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Stock market reaction to ESG-oriented management: an event study analysis on a disclosing policy in Japan

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Abstract

ESG investment, a new form of portfolio allocation that takes into consideration the non-financial factors of firms such as environmental (E), social (S), and corporate governance (G) issues in business, has gained prominence in the capital market. However, empirical evidence on the attractiveness to investors and resultant stock price reaction toward ESG-oriented firms has been scarce both inside and outside Japan. This study performs event study analysis to explore stock market reaction to the announcement of the "ESG Brand" consisting of firms that are judged to make serious efforts in favor of ESG aspects in business among the companies listed on the Tokyo Stock Exchange. The Brand selection was conducted after positive screening by a third party in an objective manner. Our finding reveals little evidence of a positive and significant stock price reaction to the Brand announcement around the event day. In addition, the result is not altered in terms of cumulative abnormal returns over a longer term. We conclude that the stock market did not respond to the announcement of the ESG Brand.

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1. **Introduction**

This study explores the stock market reaction to ESG-oriented management in Japan. ESG investment (or ESG incorporation) is a new view on portfolio allocation considering firms' non-financial factors such as environmental (E), social (S), and corporate governance (G) issues in business. ESG investment shares the spirit of the enduring tradition of SRI (Socially Responsible Investment) which is closely linked to firm view emphasizing CSR (Corporate Social Responsibility) particularly since the 1990s[1]. ESG investment has gained prominence in the capital market after establishment of the Principles for Responsible Investment (PRI) by the United Nations in 2006 (United States (N.D.)). The worldwide financial crisis that occurred in 2008 was a driving force for pushing forward ESG investment to make investors realize that sustainable corporate growth matters (Tokyo Stock Exchange (2012)).

However, it is fair to say that evidence on the economic consequences of ESG-oriented management has been scarce both inside and outside Japan. This study contributes to the literature by exploring the effect of a disclosing policy toward ESG management on stock prices in Japan. We employ an event study analysis to capture the initial phase of the attractiveness of the Brand companies as evaluated by investors in the capital market to gauge the longer-term effect of ESG management. To our knowledge, there has been surprisingly little evidence on stock market response to positive and non-extreme ESG-oriented management. Almost all existing studies explore the detrimental effect on firms of extreme negative events such as serious accident harmful to the environment or non-compliance with legal requirement. One exception is Capelle-Blancard and Petit (2012) which examines stock market reaction subsequent to ordinary news disclosure on ESG factors between 2002 and 2010 and finds that market value of firms facing negative events drops by 0.1% around the day of the announcement whereas that of firms facing positive events does not change significantly.

Several advantages to examining stock market reaction to the ESG Brand announcement should be emphasized as contributions to the existing literature. First, we can clearly identify whether the stock market favorably evaluates positive ESG activities in business since the timing of the disclosure can be identified. Second, the disclosure is considered as non-extreme and ordinary news based on positive screening that is presumably more closely related to long-term firm growth than are extreme and negative events. Third, the Brand is evaluated by a third party, not by the firm concerned, so the information on ESG is expected to be more trustworthy and neutral.

This paper proceeds as follows. Section 2 reviews ESG and the ESG Brand. Section 3 explains the empirical approach in this study. Section 4 presents the results. The final section concludes.

2. **ESG and the ESG Brand**

The current disclosure policy in Japan does not legally mandate the listed companies to report any information regarding ESG issues in their annual securities

[1] The first SRI-type financial instrument in Japan and Asian countries were developed as "Eco-Fund" in 1999. The development of SRI is available in annual reports by Social Investment Forum Japan (SIF-Japan).

report or other financial/nonfinancial reports (i.e. CSR reports) in a uniform way. On July 11, 2012, the Tokyo Stock Exchange disclosed a list of firms categorized under the name "ESG Brand" by collecting 15 listed firms making serious efforts to prioritize of ESG aspects in business[2]. The ESG Brand designation was established to attract investors to ESG-friendly firms by clearly distinguishing them from others. The firms in the ESG Brand were selected from each industrial sector and listed in the First Section of the Tokyo Stock Exchange.

