

**Seeing Through News concerning Unfunded Pension  
Benefit Obligation Write-Off Policies in Japan  
-Market Reaction to News on Newspaper-**

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**Abstract**

This paper focuses on the information content of the periodic allocation of expense by managers. In this paper, we analyzed the direction and magnitude of stock price changes in response to the disclosure of write-off policies of 424 Japanese companies on two newspapers. We obtained some empirical evidence that information concerning write-off policies confirms or changes the expectation of investors about the target companies. This was achieved by our examination concerning market reactions to information about write-off policies of unfunded pension benefit obligations; good and bad performances by short and long write-off periods.

Companies that had disclosed their write-off policies were assigned to one of the two categories: companies with good performance or companies with poor performance. Our observation of the effect of the length of unfunded pension benefit obligation (UPBO) write-off periods on stock prices made it clear that the disclosed write-off policies contained information that either confirmed or caused the revision of investors had formed opinions regarding the target companies.

In the first section, we explain the change of accounting standards and consequent

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burden of write-off expense. In the second section, we review previous research. The hypothesis which will be verified is offered in the third while research design is in the forth section. The results of our examination and their implications are given in the fifth section. Lastly, we make concluding remarks in the sixth section.

Keywords: Pension Benefit Obligation, Write-off Policy, Information Asymmetry,  
Private Information, Self Selection, Event Study, Abnormal Return

## **1. Introduction**

In June 1998 the Business Accounting Council of Japan issued “A Statement of Opinions on the Establishment of Accounting Standards for Retirement Benefits,” for the purpose of establishing accounting standards for corporate pension plans, etc. The new standards have required a company to account for unfunded pension benefit obligation (UPBO) as the provision for retirement benefit on the balance sheet since the fiscal year commencing on or after April 1,2000. This is in order to clarify the current status of pension assets and liabilities, and apply appropriate accounting treatments to determine the periodical costs of retirement benefits incurred by companies, as well as to make them compatible with international standards.

With the retirement benefit standard in place, prior to the establishment of the new standard, different accounting procedures were required for lump-sum retirement grants and corporate pensions. In Japan, the customary practice is to pay lump-sum retirement grants to employees upon retirement, in addition to their monthly salary and twice-yearly bonuses. It is strongly believed that these lump-sum retirement grants are in the nature of deferred payment for long years of service to the company; consequently, as cause

arises in a given fiscal year, companies transferred the affected portion of their future obligations for lump-sum retirement grants to the liability for severance indemnities, accounted for it as an expense, and treated it as internal savings<sup>4</sup>. On the other hand, because Japan's corporate pension system uses a defined benefits model, a company can fix the amount of future benefit obligations in advance by making all the required contributions to pension funds. Therefore, companies treated contributions to external pension funds as expenses.

In contrast, lump-sum retirement grants and corporate pensions are not accounted for separately under the new standard; however they are treated together as pension obligations. Therefore, companies sought to bring the underfunded portion of future retirement benefit obligations onto their balance sheets as a reserve. As noted above, under the old standard, companies failed to maintain reserves sufficient to offset future benefit obligations. It was predicted that the change from the old standard to the new standard would bring an awareness of large UPBO, and it was feared that this may have a significant effect on corporate management. In response, the Business Accounting Deliberation Council, as a transitional measure at the time of the change in accounting standards, called UPBO that occurred at the time of transition Accounting Standards Transitional Difference, and allowed the companies fifteen years to write-off the increase in liability over that which would have been recognized at the same date

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<sup>4</sup> Three alternative methods are accepted for estimating amounts to be transferred to the reserve for retirement allowances. These are the expected future payment method, accrued benefits at the end of the term method, and the present value system. Of these, accrued benefits at the end of the term method is the most common. Because companies were allowed to write-off, as a loss, a sum equivalent to 40% of their reserve for retirement allowances under past tax laws, several companies posted sums equal to approximately 40% of the total that would be required at the end of the year as a reserve against payment of lump-sum retirement grants. When the new standard was introduced, they were left with a 60% insufficiency in their reserves for payment of lump-sum retirement grants (although it was thought that this figure would at times be calculated using the year-end payment method even under the new standard). Under the accrued benefits at the end of the term method, the amount required is that which would be owed if all employees voluntarily retired at the end of each fiscal year.

under the company's previous accounting policy. The establishment of that write-off period left managers with substantial discretion<sup>5</sup>. Companies are also allowed to write-off these liabilities as extraordinary losses without effecting ordinary income, if the write-off is accomplished within a five-year period<sup>6</sup>.

This paper will investigate whether or not these write-off policies, and specifically the announcement of the number of years over which UPBO will be written off, contains information that has an effect on the investors' opinions<sup>7</sup>.

Theoretically, the inter-period allocation of pension costs does not involve any cash flow effects in calculating periodic accounting income, and hence has no influence on the value of a company. Therefore, the value of a company is not expected to change depending on the number of years over which unfunded pension liability is written off, as the length of write-off period only involves differential inter-period cost allocations. On the other hand, the choice of a cost allocation scheme per se may serve as an indicator of potential profitability or future cash flow prospect of a company and thus, could influence the expectation of investors. If the choice behavior is constrained by the performance of a firm, such that on the one hand, companies with good performance only can choose a specific method, and on the other hand, companies with bad performance had to choose other methods, such a choice could signal good performance of the company under consideration. In other words, the information

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<sup>5</sup> However, once selected, the length of this write-off period can only be changed in the event of large-scale restructuring, or should a change to a company's retirement benefit plan become unavoidable, in principle.

<sup>6</sup> When the write-off period exceeds five years, it is recommended that write-off costs be posted to the operating expenses section. Ordinarily, write-off costs are treated as other expenses and posted to the non-operating expenses section, or treated as personnel expenses and posted in the selling, general, and administrative expenses section. The reason for posting it to the operating expenses section is that it would be a contradiction in terms to continually post write-off costs for a period greater than five years to the extraordinary loss section, which is by definition for reporting transitory expenses.

