black line depicts the non-electronic deleted stocks.

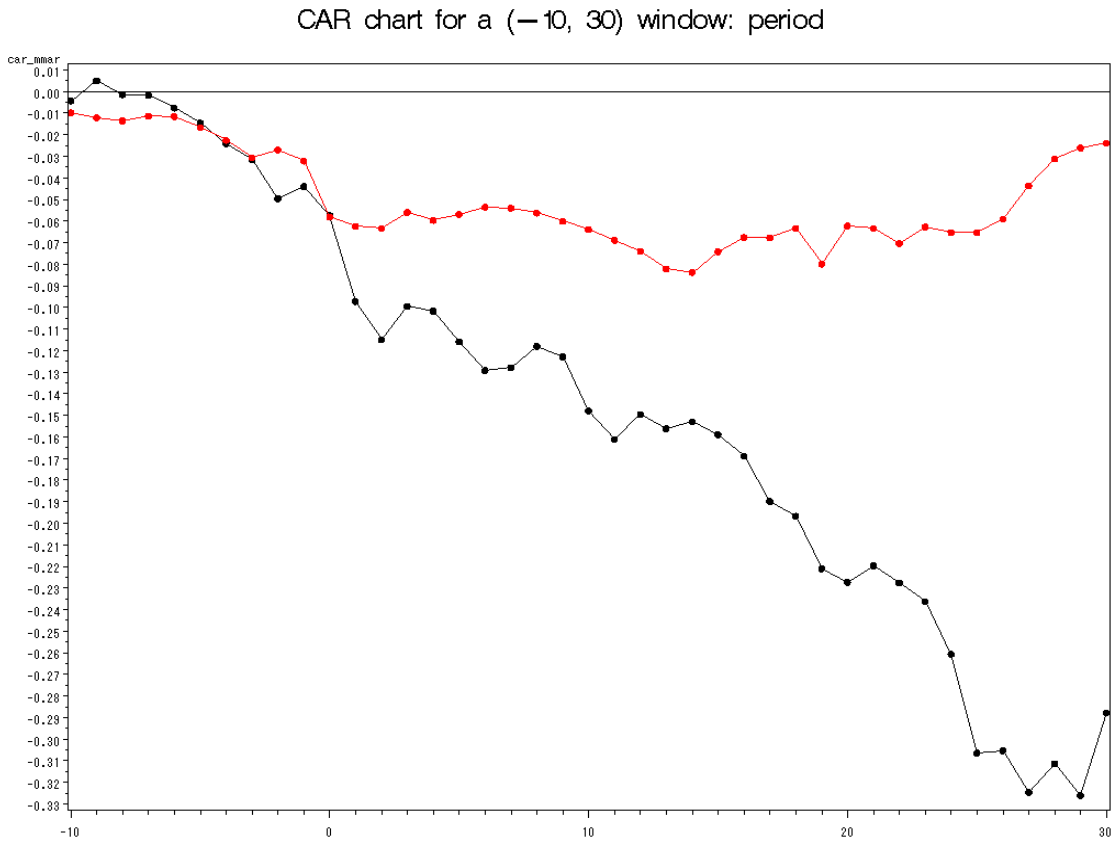

Figure 2.18 Mean cumulative abnormal returns for stocks deleted from the MSCI Taiwan Index before and after the Internet bubble burst. The black and red line represent the mean cumulative abnormal returns for stocks deleted from the MSCI Taiwan Index before and after the Internet bubble burst, respectively.

Table 2.1 Changes in the Nikkei 225 Index and MSCI Taiwan Index.

This table describes the number of firms added to or deleted from the Nikkei 225 Index and MSCI Taiwan Index from 1991 to 2008 and 1999 to 2007, respectively.

Nikkei 225 Index		
Year	Additions	Deletions
1991	6	6
1992	4	4
1993	2	2
1994	0	0
1995	1	1
1996	2	2
1997	1	1
1998	2	2
1999	2	2
2000	38	38
2001	13	13
2002	12	12
2003	5	5
2004	4	4
2005	10	10
2006	4	4
2007	3	3
2008	3	3
Total	112	112

MSCI Taiwan Index		
Year	Additions	Deletions
1999	14	15
2000	3	16
2001	33	6
2002	2	1
2003	11	7
2004	12	0
2005	9	6
2006	8	5
2007	14	5
Total	106	61

Tables 2.2 The price effects of stocks added to or deleted from the Nikkei 225 Index, 1991- 2008.

Mean abnormal returns (MAR) around the announcement date for 88 stocks added to and 51 stocks deleted from the Nikkei 225 Index in 1991- 2008. Day 0 denotes the announcement day.

Event	Panel A: Additions			Panel B: Deletions		
Day	#Obs	MAR	t(MAR)	#Obs	MAR	t(MAR)
-10	88	0.15%	0.498	51	-0.28%	-0.683
-9	88	0.12%	0.501	51	2.69%[3]*	5.269
-8	88	0.39%	1.622	51	-0.78%[3]*	-2.544
-7	88	0.32%	1.344	51	0.64%*	1.836
-6	88	0.02%	0.056	51	0.14%	0.447
-5	88	-0.32%	-1.677	51	-0.53%	-1.472
-4	88	0.29%	1.171	51	1.44%[3]*	4.311
-3	88	-0.31%	-1.112	51	1.13%[3]*	2.540
-2	88	0.31%	1.017	51	-0.44%	-0.796
-1	88	-0.15%	-0.641	51	-0.78%	-1.590
0	88	1.81%[3]*	4.460	51	-13.13%[3]*	-7.108
1	88	4.27%[3]*	9.627	51	-14.13%[2]*	-1.965
2	88	0.85%[2]*	2.213	51	-4.10%[3]*	-5.514
3	88	0.32%	0.738	51	-3.09%[3]*	-3.599
4	88	1.99%[3]*	3.442	51	4.20%[3]*	4.761
5	88	-2.01%[3]*	-4.411	51	0.86%	1.664
6	88	-0.79%[3]*	-2.848	51	-0.88%[2]*	-2.065
7	88	-0.31%	-1.232	51	-1.88%[3]*	-3.732
8	88	0.31%	0.910	51	-0.39%	-0.902
9	88	-0.73%*	-1.893	51	2.33%[3]*	4.150
10	88	0.12%	0.288	51	1.22%[3]*	3.276
11	88	-0.25%	-0.836	51	0.36%	0.459
12	88	-0.19%	-0.770	51	-0.90%[2]*	-2.244
13	88	0.16%	0.683	51	-2.93%[3]*	-5.267
14	88	-0.32%	-1.289	51	1.25%[3]*	2.458
15	88	-0.41%	-1.592	51	0.81%	1.580
16	88	0.12%	0.444	51	1.64%[3]*	3.336
17	88	-0.03%	-0.117	51	1.20%[3]*	3.779
18	88	-0.14%	-0.501	51	-0.44%	-1.015
19	88	-0.49%*	-1.936	51	-0.52%	-1.516
20	88	-0.38%	-1.542	51	-2.40%[3]*	-6.268
21	88	0.07%	0.237	51	0.01%	0.027
22	88	0.66%[2]*	2.062	51	-0.53%[2]*	-2.250
23	88	0.31%	1.412	51	0.96%[3]*	2.622
24	88	-0.23%	-0.827	51	-0.20%	-0.603
25	88	0.19%	0.683	51	0.51%	1.298
26	88	-0.49%*	-1.695	51	-0.72%[3]*	-2.659
27	88	0.10%	0.449	51	-0.14%	-0.601
28	88	-0.42%*	-1.734	51	0.50%[3]*	2.387
29	88	0.08%	0.323	51	1.67%[3]*	3.723
30	88	0.54%[2]*	2.190	51	0.46%	1.530

[3]*: significant at 1% level, [2]*: significant at 5% level, *: significant at 10 % level.

Tables 2.3 Mean cumulative abnormal returns from day 2 to day T for stocks added to or deleted from the Nikkei 225 Index, 1991- 2008.

Mean cumulative abnormal returns (CAR) from day 2 to day T for 88 stocks added to and 51 stocks deleted from the Nikkei 225 Index in 1991- 2008.

Day 2 to	Panel A: Additions			Panel B: Deletions		
Day T	CAR	t-value	p-value	CAR	t-value	p-value
2	0.85%[2]*	2.213	0.030	-4.10%[3]*	-5.514	0.000
3	1.17%*	1.881	0.063	-7.18%[3]*	-5.794	0.000
4	3.16%[3]*	3.494	0.001	-2.98%[3]*	-3.668	0.001
5	1.16%	1.464	0.147	-2.12%*	-1.986	0.053
6	0.37%	0.510	0.611	-3.01%[2]*	-2.509	0.015
7	0.06%	0.073	0.942	-4.89%[3]*	-3.294	0.002
8	0.37%	0.432	0.667	-5.28%[3]*	-3.072	0.003
9	-0.36%	-0.379	0.706	-2.95%[2]*	-2.057	0.045
10	-0.24%	-0.250	0.803	-1.73%	-1.335	0.188
11	-0.49%	-0.510	0.612	-1.38%	-0.961	0.341
12	-0.69%	-0.686	0.495	-2.28%	-1.426	0.160
13	-0.52%	-0.502	0.617	-5.20%[3]*	-3.046	0.004
14	-0.84%	-0.819	0.415	-3.95%[2]*	-2.167	0.035
15	-1.25%	-1.207	0.231	-3.15%	-1.662	0.103
16	-1.13%	-1.043	0.300	-1.51%	-0.875	0.386
17	-1.16%	-1.029	0.306	-0.31%	-0.180	0.858
18	-1.30%	-1.135	0.259	-0.76%	-0.420	0.676
19	-1.79%	-1.501	0.137	-1.28%	-0.690	0.494
20	-2.18%*	-1.742	0.085	-3.68%*	-1.958	0.056
21	-2.11%*	-1.671	0.098	-3.67%*	-1.929	0.059
22	-1.45%	-1.113	0.269	-4.21%[2]*	-2.174	0.034
23	-1.14%	-0.855	0.395	-3.25%	-1.568	0.123
24	-1.37%	-1.009	0.316	-3.45%	-1.577	0.121
25	-1.18%	-0.828	0.410	-2.94%	-1.353	0.182
26	-1.67%	-1.185	0.239	-3.66%	-1.618	0.112
27	-1.57%	-1.110	0.270	-3.79%*	-1.738	0.088
28	-1.99%	-1.361	0.177	-3.29%	-1.506	0.138
29	-1.91%	-1.307	0.195	-1.62%	-0.746	0.459
30	-1.37%	-0.935	0.353	-1.16%	-0.516	0.608

[3]*: significant at 1% level, [2]*: significant at 5% level, *: significant at 10 % level.

Table 2.4 Analysis of CARs of category 1: Large-scale and Small-scale stocks added to the Nikkei 225 Index, 1991- 2008.

This table reports market-adjusted mean cumulative abnormal returns (CARs). The CARs are calculated in various event periods for "Large-scale" and "Small-scale" added stocks from 1991 to 2008. Each cell reports the average CAR for the respective event periods. Day 0 denotes the announcement day. T statistics are reported in parentheses.

		Event Period							
		1	2	3	4	5	6	7	8
Subsample	N	-10 to -1	0	1 to 5	1 to 10	1 to 15	1 to 30	-10 to 15	-10 to 30
Large-scale	44	0.28%	2.73%[3]*	5.73%[3]*	2.62%	1.11%	2.49%	4.12%*	5.5%[2]*
		(0.19)	(3.96)	(3.74)	(1.56)	(0.70)	(1.15)	(1.93)	(2.01)
Small-scale	44	1.33%	0.88%[2]*	5.12%[3]*	5.43%[3]*	4.93%[3]*	3.31%	7.14%[3]*	5.52%[2]*
		(1.28)	(2.30)	(3.97)	(3.46)	(2.90)	(1.43)	(3.36)	(1.97)
		Pairwise t-test							
Difference		-1.05%	1.85%[2]*	0.61%	-2.81%	-3.82%	-0.82%	-3.02%	-0.02%
p-value		0.562	0.022	0.761	0.225	0.102	0.796	0.319	0.997

[3]*: significant at 1% level, [2]*: significant at 5% level, *: significant at 10 % level.

Table 2.5 Analysis of CARs of category 2: Electronic and Non-Electronic stocks added to the Nikkei 225 Index, 1991- 2008.

This table reports market-adjusted mean cumulative abnormal returns (CARs). The CARs are calculated in various event periods for "Electronic" and "Non-Electronic" added stocks from 1991 to 2008. Each cell reports the average CAR for the respective event periods. Day 0 denotes the announcement day. T statistics are reported in parentheses.

		Event Period							
		1	2	3	4	5	6	7	8
Subsample	N	-10 to -1	0	1 to 5	1 to 10	1 to 15	1 to 30	-10 to 15	-10 to 30
Electronic	25	-1.00%	2.01%[2]*	7.00%[3]*	3.73%	-0.50%	0.16%	0.47%	1.12%
		(-0.42)	(2.06)	(2.58)	(1.33)	(-0.17)	(0.04)	(0.14)	(0.25)
Non-Electronic	63	1.46%*	1.73%[3]*	4.87%[3]*	4.13%[3]*	4.26%[3]*	3.87%[3]*	7.45%[3]*	7.06%[3]*
		(1.75)	(4.02)	(5.10)	(3.38)	(3.50)	(2.40)	(4.66)	(3.40)
		Pairwise t-test							
Difference		-2.46%	0.28%	2.13%	-0.40%	-4.76%	-3.71%	-6.98%[2]*	-5.94%
p-value		0.346	0.801	0.465	0.896	0.128	0.303	0.041	0.181

[3]*: significant at 1% level, [2]*: significant at 5% level, *: significant at 10 % level.

Table 2.6 Analysis of CARs of category 3: Upwards and Downwards earnings forecast revision stocks added to the Nikkei 225 Index, 1991- 2008.

This table reports market-adjusted mean cumulative abnormal returns (CARs). The CARs are calculated in various event periods for "Upwards" earnings forecast revision and "Downwards" earnings forecast revision added stocks from 1991 to 2008. Each cell reports the average CAR for the respective event periods. Day 0 denotes the announcement day. T statistics are reported in parentheses.