The ESG scoring criteria are described as follows. The "Environment" aspect is evaluated by a standard specific to each of the 17 industries in this category to assess the risk and degree of environmental burden in each industry. The "Social" and "Governance" aspects are evaluated in a uniform way across all industries. Evaluation of the "Social" criteria is based on policies for employees, philanthropy activities, and relationship to customers and suppliers, while that of "Governance" is based on consideration of corporate governance and the corporate compliance system.

To carry out evaluations, a scoring company assigned by the Tokyo Stock Exchange performed an SRI survey on firms. Then, the scoring company gave a rating to each firm by utilizing both publicly available and informal information as well as information on any accidents that have occurred at each firm from the mass media on a daily basis. In principle, the selection process is based on "positive screening" to include into portfolio allocation those ESG-oriented firms whose top managers are aggressive in their commitment to CSR and who enhance competitiveness and attain sustainable growth.

The scoring company summed up the score for each item; following that, it selected companies receiving higher scores from both large- and small/medium-sized stocks in each of the 17 industrial sectors. Then, the scoring company selected from among them only one company whose ROE (Return on Equity) was above the sector average and whose ESG score is the highest in each industry. Finally, 15 firms were selected as listed in the first column of Table 1.[3]

3. **Methodology and data**

The main methodology in this study is an event study analysis, which is quite standardized in financial economics (Corrado (2011), Campbell et al. (1998)). The essence of event study analysis is to estimate abnormal return on an event day using daily stock data, compute any deviation from the normal return measured in the pre-event period, and test statistically the difference between normal return and the return on an event day. The normal return of stock *i* in day *t* is estimated using the market

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[2] Tokyo Stock Exchange (2012) states "a combination of companies that seriously consider and efficiently cope with ESG related issues and investors that properly allocate their portfolio on such efforts will contribute to solve or improve global environment or other social issues and to foster and develop healthy capital markets." Another example of the brand is the "Nadeshiko" a collection of companies actively encouraging women's participation in business, was announced in February 2013. Mitsuyama and Shimizutani (2013) examined the stock market response to the "Nadeshiko" brand and concluded that the stock market did not respond to the event.

[3] Since none of the ESG high-scorer in two industry groups, namely, construction & materials and real estate, satisfied ROE conditions, 15 firms out of 17 industries were selected for inclusion in the ESG Brand.

model as follows (Corrado (2011), Campbell et al. (1998)).

$$R_{it} = \alpha_i + \beta_i R_{mt} + e_{it}$$

where R_{it} is return on stock i on day t, R_{mt} is return on the overall market on the same day. α and β are the parameters to be estimated and e_{it} is a firm-specific return which is unrelated to the overall market and the expected value is zero. The abnormal return of stock i on the event day (t=0; 11th July 2012 in this case), AR_{i0}, is defined as follows.

$$AR_{i0} = R_{i0} - E(R_{i0}|R_{m0}) = R_{i0} - \alpha - \beta R_{m0}$$

where $E(\ )$ is an expectation operator. The Tokyo Stock Price Index (TOPIX) is used to calculate R_{mt} as market indices. The stock prices of 15 companies in the Brand are obtained from "Kabuka CR-DOM" issued by Toyo-Keizai Inc.[4] We set the pre-event window (control period) to the interval from 250 days prior to 10 days before the event day, a time period which corresponds to the number of trading days in a calendar year.[5]

The parameters are estimated by an ordinary least-squares (OLS) regression of firm returns R_{it} on market returns R_{mt} over the control period. Then we statistically test the null hypothesis that the difference between the normal return and the return on the event day of focus (excess return) is zero. The ESG Brand was officially announced at 4:00pm after the market was closed on the event day, thus we examine the abnormal return on the July 11, 2012 and the post-event day (12th) as well as the prior day (10th) to capture any responses around the event day.

