Economic Consequences of Fair Value Accounting and a Change in the Distribution Rule

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Abstract: This research examines the economic consequences of fair value accounting and a change in the distribution rule. In Japan, fair value accounting for financial instruments was mandated from 2001, and unrealized revaluation profits were to be included in income statements. As an institutional correspondence to the change in accounting standards, Japanese Commerce Law implemented the deduction of revaluation profits from distributable profits. However, from 2006, the Japanese Company Act changed its distribution rule to include revaluation profits in distributable profits.

Utilizing such a unique institutional setting, I investigated whether fair value adjustments are related to dividends and whether the change in the distribution rule had an impact on companies' dividend policies. The results show that the change in the distribution rule influenced companies' dividend policies, especially Japanese firms, as they tend to pay out revaluation profits as allowed by the Company Act.

Keywords: fair value accounting, dividend policy, earning persistence, distribution rule

Data Availability: Data used in this study are available from public sources.

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a Change in the Distribution Rule

1 Introduction

This research examines the economic consequences of fair value accounting and a change in the distribution rule in Japan. This topic is of interest for the following three reasons.

First, fair value accounting is becoming increasingly important in accounting standards, driven by the convergence toward or adoption of International Financial Reporting Standards (hereafter, IFRS) all over the world. Regulators suggest that fair values lead to improved financial reporting, because fair value numbers are more timely and reliable, and thus facilitate a decision mechanism (e.g., Financial Accounting Standard Board/International Accounting Standard Board, 2005). However, as pointed out in Brüggemann et al.[2010], IFRS adoption is likely to have "unintended" consequences in many aspects, and we have few empirical evidences of the consequences of fair value accounting or IFRS adoption, especially in terms of dividend policy and distribution rule.

Second, some studies argue that fair value accounting may weaken creditor protection which is achieved through the distribution rule of the Company Act (e.g., High Level Group of Company Law Experts, 2002; Pellens and Sellhorn, 2006; Rickford, 2004; 2006, etc.). In the EU, the second Company Law Directive's "balance sheet test" restricts the maximum amount of distributable profits based on a firm's balance sheet (specifically, accumulated accounting earnings). This type of distribution rule is tied strictly to the legal capital system. According to Pellens and Sellhorn [2006], the critics against capital maintenance based on IFRS financial statements are concerned that fair value accounting will lead to the distribution of "unrealized" profits, which increases the riskiness of firms' assets. However, the

relationship between fair value accounting and the distribution rule has not been examined empirically. Thus, I believe that examining the consequences of fair value accounting in terms of dividend policy and the distribution rule is necessary for the arguments about institutional designing.

Third, few empirical studies exist on the consequences of fair value accounting in terms of dividends and the distribution rule. As noted above, although fair value accounting is becoming increasingly important and its influence on the distribution rule is becoming an institutional matter, few empirical studies exist on the topic. In particular, in the EU, although arguments about reforming the legal capital system in the Company Act exist, there is insufficient empirical evidence on the relationship between fair value accounting and the legal capital system.

The main questions that this research attempts to answer are whether revaluation profits and losses from fair value accounting are paid out as dividends in Japan, and whether a change in the distribution rule influences companies' dividend policies. If a company pays out revaluation profits as dividends, this means that the company's assets on the balance sheet become riskier in terms of creditor protection of the legal capital system. Therefore, from the perspective of institutional designing, whether revaluation profits and losses from fair value accounting are paid out as dividends is an important question. In addition, the distribution rule in Japan changed the treatment of revaluation profits for trading securities, and this institutional change provides a unique opportunity to examine its economic consequence.

I assess the impact of revaluation profits and losses on dividends using the framework of Lintner [1956], which is used in Goncharov and van Triest [2011] as well. The Lintner framework formalizes the link between dividends and earnings components, and states that companies tend to prefer a stable dividend development

in relation to earnings. Namely, if managers recognize revaluation profits and losses as transitory components of earnings, revaluation profits and losses are not distribution-relevant, thus, no relationship should exist between revaluation profits and losses and dividends. In addition, if there is a positive relationship between revaluation profits and dividends, this could indicate that companies may pay out transitory "unrealized" profits as dividends, and could imply that companies' assets are becoming riskier in the context of creditor protection of the legal capital system.

I examined the impact of revaluation profits and losses on dividends in a sample of over 25,000 firm-year observations of Japanese listed companies during the period 2002−2008. In Japan, fair value accounting for financial instruments was mandated from April 2001, and a portion of fair value adjustments is included in income statements. As an institutional correspondence to the change in accounting standards, Japanese Commerce Law decided to exclude revaluation profits from distributable profits. However, from May 2006, Japanese Company Act changed its distribution rule to include revaluation profits in distributable profits. Utilizing this institutional setting, I divided the sample into two periods (the Commerce Law period (2002−2005) and the Company Act period (2006−2008)) to investigate the economic consequences of a change in the distribution rule.