<sup>7</sup> Choice of accounting procedures has been described as a principle that has information value to the accounting information user. See, for instance, Obinata [2007] (Pages 87–89).

relating to the choice behavior may have a potential influence on the stock price.

## **2. Survey of Prior Research**

In the previous section, we mentioned that application of the new accounting standard for retirement benefits would expose a huge amount of UPBO of Japanese companies and that the Business Accounting Deliberation Council reserved for management the discretion to set the UPBO write-off period, in light of the impacts awareness of UPBO management, would have brought. We then stated that this paper would investigate whether the UPBO write-off period which manager announced conveyed any additional information or not. Next, in this section, we will survey prior researches which analyzed the subject of the manager's discretion on UPBO write-off policy.

Okabe [2002] classifies the discretionary behaviors that were observed at the time of the transition to the new retirement benefits accounting standard, and points out the fact that managers adopted real discretionary behavior to reduce the differences brought about by the change of accounting standards, before the manager decides the number of years over which UPBO will be written off. Those real discretionary behavior are listed as follows; (1) to make more provisions for liability for severance indemnities, (2) to recognize liability for corporate pension early by using an account called provisions for corporate pension before the application of the new accounting standards, (3) to recognize the shortage of corporate pension reserves early by using an account called long-term accounts payable before the application of the new accounting standards, (4) to contribute assets to pension funds, (5) to contribute securities to retirement benefit trust. Tokuga [1999], thorough questionnaire survey of Japanese

companies, finds that some companies, besides companies that disclose their financial statements in accordance with U.S. GAAP, voluntarily made a trial calculation of and/or a rough estimate of pension obligation defined by projected benefit obligation method. In addition, he demonstrated the tendency of a larger scale company (specifically, in terms of the number of total assets, revenue, ordinary income, and number of employees) to voluntarily embark on a trial estimate of projected benefit obligation. These results suggest that the response of the large scale companies is more active than the small scale companies, and we can assume the possibility that larger companies would write-off the UPBO early, without reluctance<sup>8</sup>.

Next, we will review researches that investigate the relationship between managers' decisions on the number of years over which UPBO will be written off and the effect on the net earnings. Hiki [2003] researches on the period of UPBO write-off, after developing hypotheses described as follow; (1) companies that are expected to fall into the red if they select the lump-sum write-off option will choose the long-term write-off option beyond 1 year, (2) a company that is expected to end in the black if it choose the lump-sum write-off option will select the lump-sum write-off option within 1 year. This study reported that out of 936 experimental sample companies, 491 chose long-term write-off companies and 445 lump-sum write-off companies. Moreover, it points out that if the former subsample, that is, long term write-off companies, changed its allocation method of expense to lump-sum write-off option, 247 companies would fall into the red and 135 companies would increase their deficits. On the other hand, it also points out that if the latter subsample, that is, lump-sum write-off companies changed its write-off policy to long term write-off option, 328 companies would increase their surplus.

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<sup>8</sup> Langer and Lev [1993] finds out that larger-scale companies and less liability companies adopted the SFAS No.87 early.

Otomasa [2008,a] conducts a research similar to Hiki [2003], and demonstrates that research sample numbers 1156, and which are divided into 580 long-write-off companies and 576 lump-sum write-off companies. In addition, it finds out that if the former subsample changed its write-off policy to lump-sum write off, 230 companies would fall into the red and 139 companies would increase their deficits. On the other hand, it also finds that if the latter subsample changed its allocation method of expense to long-term write-off, 419 companies would increase their surplus. Moreover, Otomasa [2008,a], through multi-regression analysis that makes the years of UPBO write-off as dependent variables, demonstrates a tendency of companies with large profit, ample internal reserves, and large total assets to select short-term write-off option. By conducting logistic regression analysis with binary dependent variables on data of companies with short term write-off period, Choi and Tokuga [2007] found that well performing companies with a smaller UPBO companies make the choice of short-term write-off.

Some literature points out the possibility that corporate managers decide the write-off period by considering not only effects on net profit, but also effects on accounting figures embedded in contracts. As previously explained, a company is allowed to write-off UPBO as extraordinary losses if it will achieve its UPBO write-off within a five-year period, otherwise, the company is required to write-off UPBO as ordinary expense. In other words, if a company has some contracts incorporated with figures for ordinary profit and/or net asset which could be affected by net profit, there is a possibility that the contracts will influence the decision on the UPBO write-off period . Yoshida [2005], by focusing on the financial covenants attached at the time of bond issue, finds that a company which has contracts incorporated with the treatment of

ordinary profit maintenance prefers the short-term write-off option within five years to make its ordinary profit look better. And it also finds that a company which has contracts with covenants of net assets maintenance attached prefers the long-term write-off option over five years in order to make its net profit look better (or to avoid net loss). Otomasa [2008,b] points out that, in many cases, executive compensation will be determined based on the level of ordinary profit of their company. On that basis, he tests his hypothesis that a company which has a stronger linkage between executive bonus plans and the level of ordinary profit will select the short-term write-off option. However, evidence that the existence of executive bonus plan would affect the UPBO write-off period was not observed.

Finally, we will refer to a research that investigates whether managers decisions about the period of write-off policy conveys some additional information to investors or not. Choi and Tokuga [2007] implemented an event study that takes the day a company disclosed their write-off policy as the event day. In their results, they demonstrated that (1) announcement of write-off policy in itself had a positive effect on the stock price, (2) a significant positive effect on the stock price was observed, when a company announces its selection of short-term write-off option, and a significant negative effect on the stock price was observed when a company discloses its selection of long-term write-off option. Consequently, managers' periodic decisions on the UPBO write-off policy have signaling effects to investors, because information of write-off period reflects prospects of potential profitability of a company.

As we reviewed above, prior researches find, as statistical fact, that a corporate manager decides the company's write-off period based on both effects on the bottom-line and on the accounting figures incorporated in contracts. It also

demonstrates that the write-off period has a signaling effect to investors. However, it is natural that the length of write-off period conveys different information depending on strength and performance of companies that is disclosing their write-off policy. Taking this into account, in this paper, we attempt to detect the information value contained in UPBO write-off policies and hence can be understood as a extended research of Choi and Tokuga [2007]. In the next section, we will explain our hypotheses.