In order to evaluate the influence of the ESG Brand announcement on the stock price of selected company i on day t, we compute test statistics by standardizing abnormal return on a day as follows.

$$SAR_{it} = \frac{AR_{it}}{\sigma_i}$$

We use a standard deviation of e_i during the pre-event period as the denominator. The distribution of SAR_{it} is approximated by the standard normal as the pre-event period is set sufficiently long. Under the null hypothesis, SAR_{it} would be zero if the event does not affect the price of stock i, while significantly large SAR_{it} would be observed if the event is influential. Standardized cumulative abnormal return ($SCAR_{it}$) is used to test the longer event window of two or three days, which is calculated with a standard deviation of e_i during the pre-event period as σ_i .

We then aggregate our estimates for each firm into a single model in order to measure the overall impact of the event to the stock prices of companies concerned.

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[4] Stock split is adjusted accordingly in the case of KDDI which concluded the split during the post-event period.

[5] The ESG Brand had been announced one half year before the Liberal Democratic Party regained the administration and stock prices started increasing rapidly. The economic situation had been stagnant during the year prior to the Brand announcement, and the event window with 250 operating days is thought to be reasonable to do a linear regression while securing a sufficient volume of observations.

First, we calculate the mean of SCARs of all *N* firms weighted equally as follows.

$$\overline{SCAR_t} = \frac{1}{N}\sum_{i=1}^{N} \widehat{SCAR_{it}}$$

With large number of observations, this is supposed to be normally distributed with zero mean and a variance of $\frac{L-2}{N(L-4)}$ where *L* represents the number of days in control period if e_{it} of all companies are not correlated. Then, a null hypothesis can be tested with the test statistic as follows.

$$\theta = \left(\frac{N(L-4)}{L-2}\right)^{\frac{1}{2}} \overline{SCAR_t}$$

The event occurred in the same day for all companies concerned in the case that we are going to analyze here. Though this might raise a suspicion of possible correlations among e_{it} of each firm, the test statistic mentioned above is still valid since companies concerned are well diversified in terms of industry as showed in Table 1, unlike the examples of introducing regulation/deregulation where an event occurs in the same day and affects the same industry.

4. **Empirical results**

Table 1 reports the abnormal returns on the three days including the event day and test statistics for the null hypothesis that the abnormal returns are zero at the time of announcement of the ESG Brand. First, we look at θ values in each of six event times, namely the prior day (-1), the announcement day (0), the post-event day (+1), the accumulation of the prior and announcement days (-1, 0), that of the announcement and post-event days (0, +1), and that from the prior through the post-event days (-1, +1); none of them indicates statistically significant impact at 5% level.

Next, we look at SCARs of each company to confirm if negative response of any company offset positive one of others. Looking at the first three columns to see abnormal returns on the prior day (-1), on the announcement day (0) and the post-event day (+1), while only one company (Idemitsu Kosan) has a positive and significant excess return on the prior day, all the other excess returns are not significantly different from zero. These observations show that the stock prices for these companies did not significantly react to the ESG Brand announcement in general. In the remaining columns of Table 1, we do not observe any positive abnormal returns that are significantly different from zero except for three companies. We see the positive and significant coefficients for the (-1,0) and (-1,1) period for TSUMURA, suggesting that the stock price responded significantly to the Brand announcement. In contrast, we see *negative* and significant in the (-1,0) and (-1,1) period for TORAY INDUSTRIES and KOMATSU.[6] Overall, we do not find any positive and significant excess return on the

[6] Those findings are not altered if we examine stock price response to the announcement by the three firms that announced through their own press releases their inclusion in the ESG Brand

stock prices of the 15 companies in the ESG Brand excepting Idemitsu Kosan and TSUMURA, showing that stock market did not respond to the announcement of the Brand around the event day.