Although revaluation profits from securities do not have a statistically significant positive correlation with dividends in the Commerce Law period, I found that revaluation profits have a significantly positive correlation with dividend payouts during the Company Act period. On the other hand, revaluation losses have a significantly positive correlation with dividends throughout all sample periods. These results indicate that, in Japan, revaluation profits from fair value measurements are distribution-relevant and the change in the distribution rule had an impact on companies' dividend policies.

This research contributes to the literature on the economic consequences of fair value accounting. Brüggemann et al. [2010] points out that the literature on the "unintended" economic consequences of IFRS adoption or fair value accounting is still in its infancy. To appropriately evaluate the "value" of fair value accounting or IFRS, I believe that it is important to examine the consequences of fair value accounting from various perspectives. Moreover, I believe that this research will support the arguments for institutional designing. As noted above, fair value accounting may affect the effectiveness of the distribution rule, especially in a country where the distribution rule is based on a legal capital system. To the best of my knowledge, this is the first empirical study that focuses on the relationship between fair value accounting and the distribution rule.

The paper is structured as follows. In the next section, I provide an institutional and theoretical background for the relationship between dividends and earnings components, and develop hypotheses. In section three, I discuss the design of the research. The fourth section discusses the results of the analyses. In section five, I present the conclusion.

2 Research background and hypothesis development

In this section, I describe the background of this research. First, I describe Japanese accounting standards for financial instruments. Accounting for financial instruments is one of the major fair value accounting in Japan. Second, I describe the distribution rule in Japan. In particular, I focus on a change in the distribution rule with respect to the treatment of revaluation profits from financial instruments. Third, I describe previous literature on earnings persistence and earnings components to develop hypotheses.

2.1 Accounting for financial instruments in Japan

I analyze the economic consequences of fair value accounting by focusing on accounting for financial instruments. In Japan, fair value measurements for financial instruments have been mandated since April 2001. According to "accounting standards for financial instruments" as published by the Business Accounting Deliberation Council in 1999, the evaluation of financial instruments depends on the purpose of the holding. Table1 summarizes the Japanese standards for financial securities.

Insert Table 1 about here

The Japanese accounting standards mandate mark-to-market accounting for trading securities and available-for-sale securities. Trading securities include changes in fair values reported in net income. In other words, the revaluation profits and losses from trading securities are included in the income statement. On the other hand, available-for-sale securities basically include with changes in fair values reported in the net assets of the balance sheet. Thus, the revaluation profits and losses to be considered as earning components are basically from trading securities.

2.2 The distribution rule in Japan

Japan has a distribution rule similar to the EU's balance sheet test, and it is based on the legal capital system that requires firms to maintain certain amounts of legal capital. In this type of distribution rule, capital maintenance is considered to lead creditor protection because almost the same amounts of assets that are assumed to contribute to protect the interests of creditors are maintained in companies. Therefore, distributable profits are the amounts of net assets after excluding legal capital, namely accumulated earnings on the balance sheet.

However, as pointed out in Kraakman et al. [2009], the effectiveness of the

distribution rule is dependent on accounting standards. With regard to fair value accounting, many researchers have stated that paying out unrealized profits is an institutional matter (e.g., Pellens and Sellhorn, 2006; Ito, 1993; Saitou, 1991; 2009, etc). Because distributing unrealized profits means decreasing cash and increasing riskier assets (namely, unrealized incremental parts of assets from fair value measurements), the capital maintained through the distribution rule may not support creditor protection. Therefore, as an institutional correspondence to fair value accounting, Japanese Commerce Law required the deduction of any revaluation profits from distributable profits.

However, the Company Act and not the Commerce Law became effective in May 2006. Therefore, the Japanese distribution rule changed the treatment of revaluation profits from trading securities. The new Company Act allowed the inclusion of revaluation profits from trading securities in distributable profits. With respect to this institutional change, Aizawa and Koritani [2006], who were officers of the Ministry of Justice at the time, stated that trading securities were equivalent to cash in terms of liquidity, and thus revaluation profits from trading securities were distributable. In other words, the Japanese Company Act began to recognize the revaluation profits from trading securities as "realized" profits and, as a result, deemed revaluation profits from trading securities distributable as of May 2006.

In short, in Japan, although the Commerce Law did not treat revaluation profits from trading securities as distributable, they became distributable through the Company Act. Such an institutional change provides a unique research setting for investigating the economic consequences of the distribution rule.