		Event Period							
		1	2	3	4	5	6	7	8
Subsample	N	-10 to -1	0	1 to 5	1 to 10	1 to 15	1 to 30	-10 to 15	-10 to 30
Up	29	0.70%	0.95%[2]*	5.23%[3]*	5.65%[3]*	5.19%[3]*	2.78%	6.83%[3]*	4.42%
		(0.67)	(2.28)	(3.40)	(3.78)	(2.74)	(1.15)	(2.93)	(1.54)
Down	30	1.17%	1.11%[2]*	3.13%	0.56%	-0.80%	-0.80%	1.46%	1.45%
		(0.72)	(2.07)	(1.66)	(0.23)	(-0.34)	(-0.27)	(0.52)	(0.39)
					Pairwise t-test				
Difference		-0.47%	-0.16%	2.10%	5.09%*	5.99%*	3.58%	5.37%	2.97%
p-value		0.807	0.807	0.393	0.081	0.055	0.368	0.150	0.530

[3]*: significant at 1% level, [2]*: significant at 5% level, *: significant at 10 % level.

Table 2.7 Analysis of CARs for stocks added to the Nikkei 225 Index before and after the Internet bubble burst.

This table reports market-adjusted mean cumulative abnormal returns (CARs). The CARs are calculated in various event periods for stocks added to the Nikkei 225 Index before and after the Internet bubble burst. Each cell reports the average CAR for the respective event periods. Day 0 denotes the announcement day. T statistics are reported in parentheses.

		Event Period							
		1	2	3	4	5	6	7	8
Subsample	N	-10 to -1	0	1 to 5	1 to 10	1 to 15	1 to 30	-10 to 15	-10 to 30
Before	19	1.41%	-0.20%	10.51%[3]*	7.82%[3]*	7.25%[3]*	6.76%[2]*	8.50%[3]*	8.01%[3]*
		(1.05)	(-0.63)	(4.16)	(2.96)	(2.90)	(2.03)	(3.34)	(2.41)
After	69	0.64%	2.35%[3]*	4.02%[3]*	2.98%[3]*	1.85%	1.84%	4.84%[3]*	4.82%[2]*
		(0.59)	(4.77)	(3.98)	(2.37)	(1.43)	(1.04)	(2.71)	(2.09)
					Pairwise t-test				
Difference		0.77%	-2.55%[3]*	6.49%[2]*	4.84%*	5.40%*	4.92%	3.66%	3.19%
p-value		0.655	0.000	0.025	0.084	0.057	0.199	0.246	0.504

[3]*: significant at 1% level, [2]*: significant at 5% level, *: significant at 10 % level.

Table 2.8 Analysis of CARs of category 1: Large-scale and Small-scale stocks deleted from the Nikkei 225 Index, 1991- 2008.

This table reports market-adjusted mean cumulative abnormal returns (CARs). The CARs are calculated in various event periods for "Large-scale" and "Small-scale" deleted stocks from 1991 to 2008. Each cell reports the average CAR for the respective event periods. Day 0 denotes the announcement day. T statistics are reported in parentheses.

		Event Period							
		1	2	3	4	5	6	7	8
Subsample	N	-10 to -1	0	1 to 5	1 to 10	1 to 15	1 to 30	-10 to 15	-10 to 30
Large-scale	26	-0.10%	-6.70%[3]*	-8.10%[3]*	-8.00%[3]*	-8.20%[3]*	-5.60%	-15.0%[3]*	-12.4%[3]*
		(-0.05)	(-3.06)	(-4.19)	(-3.13)	(-2.57)	(-1.63)	(-5.00)	(-4.13)
Small-scale	25	6.70%[3]*	-19.90%[3]*	-24.8%*	-24.10%	-26.70%*	-25.40%*	-39.9%[3]*	-38.5%[3]*
		(2.62)	(-8.33)	(-1.70)	(-1.67)	(-1.88)	(-1.81)	(-3.34)	(-3.26)
		Pairwise t-test							
Difference		-6.80%[2]*	13.20%[3]*	16.70%	16.10%	18.50%	19.80%	24.90%*	26.10%[2]*
p-value		0.046	0.000	0.267	0.280	0.215	0.183	0.053	0.041

[3]*: significant at 1% level, [2]*: significant at 5% level, *: significant at 10 % level.

Table 2.9 Analysis of CARs of category 2: Electronic and Non-Electronic stocks deleted from the Nikkei 225 Index, 1991- 2008.

This table reports market-adjusted mean cumulative abnormal returns (CARs). The CARs are calculated in various event periods for "Electronic" and "Non-Electronic" deleted stocks from 1991 to 2008. Each cell reports the average CAR for the respective event periods. Day 0 denotes the announcement day. T statistics are reported in parentheses.

		Event Period							
		1	2	3	4	5	6	7	8
Subsample	N	-10 to -1	0	1 to 5	1 to 10	1 to 15	1 to 30	-10 to 15	-10 to 30
Electronic	4	0.27%[2]*	-8.68%	-3.50%	-3.30%	-2.20%	1.54%	-10.60%*	-6.90%
		(0.04)	(-1.20)	(-0.97)	(-0.68)	(-0.44)	(0.19)	(-1.70)	(-0.84)
Non-Electronic	47	3.48%[2]*	-13.51%[3]*	-17.30%[2]*	-16.90%[2]*	-18.60%[3]*	-16.70%[2]*	-28.60%[3]*	-26.70%[3]*
		(1.97)	(-7.03)	(-2.21)	(-2.18)	(-2.39)	(-2.16)	(-4.26)	(-4.01)
					Pairwise t-test				
Difference		-3.21%	4.80%	13.80%	13.60%	16.40%*	18.24%	18.00%*	19.80%
p-value		0.619	0.488	0.116	0.152	0.089	0.135	0.073	0.395

[3]*: significant at 1% level, [2]*: significant at 5% level, *: significant at 10 % level.

Table 2.10 Analysis of CARs for stocks deleted from the Nikkei 225 Index before and after the Internet bubble burst.

This table reports market-adjusted mean cumulative abnormal returns (CARs). The CARs are calculated in various event periods for stocks deleted from the Nikkei 225 Index before and after the Internet bubble burst. Each cell reports the average CAR for the respective event periods. Day 0 denotes the announcement day. T statistics are reported in parentheses.

		Event Period							
		1	2	3	4	5	6	7	8
Subsample	N	-10 to -1	0	1 to 5	1 to 10	1 to 15	1 to 30	-10 to 15	-10 to 30
Before	8	-11.20%[3]*	0.25%	-5.30%	-4.60%	-3.70%	4.26%	-14.7%[3]*	-6.7%[2]*
		(-3.41)	(0.23)	(-0.66)	(-0.52)	(-1.31)	(1.23)	(-3.27)	(-2.01)
After	43	5.91%[3]*	-15.60%[3]*	-18.3%[2]*	-17.9%[2]*	-19.8%[3]*	-18.9%[2]*	-29.5%[3]*	-28.6%[3]*
		(3.59)	(-7.97)	(-2.14)	(-2.12)	(-2.33)	(-2.26)	(-4.04)	(-3.96)
		Pairwise t-test							
Difference		-17.11%[3]*	15.85%[3]*	13.00%	13.30%	16.10%*	23.16%[2]*	14.80%*	21.95%[3]*
p-value		0.000	0.000	0.160	0.147	0.079	0.014	0.091	0.008

[3]*: significant at 1% level, [2]*: significant at 5% level, *: significant at 10 % level.

Tables 2.11 The price effects of stocks added to or deleted from the MSCI Taiwan Index, 1999- 2007.

Mean abnormal returns (MAR) around the announcement date for 102 stocks added to and 58 stocks deleted from the MSCI Taiwan Index in 1999- 2007. Day 0 denotes the announcement day.

Event	Panel A: Additions			Panel B: Deletions		
Day	#Obs	MAR	t(MAR)	#Obs	MAR	t(MAR)
-10	102	-0.19%	-0.764	58	-0.83%[3]*	-2.891
-9	102	-0.02%	-0.079	58	0.08%	0.209
-8	102	0.19%	0.904	58	-0.28%	-1.022
-7	102	-0.80%[3]*	-3.236	58	0.15%	0.540
-6	102	0.24%	1.161	58	-0.16%	-0.678
-5	102	-0.18%	-1.123	58	-0.56%[2]*	-1.973
-4	102	0.03%	0.124	58	-0.69%[2]*	-2.132
-3	102	-0.35%	-1.647	58	-0.79%[3]*	-2.839
-2	102	-0.08%	-0.363	58	-0.20%	-0.529
-1	102	-0.26%	-1.032	58	-0.24%	-0.656
0	102	1.07%[3]*	4.249	58	-2.27%[3]*	-6.581
1	102	0.29%	1.113	58	-1.35%[3]*	-3.064
2	102	0.40%[2]*	2.086	58	-0.53%	-1.365
3	102	0.64%[3]*	2.524	58	0.95%[3]*	2.651
4	102	-0.44%[3]*	-2.603	58	-0.33%	-0.981
5	102	-0.13%	-0.549	58	-0.16%	-0.391
6	102	-0.24%	-1.053	58	-0.10%	-0.307
7	102	0.43%[2]*	1.980	58	0.00%	-0.012
8	102	-0.17%	-0.919	58	0.09%	0.279
9	102	0.11%	0.582	58	-0.41%	-1.669
10	102	-0.20%	-0.951	58	-0.93%[3]*	-2.724
11	102	0.14%	0.586	58	-0.71%*	-1.874
12	102	0.42%*	1.958	58	-0.09%	-0.271
13	102	-0.03%	-0.081	58	-0.77%[3]*	-2.502
14	102	-0.60%[3]*	-3.061	58	-0.04%	-0.123
15	102	-0.09%	-0.482	58	0.56%	1.492
16	102	0.04%	0.155	58	0.23%	0.600
17	102	0.50%[2]*	2.216	58	-0.55%*	-1.697
18	102	-0.60%[3]*	-3.339	58	0.15%	0.488
19	102	0.27%	0.988	58	-1.86%[3]*	-5.641
20	102	-0.43%[2]*	-2.049	58	1.15%[3]*	2.997
21	102	0.40%	1.528	58	0.11%	0.260
22	102	-0.22%	-0.953	58	-0.73%[3]*	-2.468
23	102	-0.43%	-1.235	58	0.35%	1.081
24	102	0.04%	0.157	58	-0.82%[3]*	-2.462
25	102	-0.78%[3]*	-3.478	58	-1.19%[3]*	-2.745
26	102	-0.72%[3]*	-2.599	58	0.50%	1.317
27	102	0.76%[3]*	3.381	58	0.64%	1.688
28	102	-0.65%[3]*	-2.603	58	1.27%[3]*	3.402
29	102	-0.01%	-0.032	58	-0.01%	-0.017
30	102	0.03%	0.118	58	1.16%[3]*	3.454

[3]*: significant at 1% level, [2]*: significant at 5% level, *: significant at 10 % level.

Tables 2.12 Mean cumulative abnormal returns from day 2 to day T for stocks added to or deleted from the MSCI Taiwan Index, 1999- 2007.

Mean cumulative abnormal returns (CAR) from day 2 to day T for 102 stocks added to and 58 stocks deleted from the MSCI Taiwan Index in 1999- 2007.

Day 2 to	Panel A: Additions			Panel B: Deletions		
Day T	CAR	t-value	p-value	CAR	t-value	p-value
2	0.40%[2]*	2.086	0.039	-0.53%	-1.365	0.178
3	1.05%[3]*	3.118	0.002	0.42%	0.978	0.332
4	0.60%	1.486	0.140	0.09%	0.167	0.868
5	0.47%	1.135	0.259	-0.07%	-0.093	0.926
6	0.23%	0.454	0.651	-0.17%	-0.195	0.846
7	0.65%	1.130	0.261	-0.17%	-0.186	0.853
8	0.48%	0.821	0.414	-0.08%	-0.080	0.937
9	0.59%	0.953	0.343	-0.49%	-0.450	0.655
10	0.39%	0.612	0.542	-1.42%	-1.276	0.207
11	0.53%	0.790	0.431	-2.13%	-1.637	0.107
12	0.95%	1.395	0.166	-2.22%*	-1.724	0.090
13	0.92%	1.175	0.243	-2.99%[2]*	-2.238	0.029
14	0.32%	0.402	0.689	-3.02%[2]*	-2.289	0.026
15	0.23%	0.277	0.782	-2.46%[2]*	-2.033	0.047
16	0.27%	0.302	0.763	-2.23%*	-1.933	0.058
17	0.77%	0.796	0.428	-2.79%[2]*	-2.311	0.025
18	0.17%	0.167	0.868	-2.64%[2]*	-2.001	0.050
19	0.43%	0.425	0.672	-4.50%[3]*	-3.201	0.002
20	0.01%	0.008	0.994	-3.35%[2]*	-2.356	0.022
21	0.41%	0.397	0.692	-3.24%[2]*	-2.302	0.025
22	0.19%	0.174	0.862	-3.97%[3]*	-2.793	0.007
23	-0.24%	-0.211	0.833	-3.62%[2]*	-2.394	0.020
24	-0.21%	-0.173	0.863	-4.44%[3]*	-2.742	0.008
25	-0.99%	-0.807	0.422	-5.63%[3]*	-2.957	0.005
26	-1.71%	-1.383	0.170	-5.13%[2]*	-2.577	0.013
27	-0.95%	-0.743	0.459	-4.49%[2]*	-2.146	0.036
28	-1.60%	-1.221	0.225	-3.22%	-1.581	0.119
29	-1.60%	-1.209	0.229	-3.23%	-1.516	0.135
30	-1.58%	-1.207	0.230	-2.07%	-1.059	0.294

[3]*: significant at 1% level, [2]*: significant at 5% level, *: significant at 10 % level.

Table 2.13 Analysis of CARs of category 1: Large-scale and Small-scale stocks added to the MSCI Taiwan Index, 1999- 2007.

This table reports market-adjusted mean cumulative abnormal returns (CARs). The CARs are calculated in various event periods for "Large-scale" and "Small-scale" added stocks from 1999 to 2007. Each cell reports the average CAR for the respective event periods. Day 0 denotes the announcement day. T statistics are reported in parentheses.