### 3. Hypothesis

There is an asymmetry in the knowledge of a company's internal information (private information) between corporate managers and investors (including not only the existing shareholders but also the latent shareholders). Managers have superior access to information, while investors are at a disadvantage<sup>9</sup>. Effective measures to alleviate this information asymmetry include (1) signaling<sup>10</sup> by insiders (individuals with information advantage), or (2) inducing insiders to reveal their own attributes using a self-selection<sup>11</sup> mechanism (Akerlof [1970], Spence [1973], Stiglitz [1993]).

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<sup>9</sup> It is known that, in a market where information asymmetry exists, products of high quality are sometimes refused, while low-quality products sometimes survive as a result of adverse selection. Akerlof [1970] took the used car market as an example to describe the process by which adverse selection arises.

<sup>10</sup> Among individuals with information advantage, with regard to a specific attribute, there is a high-quality group and a low-quality group. When under-informed parties cannot observe that attribute, they may try to distinguish the high-quality group from the low-quality group, bear the cost, and send a signal revealing their own quality level. This is called signaling. The principle of signaling was described by Spence [1973]. (1) If a company proposes to pay employees differently depending on their educational level, employees know that. (2) The employee must bear the financial and psychological costs in getting an education (although the educational level has no influence on the productivity). According to the hypothesis described in (1) and (2) above, if the high productivity group invests in education for the purpose of setting themselves apart from the low productivity group, even though it will not increase their own productivity, that behavior creates a signaling equilibrium (where neither group has incentives to change its behavior)

<sup>11</sup> Self-selection is a method of causing persons to expose their attributes by causing them to make a choice, by presenting them with several alternatives where information on an attribute is unclear. The examples below are often given to illustrate self-selection. (1) When characteristics of an insurance company's policyholders (risk of involvement in accidents, etc.) are unclear, the insurance company can induce policyholders to reveal characteristics by having them choose between a low premium or low indemnity product and a high premium or high guarantee product. (2) A company can induce employees

As mentioned in section 1, when the new retirement benefits accounting standards were introduced, the central policy's concern in establishing the accounting standards was to reserve for management the discretion to set the UPBO write-off period, with due consideration for their own company's financial condition. It can be seen that this measure allowed the selection of the write-off period, among alternative time limits, for the write-offs with a maximum of fifteen years, and also the selection of the managers to reveal attributes of the company's financial condition. This corresponds to what is called "self-selection" in the field of information economics; it is possible for investors to read attributes of a company through the company's act of selecting<sup>12</sup>.

Investors conduct analyses using all the information they can obtain, including past information released by a company. Once it is known whether the company is performing well or poorly, the investor forms opinions based on the company's income trends. However, among companies that announce high profits, there are companies that have promising futures, and those that do not. Similarly, some companies that announce low earnings show no special promise of future success, while others are forecast to achieve good performance in the future. Because investors have no access to companies' inside information, they are unable to discern this difference in attributes.

Concurrently the possibility exists that the announcement of a cost allocation plan can convey to the investor information regarding corporate attributes that otherwise could not be known. Because of the effects of the transitional measures, poorly-performing companies often find that they must select the long-term UPBO

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to reveal characteristics (confidence in their own capabilities, etc.) by having them choose between an unregulated compensation plan and an annual salary system (Stiglitz [1993], pp.538-539, Nishimura [1995] pages 319-321, Okuno & Suzumura [1988] pages 155-162 and 394).

<sup>12</sup> Selection of accounting procedures can have the effect of transmitting a company's private information (Scott [2003] pp.422-427).

write-off<sup>13</sup>, despite its relatively heavy burden. Therefore, investors also assume that well-performing companies select the short-term write-off, and poorly-performing companies select the long-term write-off.

Consequently, if companies with good performance announce that they have selected the short-term write-off, this shows that the company has confidence in its future profitability. This corroborates investors' own opinions of good performance in the future. As a result, if a company announces that it has selected the long-term write-off even though its performance is good, investors are surprised to see the company deviate from the course of action that they expect. This selection behavior indicates that the outlook for that company's future performance is unclear, and investors revise their opinions.

H1: If a company with good performance announces the selection of the short-term write-off option, it strengthens the confidence that investors have in the opinions they have formed with regard to companies with good performance. This has a positive effect on stock prices.

H2: When companies with good performance announce the selection of the long-term write-off option, the opinions that investors had formed of companies with good performance change, and this has a negative effect on stock prices.

In contrast, because investors expect a poorly-performing company to select the

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<sup>13</sup> As mentioned in section 2, previous research demonstrates the tendency of well-performing companies to select a short-term write-off and poorly-performing companies to select a long-term write-off (Hiki [2003], Choi and Tokuga [2007], and Otomasa [2008, a]).

long-term write-off option, it only serves to strengthen their confidence that their opinions of poor performance in the future are correct. On the other hand, if a company takes the short-term write-off option even though it is performing poorly, this is an indication that the causes of its current performance level are temporary, and that there are positive factors that will contribute to a turnaround in the company's performance. Such an announcement is surprising to investors, who revise their opinions.

H3: When a company that is performing poorly announces its selection of the short-term write-off, investors revise the opinions that they have formed regarding poorly-performing companies, which has a positive effect on the stock price.

H4: When a company with bad performance announces its selection of the long-term write-off, it strengthens the investors' confidence in the opinions that they have formed with regard to companies with weak performance. This gives rise to a negative effect on the stock price.

(Please insert figure 1 here)

## **4. Research Design**

### **4.1. Samples and Data**

In this section, we will discuss the selection for the sample used to test our hypothesis. In this study, a study sample of 424 companies was used, each of which had to satisfy the criteria listed below in items (1) to (6).