While we do not see any excess returns on the stock prices of most of the Brand companies on impact, we might see stock market reactions in a longer run. This is particularly the case for TSUMURA and Idemitsu Kosan to explore whether stock market response, if any, is transitory or permanent. For this perpose, we depict CARs (cumulative abnormal returns) over 100 days subsequent to the event day.

Figure 1(1) shows that the stock prices of five companies increased after the event day and are continuously higher than those on the day: Asahi Group Holdings, TSUMURA, TOKYU CORPORATION, KDDI CORPORATION, and FAST RETAILING. In particular, the CARs steadily increase over 100 days after the Brand announcement for three companies, TSUMURA, TOKYU CORPORATION, and KDDI CORPORATION. On a closer look, the increasing trend on CARs for those companies started *before* the event day (around 35 days for TSUMURA, around 20 days for TOKYU CORPORATION, and around 110 days for KDDI CORPORATION), implying that the upward pattern is not caused by the Brand announcement. For the remaining two companies, Asahi Group Holdings and FAST RETAILING, the CARs return to the same level as on the event day. In any case, we do not see that the ESG Brand announcement *per se* improve stock price level of the Brand firms over a longer period, even for TSUMURA which saw significant positive abnormal returns around the event day. [7]

Figure 1(2) depicts the cumulative abnormal returns for the remaining 10 companies including Idemitsu Kosan. We do not see any jumps in stock prices over 100 days subsequent to the ESG Brand announcement, showing that the stock price of those companies did not respond to the event over the long run.

In sum, we observe stock market reaction to the ESG Brand announcement neither around the event day nor over 100 days subsequent to the event. These examinations show that the stock price development of the 15 ESG Brand companies was not related to the event in any horizon. In other words, the ESG Brand announcement did not favorably affect the stock price of the companies that were designated ESG Brand issues. Our findings are consistent with those of Capelle-Blancard and Petit (2012) to show that the market value of firms does not change significantly with positive and ordinary news.

That the stock price did not respond to the ESG Brand announcement may be explained in two ways. First, investors did not put higher value on ESG issues and did not expect that ESG-oriented companies would attain sustainable corporate growth and improve investment performance. This may reflect the fact that the SRI investment is not active in Japan in recent years (Social Investment Forum Japan (2012)). Second, as investors had obtained information that the selected companies were aggressively

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(TORAY, ITOCHU and RICOH LEASING). We do not see any positive and significant response to the announcement and the results are not changed if we perform a formal event study analysis.

[7] TSUMURA recorded growth in sales of herbal medicines in FY2011 ending March 2012, and the trend continued in the first quarter of FY2012. On May 25, 2012, business daily *Nihon Keizai Shimbun* newspaper selected 20 companies that improved their ROEs most since FY2007, and TSUMURA was ranked at the 20th position thanks to the good performance in the herbal medicine business according to the report.

pursuing ESG issues prior to the event, perhaps the ESG Brand announcement was nothing new for them. While we cannot distinguish the two possibilities without more information on investors, future studies should address why stock market price did not respond in order to shed light on the stagnant development of ESG investment in Japan.

5. **Conclusion**

We examined the stock market reaction to the ESG Brand announcement in 2012 and found little evidence on positive and significant stock price reaction to the Brand announcement around the event day. The result is not altered in terms of cumulative abnormal returns over a longer term. Based on those observations, we conclude that the stock market did not respond to the announcement of the ESG Brand.