		Event Period							
		1	2	3	4	5	6	7	8
Subsample	N	-10 to -1	0	1 to 5	1 to 10	1 to 15	1 to 30	-10 to 15	-10 to 30
Large-scale	51	0.23%	0.85%[3]*	0.60%	0.33%	0.18%	-0.50%	1.26%	0.60%
		(0.22)	(2.51)	(0.85)	(0.31)	(0.14)	(-0.23)	(0.79)	(0.27)
Small-scale	51	-3.10%[3]*	1.28%[3]*	0.91%	1.03%	0.86%	-2.10%	-0.90%	-3.90%[2]*
		(-3.25)	(3.45)	(1.31)	(1.05)	(0.65)	(-1.18)	(-0.58)	(-1.96)
		Pairwise t-test							
Difference		3.33%[2]*	-0.43%	-0.31%	-0.70%	-0.68%	1.60%	2.16%	4.50%
p-value		0.021	0.386	0.754	0.628	0.705	0.556	0.334	0.142

[3]*: significant at 1% level, [2]*: significant at 5% level.

Table 2.14 Analysis of CARs of category 2: Electronic and Non-Electronic stocks added to the MSCI Index Index, 1999- 2007.

This table reports market-adjusted mean cumulative abnormal returns (CARs). The CARs are calculated in various event periods for "Electronic" and "Non-Electronic" added stocks from 1999 to 2007. Each cell reports the average CAR for the respective event periods. Day 0 denotes the announcement day. T statistics are reported in parentheses.

		Event Period							
		1	2	3	4	5	6	7	8
Subsample	N	-10 to -1	0	1 to 5	1 to 10	1 to 15	1 to 30	-10 to 15	-10 to 30
Electronic	67	-1.30%	1.09%[3]*	1.14%	1.53%	1.88%	-0.60%	1.68%	-0.80%
		(-1.33)	(3.60)	(1.66)	(1.49)	(1.50)	(-0.29)	(1.11)	(-0.36)
Non-Electronic	35	-1.60%	1.02%[2]*	0.03%	-0.90%	-2.10%[2]*	-2.70%	-2.70%[2]*	-3.30%*
		(-1.73)	(2.26)	(0.05)	(-1.47)	(-2.25)	(-1.94)	(-1.97)	(-1.86)
		Pairwise t-test							
Difference		0.30%	0.07%	1.11%	2.43%[2]*	3.98%[2]*	2.10%	4.38%[2]*	2.50%
p-value		0.804	0.898	0.222	0.043	0.012	0.379	0.035	0.363

[3]*: significant at 1% level, [2]*: significant at 5% level, *: significant at 10 % level.

Table 2.15 Analysis of CARs of category 3: upwards and downwards earnings forecast revision stocks added to the MSCI Taiwan Index, 1999- 2007.

This table reports market-adjusted mean cumulative abnormal returns (CARs). The CARs are calculated in various event periods for "Upwards" earnings forecast revision and "Downwards" earnings forecast revision added stocks from 1999 to 2007. Each cell reports the average CAR for the respective event periods. Day 0 denotes the announcement day. T statistics are reported in parentheses.

		Event Period							
		1	2	3	4	5	6	7	8
Subsample	N	-10 to -1	0	1 to 5	1 to 10	1 to 15	1 to 30	-10 to 15	-10 to 30
Up	21	-0.70%	1.29%[3]*	0.76%	1.60%	-1.90%	-3.50%	-1.40%	-3.00%
		(-0.42)	(2.96)	(0.90)	(0.97)	(-0.89)	(-0.94)	(-0.44)	(-0.67)
Down	27	-1.90%	0.85%	1.54%	-0.20%	1.28%	1.07%	0.23%	0.02%
		(-1.38)	(1.61)	(1.25)	(-0.14)	(0.60)	(0.39)	(0.09)	(0.01)
		Pairwise t-test							
Difference		1.20%	0.44%	-0.78%	1.80%	-3.18%	-4.57%	-1.63%	-3.02%
p-value		0.599	0.532	0.606	0.450	0.302	0.320	0.691	0.579

[3]*: significant at 1% level

Table 2.16 Analysis of CARs for stocks added to the MSCI Taiwan Index before and after the Internet bubble burst.

This table reports market-adjusted mean cumulative abnormal returns (CARs). The CARs are calculated in various event periods for stocks added to the MSCI Taiwan Index before and after the Internet bubble burst. Each cell reports the average CAR for the respective event periods. Day 0 denotes the announcement day. T statistics are reported in parentheses.

		Event Period							
		1	2	3	4	5	6	7	8
Subsample	N	-10 to -1	0	1 to 5	1 to 10	1 to 15	1 to 30	-10 to 15	-10 to 30
Before	13	1.78%*	0.18%	4.06%[3]*	4.52%[2]*	6.61%[2]*	8.27%[2]*	8.57%[2]*	10.23%[3]*
		(1.18)	(0.40)	(3.32)	(1.98)	(2.06)	(2.20)	(2.19)	(2.78)
After	89	-1.90%[3]*	1.19%[3]*	0.28%	0.12%	-0.40%	-2.70%*	-1.10%	-3.40%[2]*
		(-2.40)	(4.31)	(0.54)	(0.16)	(-0.42)	(-1.90)	(-0.96)	(-2.13)
		Pairwise t-test							
Difference		3.68%*	1.01%*	3.78%[2]*	4.40%[2]*	7.01%*	10.97%[3]*	9.67%[2]*	13.63%[3]*
p-value		0.089	0.076	0.010	0.040	0.055	0.007	0.033	0.002

[3]*: significant at 1% level, [2]*: significant at 5% level, *: significant at 10 % level.

Table 2.17 Analysis of CARs of category 1: Large-scale and Small-scale stocks deleted from the MSCI Taiwan Index, 1999- 2007.

This table reports market-adjusted mean cumulative abnormal returns (CARs). The CARs are calculated in various event periods for "Large-scale" and "Small-scale" deleted stocks from 1999 to 2007. Each cell reports the average CAR for the respective event periods. Day 0 denotes the announcement day. T statistics are reported in parentheses.

		Event Period							
		1	2	3	4	5	6	7	8
Subsample	N	-10 to -1	0	1 to 5	1 to 10	1 to 15	1 to 30	-10 to 15	-10 to 30
Large-scale	29	-1.80%	-2.00%[3]*	-1.00%	-2.60%[2]*	-3.90%[3]*	-7.90%[3]*	-7.60%[3]*	-11.70%[3]*
		(-1.03)	(-5.36)	(-1.12)	(-2.19)	(2.76)	(-3.14)	(-3.38)	(-3.65)
Small-scale	29	-5.30%[3]*	-2.50%[3]*	-1.80%	-2.90%	-3.80%	1.08%	-11.60%[3]*	-6.70%*
		(-3.14)	(-4.36)	(-1.19)	(-1.32)	(-1.60)	(0.30)	(-3.51)	(-1.79)
		Pairwise t-test							
Difference		3.50%	0.50%	0.80%	0.30%	-0.10%	-8.98%[2]*	4.00%	-5.00%
p-value		0.150	0.440	0.658	0.919	0.969	0.044	0.330	0.319

[3]*: significant at 1% level, [2]*: significant at 5% level, *: significant at 10 % level

Table 2.18 Analysis of CARs of category 2: Electronic and Non-Electronic stocks deleted from the MSCI Taiwan Index, 1999- 2007.

This table reports market-adjusted mean cumulative abnormal returns (CARs). The CARs are calculated in various event periods for "Electronic" and "Non-Electronic" deleted stocks from 1999 to 2007. Each cell reports the average CAR for the respective event periods. Day 0 denotes the announcement day. T statistics are reported in parentheses.

		Event Period							
		1	2	3	4	5	6	7	8
Subsample	N	-10 to -1	0	1 to 5	1 to 10	1 to 15	1 to 30	-10 to 15	-10 to 30
Electronic	11	-1.30%	-1.40%[2]*	1.84%	2.06%	1.81%	3.55%	-0.90%	0.86%
		(-0.49)	(-2.25)	(1.25)	(1.20)	(0.67)	(0.86)	(-0.20)	(0.19)
Non-Electronic	47	-4.00%[3]*	-2.50%[3]*	-2.20%[2]*	-3.90%[3]*	-5.10%[3]*	-5.10%[2]*	-11.6%[3]*	-11.6%[3]*
		(-2.97)	(-6.24)	(-2.16)	(-2.71)	(-3.43)	(-1.99)	(-5.41)	(-4.20)
		Pairwise t-test							
Difference		2.70%	1.10%	4.04%*	5.96%[2]*	6.91%[2]*	8.65%	10.70%[2]*	12.46%[2]*
p-value		0.384	0.207	0.074	0.013	0.044	0.133	0.033	0.047

[3]*: significant at 1% level, [2]*: significant at 5% level, *: significant at 10 % level.

Table 2.19 Analysis of CARs for stocks deleted from the MSCI Taiwan Index before and after the Internet bubble burst.

This table reports market-adjusted mean cumulative abnormal returns (CARs). The CARs are calculated in various event periods for stocks deleted from the MSCI Taiwan Index before and after the Internet bubble burst. Each cell reports the average CAR for the respective event periods. Day 0 denotes the announcement day. T statistics are reported in parentheses.

		Event Period							
		1	2	3	4	5	6	7	8
Subsample	N	-10 to -1	0	1 to 5	1 to 10	1 to 15	1 to 30	-10 to 15	-10 to 30
Before	15	-4.40%[3]*	-1.34%[3]*	-5.90%[3]*	-9.00%[3]*	-10.2%[3]*	-23.0%[3]*	-15.9%[3]*	-28.8%[3]*
		(-2.65)	(-3.65)	(-3.46)	(-5.65)	(-5.43)	(-11.10)	(-8.34)	(-9.85)
After	43	-3.20%[2]*	-2.60%[3]*	0.12%	-0.60%	-1.60%	3.42%	-7.40%[3]*	-2.40%
		(-2.09)	(-5.91)	(0.13)	(-0.40)	(-1.01)	(1.64)	(-2.92)	(-0.98)
		Pairwise t-test							
Difference		-1.20%	1.30%[2]*	-6.02%[3]*	-8.40%[3]*	-8.60%[3]*	-26.42%[3]*	-8.50%[2]*	-26.4%[3]*
p-value		0.606	0.034	0.002	0.000	0.005	0.000	0.010	0.000

[3]*: significant at 1% level, [2]*: significant at 5% level.

Chapter III

Analyst Responses of Earnings Forecasts to Stocks Indices Adjustments

1. Introduction

This chapter extends the work of Denis et al. (2003) using Nikkei 225 Index and MSCI Taiwan Index adjustments to study the earnings forecast changes and absolute forecast errors of analysts over the period through September 1991 to March 2008 and May 1999 to May 2007, respectively. The preceding chapter mentioned studies examining how stocks additions and deletions to major stock indices induced changes in trading volume and returns. However, few studies before Denis et al. (2003) showed a relationship between additions and deletions to major indices and earnings forecasts. Denis et al. (2003) analyzed earnings per share (EPS) forecasts for companies that are newly added to the S&P 500 Index, and also compare post-inclusion realized earning to pre-inclusion forecast. They find that companies newly added to the Index experience significant increases in EPS forecasts and apparent improvements in realized earnings.

This study examines whether earnings forecasts made by analysts of the Nikkei 225 Index and MSCI Taiwan Index differ from those made by analysts of the S&P 500 Index. Stock markets vary in nature from one country to another. The U.S and Japanese stock markets are considered developed, and are dominated by institutional investors. In contrast, the Taiwanese stock market is classified as an emerging market, and is dominated by individual investors. The differences between the Taiwanese, Japanese and U.S. stock markets, the properties of brokerage firms and the characteristics of stock indices may generate different results in analyst forecasts when stocks are added to or deleted from major stock indices. This study also examines whether the earnings forecasts of the analysts differ between newly added stocks and the matched stocks.

Additionally, this study analyzes the differences between foreign analysts and local ones of the Nikkei 225 Index and MSCI Taiwan Index. Unlike the definition of local and foreign analysts used by Bae et al. (2008), this study classifies an analyst as a "local (foreign) analyst" if he works for a local (foreign) firm, regardless of whether the country location of an analyst is the same as that of the firm he reports to examine whether local and foreign analysts have the same earnings forecasts. Absolute forecast error, as a proxy for "forecast accuracy", is used to test the accuracy of local and foreign analysts. The absolute forecast error is the absolute difference between the median EPS forecast preceding the month in which it is announced that a company will be added to the Index and the realized EPS for the same fiscal period and the same firm. This study also examines whether the absolute forecast errors made by analysts focusing on stocks added to the Nikkei 225 Index and MSCI Taiwan Index are smaller than those made by analysts focusing on the matching firms.

The empirical results show that the magnitude of changes in EPS forecast made by foreign analysts are smaller than those of changes in EPS forecast made by local analysts for all the three types of stocks in Japan. Compared with "all other Japanese firms", the magnitude of mean forecasts revisions is smaller for the analysts focused on "newly included Japanese firms". The empirical results also show that the magnitude of revisions in mean earnings forecasts does not differ significantly between the analysts of "newly included Japanese firms" and "ISL-matched Japanese firms". For firms newly added to the MSCI Taiwan Index, the magnitude of changes in analysts EPS forecasts do not differ clearly from those of their peer groups.

The absolute forecast errors made by analysts for "all other Japanese firms" are larger than those made by analysts for "newly included Japanese firms". Also, the absolute forecast errors made by analysts for "all other Taiwan firms" and "ISL-matched Taiwan firms" are larger than those made by analysts for "newly included Taiwan firms". This phenomenon demonstrates firms that are newly added to

the Nikkei 225 Index and MSCI Taiwan index exhibit significantly improved performance. In terms of the relative accuracy of local and foreign analysts, the results display that the forecasts of foreign analysts are less accurate than those of local analysts in Japan and the forecasts of foreign analysts are more accurate than those of local analysts in Taiwan.