- (1) There must have been an article discussing the company's UPBO write-off period in the Nihon Keizai Shimbun or the Nihon Keizai Kinyuu Shimbun during the period April 1999–March 2002.
- (2) Subject companies must have posted an increase in UPBO arising from the change in accounting standards, and the number of years in the write-off period had to be specified.
- (3) Subject companies had to be listed on the first or second sections of the Tokyo Stock Exchange.
- (4) The fiscal years of the subject companies had to end on March 31.
- (5) Complete consolidated financial statements and stock price information had to be available.
- (6) Subject companies could not be connected with the banking industry.

Criterion (1) was established to allow the identification of the days on which a large number of investors received information regarding the announcements of UPBO write-off policies. This was necessary to verify the response of securities markets to these announcements, which was the purpose of the study. Where the Nihon Keizai Shimbun and the Nihon Keizai Kinyuu Shimbun both published articles, but on different days, the article published on the earlier date was used as the sample. Criterion (2) was added because this study is focused on the decisions of corporate managers regarding the write-off periods for liabilities. Criterion (3) was added because publicly listed companies were required for the verification of the effects on stock prices, and after careful consideration of the availability of data. If some subject companies ended their fiscal years at significantly separated points in time, it would have been difficult to

determine which period's corporate performance was affected by the UPBO write-off policies. In order to avoid this, criterion (4) was added<sup>14</sup>. Criterion (5) was set because the relevant data were required to evaluate the strength of corporate performance and to verify the effects on stock prices. Criterion (6) excluded companies from the banking industry, whose structure of financial statements differs from that of companies in other industries. Newspaper articles were taken from the Nikkei Telecom database, while accounting and stock price data were obtained from the Bloomberg database.

#### **4.2. The Event Study Analytical Method**

In this paper, we analyzed the response of securities markets to the announcement of companies' UPBO write-off policies, before and after the announcements; specifically, taking the day of publication, by the Nihon Keizai Shimbun or Nihon Keizai Kinyuu Shimbun, of an article on UPBO write-off policies as the event day, we conducted an event study focused on stock price trends during the period from seven days before the event day until seven days after the event day. This event study assumed a condition of semi-strong form efficiency in the securities markets, and measured the difference between the rate of change in expected stock prices and the rate of change in actual stock prices. Using this analytical method, we confirmed whether there is additional information content within the announcement event. In this analysis, the rate of change in TOPIX was used as the market's expected return, and the abnormal return of each trading name was calculated using the equation below.

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<sup>14</sup> This ensured that the announcements of UPBO write-off policies in newspaper articles were not biased towards a particular month.

$$AR_{i,t} = \{(P_{i,t} - P_{i,t-1})/P_{i,t-1}\} - \{(M_t - M_{t-1})/M_{t-1}\}$$

Where, AR: The abnormal return of company i at time t

P: Company i stock price at close of trading day at time t

M: Closing value of TOPIX at time t

t: From -7 to +7

Next, the AR values for each sample at each point in time were added, then divided by the number of companies in the sample, which yielded the average abnormal return (AAR) of the study sample. The three-day cumulative average abnormal return (CAAR) C was calculated by adding the AAR values for time t, the day previous, and the day after<sup>15</sup>. The CAAR is calculated while shifting the base point in time.

$$AAR_t = \frac{1}{N} \times \sum_{i=1}^N AR_{i,t}$$

$$CAAR_t[t-1, t+1] = \sum_{t=t-1}^{t+1} AAR_t$$

Where, N is the number of companies in the sample.

#### 4.3. Configuring the Subsample

Next, we will discuss the configuration of the subsample. For this study, companies that are writing off their UPBO within three years were designated as “short-term write-off companies,” and taking more than three years were designated as “long-term

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<sup>15</sup> Stock returns were cumulative over several days because a price movement limit system for securities transactions is in place. To prevent drastic fluctuations in stock prices on Japan’s securities markets, it establishes limits on the fluctuations permitted in stock prices in a single day. When these limit values (called stop high (upper limit) and stop low (lower limit) are exceeded, securities transactions are carried forward to the following day. Therefore, in order to observe investors’ evaluations of specific announcement events it is more effective to add the stock price changes over several days.

write-off companies.” The reasons for dividing the categories were (1) The average write-off period for the study sample was 3.81 years<sup>16</sup>, (2) By using the same standard as Choi and Tokuga [2007], we maintained consistency with the previous research.

Companies were designated as well performing or poorly performing in accordance with the criteria given below. We controlled differences in company size by dividing the operating income of each company for the fiscal year of its announcement event by its total assets. Then, we calculated the median value for the entire sample. Companies that exceeded the median were put into the well-performing company subset, and those that came below the median were designated as poorly-performing companies<sup>17</sup>. Operating income was used because it was critical that each company have sufficient profit from the core businesses to afford the UPBO write-off costs.

(Please insert figure 2 here)

Figure 2 is a cross-tabulation table showing these subsamples. The study sample numbered 424 companies, divided into 292 short-term write-off companies and 132 long-term write-off companies. Thus, we observe that approximately two-thirds of the companies selected the short-term write-off. On the other hand, there were 213 well-performing companies and 211 poorly-performing companies. As in the previous

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<sup>16</sup> Previous researchers, who obtained their samples from securities reports rather than newspaper articles, calculated average write-off periods of 5.45 years (Hiki [2003], page 44, Figure 2), 5.21 years (Yoshida [2005]), and 5.16 years (Otomasa [2008, a]). All of these average write-off periods are longer than those in this paper, which obtained its sample using newspaper articles. The possibility is suggested that this difference is due to the inclusion of a large number of companies that selected the short-term write-off among those companies that made an advance announcement of their UPBO write-off policies.

<sup>17</sup> Return on assets within the study sample was 0.0297. Statistics for incorporated businesses show industry-wide average return on assets for each fiscal year from fiscal 1999 through fiscal 2001 as 0.0227, 0.0289, and 0.0239, respectively; accordingly, it is considered that this paper makes rather difficult judgments regarding the strength of corporate performance.

research, this sample displayed a correlation between the strength of corporate performance and the UPBO write-off period; specifically, the null hypothesis below was established, and the two attributes of the strength of corporate performance and the length of the UPBO write-off period were tested for correlation (test of independence).