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Table 1: Cumulative Abnormal Returns around the Event Day of the Announcement of the "ESG Brand" Selection

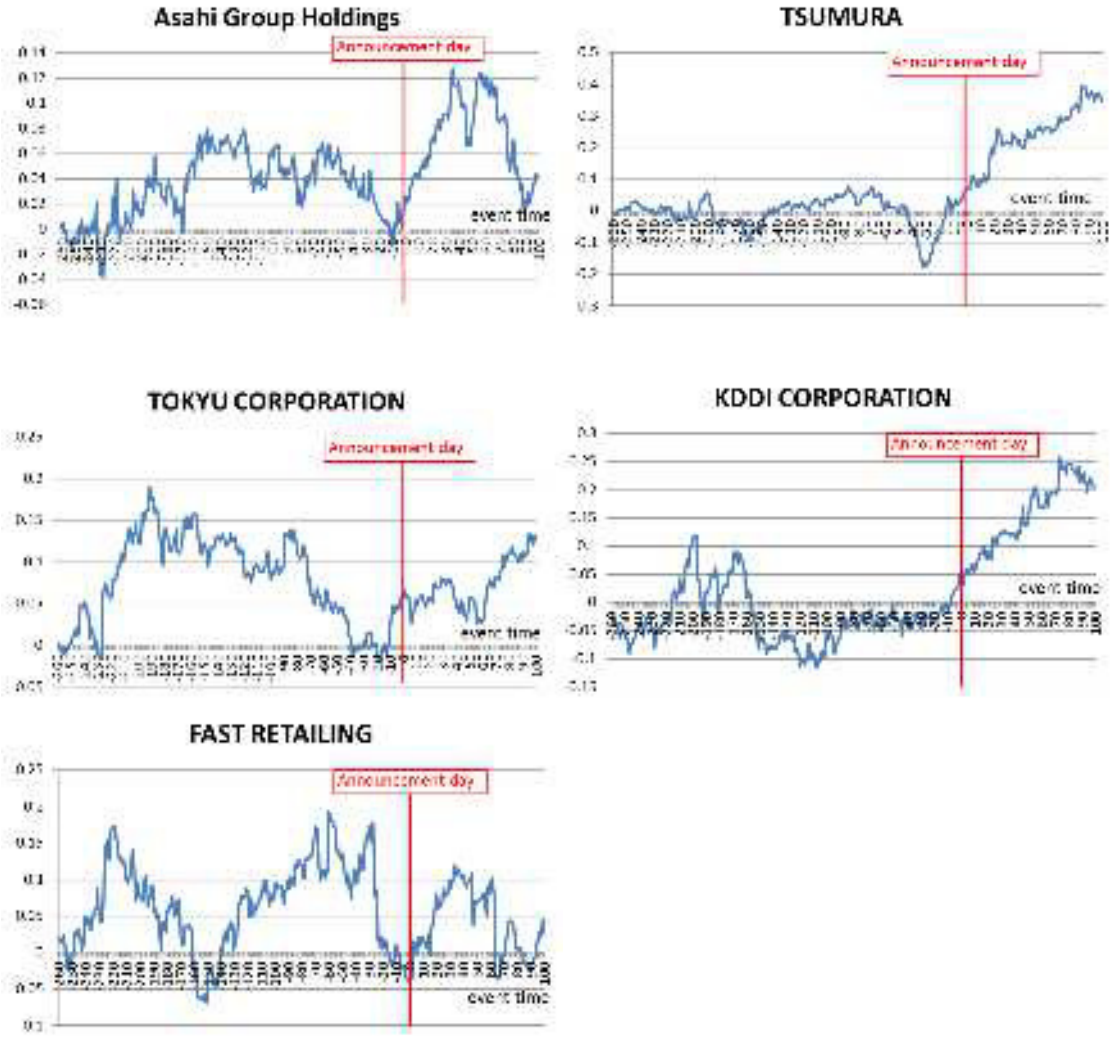
	(-1)	(0)	(+1)	(-1, 0)	(0, +1)	(-1, +1)
θ	0.0137	-0.0079	-0.1148	0.0058	-0.1227	-0.109
	(1.0509)	(-0.4577)	(-0.4377)	(0.5932)	(-0.8954)	(0.1555)
Asahi Group Holdings (Foods)	0.0148	-0.0002	-0.4286	0.0146	-0.4288	-0.414
	(1.5538)	(-0.0225)	(-0.4286)	(1.5313)	(-0.4511)	(1.1027)
Idemitsu Kosan (Oil & Coal Products)	0.0293	-0.0223	0.0114	0.0070	-0.0109	0.0184
	(1.9744)**	(-1.5047)	(0.7681)	(0.4697)	(-0.7366)	(1.2378)
TORAY INDUSTRIES (Textiles & Apparels)	-0.0064	-0.0134	-0.0010	-0.0198	-0.0145	-0.0208
	(-0.5744)	(-1.2132)	(-0.0939)	(-1.7876)**	(-1.3072)	(-1.8815)**
TSUMURA (Pharmaceutical)	0.0201	0.0032	0.0017	0.0232	0.0049	0.0250