The paper proceeds as follows: Section 2 discusses the literature review; Section 3 presents the data and methodology used in this study; Section 4 displays the changes in analysts' EPS forecast; Section 5 tests for differences in absolute forecast errors; and Section 6 concludes.

2. Literature Review

2.1 The performance of local and foreign analysts

Does distance influence the quality of information that investors get? A large number of papers find local investors have an information advantage (Brennan and Cao, 1997; Hau, 2001). However, some papers suggest that foreign investors who participate in a market can be better informed than local investors (Seasholes, 2000; Froot et al., 2001). These studies provide mixed conclusions regarding whether local or foreign investors have information advantage.

In contrast to most studies focus on investors choice and performance, Bae et al. (2008) directly examined whether analysts resident in a country make more precise earnings forecasts for firms in that country than analysts who are not resident in that country. They found that local analysts have a significant information advantage over foreign analysts for a large sample of countries. The result is the same as Malloy (2005) who witnessed that in the U.S. analysts who are closer to the headquarters of firms have information advantages.

However, Bacmann and Bolliger (2001) investigated the relative performance of local and foreign financial analysts on Latin American emerging markets. They found

that foreign financial analysts outperform local analysts on these markets. Foreign analysts produce more timely and more accurate forecasts. A significant price reaction is observed following their downward forecast revisions. Also, the evidences on the performance of local and foreign analysts are mixed.

Bae et al. (2008) defined an analyst as a "local analyst" if the country location of an analyst is the same as that of the firm he covers, regardless of whether an analyst is working for a local research firm or a research firm from a foreign country. Unlike the analysts definition of Bae et al.(2008)[10], this study defines an analyst as a "local (foreign) analyst" if the analyst is working for a local (foreign) firm, regardless of whether the country location of an analyst is the same as that of the firm he reports. It means that local analysts may not in the same country location where they cover, but foreign analysts may in the same country location where they cover. Then, this study discusses forecast accuracy of analysts and optimism in the next part.

2.2 Forecast accuracy of analysts and optimism

A large number of papers employ analysts' forecasts as a measure of expected earnings and refer to negative mean forecast errors as evidence of the phenomenon of optimism in analysts forecast. Ke and Yu (2006) found that analysts' forecasts tend to be optimistic at the beginning of the period while pessimistic at the end of the period to produce more accurate earnings forecasts and they are thus less likely to be fired.

Clement (1999) found that forecast accuracy is positively associated with analysts' experience and employer size, and negatively associated with the number of firms and industries followed by the analysts. Duru and Reeb (2002) found greater corporate international diversification associated with less accurate and more optimistic analysts' forecasts. Hope (2003) witnessed strong enforcement of

[10] We do not have the data of the country locations of analysts, hence we use the properties of broker-age firms that analysts work for dividing them into local or foreign analysts.

accounting standards and firm-level disclosures are associated with higher forecast accuracy. Loh and Mian (2006) applied absolute forecast errors examining the relation between the accuracy of analysts' earnings forecasts and the profitability of their stock recommendations. They documented the recommendations of superior earnings forecasters significantly outperform those of inferior ones.

Combining papers above, we find, in order to maintain good relationships with management and avoid being fired, analysts are usually more optimistic at the beginning of the period. However, corporations with less international diversification, larger size, strong enforcement of accounting standards and firm-level disclosures will induce analysts' earnings forecasts more accurate. More accurate earnings forecasts often accompany superior stock recommendations. Are local analysts or foreign analysts more accurate in earnings forecasts? We will discuss in this chapter.

3. Data and methodology

3.1 Sample description

We use Nikkei 225 Index and MSCI Taiwan Index inclusions to study the earnings forecast changes of analysts over the period through September 1991 to March 2008 and May 1999 to May 2007, respectively. We examine whether their forecasts are different in newly added firms and the matching firms. Our matching firms are listed firms that are not included in the Nikkei 225 Index and MSCI Taiwan Index, which are two benchmark portfolios. Also, whether local analysts and foreign analysts have the same earnings forecasts or not is analyzed. Nikkei 225 Index and MSCI Taiwan Index have undergone composite stocks adjusted for many times in these periods. There are 112 firms and 105 firms included in the Nikkei 225 Index and MSCI Taiwan Index during the sample periods, respectively. The sample excludes newly added firms that are a spin-off or if they engaged in a merger or takeover

around the inclusion event.

In order to compare the differences of earnings forecast changes of analysts for newly added firms and the matched firms, we adopt two benchmarks for the matched firms. First, we include all companies in the I/B/E/S database that we can compute a current/ one-year-ahead median EPS forecast for the same pre-announcement and post- announcement time periods as for the addition firms[11].

For the second benchmark, we separate firms into different industry sectors. The log market capitalization is proxied for size. The liquidity is defined as the trading volume dividend by the number of shares outstanding for MSCI Taiwan Index. For Nikkei 225 Index, market liquidity is measured by its trading volume. Each newly added stock is matched with its appropriate industry, size and liquidity[12]. We regard the first criterion set as "all other firms" while the second criterion as the "industry, size and liquidity (ISL) matched firms". In Appendix A and B, we exhibit the descriptive statistics of price, market value, turnover rate and volume for Nikkei 225 Index and MSCI Taiwan Index addition firms and the matched firms.

Earnings per share (EPS) forecasts and actual EPS for the current year and one-year-head are obtained from the I/B/E/S database. The price, market value and trading volume of Japanese stocks are obtained from the Datastream. Information on announcement dates for Nikkei 225 Index adjustment is obtained from the Nikkei Interactive website. Price, market value, trading volume and the number of shares

[11] The first criterion for our research is consistent with Denis et al. (2003).

[12] The second criterion for Denis et al. (2003) is that each company in the I/B/E/S database first sorted into 1 of the 12 Fama French industry portfolios. Each industry portfolio is divided into 3 portfolios on the basis of market capitalization, with one-third of the firms in each market-value portfolio. Finally, within each industry and market-value portfolio, firms are sorted into 3 liquidity portfolios, where liquidity is defined as the five-year average of annual trading volume divided by the number of shares outstanding. This sorting procedure results in 108 portfolios. Each newly added stock is matched with its appropriate industry, size, and liquidity portfolio. We have not adopted this classification in this paper due to data limitation.

outstanding data for Taiwanese stocks are obtained from the TEJ (Taiwan Economic Journal). Furthermore, announcement date information for MSCI Taiwan Index adjustment is obtained from the UDN (United Daily News) data.

3.2. Analyst earnings forecast

How to consider a forecast to be a current year forecast or next fiscal year forecast? We adopt the thought of Denis et al. (2003) that require the Index inclusion announcement occurs at least three months prior to the firms' fiscal year-ends in order to classify the current year's forecasts as a current year forecast. For example, if a company's fiscal year-end is December 31, 2000, and the Index inclusion announcement occurs before October 2000, the earnings forecast for fiscal year 2000 is treated as a current-year forecast and the earnings forecast for 2001 is treated as a one-year-ahead forecast. If, on the other hand, the announcement takes place after October 2000, the earnings forecast for fiscal year 2001 is treated as a current-year forecast and the earnings forecast for 2002 is treated as a one- year-ahead forecast.[13]

For the newly added firms and the matching firms, we compute the earnings forecast changes using the following procedure[14]. To compute the pre-announcement and post-announcement median EPS forecasts of an Index inclusion for a given company, the event window is four months prior to the announcement month of an Index inclusion and four months following to the announcement month of an Index inclusion. For each individual analyst, we use the pre-announcement EPS forecast, which is closest to the announcement month of an Index inclusion. From these individual analysts' forecasts, the median pre-announcement EPS forecast is determined. To calculate the post-announcement EPS forecast, for each continuing analyst, we use the first post-announcement EPS forecast of an index inclusion. From

[13] Some studies use analysts' annual earnings forecasts for the current and next fiscal year that are reported in the I/B/E/S database as current-year forecasts and one-year-ahead forecasts.

[14] The detail computing mode of earnings forecast changes is presented here.

these individual analysts' forecasts, the median post-announcement EPS forecast is determined[15]. We calculate the raw forecast changes by subtracting the pre-announcement EPS forecast from the post-announcement EPS forecast as[16, 17]

$$\Delta FE_i = FE_{i,+} - FE_{i,-}, \tag{1}$$

where ΔFE_i is the EPS forecast change for firm *i*, $FE_{i,-}$ is the pre-Index-inclusion EPS forecast for firm *i*, $FE_{i,+}$ is the post-Index-inclusion EPS forecast for firm *i*.

For a stock with a ￥500 price per share and a stock with a ￥50 price per share, a ￥10 per share change in earnings forecast may have very different implications. Also, for a stock with earnings per share of ￥10 and a stock with earnings per share of ￥100, a ￥10 per share change in earnings forecast may have very different implications. Hence, we standardize the EPS forecast changes by stock price and EPS.

$$\Delta PFE_i = \frac{FE_{i,+} - FE_{i,-}}{P_{i,-}}, \tag{2}$$

where ΔPFE_i is change in the EPS forecast for firm *i* standardized by stock price, $FE_{i,+}$ and $FE_{i,-}$ are as defined above, $P_{i,-}$ is firm *i* stock price as of the end of the month prior to the announcement month.

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[15] We replicated our analysis using mean analysts' forecast, the results are similar to median analysts' forecast.

[16] Our research adopts the formula of Denis et al. (2003) to explore analyst response to stocks index adjustments.

[17] Shu et al. (2004) examined the Taiwanese listed firms that are added to or deleted from the MSCI free indices around the event dates. Chakrabarti et al. (2005) applied the MSCI country indices for 29 countries to examine the returns of stocks added to or removed from these indices around the event dates. Okada et al. (2006) investigated the stock price and volume behavior of firms around the time of their addition to the Nikkei 225 index. All of these studies found that stocks being added to the indices experience sharp price rise on and after the announcement date. The papers mentioned above show that the performance of firms will be influenced by the information of announcement adjusted. The primary mission of analysts is to investigate the whole performance of firms. Therefore, we can reasonable anticipate that analysts will refer to the information of announcement adjusted to modify their forecasts.

To standardize by EPS, for companies that have a positive pre-announcement EPS forecast[18], we divide the forecast change by the pre-announcement EPS forecast as

$$\Delta EFE_i = \frac{FE_{i,+} - FE_{i,-}}{FE_{i,-}}, \tag{3}$$

where ΔEFE_i is the change in the EPS forecast for firm *i* standardized by EPS. $FE_{i,+}$ and $FE_{i,-}$ are as defined above.

3.3. Absolute forecast error

After computing median EPS forecast changes, to examine possible biases in the forecasts, we use "absolute forecast error"[19] as a proxy. We compute absolute forecast errors for the newly added firms and the benchmark portfolios. The absolute forecast error is the absolute difference between the analysts' median EPS forecast preceding the month of announcement that a company will be added to the Index and the realized EPS for the same fiscal period and the same firm.

It can be formularized as

$$FError_i = \left| RE_{i,+} - FE_{i,-} \right|, \tag{4}$$

where $FError_i$ is the absolute raw forecast error for firm *i*, $RE_{i,+}$ is the realized EPS for the same fiscal period for firm $i, FE_{i,-}$ is as defined above. The bigger the absolute forecast error values are, the less accurate they are.

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[18] To avoid the effects reverse, therefore only considers positive pre-announcement EPS forecasts.

[19] The values of forecast errors have similar amounts of positive values and negative values. In order to avoid the effects offsetting between positive forecast errors and negative forecast errors, we follow the method used by Conroy and Harris (1995), Guay et al. (2003) and Gu and Wang (2005) to take the absolute value of forecast errors. Our research still uses the thought of Denis et al. (2003) to examine the possible biases.

In the same way, different stock price and different earnings have different implications for forecast errors. Therefore, we standardize the forecast errors by stock price and EPS.

$$\Delta PFError_i = \left| \frac{RE_{i,+} - FE_{i,-}}{P_{i,-}} \right|, \quad (5)$$

The values of forecast errors have similar amounts of positive values and negative values. In order to avoid the effects offseting between positive forecast errors and negative forecast errors, we follow the method used by Conroy and Harris (1995), Guay et al. (2003) and Gu and Wang (2005) to take the absolute value of forecast errors.

where $\Delta PFError_i$ is the EPS absolute forecast error for firm *i* standardized by stock price.

To standardize by EPS, for companies that have a positive pre-announcement EPS forecast, we divide the forecast errors by the pre-announcement EPS forecast as

$$\Delta EFError_i = \left| \frac{RE_{i,+} - FE_{i,-}}{FE_{i,-}} \right|, \quad (6)$$

where $\Delta EFError_i$ is the EPS absolute forecast error for firm *i* standardized by EPS.

4. Changes in analysts' EPS forecast

4.1 Magnitude of EPS forecast changes for firms added to the Nikkei 225 Index and the matched firms

There are 61 firms newly included firms to the Nikkei 225 Index that are eligible for further analysis. Table 3.1 lists the mean (of the median) changes in current-year and one-year-ahead EPS forecasts for firms newly added to the Nikkei 225 Index and

for matched firms[20]. Tables 3.1A to 3.1C respectively show mean forecasts revisions for the newly added firms, all other firms and ISL-matched firms. Tables 3.1A to 3.1C also list mean forecasts revisions of foreign and local analysts of newly added firms, all other firms and ISL-matched firms.

[Insert Tables 3.1A to 3.1C here]

Panel A of Table 3.1A to 3.1C display the current-year mean forecast revisions for all three types of firms. For the newly added firms, raw mean forecast revision is slightly and insignificantly positive at ￥0.523 (p-value = 0.929). For the matched firms, it is significantly negative at ￥-16.750 (p-value = 0.000) for all other firms; and for the ISL-matched firms, it is ￥-37.282 (p-value = 0.414). These analytical results are consistent with Denis et al. (2003) and prior studies by showing that analysts systematically revise their forecasts downwards as the fiscal year progresses. Foreign analysts and local ones display an equal tendency to revise earnings forecasts downwards. For all other firms, it is significantly negative at ￥-18.64 (p-value = 0.000) for the foreign analysts and ￥-14.01 (p-value = 0.000) for the local analysts. For all the three types of stocks, the raw forecasts revisions of foreign and local analysts show similar patterns.