H<sub>0</sub>: The strength of corporate performance and the length of the UPBO write-off period are mutually independent.

Pearson's chi-square showed a value of 6.669, and rejected the null hypothesis set out in H<sub>0</sub> at 1% significance level. The numbers in parentheses in Figure 2 are based on the percentages of the short-term write-off companies and long-term write-off companies in the sample as a whole (68.9% and 31.1%, respectively), and both the short-term and long-term write-off companies show the sample composition that would be assumed if the two attributes above were uncorrelated.

If one assumes, for the sake of argument, that the two attributes are uncorrelated, 147 well-performing short-term write-off companies and 66 poorly-performing long-term write-off companies should be found. However, there were actually 159 well-performing short-term write-off companies, and 78 poorly-performing long-term write-off companies. In light of the results of the test for correlation and the numerical composition figures that would be expected in the sample if the two attributes were uncorrelated, it was demonstrated that within this sample, well-performing companies preferred the short-term write-off option, while poorly-performing companies preferred the long-term write-off.

## 5. Results and Discussion

In this section, we will discuss the results of the event studies conducted on each subsample. The statistical test method used to determine the significance of AAR and CAAR figures was the Wilcoxon Signed Ranks Test, a type of non-parametric test<sup>18</sup>.

(Please insert figure 3 and 4 here)

Figures 3 and 4 show the results of the event study of well-performing short-term write-off companies that was conducted to test H<sub>1</sub>. Figure 3 is a graphical representation of the changes in CAAR on and around the event days. We did not limit ourselves to the observation of the obvious or to the event day when verifying these changes. Numerous observations showed that CAAR displayed positive values for a three-day period. Figure 4 shows AAR and CAAR values and their significance. Significant changes were seen in AAR, which was +0.418% two days after the announcement event, +0.238% four days later, and +0.584% after five days. CAAR did not show any significant positive values during the period prior to the event day, except for the second day before the event. However, significant positive values were observed during the period following the event, from two days after until six days after. These results suggest that investors received information that increased their confidence in forecasts of the profitability of well-performing companies, following the announcements of UPBO write-off policies. Consequently, H<sub>1</sub> was supported.

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<sup>18</sup> (1) No normal probability distribution was conducted on the study sample's stock returns. (2) As shown in Figure 2, after consideration of the existence of subsamples numbering as fewer than 100 companies, it was decided that a non-parametric test would be performed.

(Please insert figure 5 and 6 here)

Figures 5 and 6 show the results of the study of well-performing long-term write-off companies that was conducted to test H<sub>2</sub>. Figure 5 shows the changes in CAAR around the event day. Immediately after the announcements of the write-off policies, CAAR accelerated in its already positive direction; however, it later dropped conspicuously into negative values. The changes in CAAR described here are the opposite of those shown by the well-performing short-term write-off sample that suggests that there were revisions to the opinions of the investors. Figure 6 shows the results of the observation of AAR and CAAR values. On the day of the announcement event, AAR shows a value of +1.380% (statistically significant at the 1% level). However, negative values were observed from two days until five days after the announcement event. On the fourth day following the event, in particular, the rate of change was a significant value at the 1% level. CAAR displayed a similar trend. Significant positive values were detected around the event day; however, from three days to five days after the event day, significant negative changes were observed. This showed that investors had received information on companies showing good performance that was conducive to the revision of opinions, and H<sub>2</sub> was supported.

(Please insert figure 7 and 8 here)

Figures 7 and 8 show the results of the event study of poorly-performing short-term write-off companies that were conducted to test H<sub>3</sub>. Figure 7 shows changes in CAAR around the event day, showing positive values immediately after the announcement of

write-off policies. If one examines the changes in AAR recorded in Figure 8, significant positive values are seen six days after the event day. Observing changes in CAAR, significant values at the +0.923% and 10% level are recorded two days after the event day. These results suggest that the UPBO write-off policy announcements contained information that influenced investors to make upward revisions to their evaluations of companies showing weak performance, which can be considered to support H3.

(Please insert figure 9 and 10 here)

Finally, Figures 9 and 10 show the results of the event study conducted on poorly-performing long-term write-off companies to test H4. Figure 9 shows changes to CAAR around the event day. Unlike figures for poorly-performing short-term write-off companies, negative values can be seen immediately after announcements of write-off policies. That result is consistent with the hypothesis. Figure 10 shows values for AAR and CAAR and their significance. Seven days after the announcement event, AAR shows a significant negative value of  $-0.578\%$ . Although CAAR shows negative values from one day prior to the announcement event until three days after, statistical significance could not be observed. The result obtained for AAR was consistent with the hypothesis; however, no significant response was observed in CAAR. Therefore, support for H4 was limited.

Information that surprised and prompted investors to revise their opinions had greater value as additional information than information that affirmed the investors' opinions, and it is anticipated that it will produce greater changes in the stock prices. It is extremely interesting that a comparison of H3 and H4 test results show that test results

for H<sub>3</sub>, which conduces to the revision of opinions, are more clearly detected.

## **6. Conclusion**

The subject matter of this paper is transitional obligations arising from the adoption of new retirement benefit accounting standards, and the study of the value of information contained in cost allocation plans announced by corporate executives. As a transitional measure at the time of the change in accounting standards, companies were allowed the discretion to set the UPBO write-off period, taking corporate performance into account. It was therefore possible for investors to anticipate the alternative courses of action that companies may take.

Consequently, from the question of whether corporate write-off policies (setting the length of the UPBO write-off period) that anticipate the strength of corporate performance are consistent with announced write-off policy, we established the hypothesis that investors can obtain companies' private information (including earnings forecasts).