	(1.5999)	(0.2529)	(0.1376)	(1.8528)**	(0.3905)	(1.9904)**
NISSAN MOTOR (Transportation Equipment)	-0.0021	0.0079	-0.0016	0.0058	0.0063	0.0042
	(-0.1835)	(0.6767)	(-0.1356)	(0.4932)	(0.5411)	(0.3576)
Asahi Holdings (Nonferrous Metals)	0.0065	-0.0061	0.0056	0.0004	-0.0005	0.0060
	(0.4556)	(-0.4293)	(0.3935)	(0.0264)	(-0.0357)	(0.4199)
KOMATSU (Machinery)	-0.0226	-0.0063	-0.0152	-0.0289	-0.0215	-0.0441
	(-1.4986)	(-0.4158)	(-1.0107)	(-1.9144)**	(-1.4265)	(-2.9252)***
NIDEC CORPORATION (Electric Appliances)	0.0033	0.0005	-0.0030	0.0038	-0.0025	0.0008
	(0.2453)	(0.0413)	(-0.2296)	(0.2866)	(-0.1883)	(0.0570)
KDDI CORPORATION (Information & Communication)	0.0166	-0.0045	-0.0109	0.0121	-0.0154	0.0012
	(1.1641)	(-0.3137)	(-0.7657)	(0.8504)	(-1.0794)	(0.0847)
OSAKA GAS (Electric Power & Gas)	-0.0048	0.006	-0.0037	0.0011	0.0023	-0.0026
	(-0.4682)	(0.5754	(-0.3575)	(0.1072	(0.2179)	(-0.2503)