This study calculates the current-year mean of standardized changes in EPS forecasts for all the three firm types, and the results are listed in the Panel A of Tables 3.1A to 3.1C. Also, the results show that analysts systematically revise their forecasts downwards as the fiscal year progresses for all the three firm types. For instance, when forecasts revisions are standardized by the pre-announcement EPS forecast, it is -13.27% (p-value =0.026, 58 have a positive pre-inclusion EPS forecast) for the newly added firms, -14.42% (p-value =0.000, 13095 have a positive pre-inclusion

[20] Extreme values may influence the empirical results, and thus this study excludes the 1% outlier of EPS forecast changes.

EPS forecast) for all other firms, and -5.29% (p-value =0.005) for the ISL-matched firms, and thus is significantly negative in all cases. When forecasts revisions are standardized by stock prices, the results indicate that forecasts revisions are all significantly negative. The magnitude of changes in EPS forecasts made by foreign analysts appears smaller than those made by local analysts for all three types of stocks. For all other firms, the result is statistically significantly different from zero, which is a very interesting finding.

[Insert Table 3.1D here]

Finally, for comparison this study subtracts the current year raw and standardized mean changes in EPS forecasts for newly included firm peer groups from those of the newly included firms. The results are presented in Panel A of Table 3.1D. In comparison with all other firms, the magnitude of mean forecast revisions seems to be smaller for the analysts of newly included firms, and the effects are very noticeable for foreign analysts. The magnitude of mean forecast revisions for newly included firms and ISL-matched firms, reveals does not differ between the two groups. Also, foreign analysts and local analysts do not produce significantly different forecasts between newly added firms and ISL-matched firms, representing another very interesting finding that differs from the results of Denis et al. (2003).

Panel B of Tables 3.1A to 3.1C exhibit the one-year-ahead raw and standardized mean forecasts revisions for all the three firm types. The results resemble those for the current-year forecasts, but all measures are smaller. The magnitude of changes in EPS forecasts of foreign analysts is smaller than that of changes in EPS forecasts of local analysts for all three stock types. For all other firms, the result differs significantly from zero.

Panel B of Table 3.1D illustrates the one-year-ahead raw and standardized differences of mean changes in EPS forecasts for newly included firms and their

benchmarks. In comparison with all other firms, the magnitude of mean forecasts revisions appears smaller for the analysts examining newly included firms, and this effect is very noticeable for both local and foreign analysts. Additionally, the magnitude of mean forecasts revisions for newly included firms and ISL-matched firms does not differ significantly.

4.2 Magnitude of EPS forecast changes for firms added to the MSCI Taiwan Index and the matched firms

The MSCI Taiwan Index contains 50 newly included firms that are eligible for further analysis. Table 3.2 lists the mean (of the median) changes in current-year and one-year-ahead EPS forecasts for firms newly added to the MSCI Taiwan Index and for matched firms. Tables 3.2A to 3.2C respectively show mean forecasts revisions for the newly added firms, all other firms and ISL-matched firms. Tables 3.2A to 3.2C also list mean forecasts revisions of foreign and local analysts of newly added firms, all other firms and ISL-matched firms.

[Insert Tables 3.2A to 3.2C here]

Panel A of Table 3.2A to 3.2C show the current-year mean forecasts revisions for all the three firm types. For the newly added firms, raw mean forecast revision is slightly and insignificantly negative at NT$-0.1302 (p-value = 0.162). For the matched firms, it is NT$-0.1723 (p-value =0.678) for all other firms; and for the ISL-matched firms, it is NT$-0.0923 (p-value =0.491). The analytical results seem consistent with Denis et al. (2003) and previous studies by showing that analysts systematically revise their forecasts downwards as the fiscal year progresses. For ISL-matched firms, the raw forecasts revision of foreign analysts is larger than that of local analysts (p-value for the difference is 0.091)

This study calculates the current-year mean of standardized changes in EPS forecasts for all the three types of firms, and the results are listed in the Panel A of

Tables 3.2A to 3.2C. The results also demonstrate that analysts systematically revise their forecasts downwards as the fiscal year progresses for all the companies. For instance, when forecasts revisions are standardized based on the pre-announcement EPS forecast, it is -7.79% (p-value =0.024) for the newly added firms, -7.32% (p-value =0.060) for all other firms (1059 have a positive pre-inclusion EPS forecast), and -8.62% (p-value =0.124, 47 have a positive pre-inclusion EPS forecast) for the ISL-matched firms. The standardized forecasts revision made by foreign analysts is smaller than that made by local analysts for all other firms (p-value for the difference is 0.036).

Finally, for comparison this study subtracts the current year raw and standardized mean changes in EPS forecasts for newly included firm peer groups from those of the newly included firms. The results are illustrated in Panel A of Table 3.2D. Compared with all other firms, the magnitude of mean forecasts revisions seems to be slightly smaller for the newly included firms, although they are not statistically significant. Compared with the ISL-matched firms, the magnitude of mean forecasts revisions also appears slightly smaller for the newly included firms, but does not differ between the two groups. Foreign analysts and local analysts do not produce significantly different forecasts between newly added firms and all the matched firms

[Insert Table 3.2D here]

Panel B of Tables 3.2A to 3.2C exhibit the one-year-ahead raw and standardized mean forecasts revisions for all the three types of firms. The results are similar with those for the current-year forecasts. The magnitude of changes in raw EPS forecasts of foreign analysts reveals larger than that of changes in raw EPS forecasts of the local analysts for all other firms. The result also differs significantly from zero.

Panel B of Table 3.2D shows the one-year-ahead raw and standardized differences of mean changes in EPS forecasts for newly included firms and the

matched firms. The analytical results present that the magnitude of raw and standardized mean forecasts revisions for the newly added firms is no difference between those of all other firms and ISL-matched firms. The results indicate that analysts do not reduce their earnings revised scope for firms that newly added to MSCI Taiwan Index. That is an interest finding that differs from the results of Denis et al. (2003).

5. Absolute forecast errors of analysts

5.1 Absolute forecast errors for firms added to the Nikkei 225 Index and the matched firms

After computing median EPS forecast changes of analysts, this study next calculates absolute forecast errors. Table 3.3 lists the results of absolute forecast errors of analysts for all the measures in Japan[21]. Panels A and B of Table 3.3 show the results for current-year and one-year-ahead absolute forecast errors. Table 3.3 also shows the results of absolute forecast errors of foreign analysts and local analysts for all the measures.

[Insert Table 3.3 here]

Table 3.3A exhibits current-year and one-year-ahead absolute forecast errors for newly added firms, and the results reveal the mean absolute forecast errors no significantly difference between foreign and local analysts. Table 3.3B shows current-year and one-year-ahead raw absolute forecast errors for all other firms, and reveal that the mean absolute forecast errors of foreign analysts are larger than those of local analysts (p-value for the difference = 0.013 for current year; p-value for the difference = 0.006 for one-year-ahead). Table 3.3C lists current-year standardized mean absolute forecast errors for ISL-matched firms, and reveals that value of foreign

[21] The extreme values may influence the empirical results, and thus this study excludes the 1% outlier of EPS absolute forecast errors.

analysts is larger than that of local analysts (p-value for the difference = 0.054).

Table 3.3D lists the core question we want to know that is whether the absolute forecast errors for the newly included firms are smaller than those of their benchmarks. For current-year forecasts, comparisons with all other firms reveal no statistically significant difference for the whole analysts. Separating analysts into foreign analysts and local ones reveals that mean absolute forecast errors for foreign analysts of newly included firms are smaller than those for foreign analysts of all other firms. For example, the raw mean absolute forecast error for foreign analysts of all other firms is ￥211.920, which is more than double the raw mean absolute forecast error of foreign analysts for the newly included firms (p-value for the difference = 0.034). Also, the raw absolute forecast error for local analysts of newly included firms is smaller than that for the local analysts of all other firms (p-value for the difference = 0.099). Comparisons with ISL-matched firms reveal no statistically significant difference for the whole analysts. But the standardized absolute forecast errors for local analysts of ISL-matched firms are smaller than those for local analysts of newly included firms.

For one-year-ahead raw and standardized absolute forecast errors, the differences between the newly included firms and their peer groups are almost negative. This means the absolute forecast errors for the newly included firms are smaller than those for their benchmarks. Particularly, the mean differences in standardized absolute forecast errors between the newly included firms and the all other firms all differ statistically significantly from zero and have p-values of 0.018 or less. However, the mean differences in absolute forecast errors between the newly included firms and the ISL-matched firms are not significantly different from zero. This shows that in comparison with all other firms, firms newly added to the Nikkei 225 Index display significant improvements in performance[22]. Compared with ISL-matched firms, the

[22] Firms that are added to the Nikkei 225 Index experience better operating performance that induced their realized EPS raising. This makes the absolute forecast errors of analysts for newly included firms

effects are not notable. In terms of whether local versus foreign analysts are more accurate, the results of this study show that the forecasts of foreign analysts are less accurate than those of local analysts. Possibly is that local analysts have a significant information advantage over foreign analysts.

5.2 Absolute forecast errors for firms added to the MSCI Taiwan Index and the matched firms

Table 3.4 lists the results of absolute forecast errors of analysts for all the companies in Taiwan. Panels A and B of Table 3.4 show the results for current-year and one-year-ahead absolute forecast errors. Table 3.4 also shows the results of absolute forecast errors of foreign analysts and local analysts for all the companies.

[Insert Table 3.4 here]

Table 3.4A and 3.4C display current-year and one-year-ahead absolute forecast errors for newly added firms and ISL-matched firms, respectively. Also, the results reveal the mean absolute forecast errors no significantly difference between foreign and local analysts for the two types of firms. Table 3.4B shows current-year raw and standardized absolute forecast errors for all other firms, and reveal that the mean absolute forecast errors of foreign analysts are smaller than those of local analysts (p-value for the difference = 0.026 for raw; p-values for the difference = 0.007 and 0.023 for standardized). For one-year-ahead raw and standardized absolute forecast errors, the value of foreign analysts remains smaller than that of local analysts, but dose not statistically significant.

Table 3.4D lists the mean differences between the absolute forecast errors of the newly included firms and their benchmarks in Taiwan. For current-year forecasts, comparisons with all other firms reveal statistically significant difference among the whole analysts or local and foreign analysts. For example, the raw mean absolute

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smaller than those for all other firms.

forecast error of the whole analysts for all other firms analysts is NT$ 3.1562, which is more than twice the raw mean absolute forecast error of the whole analysts for the newly included firms (p-value for the difference = 0.067). Also, the standardized absolute forecast errors for local and foreign analysts of newly included firms are smaller than those for the local and foreign analysts of all other firms. Compared with ISL-matched firms, the absolute forecast errors for analysts of newly included firms are smaller, but the mean differences reveal no statistically significant difference.

For one-year-ahead raw and standardized absolute forecast errors, the values for the newly included firms remain smaller than those for their benchmarks. For instance, the mean differences in absolute forecast errors standardized by EPS between newly included firms and all other firms differ significantly from zero with p-values of 0.075 or less. In comparison with ISL-matched firms, the absolute forecast errors for the whole analysts and foreign analysts of the newly added firms are still smaller, p-values for the differences are = 0.049 and 0.033, respectively.

The results mentioned above show that in comparison with all other firms and ISL-matched firms, firms that are newly added to the MSCI Taiwan Index display significant improvements in performance. Regarding whether local versus foreign analysts are more accurate, the results display the forecasts of foreign analysts are more accurate than those of local analysts. Possibly is that foreign analysts who work for important international brokerage houses and have the better international expertise than local analysts.

6. Conclusions

Regarding the study of analyst forecasts of earnings per share around the date of Index inclusion, Denis et al. (2003) found that companies that are newly added to the S&P 500 Index experience significant increases in EPS forecasts and apparent

improvements in performance. However the natures of stock markets vary from one country to another and the characteristics of stock indices adjustment are diverse. For the Japan, Taiwan and U.S. stock markets, the differences may generate different results in analyst forecasts when stocks are added to or deleted from major stock indices. As a result, this study examines whether earnings forecasts by the analysts focused on the Nikkei 225 Index and MSCI Taiwan Index differ from those by the analysts focused on the S&P 500 Index. This study uses adjustments in composite stocks of the Nikkei 225 Index and MSCI Taiwan Index to examine changes in EPS forecasts and forecast accuracy of local and foreign analysts.

The magnitude of changes in EPS forecasts of the foreign analysts is smaller than that of changes in EPS forecasts of the local analysts for all the three types of Japan stocks. For “all other Japanese firms”, the results are statistically significantly different from zero. In comparison with “all other Japanese firms”, the magnitude of mean forecast revisions is smaller for the analysts examining “newly included Japan firms”, the effects are very noticeable for the foreign and local analysts. The magnitude of mean forecasts revisions for the analysts examining “newly included Japan firms” and “ISL-matched Japan firms”, the results show no apparent difference between the two groups. For firms newly added to the MSCI Taiwan Index, the magnitude of changes in EPS forecasts of the analysts appears similar to those of their peer groups.

The absolute forecast errors made by analysts for “all other Japanese firms” are larger than those made by analysts for “newly included Japanese firms”. Also, the absolute forecast errors made by analysts for “all other Taiwan firms” and “ISL-matched Taiwan firms” are larger than those made by analysts for “newly included Taiwan firms”. This phenomenon demonstrates firms that are newly added to the Nikkei 225 Index and MSCI Taiwan index exhibit significantly improved performance. However, the absolute forecast errors made by analysts for “ISL-

matched Japan firms" and for "newly included Japanese firms" display no significantly difference. The frameworks of "ISL-matched Japan firms" may be as good as those of firms newly added to the Nikkei 225 Index. Thus the analysts forecasting earnings of the two types of firms did not produce different earnings forecasts. Regarding whether local versus foreign analysts are more accurate, the analytical results display that the forecasts of foreign analysts are less accurate than those of local analysts in Japan and the forecasts of foreign analysts are more accurate than those of local analysts in Taiwan.