It was show that, when well-performing companies selected a short-term write off, a positive effect on the price of their stock was observed as investors affirmed their own opinions. A negative effect on companies' stock prices was observed when companies that were performing well selected a long-term write-off option, as investors revised their opinions. When companies whose performance was flagging selected a long-term write-off, negative effects on their stock prices were observed, although these effects were limited. This was once again because investors considered that choice as an affirmation of their own opinions, and finally, when companies displaying weak performance selected a short-term write-off, we once again observed positive effects on

their stock prices, and it became clear that investors were revising their opinions.

In summary, the results of this study show that when a company's alternative courses of action can be anticipated, within the system that gives companies their choice of cost allocation period, there are indirect paths through which companies' confidential information can be revealed. This study also shows that investors are reading too much about companies' attributes into corporate announcements of write-off policies.

One can point out, as a research limitation, that we did not adequately control factors other than the UPBO write-off period. For instance, companies were requested to implement the new retirement benefits accounting standards beginning with the financial statements for the fiscal year that ended on March 31, 2001. However, as Okabe (2002) identified, some companies adopted the new rules early, and some were a year late, and required an extension of the deadline. It must be made clear that the value of the information contained in the write-off policies may differ, depending on the point in time at which a company implemented the new retirement benefits accounting standard.

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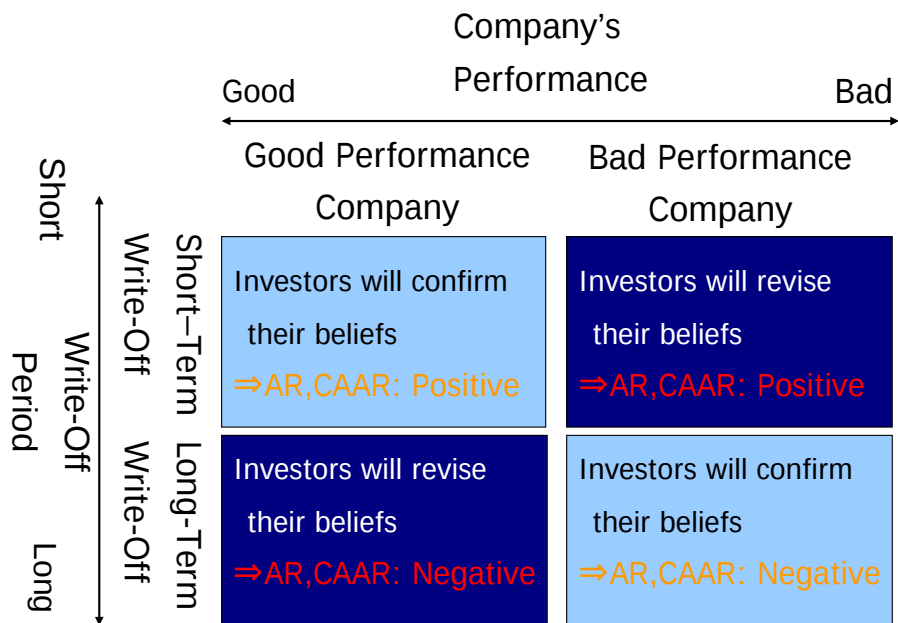
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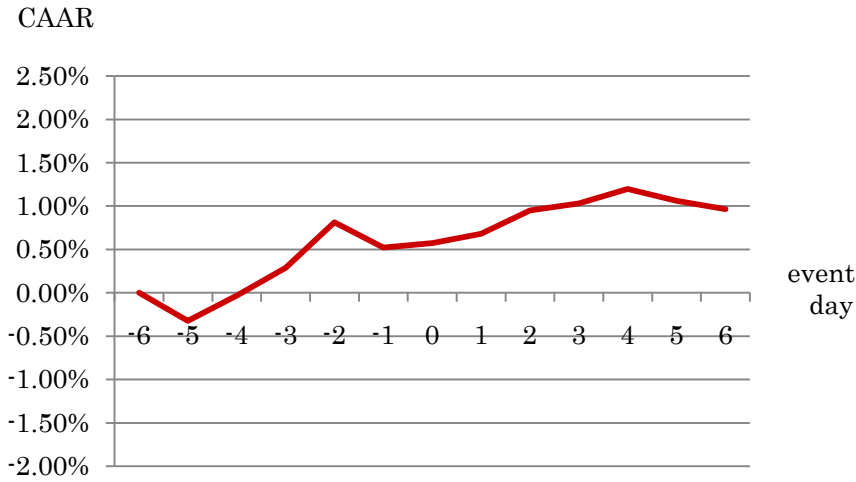
« Figure 1 » Illustration of Hypotheses



« Figure 2 » Subsample Cross-Tabulation Table

|                      | Companies performing well | Companies performing poorly | Totals |       |
|----------------------|---------------------------|-----------------------------|--------|-------|
| Short-term write-off | 159 (147)                 | 133 (145)                   | 292    | 68.9% |
| Long-term Write-off  | 54 (66)                   | 78 (66)                     | 132    | 31.1% |
| Totals               | 213                       | 211                         | 424    |       |

« Figure 3 » Change in CAAR of Short-Term Write-Off Policy Disclosure by Good Performance Companies