2.3 Earnings components and dividends

As noted above, the central questions of this research are whether revaluation

profits and losses are related to dividends and whether a change in the distribution rule influences companies' dividend policies. To examine these questions, I focus on the relationship between earnings and dividends in the same way as Goncharov and van Triest [2011]. The formal link between earnings and dividends is proposed in the seminal work of Lintner [1956]. According to Lintner's partial adjustment model, companies aim to pay out a certain percent of permanent or core earnings as dividends and slowly adjust their current payouts to the target ratio. This model implies that dividends (or changes in dividends) can be a function of current earnings and past dividends, and predicts that dividends are related to permanent earnings components and not to transitory components.

In this regard, numerous studies show that dividends are related to permanent earnings. Edwards and Mayer [1985] shows that UK companies tend to reduce dividend payouts only when facing a persistent decline in earnings. Conversely, this implies that transitory components of earnings are not relevant to distributions. Kormendi and Zarowin [1996] finds that dividend payouts are higher in firms with more persistent earnings. Jagannathan et al. [2000] finds that only a proxy for a permanent income component significantly affects changes in dividends. Skinner [2004] reports that the reported earnings of companies paying dividends are more persistent in future periods. In Japan, there are also studies which support the link between earnings components and dividends. Hanaeda and Serita [2008], which reports the results of a questionnaire survey of Japanese companies, shows that about 80% of managers consider long-term changes in net income as important as determining dividend policies, while 44% of managers think that transitory changes in net income are important. These results imply that, in Japan, permanent components of earnings are more related to dividend policy than transitory components. Yoshioka et al. [2008], which conducts a different questionnaire survey,

reports that 22.4% of companies replied that "distributing revaluation profits is reasonable," while 68.9% of companies answered "not reasonable." This may also imply that uncertain transitory components are not distribution-relevant.

2.4 Hypotheses development

Since fair values incorporate market expectations about future cash flows and reflect present economic conditions, mark-to-market accounting is expected to introduce additional transitory components in the income statement, which may increase the volatility of aggregate income (Barth et al., 2001; Hung and Subramanyam, 2007; Goncharov and van Triest, 2011). Prior literature suggests that dividends are not related to volatile earnings components (Jagannathan et al., 2000; Lintner, 1956). Conversely, as long as revaluation profits and losses from fair value accounting are persistent, these components should affect dividend payouts. However, as revaluation profits and losses from securities stem from market fluctuations or transitory variations in stock prices, such profits and losses are expected to be transitory earnings components. Thus, I hypothesize here that transitory revaluation profits and losses do not significantly affect changes in dividends.

H1: Revaluation profits and losses have no effect on distribution.

In addition, according to the results of Hanaeda and Serita [2008] and Yoshioka et al. [2008], even if the Japanese Company Act allows for the distribution of revaluation profits from trading securities, Japanese companies are expected not to pay out such profits. In other words, no matter how the distribution rule changes, revaluation profits and losses do not significantly affect dividends. This leads to my second hypothesis.

H2: Even with a change in the distribution rule to include revaluation profits

into distributable profits, revaluation profits and losses have no effect on distributions.

As Goncharov and van Triest [2011] points out, these hypotheses have underlying assumptions: revaluation profits and losses from fair value accounting are transitory, and relevant stakeholders (managers who propose dividends, and shareholders who approve them) assess the persistency of the revaluation profits and losses. In this respect, previous literature shows the opposite results. For example, DeAngelo et al. [1996] reports that dividends tend not to be reliable signals of future earnings and, managers tend to overestimate future earnings after long-term growth. Hirshleifer et al. [2004] provides empirical evidence showing that investors fail to correctly assess the persistence of earnings components. However, in this research I hypothesize that these assumptions are expected to be valid for a number of previous studies described in the preceding section. I also test the persistence of earnings components in a later section.

3 Research design and sample selection

3.1 Research design

To test the hypotheses, I regress dividend changes on revaluation profits and losses using Lintner's partial adjustment model, as modified by Fama and Babiak [1968]. Equation (1) represents the first step of the regression model:

$$\Delta DIV_{i,t} = \alpha_1 + \beta_1 DIV_{i,t-1} + \beta_2 NI_{i,t} + \beta_3 NI_{i,t-1} + \varepsilon_{i,t} \qquad (1)$$

where $\Delta DIV_{i,t}$ and $DIV_{i,t-1}$ are dividend changes from year *t-1* to year *t* and lagged dividends, respectively; $NI_{i,t}$ and $NI_{i,t-1}$ represent net income for year *t* and *t-1*, respectively.