Table 3.1 Changes in analysts' EPS forecasts for firms added to the Nikkei 225 Index and the matched firms

Table 3.1A Nikkei 225 Index Addition Firms

Earnings per share forecasts are taken from the I/B/E/S files for a sample of 60 firms added to the Nikkei 225 over the period 1991 to 2008. Subtracting the pre-announcement EPS forecast from the postannouncement forecast to calculate the current-year and one-year-ahead EPS forecasts changes. Local analysts and foreign ones depending on the local or foreign brokerage firms they are working for. The "Mean Difference" is the average of differences between mean foreign analysts' change in eps forecast and the mean local analysts' change in eps forecast. The p-values in parentheses test whether the numbers above are significantly different from zero.

Nikkei 225 Index Addition Firms

	1	2	3	4	5
Sample	Sample Size	Mean Δ EPS Forecast for **Nikkei 225 Index Addition Firms**	Mean ΔEPS Forecast for **Nikkei 225 Addition Firms'** Foreign Analysts	Mean ΔEPS Forecast for **Nikkei 225Addition Firms'** Local Analysts	Mean Difference (col.3 – col. 4)
Panel A：Changes in **Current -Year** EPS Forecasts					
Eps forecast change	60	￥ 0.523	￥ 1.582	￥ -7.478	￥ 9.060
		(0.929)	(0.822)	(0.216)	(0.329)
Eps forecast change standardized by eps	58	- 13.27 %[2]*	- 5.27 %	- 12.70 %*	7.43 %
		(0.026)	(0.209)	(0.064)	(0.347)
Eps forecast change standardized by price	60	- 0.43 %*	- 0.05 %	- 0.38 %	0.33 %
		(0.062)	(0.579)	(0.130)	(0.218)
Panel B：Changes in **One -Year -Ahead** EPS Forecasts					
Eps forecast change	50	￥ 34.390	￥ 40.139	￥ 11.371	￥ 28.768
		(0.166)	(0.325)	(0.275)	(0.453)
Eps forecast change standardized by eps	50	- 2.19 %	0.83 %	0.09 %	0.74 %
		(0.391)	(0.980)	(0.605)	(0.851)
Eps forecast change standardized by price	50	- 0.02 %	0.04 %	0.04 %	0.00 %
		(0.810)	(0.566)	(0.738)	(0.975)

[2]*: significant at 5 % level, *: significant at 10 % level.

Table 3.1B All Other Firms

Earnings per share forecasts are taken from the I/B/E/S files for a sample of 13633 firms with eps forecasts that are contemporaneous with the eps forecasts of newly included firms as "all other firms" as one criterion. Subtracting the pre-announcement EPS forecast from the postannouncement forecast to calculate the current-year and one-year-ahead EPS forecasts changes. Local analysts and foreign ones depending on the local or foreign brokerage firms they are working for. The "Mean Difference" is the average of differences between mean foreign analysts' change in eps forecast and the mean local analysts' change in eps forecast. The p-values in parentheses test whether the numbers above are significantly different from zero.

All Other Firms

	1	2	3	4	5
Sample	Sample Size	Mean Δ EPS Forecast for **All Other Firms**	Mean ΔEPS Forecast for **all other firms'** Foreign Analysts	Mean ΔEPS Forecast for **all other firms'** Local Analysts	Mean Difference (col.3 – col. 4)
Panel A：Changes in **Current -Year** EPS Forecasts					
Eps forecast change	13633	￥ - 16.750 [3]*	￥ -18.64 [3]*	￥ -14.01 [3]*	￥ - 4.63
		(0.000)	(0.000)	(0.000)	(0.207)
Eps forecast change standardized by eps	13095	- 14.42 % [3]*	- 13.63 % [3]*	- 14.48 % [3]*	0.85 %
		(0.000)	(0.000)	(0.000)	(0.457)
Eps forecast change standardized by price	12249	- 0.46 % [3]*	- 0.40 % [3]*	- 0.45 % [3]*	0.05 % *
		(0.000)	(0.000)	(0.000)	(0.063)
Panel B：Changes in **One -Year -Ahead** EPS Forecasts					
Eps forecast change	11391	￥ -12.137 [3]*	￥ -10.554 [3]*	￥ -10.579 [3]*	￥ 0.025
		(0.000)	(0.000)	(0.000)	(0.995)
Eps forecast change standardized by eps	11239	- 4.19 % [3]*	- 3.71 % [3]*	- 4.05 % [3]*	0.34 %
		(0.000)	(0.000)	(0.000)	(0.440)
Eps forecast change standardized by price	10279	- 0.25 % [3]*	-0.21 % [3]*	- 0.25% [3]*	0.04 % *
		(0.000)	(0.000)	(0.000)	(0.089)

[3]*: significant at 1 % level, *: significant at 10 % level.

Table 3.1C ISL-matched Firms

Earnings per share forecasts are taken from the I/B/E/S files for a sample of 56 firms with eps forecasts that are matched appropriate industry, size, and liquidity with the contemporaneous eps forecasts of newly included firms as "ISL-matched firms" as a second criterion . Subtracting the pre-announcement EPS forecast from the postannouncement forecast to calculate the current-year and one-year-ahead EPS forecasts changes. Local analysts and foreign ones depending on the local or foreign brokerage firms they are working for. The "Mean Difference" is the average of differences between mean foreign analysts' change in eps forecast and the mean local analysts' change in eps forecast. The p-values in parentheses test whether the numbers above are significantly different from zero.

ISL-match Firms

	1	2	3	4	5
Sample	Sample Size	Mean Δ EPS Forecast for **ISL-matched Firms**	Mean ΔEPS Forecast for **ISL-matched firms'** Foreign Analysts	Mean ΔEPS Forecast for **ISL-matched firms'** Local Analysts	Mean Difference (col.3 – col. 4)
Panel A：Changes in **Current -Year** EPS Forecasts					
Eps forecast change	56	￥ - 37.282	￥ - 3.236	￥ -112.518	￥ 109.282
		(0.414)	(0.405)	(0.380)	(0.394)
Eps forecast change standardized by eps	56	- 5.29 %[3]*	-6.00 %[3]*	- 4.80 %*	- 1.2 %
		(0.005)	(0.004)	(0.052)	(0.697)
Eps forecast change standardized by price	56	-0.21 %[3]*	- 0.20 %[3]*	- 0.22 %[2]*	0.02 %
		(0.005)	(0.006)	(0.028)	(0.848)
Panel B：Changes in **One -Year -Ahead** EPS Forecasts					
Eps forecast change	46	￥ -23.645	￥ 4.840	￥ - 76.207	￥ 81.047
		(0.399)	(0.301)	(0.378)	(0.350)
Eps forecast change standardized by eps	45	- 1.21 %	1.23 %	- 3.23 %	4.46 %
		(0.541)	(0.630)	(0.185)	(0.214)
Eps forecast change standardized by price	46	- 0.12 %	- 0.05 %	- 0.16 %	0.11 %
		(0.117)	(0.545)	(0.120)	(0.405)

[3]*: significant at 1% level, [2]*: significant at 5% Level, *: significant at 10 % level.

Table 3.1D Comparison with the matched firms

Earnings per share forecasts are taken from the I/B/E/S files for newly included firms and the matched firms over the period 1991 to 2008. Subtracting the pre-announcement EPS forecast from the postannouncement forecast to calculate the current-year and one-year-ahead EPS forecasts changes. Local analysts and foreign ones depending on the local or foreign brokerage firms they are working for. Here, the "Mean Difference" is the average of differences between the newly added firms' mean change in eps forecast and the mean of their criterion sample changes in eps forecasts. The p-values in parentheses test whether the numbers above are significantly different from zero.

	Comparison with All Other Firms			Comparison with ISL-matched Firms		
	1	2	3	4	5	6
Sample	ΔEPS Forecast Mean difference for added and all other firms	Δ EPS Forecast Mean difference for added and all other firms' foreign analysts	Δ EPS Forecast Mean difference for added and all other firms' local analysts	Δ EPS Forecast Mean difference for added and ISL-matched firms	Δ EPS Forecast Mean difference for added and ISL-matched firms' foreign analysts	Δ EPS Forecast Mean difference for added and ISL-matched firms' local analysts
Panel A：Changes in **Current -Year** EPS Forecasts						
Eps forecast change	￥ 17.273 [3]*	￥ 20.222[2]*	￥ 6.532	￥ 37.805	￥ 4.818	￥ 105.04
	(0.006)	(0.010)	(0.302)	(0.412)	(0.548)	(0.412)
Eps forecast change	1.15 %	8.36 %*	1.78 %	- 7.98 %	0.73 %	- 7.90 %
standardized by eps	(0.846)	(0.053)	(0.792)	(0.194)	(0.873)	(0.270)
Eps forecast change	0.03 %	0.35 % [3]*	0.07 %	- 0.22 %	0.14 %	- 0.16 %
standardized by price	(0.902)	(0.006)	(0.825)	(0.365)	(0.217)	(0.547)
Panel B：Changes in **One -Year -Ahead** EPS Forecasts						
Eps forecast change	￥ 46.527*	￥ 50.693	￥ 21.95*	￥ 58.035	￥ 35.299	￥ 87.578
	(0.064)	(0.184)	(0.068)	(0.119)	(0.340)	(0.316)
Eps forecast change	1.99 %	4.54 % [3]*	4.14 %	- 0.98 %	- 0.40 %	3.32 %
standardized by eps	(0.437)	(0.008)	(0.258)	(0.759)	(0.895)	(0.444)
Eps forecast change	0.23 %[3]*	0.25 %[3]*	0.29 %[3]*	0.10 %	0.09 %	0.20 %
standardized by price	(0.000)	(0.000)	(0.000)	(0.314)	(0.406)	(0.215)

[3]*: significant at 1% level, [2]*: significant at 5% level, *: significant at 10 % level.

Table 3.2 Changes in analysts' EPS forecasts for firms added to the MSCI Taiwan Index and the matched firms

Table 3.2A MSCI Taiwan Index Addition Firms

Earnings per share forecasts are taken from the I/B/E/S files for a sample of 50 firms added to the MSCI Taiwan Index over the period 1999 to 2007. Subtracting the pre-announcement median EPS forecast from the postannouncement median forecast to calculate the current-year and one-year-ahead EPS forecasts changes. Local analysts and foreign ones depending on the local or foreign brokerage firms they are working for. The "Mean Difference" is the average of differences between mean foreign analysts' change in eps forecast and the mean local analysts' change in eps forecast. The p-values in parentheses test whether the numbers above are significantly different from zero.

MSCI Taiwan Index Addition Firms

	1	*2*	*3*	*4*	*5*
Sample	Sample Size	Mean Δ EPS Forecast for **MSCI Taiwan Index Addition Firms**	Mean ΔEPS Forecast for **MSCI Taiwan Index Addition Firms'** Foreign Analysts	Mean ΔEPS Forecast for **MSCI Taiwan Index Addition Firms'** Local Analysts	Mean Difference (col.3 – col. 4)
Panel A：Changes in **Current -Year** EPS Forecasts					
Eps forecast change	50	NT$ - 0.1302	NT$ - 0.0539	NT$ - 0.0272	NT$ -0.0267
		(0.162)	(0.459)	(0.879)	(0.889)
Eps forecast change	50	- 7.79 %[2]*	- 4.55 %	- 3.37 %	-1.18%
Standardized by eps		(0.024)	(0.183)	(0.557)	(0.858)
Eps forecast change	50	-0.67%*	-0.35%	-0.34%	-0.01%
Standardized by price		(0.098)	(0.233)	(0.675)	(0.984)
Panel B：Changes in **One -Year -Ahead** EPS Forecasts					
Eps forecast change	44	NT$ -0.2272 [2]*	NT$ -0.1043	NT$ -0.2474	NT$ 0.1431
		(0.030)	(0.290)	(0.280)	(0.561)
Eps forecast change	44	-6.19%[2]*	-2.82%	-6.98%	4.46%
Standardized by eps		(0.013)	(0.109)	(0.231)	(0.488)
Eps forecast change	44	-0.81%[2]*	-0.27%	-0.84%	0.57%
Standardized by price		(0.029)	(0.328)	(0.296)	(0.496)

[2]*: significant at 5 % level, *: significant at 10 % level.

Table 3.2B All Other Firms

Earnings per share forecasts are taken from the I/B/E/S files for a sample of 1094 firms with eps forecasts that are contemporaneous with the eps forecasts of newly included firms as "all the firms" as one criterion. Subtracting the pre-announcement median EPS forecast from the postannouncement median forecast to calculate the current-year and one-year-ahead EPS forecasts changes. Local analysts and foreign ones depending on the local or foreign brokerage firms they are working for. The "Mean Difference" is the average of differences between mean foreign analysts' change in eps forecast and the mean local analysts' change in eps forecast. The p-values in parentheses test whether the numbers above are significantly different from zero.

All Other Firms

	1	*2*	*3*	*4*	*5*
Sample	Sample Size	Mean Δ EPS Forecast for **All Other Firms**	Mean ΔEPS Forecast for **all other firms'** Foreign Analysts	Mean ΔEPS Forecast for **all other firms'** Local Analysts	Mean Difference (col.3 – col. 4)
Panel A：Changes in **Current -Year** EPS Forecasts					
Eps forecast change	1094	NT$ -0.1723	NT$ -0.1089[3]*	NT$ -0.2276	NT$ 0.1187
		(0.678)	(0.001)	(0.745)	(0.865)
Eps forecast change	1059	-7.32%*	2.83%	-14.06%[3]*	16.89%[2]*
Standardized by eps		(0.060)	(0.640)	(0.008)	(0.036)
Eps forecast change	1071	-0.33%	-0.48%[3]*	-0.30%	-0.18%
Standardized by price		(0.691)	(0.001)	(0.827)	(0.900)
Panel B：Changes in **One -Year -Ahead** EPS Forecasts					
Eps forecast change	818	NT$ 0.0472	NT$ -0.1126*	NT$ 0.3591	NT$ -0.4717
		(0.847)	(0.060)	(0.568)	(0.455)
Eps forecast change	806	-2.14%	-1.92%	0.23%	-2.15%
Standardized by eps		(0.487)	(0.570)	(0.955)	(0.684)
Eps forecast change	811	-0.23%	-0.53%[2]*	0.52%	1.05%
Standardized by price		(0.656)	(0.038)	(0.678)	(0.413)

[3]*: significant at 1 % level, [2]*: significant at 5 % level, *: significant at 10 % level.