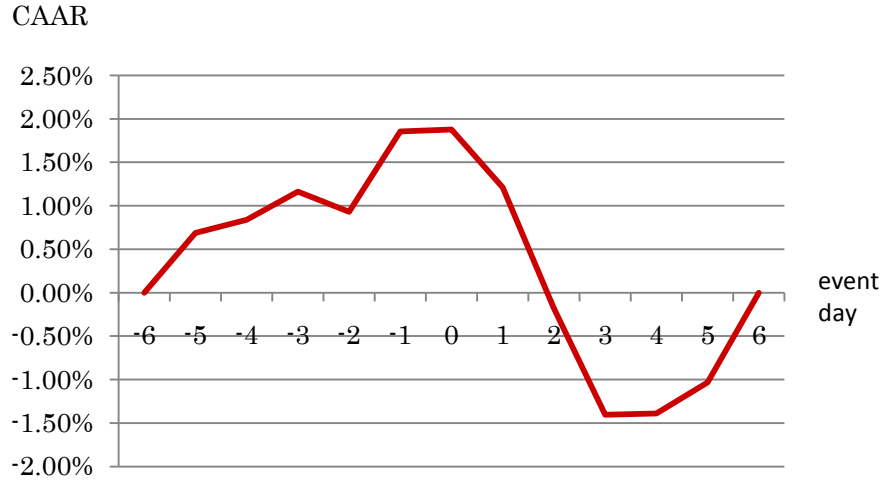


« Figure .4 » AAR and CAAR of Well-Performing Short-Term Write-Off Companies

| Time | AAR (%) | Wilcoxon Z | p-value | CAAR (%) | Wilcoxon Z | p-value |
|------|---------|------------|---------|----------|------------|---------|
| −6   | 0.101   | 0.184      | 0.854   |          |            |         |
| −5   | −0.213  | 0.555      | 0.579   | −0.323   | 0.741      | 0.459   |
| −4   | −0.211  | 1.359      | 0.174   | −0.030   | 0.327      | 0.744   |
| −3   | 0.395   | 1.505      | 0.132   | 0.290    | 0.566      | 0.572   |
| −2   | 0.106   | 0.220      | 0.826   | 0.812*** | 2.442      | 0.015   |
| −1   | 0.310   | 1.592      | 0.111   | 0.523    | 1.106      | 0.269   |
| 0    | 0.105   | 0.170      | 0.865   | 0.573    | 1.314      | 0.189   |
| +1   | 0.157   | 0.392      | 0.695   | 0.681    | 1.402      | 0.161   |
| +2   | 0.418** | 2.310      | 0.021   | 0.948**  | 2.213      | 0.027   |
| +3   | 0.373   | 0.951      | 0.342   | 1.030*** | 3.601      | 0.000   |
| +4   | 0.238** | 2.237      | 0.025   | 1.196*** | 3.104      | 0.002   |
| +5   | 0.584** | 1.990      | 0.047   | 1.058*** | 3.116      | 0.002   |
| +6   | 0.235   | 1.125      | 0.261   | 0.965*** | 2.475      | 0.013   |
| +7   | 0.145   | 1.058      | 0.290   |          |            |         |

Time denotes event day relative to write-off policy announcement day. AAR and CAAR are average abnormal return and cumulative average abnormal return for day t to the portfolio of subsample, respectively. Wilcoxon Z and p-value report Z-statistics and p-value for signed rank test. \*\*\*, \*\*, \*, denote significance level at the 1 percent, 5 percent, and 10 percent, respectively (two-tailed).

« Figure. 5 » Change in CAAR of Long-Term Write-Off Policy Disclosure by Good Performance Companies

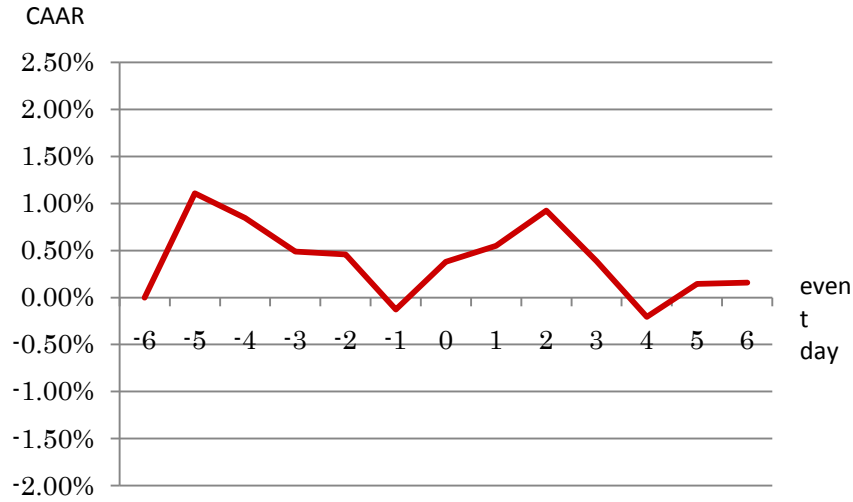


« Figure. 6 » AAR and CAAR of Well-Performing Long-Term Write-Off Companies

| Time | AAR (%)   | Wilcoxon Z | p-value | CAAR (%)  | Wilcoxon Z | p-value |
|------|-----------|------------|---------|-----------|------------|---------|
| −6   | 0.302     | 0.607      | 0.544   |           |            |         |
| −5   | 0.006     | 0.659      | 0.510   | 0.688     | 0.452      | 0.651   |
| −4   | 0.379     | 0.839      | 0.401   | 0.840     | 0.848      | 0.396   |
| −3   | 0.454     | 1.227      | 0.220   | 1.162     | 1.640      | 0.101   |
| −2   | 0.328     | 1.003      | 0.316   | 0.929*    | 1.709      | 0.087   |
| −1   | 0.146     | 0.538      | 0.590   | 1.855***  | 2.794      | 0.005   |
| 0    | 1.380***  | 3.250      | 0.001   | 1.877***  | 2.751      | 0.006   |
| +1   | 0.350     | 1.055      | 0.292   | 1.210*    | 1.812      | 0.070   |
| +2   | −0.521    | 1.416      | 0.157   | −0.180    | 1.149      | 0.250   |
| +3   | −0.010    | 0.805      | 0.421   | −1.403*** | 3.035      | 0.002   |
| +4   | −0.872*** | 2.544      | 0.011   | −1.390*** | 2.544      | 0.011   |
| +5   | −0.507    | 1.124      | 0.261   | −1.033*   | 1.709      | 0.087   |
| +6   | 0.346     | 0.710      | 0.477   | −0.001    | 0.297      | 0.776   |
| +7   | 0.159     | 0.400      | 0.689   |           |            |         |

Time denotes event day relative to write-off policy announcement day. AAR and CAAR are average abnormal return and cumulative average abnormal return for day t to the portfolio of subsample, respectively. Wilcoxon Z and p-value report Z-statistics and p-value for signed rank test. \*\*\*, \*\*, \*, denote significance level at the 1 percent, 5 percent, and 10 percent, respectively (two-tailed).