TOKYU CORPORATION (Land Transportation)	-0.0005 (-0.0504)	0.0029 (0.2650)	0.0069 (0.6404)	0.0023 (0.2146)	0.0098 (0.9054)	0.0092 (0.8550)
ITOCHU Corporation (Wholesale Trade)	0.0042 (0.3500)	-0.002 (-0.1690)	-0.0042 (-0.3448)	0.0022 (0.1810)	-0.0062 (-0.5138)	-0.002 (-0.1638)
FAST RETAILING (Retail Trade)	0.0017 (0.0970)	0.0031 (0.1714)	-0.0024 (-0.1336)	0.0048 (0.2684)	0.0007 (0.0378)	0.0024 (0.1348)
Mitsubishi UFJ Financial Group (Banks)	-0.0014 (-0.1524)	0.0096 (1.0286)	-0.0012 (-0.1237)	0.0082 (0.8763)	0.0085 (0.9049)	0.0071 (0.7525)
RICOH LEASING COMPANY (Other Financing Business)	-0.0054 (-0.4260)	-0.0092 (-0.7231)	-0.0002 (-0.0181)	-0.0146 (-1.1491)	-0.0094 (-0.7412)	-0.0148 (-1.1672)

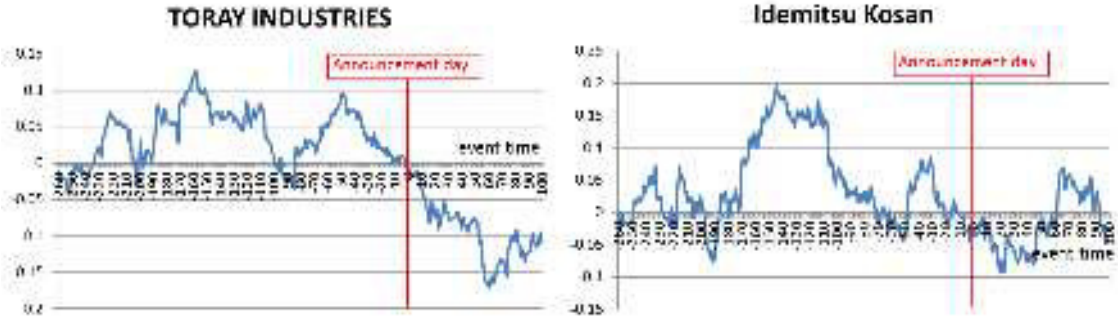
Note: The figures in the upper rows are cumulative abnormal returns (CAR) and those in the lower rows are standardized CAR (SCAR) as test statistics. ** and *** refer to 5 percent and 1 percent significance in the cells shaded in gray. The timing to measure the abnormal return is as follows: (-1) The day before the announcement; (0) The announcement day; (+1) The day after the announcement.
(-1, 0) The day before and the day of the announcement; (0, +1) The day of and the day after the announcement; (-1, +1) The day before, the day of, and the day after the announcement.

Figure 1: Cumulative Abnormal Returns over a Longer Term

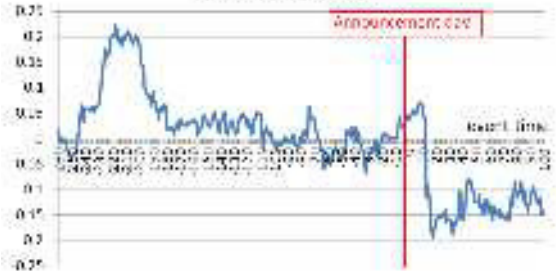
(1) Five companies with positive reaction over 100 days



(2) Ten companies without positive reaction over 100 days



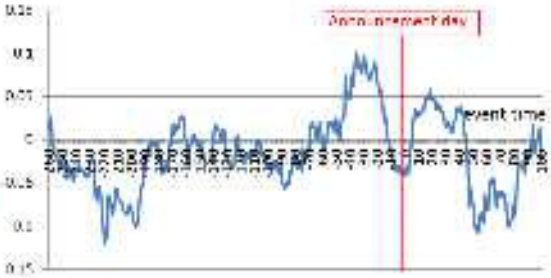
Asahi Holdings



KOMATSU

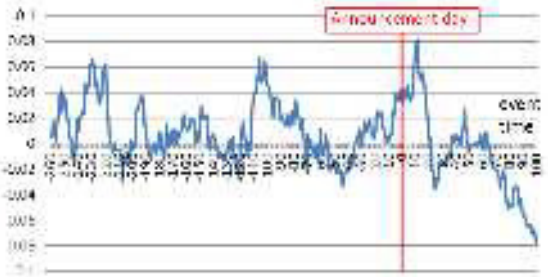
NIDEC CORPORATION

NISSAN MOTOR

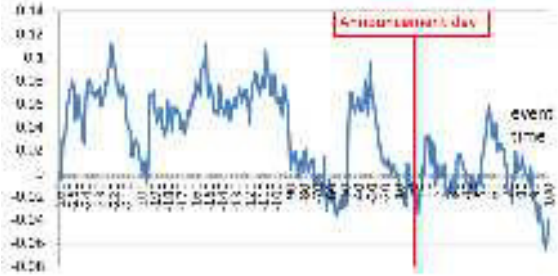


ITOCHU Corporation

Mitsubishi UFJ Financial Group



RICOH LEASING COMPANY



OSAKA GAS