Table 3.2C ISL-match Firms

Earnings per share forecasts are taken from the I/B/E/S files for a sample of 48 firms with eps forecasts that are matched appropriate industry, size, and liquidity with the contemporaneous eps forecasts of newly included firms as "ISL-matched firms" as a second criterion . Subtracting the pre-announcement median EPS forecast from the postannouncement median forecast to calculate the current-year and one-year-ahead EPS forecasts changes. Local analysts and foreign ones depending on the local or foreign brokerage firms they are working for. The "Mean Difference" is the average of differences between mean foreign analysts' change in eps forecast and the mean local analysts' change in eps forecast. The p-values in parentheses test whether the numbers above are significantly different from zero.

ISL-match Firms

	1	*2*	*3*	*4*	*5*
Sample	Sample Size	Mean Δ EPS Forecast for **ISL-matched Firms**	Mean ΔEPS Forecast for **ISL-matched firms'** Foreign Analysts	Mean ΔEPS Forecast for **ISL-matched firms'** Local Analysts	Mean Difference (col.3 – col. 4)
Panel A：Changes in **Current -Year** EPS Forecasts					
Eps forecast change	48	NT$ -0.0923	NT$ -0.2128	NT$ 0.1556	NT$ -0.3684*
		(0.491)	(0.114)	(0.375)	(0.091)
Eps forecast change	47	-8.62%	-9.03%	-4.39%	-4.64%
Standardized by eps		(0.124)	(0.109)	(0.574)	(0.620)
Eps forecast change	48	-0.75%[2]*	-0.73%*	-0.25%	-0.48%
Standardized by price		(0.049)	(0.091)	(0.612)	(0.451)
Panel B：Changes in **One -Year -Ahead** EPS Forecasts					
Eps forecast change	42	NT$ -0.2061*	NT$ -0.2343	NT$ 0.0558	NT$ -0.2901*
		(0.085)	(0.112)	(0.468)	(0.080)
Eps forecast change	41	-11.98%	-14.67%	6.32%	20.99%
Standardized by eps		(0.309)	(0.298)	(0.312)	(0.172)
Eps forecast change	42	-0.66%*	-0.73%	0.31%	-1.04%
Standardized by price		(0.098)	(0.149)	(0.422)	(0.101)

[2]*: significant at 5 % level, *: significant at 10 % level.

Table 3.2D Comparison with the matched firms

Earnings per share forecasts are taken from the I/B/E/S files for newly included firms and the matched firms over the period 1999 to 2007. Subtracting the pre-announcement median EPS forecast from the postannouncement median forecast to calculate the current-year and one-year-ahead EPS forecasts changes. Local analysts and foreign ones depending on the local or foreign brokerage firms they are working for. Here, the "Mean Difference" is the average of differences between the newly added firms' mean change in eps forecast and the mean of their criterion sample changes in eps forecasts. The p-values in parentheses test whether the numbers above are significantly different from zero.

	Comparison with All other Firms			*Comparison with ISL-matched Firms*		
	1	*2*	*3*	*4*	*5*	*6*
Sample	ΔEPS Forecast Mean difference for added and all other firms	Δ EPS Forecast Mean difference for added and all other firms' foreign analysts	Δ EPS Forecast Mean difference for added and all other firms' local analysts	Δ EPS Forecast Mean difference for added and ISL-matched firms	Δ EPS Forecast Mean difference for added and ISL-matched firms' foreign analysts	Δ EPS Forecast Mean difference for added and ISL-matched firms' local analysts
Panel A：Changes in **Current -Year** EPS Forecasts						
Eps forecast change	NT$ 0.0421	NT$ 0.0550	NT$ 0.2004	NT$ -0.0379	NT$ 0.1589	NT$ -0.1828
	(0.921)	(0.492)	(0.781)	(0.814)	(0.293)	(0.463)
Eps forecast change	-0.47%	-7.38%	10.69%	0.83%	4.48%	1.02%
Standardized by eps	(0.927)	(0.287)	(0.171)	(0.897)	(0.489)	(0.915)
Eps forecast change	-0.34%	0.13%	-0.04%	0.08%	0.38%	-0.09%
Standardized by price	(0.710)	(0.697)	(0.984)	(0.874)	(0.455)	(0.923)
Panel B：Changes in **One -Year -Ahead** EPS Forecasts						
Eps forecast change	NT$ -0.2744	NT$ 0.0083	NT$ -0.6065	NT$ -0.0211	NT$ 0.1300	NT$ -0.3032
	(0.300)	(0.943)	(0.363)	(0.892)	(0.457)	(0.209)
Eps forecast change	-4.05%	-0.90%	-7.21%	5.79%	11.85%	-13.30%
Standardized by eps	(0.298)	(0.811)	(0.305)	(0.628)	(0.402)	(0.118)
Eps forecast change	-0.58%	0.26%	-1.36%	-0.15	0.46%	-1.15
Standardized by price	(0.361)	(0.482)	(0.359)	(0.788)	(0.418)	(0.196)

Table 3.3 EPS absolute forecast errors for firms added to the Nikkei 225 Index and the matched firms

Table 3.3A Nikkei 225 Index Addition Firms

Eps forecasts and actual eps are taken from the I/B/E/S files for a sample of 56 firms added to the Nikkei 225 Index over the period 1991 to 2008. The absolute forecast error is absolute difference between median EPS forecast preceding the month of announcement that a company will be added to the Index and the realized eps for the same fiscal period and the same firm. The eps absolute forecast error is calculated for current-year and one-year-ahead eps forecasts. Local analysts and foreign ones depending on the local or foreign brokerage firms they are working for. The "Mean Difference" is the average of differences between mean foreign analysts' eps absolute forecast error and the mean local analysts' eps absolute forecast error. The p-values in parentheses test whether the numbers above are significantly different from zero.

Nikkei 225 Index Addition Firms

	1	2	3	4	5
Sample	Sample Size	Mean absolute forecast error for **Nikkei 225 Index Addition Firms**	Mean absolute forecast error for **Nikkei 225 Index Addition Firms'** Foreign Analysts	Mean absolute forecast error for **Nikkei 225 Index Addition Firms'** Local Analysts	Mean Difference (col.3 – col. 4)
Panel A：**Current -Year** EPS Absolute Forecast Errors					
Absolute forecast error	56	￥ 106.505	￥ 101.906	￥ 101.158	￥ 0.748 (0.991)
Absolute forecast error standardized by eps	54	1.257	0.605	1.034	- 0.429 (0.295)
Absolute forecast error standardized by price	56	3.16 %	2.06 %	4.12 %	- 2.06 % (0.153)
Panel B：**One -Year -Ahead** EPS Absolute Forecast Errors					
Absolute forecast error	42	￥ 248.445	￥ 159.574	￥ 207.100	￥ - 47.526 (0.754)
Absolute forecast error standardized by eps	42	0.591	0.534	0.489	0.045 (0.751)
Absolute forecast error standardized by price	42	2.32 %	2.00 %	2.23 %	- 0.23 % (0.756)

Table 3.3B All Other Firms

Eps forecasts and actual eps are taken from the I/B/E/S files for a sample of 13397 all other firms over the period 1991 to 2008. The absolute forecast error is absolute difference between median EPS forecast preceding the month of announcement that a company will be added to the Index and the realized eps for the same fiscal period and the same firm. The eps absolute forecast error is calculated for current-year and one-year-ahead eps forecasts. Local analysts and foreign ones depending on the local or foreign brokerage firms they are working for. The "Mean Difference" is the average of differences between mean foreign analysts' eps absolute forecast error and the mean local analysts' eps absolute forecast error. The p-values in parentheses test whether the numbers above are significantly different from zero.

All Other Firms

	1	2	3	4	5
Sample	Sample Size	Mean absolute forecast error for **All Other Firms**	Mean absolute forecast error for **All Other Firms'** Foreign Analysts	Mean absolute forecast error for **All Other Firms'** Local Analysts	Mean Difference (col.3 – col. 4)
Panel A：**Current -Year** EPS Absolute Forecast Errors					
Absolute forecast error	13397	￥ 176.726	￥ 211.920	￥ 168.497	￥ 43.423[2]*
					(0.013)
Absolute forecast error standardized by eps	12879	0.994	0.947	0.972	- 0.025
					(0.502)
Absolute forecast error standardized by price	12150	2.98 %	2.74 %	2.82 %	- 0.08 %
					(0.357)
Panel B：**One -Year -Ahead** EPS Absolute Forecast Errors					
Absolute forecast error	9934	￥ 268.022	￥ 320.016	￥ 245.293	￥ 74.723[3]*
					(0.006)
Absolute forecast error standardized by eps	9801	0.955	0.914	0.959	- 0.045
					(0.140)
Absolute forecast error standardized by price	9088	4.00 %	3.98 %	3.80 %	0.18 %
					(0.104)

[3]*: significant at 1% level, [2]*: significant at 5% level.

Table 3.3C ISL-matched Firms

Eps forecasts and actual eps are taken from the I/B/E/S files for a sample of 52 ISL-matched firms over the period 1991 to 2008. The absolute forecast error for ISL-matched firms reported in I/B/E/S with eps forecasts that are matched appropriate industry, size, and liquidity with the contemporaneous eps forecasts of newly included firms as a second criterion. The eps absolute forecast error is calculated for current-year and one-year-ahead eps forecasts. Local analysts and foreign ones depending on the local or foreign brokerage firms they are working for. The "Mean Difference" is the average of differences between mean foreign analysts' eps absolute forecast error and the mean local analysts' eps absolute forecast error. The p-values in parentheses test whether the numbers above are significantly different from zero.

	ISL-match Firms				
	1	2	3	4	5
Sample	Sample Size	Mean absolute forecast error for **ISL-matched Firms**	Mean absolute forecast error for **ISL-matched Firms'** Foreign Analysts	Mean absolute forecast error for **ISL-matched Firms'** Local Analysts	Mean Difference (col.3 – col. 4)
Panel A：**Current -Year** EPS Absolute Forecast Errors					
Absolute forecast error	52	￥ 181.884	￥ 219.001	￥ 224.734	￥ - 5.733 (0.973)
Absolute forecast error standardized by eps	52	0.795	0.763	0.281	0.482* (0.054)
Absolute forecast error standardized by price	52	2.05 %	1.63 %	1.30 %	0.33 % (0.458)
Panel B：**One -Year -Ahead** EPS Absolute Forecast Errors					
Absolute forecast error	40	￥ 484.659	￥ 503.507	￥ 646.920	￥ - 143.413 (0.710)
Absolute forecast error standardized by eps	39	0.924	0.839	0.583	0.256 (0.305)
Absolute forecast error standardized by price	40	2.14 %	2.12 %	2.02 %	0.10 % (0.843)

*: significant at 10 % level.

Table 3.3D Comparison with the matched firms

Eps forecasts and actual eps are taken from the I/B/E/S files for newly included firms and the matched firms over the period 1991 to 2008. Subtracting the eps forecast proceeding the month of announcement from the realized EPS for the same fiscal period and the same firm to calculate the current-year and one-year-ahead EPS absolute forecasts errors. Local analysts and foreign ones depending on the local or foreign brokerage firms they are working for. Here, the "Mean Difference" is the average of differences between the newly added firms' mean eps absolute forecast error and the mean of their criterions sample eps absolute forecast errors. The p-values in parentheses test whether the numbers above are significantly different from zero.

	Comparison with All other Firms			Comparison with ISL-matched Firms		
	1	2	3	4	5	6
Sample	EPS absolute forecast error mean difference for added and all other firms	EPS absolute forecast error mean difference for added and all other firms' foreign analysts	EPS absolute forecast error mean difference for added and all other firms' local analysts	EPS absolute forecast error mean difference for added and ISL-matched firms	EPS absolute forecast error mean difference for added and ISL-matched firms' foreign analysts	EPS absolute forecast error mean difference for added and ISL-matched firms' local analysts
Panel A：**Current -Year** EPS Absolute Forecast Errors						
Absolute forecast error	￥ - 70.221	￥ - 110.014[2]*	￥ - 67.339*	￥ - 75.379	￥ - 117.095	￥ -123.576
	(0.102)	(0.034)	(0.099)	(0.457)	(0.354)	(0.346)
Absolute forecast error standardized by eps	0.263	- 0.343*	0.062	0.462	- 0.158	0.753[2]*
	(0.626)	(0.083)	(0.884)	(0.435)	(0.606)	(0.044)
Absolute forecast error standardized by price	0.18 %	- 0.68 %	1.30 %	1.11 %	0.43 %	2.82 %[2]*
	(0.845)	(0.418)	(0.298)	(0.314)	(0.571)	(0.031)
Panel B：**One -Year -Ahead** EPS Absolute Forecast Errors						
Absolute forecast error	￥ - 19.557	￥ - 160.442	￥ - 38.193	￥ - 236.214	￥ - 343.933	￥ - 439.820
	(0.876)	(0.105)	(0.757)	(0.341)	(0.205)	(0.175)
Absolute forecast error standardized by eps	- 0.364[3]*	- 0.380[3]*	- 0.470[3]*	- 0.333	- 0.305	- 0.094
	(0.001)	(0.000)	(0.000)	(0.203)	(0.210)	(0.529)
Absolute forecast error standardized by price	- 1.68 %[3]*	- 1.98 %[3]*	- 1.57 %[2]*	0.18 %	- 0.12 %	0.21 %
	(0.000)	(0.000)	(0.018)	(0.737)	(0.822)	(0.768)

3*: significant at 1 % level, 2*: significant at 5 % level, *: significant at 10 % level.

Table 3.4 EPS absolute forecast errors for firms added to the MSCI Taiwan Index and the matched firms

Table 3.4A MSCI Taiwan Index Addition Firms

Eps forecasts and actual eps are taken from the I/B/E/S files for a sample of 42 firms added to the MSCI Taiwan Index over the period 1999 to 2007. The absolute forecast error is absolute difference between median EPS forecast preceding the month of announcement that a company will be added to the Index and the realized eps for the same fiscal period and the same firm. The eps absolute forecast error is calculated for current-year and one-year-ahead eps forecasts. Local analysts and foreign ones depending on the local or foreign brokerage firms they are working for. The "Mean Difference" is the average of differences between mean foreign analysts' eps absolute forecast error and the mean local analysts' eps absolute forecast error. The p-values in parentheses test whether the numbers above are significantly different from zero.