« Figure. 7 » Change in CAAR of Short-Term Write-Off Policy Disclosure by Bad Performance Companies

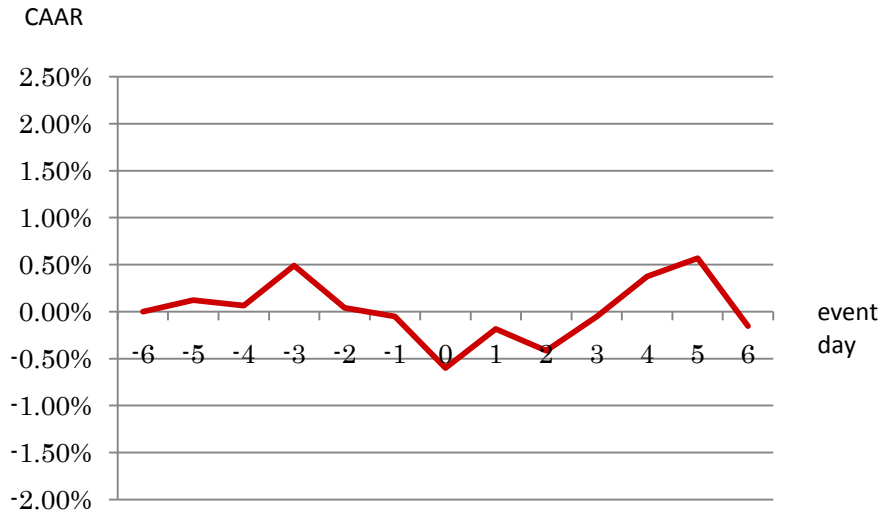


« Figure. 8 » AAR and CAAR of Poorly-Performing Short-Term Write-Off Companies

| Time | AAR (%) | Wilcoxon Z | p-value | CAAR (%) | Wilcoxon Z | p-value |
|------|---------|------------|---------|----------|------------|---------|
| −6   | 0.574*  | 1.780      | 0.075   |          |            |         |
| −5   | 0.372   | 1.077      | 0.282   | 1.106**  | 2.294      | 0.022   |
| −4   | 0.159   | 1.086      | 0.278   | 0.844*   | 1.849      | 0.064   |
| −3   | 0.312   | 0.724      | 0.469   | 0.487    | 0.520      | 0.603   |
| −2   | 0.015   | 0.030      | 0.976   | 0.458    | 1.169      | 0.242   |
| −1   | 0.130   | 0.724      | 0.469   | −0.128   | 0.039      | 0.969   |
| 0    | −0.273  | 1.358      | 0.175   | 0.381    | 0.819      | 0.413   |
| +1   | 0.524   | 1.088      | 0.277   | 0.549    | 1.225      | 0.221   |
| +2   | 0.298   | 1.279      | 0.201   | 0.923*   | 1.950      | 0.051   |
| +3   | 0.100   | 0.147      | 0.883   | 0.385    | 1.070      | 0.285   |
| +4   | −0.013  | 0.134      | 0.894   | −0.207   | 1.196      | 0.232   |
| +5   | −0.294  | 1.609      | 0.108   | −0.143   | 0.212      | 0.832   |
| +6   | 0.451*  | 1.852      | 0.064   | 0.157    | 0.291      | 0.771   |
| +7   | 0.000   | 0.664      | 0.507   |          |            |         |

Time denotes event day relative to write-off policy announcement day. AAR and CAAR are average abnormal return and cumulative average abnormal return for day t to the portfolio of subsample, respectively. Wilcoxon Z and p-value report Z-statistics and p-value for signed rank test. \*\*\*, \*\*, \*, denote significance level at the 1 percent, 5 percent, and 10 percent, respectively (two-tailed).

« Figure. 9 » Change in CAAR of Long-Term Write-Off Policy Disclosure by Bad Performance Companies



« Figure.10 » AAR and CAAR of Poorly-Performing Long-Term Write-Off Companies

| Time | AAR (%)  | Wilcoxon Z | p-value | CAAR (%) | Wilcoxon Z | p-value |
|------|----------|------------|---------|----------|------------|---------|
| -6   | 0.249    | 0.127      | 0.899   |          |            |         |
| -5   | -0.095   | 0.655      | 0.512   | 0.122    | 0.107      | 0.915   |
| -4   | -0.032   | 0.376      | 0.707   | 0.064    | 0.027      | 0.978   |
| -3   | 0.192    | 0.247      | 0.805   | 0.489    | 0.516      | 0.606   |
| -2   | 0.330    | 0.690      | 0.490   | 0.040    | 0.122      | 0.903   |
| -1   | -0.481   | 1.626      | 0.104   | -0.051   | 0.615      | 0.538   |
| 0    | 0.099    | 0.944      | 0.345   | -0.601   | 0.501      | 0.617   |
| +1   | -0.219   | 1.173      | 0.241   | -0.183   | 0.052      | 0.958   |
| +2   | -0.063   | 0.351      | 0.725   | -0.416   | 1.611      | 0.107   |
| +3   | -0.133   | 1.168      | 0.243   | -0.053   | 0.321      | 0.748   |
| +4   | 0.143    | 0.466      | 0.641   | 0.373    | 0.087      | 0.981   |
| +5   | 0.363    | 0.416      | 0.677   | 0.570    | 0.436      | 0.663   |
| +6   | 0.063    | 0.411      | 0.681   | -0.152   | 0.072      | 0.942   |
| +7   | -0.578** | 2.000      | 0.046   |          |            |         |

Time denotes event day relative to write-off policy announcement day. AAR and CAAR are average abnormal return and cumulative average abnormal return for day t to the portfolio of subsample, respectively. Wilcoxon Z and p-value report Z-statistics and p-value for signed rank test. \*\*\*, \*\*, \*, denote significance level at the 1 percent, 5 percent, and 10 percent, respectively (two-tailed).