MSCI Taiwan Index Addition Firms

	1	*2*	*3*	*4*	*5*
Sample	Sample Size	Mean absolute forecast error for **MSCI Taiwan Index Addition Firms**	Mean absolute forecast error for **MSCI Taiwan Index Addition Firms'** Foreign Analysts	Mean absolute forecast error for **MSCI Taiwan Index Addition Firms'** Local Analysts	Mean Difference (col.3 – col. 4)
Panel A：**Current -Year** EPS Absolute Forecast Errors					
Absolute forecast error	42	NT$ 1.4166	NT$ 1.4138	NT$ 1.7888	NT$ -0.3750
					(0.622)
Absolute forecast error standardized by eps	42	0.3672	0.3532	0.4865	-13.33%
					(0.272)
Absolute forecast error standardized by price	42	5.76%	5.73%	8.25%	-2.52%
					(0.624)
Panel B：**One -Year -Ahead** EPS Absolute Forecast Errors					
Absolute forecast error	36	NT$ 2.2694	NT$ 2.4233	NT$ 2.2773	NT$ 0.1460
					(0.870)
Absolute forecast error standardized by eps	36	0.5872	0.5237	0.6572	-0.1335
					(0.488)
Absolute forecast error standardized by price	36	7.30%	7.08%	7.99%	-0.91%
					(0.726)

Table 3.4B All Other Firms

Eps forecasts and actual eps are taken from the I/B/E/S files for a sample of 968 all other firms over the period 1999 to 2007. The absolute forecast error is absolute difference between median EPS forecast preceding the month of announcement that a company will be added to the Index and the realized eps for the same fiscal period and the same firm. The eps absolute forecast error is calculated for current-year and one-year-ahead eps forecasts. Local analysts and foreign ones depending on the local or foreign brokerage firms they are working for. The "Mean Difference" is the average of differences between mean foreign analysts' eps absolute forecast error and the mean local analysts' eps absolute forecast error. The p-values in parentheses test whether the numbers above are significantly different from zero.

All Other Firms

	1	*2*	*3*	*4*	*5*
Sample	Sample Size	Mean absolute forecast error for **All Other Firms**	Mean absolute forecast error for **All Other Firms'** Foreign Analysts	Mean absolute forecast error for **All Other Firms'** Local Analysts	Mean Difference (col.3 – col. 4)
Panel A：**Current -Year** EPS Absolute Forecast Errors					
Absolute forecast error	968	NT$ 3.1562	NT$ 1.2969	NT$ 4.4851	NT$ -3.189[2]* (0.026)
Absolute forecast error standardized by eps	937	0.9117	0.6197	1.1054	-0.485[3]* (0.007)
Absolute forecast error standardized by price	953	8.50%	5.24%	10.77%	-5.53% [2]* (0.023)
Panel B: **One -Year -Ahead** EPS Absolute Forecast Errors					
Absolute forecast error	562	NT$ 2.6066	NT$ 2.4049	NT$ 3.1792	NT$ -0.7743 (0.311)
Absolute forecast error standardized by eps	552	1.0131	0.9814	1.2078	-0.2264 (0.412)
Absolute forecast error standardized by price	561	9.88%	9.40%	10.28%	-0.88% (0.617)

*: significant at 10 % level.

Table 3.4C ISL-match Firms

Eps forecasts and actual eps are taken from the I/B/E/S files for a sample of 41 ISL-matched firms over the period 1999 to 2007. The absolute forecast error for ISL-matched firms reported in I/B/E/S with eps forecasts that are matched appropriate industry, size, and liquidity with the contemporaneous eps forecasts of newly included firms as a second criterion. The eps absolute forecast error is calculated for current-year and one-year-ahead eps forecasts. Local analysts and foreign ones depending on the local or foreign brokerage firms they are working for. The "Mean Difference" is the average of differences between mean foreign analysts' eps absolute forecast error and the mean local analysts' eps absolute forecast error. The p-values in parentheses test whether the numbers above are significantly different from zero.

ISL-match Firms

	1	*2*	*3*	*4*	*5*
Sample	Sample Size	Mean absolute forecast error for **ISL-matched Firms**	Mean absolute forecast error for **ISL-matched Firms'** Foreign Analysts	Mean absolute forecast error for **ISL-matched Firms'** Local Analysts	Mean Difference (col.3 – col. 4)
Panel A：**Current -Year** EPS Absolute Forecast Errors					
Absolute forecast error	41	NT$ 1.5293	NT$ 1.9288	NT$ 1.1907	NT$ 0.7381
					(0.421)
Absolute forecast error standardized by eps	40	0.5007	0.5471	0.7139	-0.1668
					(0.637)
Absolute forecast error standardized by price	41	5.27%	6.64%	4.70%	1.94%
					(0.458)
Panel B：**One -Year -Ahead** EPS Absolute Forecast Errors					
Absolute forecast error	34	NT$ 2.1267	NT$ 2.5226	NT$ 2.1584	NT$ 0.3642
					(0.732)
Absolute forecast error standardized by eps	33	1.0740	1.1725	1.1336	0.0389
					(0.933)
Absolute forecast error standardized by price	34	7.50%	8.74%	7.72%	1.02%
					(0.735)

[2]*: significant at 5 % level, *: significant at 10 % level.

Table 3.4D. Comparison with the matched firms

Eps forecasts and actual eps are taken from the I/B/E/S files for newly included firms and the matched firms over the period 1999 to 2007. Subtracting the eps forecast preceding the month of announcement from the realized EPS for the same fiscal period and the same firm to calculate the current-year and one-year-ahead EPS absolute forecasts errors. Local analysts and foreign ones depending on the local or foreign brokerage firms they are working for. Here, the "Mean Difference" is the average of differences between the newly added firms' mean absolute eps forecast error and the mean of their criterion sample absolute eps forecast errors. The p-values in parentheses test whether the numbers above are significantly different from zero.

	Comparison with All other Firms			*Comparison with ISL-matched Firms*		
	1	*2*	*3*	*4*	*5*	*6*
Sample	EPS absolute forecast error mean difference for added and all other firms	EPS absolute forecast error mean difference for added and all other firms' foreign analysts	EPS absolute forecast error mean difference for added and all other firms' local analysts	EPS absolute forecast error mean difference for added and ISL-matched firms	EPS absolute forecast error mean difference for added and ISL-matched firms' foreign analysts	EPS absolute forecast error mean difference for added and ISL-matched firms' local analysts
Panel A：**Current -Year** EPS Absolute Forecast Errors						
Absolute forecast error	NT$ -1.7396*	NT$ 0.1169	NT$ -2.2963*	NT$ -0.1127	NT$ -0.5150	NT$ 0.5981
	(0.067)	(0.777)	(0.087)	(0.875)	(0.593)	(0.413)
Absolute forecast error standardized by eps	-0.5445[3]*	-0.2665[3]*	-0.6189[3]*	-0.1335	-0.1939	-0.2274
	(0.000)	(0.004)	(0.002)	(0.261)	(0.159)	(0.515)
Absolute forecast error standardized by price	-2.74%	0.49%	-2.52%	0.49%	-0.91%	3.55%
	(0.366)	(0.871)	(0.618)	(0.874)	(0.807)	(0.446)
Panel B： **One -Year -Ahead** EPS Absolute Forecast Errors						
Absolute forecast error	NT$ -0.3372	NT$ 0.0184	NT$ -0.9019	NT$ 0.1427	NT$ -0.0992	NT$ 0.1189
	(0.555)	(0.978)	(0.373)	(0.830)	(0.906)	(0.914)
Absolute forecast error standardized by eps	-0.4259[3]*	-0.4577[3]*	-0.5506*	-0.4868[2]*	-0.6488[2]*	-0.4764
	(0.002)	(0.001)	(0.075)	(0.049)	(0.033)	(0.238)
Absolute forecast error standardized by price	-2.58%*	-2.32%	-2.29%	-0.20%	-1.66%	0.27%
	(0.096)	(0.189)	(0.377)	(0.915)	(0.493)	(0.931)

3*: significant at 1% level, 2*: significant at 5% level, *: significant at 10% level.

Chapter IV

Conclusions and Future Studies

This dissertation extends previous literature to examine the effects of changes in price and the earnings forecast responses of analysts to stocks Indices adjustments. Few studies have shown stocks additions and deletions to major indices related to the analysts forecast, and few studies have classified the composite stocks into different categories to compare the prices responses of different firm types. Our results can provide better information for investors and management to make better decisions.

In the first essay, we extend the literature on the effects of changes in price to stocks Index adjustments, and examine adjustments resulting changes in the composition of the Nikkei 225 Index and MSCI Taiwan Index. Confirmed and consistent with findings by Okada et al. (2006), the analytical results show the price effects on stocks experiencing adjustments in the Nikkei 225 Index are consistent with the price pressure hypothesis. The price effects of composite stocks changed for the MSCI Taiwan Index are consistent with the downward sloping demand curve hypothesis. Based on classifying the characteristics of composite stocks into three categories, we find that large-scale added stocks dominate the price trend in the whole added sample in the Nikkei 225 Index. Also, added stocks with upwards revision earnings forecasts make more abnormal returns than the added stocks with downwards revision earnings forecasts in the Nikkei 225 Index during the post-announcement period. The electronic stocks earn larger abnormal returns than non-electronic stocks in the MSCI Taiwan Index. That can enable investors to profit by buying electronic stocks and added stocks with upwards revision earnings forecasts. The price reactions for the composite stocks in the Nikkei 225 Index and MSCI Taiwan Index around the Internet bubble burst have significantly difference.

In the second essay, we extend Denis et al. (2003) using Nikkei 225 Index and MSCI Taiwan Index adjustments to study the earnings forecast changes and absolute

forecast errors of analysts. Depending on the properties of brokerage firms that analysts work for, we divide them into local analysts and foreign analysts to separate who are more accurate than one the other. The results show that in comparison with the matching firms in Japan, the magnitudes of mean forecast revisions and absolute forecast errors are smaller made by analysts focusing on firms newly added to the Nikkei 225 Index. For firms newly added to the MSCI Taiwan Index, the magnitude of changes in analysts EPS forecasts do not differ clearly from those of their peer groups. Absolute forecast errors made by analysts focusing on firms newly added to the MSCI Taiwan Index are smaller than those made by analysts focusing on the matching firms. This phenomenon demonstrates firms that are newly added to the Nikkei 225 Index and MSCI Taiwan index exhibit significantly improved performance. Regarding whether local versus foreign analysts are more accurate, the analytical results display that the forecasts of foreign analysts are less accurate than those of local analysts in Japan and the forecasts of foreign analysts are more accurate than those of local analysts in Taiwan.

Taken together, our evidence indicates that the price effects on stocks experiencing adjustments in the Nikkei 225 Index are consistent with the price pressure hypothesis and the future performance of added stocks will be improved. Also, the price effects of composite stocks changed in the MSCI Taiwan Index are consistent with the downward sloping demand curve hypothesis and companies newly added to the index experience significant improvements in realized earnings. The differences between the stock markets, the different responses for institutional investors and individual investors and the characteristics of stock indices adjusted, which should be the primary causes that make the results different.

Furthermore, this dissertation mainly focuses on the effects of earnings forecast responses of analysts to stocks Indices adjustments. It might be interesting to examine the relation between the future stock price movement and the stocks recommendations of analysts. A better appreciation of stocks recommendations might associate with a

better assessment of future stock price movements. In our future studies, we would like to take the recommendations of analysts to study the performance of composite stocks in major Indices.

Appendix A: The Descriptive Statistics of P, MV and VO for Nikkei 225 Index Addition Firms and the Matched Firms.

Panel A: Price (P)						
	N	Mean	Median	Std Dev	Minimum	Maximum
Addition firms	60	￥43913.82	￥1544	159858.9	￥280	￥839000
ISL-matched firms	56	42000.09	1805.455	131656.4	198	730000
All other firms	12249	18260.55	999	107764.1	42	5189998
Panel B: Market Value (MV, unit: million)						
	N	Mean	Median	Std Dev	Minimum	Maximum
Addition firms	60	￥969370.57	￥467339.39	1471797	￥54507.59	￥9605030.52
ISL-matched firms	56	587473.3	402717.6	573702	48667.14	2663588
All other firms	12249	495906.5	146375.8	1371392	0.13	37168540
Panel C: Volume (VO, unit: million)						
	N	Mean	Median	Std Dev	Minimum	Maximum
Addition firms	60	1917.82	595.82	5578.66	3.07	32662.5
ISL-matched firms	56	1371.05	323.31	4318.33	1.1	32240.5
All other firms	12249	1023.25	215.11	3524.31	0	146991.5

Appendix B: The Descriptive Statistics of P, MV and TU for MSCI Taiwan Index Addition Firms and the Matched Firms.

Panel A: Price (P)						
	N	Mean	Median	Std Dev	Minimum	Maximum
Addition firms	50	NT$52.9032	NT$28.375	47.47428	NT$8.84	NT$199
ISL-matched firms	48	36.51208	28.32	29.19788	8.46	160.97
All other firms	1071	34.10156	22.8	47.53385	2.19	857.78
Panel B: Market Value (MV, unit: thousand))						
	N	Mean	Median	Std Dev	Minimum	Maximum
Addition firms	50	NT$82900.13	NT$45828.5	105175.6	NT$10415	NT$52996
ISL-matched firms	48	68618.61	47505	66206.91	8559	337313
All other firms	1071	74952.66	22002	165327.2	403	1722122
Panel C: Turnover Rate (TU)						
	N	Mean	Median	Std Dev	Minimum	Maximum
Addition firms	50	1.684417	1.340565	1.347878	0.055	5.34944
ISL-matched firms	48	1.454695	0.982585	1.197821	0.22853	4.32185
All other firms	1071	0.985457	0.67341	0.888199	0.01986	4.84411

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