In the next step, I decompose net income into net income before revaluation profits and losses from securities (proxy for permanent earnings; $NIREV_{i,t}$) and

revaluation profits and losses from securities (proxy for transitory earnings; $REV_{i,t}$) :

$$\Delta DIV_{i,t} = \alpha_1 + \beta_1 DIV_{i,t-1} + \beta_2 NIREV_{i,t} + \beta_3 REV_{i,t} + \beta_4 NIREV_{i,t-1} + \varepsilon_{i,t} \quad (2)$$

where all variables are as defined previously and are scaled by total assets. This is the same method adopted by Goncharov and van Triest [2011].

However, there are two differences with Goncharv and van Triest [2011]. First, the Russian companies used by Goncharov and van Triest [2011] reported only positive revaluation adjustments. In contrast to Russia, most Japanese companies posted negative revaluation adjustments, while only a few posted revaluation profits. Thus, to investigate the economic consequences of fair value accounting in Japan, it is necessary to focus on revaluation losses, and not only on revaluation profits. I incorporate dummy variables into equation (2) as cross-terms to separate revaluation profit samples from loss samples. Second, as noted in the previous section, the distribution rule changed in Japan. In short, although revaluation profits from trading securities were not distributable during the Commerce Law period, they became distributable during the Company Act period. To test H2, I divide the sample into two subsamples: the Commerce Law period (2002−2005) and the Company Act period (2006−2008).

The result of considering these differences is the final regression model used by this research, as in equation (3) below:

$$\begin{aligned}\Delta DIV_{i,t} = \alpha_1 + \beta_1 NIREV_{i,t} + \beta_2 NIREV_{i,t-1} + \beta_3 REV * REV\_D\_PLUS_{i,t} \\ + \beta_4 REV * REV\_D\_MINUS_{i,t} + \beta_5 DIV_{i,t-1} + CONTROLs_{it} \\ + YEARS_{it} + INDUSTRIES_{it} + \varepsilon_{i,t} \quad (3)\end{aligned}$$

where $REV\_D\_PLUS_{i,t}$ and $REV\_D\_MINUS_{i,t}$ are dummy variables that equal one if $REV_{i,t}$ is positive and 0 otherwise, and that equal one if $REV_{i,t}$ is negative and 0 otherwise, respectively. In equation (3), if revaluation profits and losses significantly affect any dividend changes, β_3 and β_4 are expected to be significantly positive or

negative. Thus, according to my hypotheses, I expect not to observe any significance in β_3 and β_4 .

3.2 Sample selection, variables and descriptive statistics

I analyze a sample of public companies listed in Japan. The data is obtained from the Nikkei Digital Media, Inc. database called NIKKEI NEEDS Financial-Quests, which includes detailed financial data for a comprehensive set of Japanese public companies. The sample period spans from 2002 to 2008, since fair value measurements for financial instruments were mandated from 2001. I use firm-year observations with available annual accounting data of companies except for those in the banking, securities, and insurance sectors. The final sample consists of 25,684 firm-year observations, in which there are 399 firm-year revaluation profit samples, 13,890 firm-year revaluation loss samples, and 11,395 firm-year non-revaluation samples. The variables used in equation (3) are listed below, and explained in Table 2 in detail.

$NIREV$ = net income before revaluation profits and losses from securities.

REV = revaluation profits and losses from securities.

REV_D_PLUS = dummy variable which take 1 if REV is positive, otherwise 0.

REV_D_MINUS = dummy variable which take 1 if REV is negative, otherwise 0.

DIV = total amounts of dividends.

ΔDIV = DIV changes from previous year.

$CASH$ = amounts of cash and the equivalent.

LEV = total amounts of debt.

$GROWTH$ = average growth rate of Sales for past 3 years.

$SIZE$ = natural log of total assets.

FSH = proportion (percentage) of shares held by foregin investors.

$RETAIN$ = total amounts of distributable profits or accumulated profits.

$YEARS$ = year dummies from 2002 to 2008.

$INDUSTRIES$ = industry dummies, using Nikkei Middle Classification. [1]

The first six variables are explained above, and the others are control variables. *CASH*, *LEV*, *GROWTH* and *SIZE* are also used in Goncharov and van Triest [2011] to control for the cross-sectional variation in dividend policy[2]. *FSH* is incorporated to control for shareholder structure. In Japan, an increase in foreign investors was observed after the 1990s, which presumably influences companies' dividend policies (e.g., Nakao, 2008). *RETAIN* is incorporated to control for the size of firms' distributable profits. Here, *RETAIN* is calculated separately for the Commerce Law period and the Company Act period. *YEARS* and *INDUSTRIES* are year dummy and industry dummy variables, respectively, to control for the differences in each sample year and each industry. All variables except for dummy variables, *GROWTH, and FSH* are scaled by total assets. Moreover, to rule out the impact of outliers, I used data at the 99th percentile and at the 1st percentile to be the maximum and minimum, respectively, for each variable.

Here, I add a note of caution on the variables *REV*. As noted in the previous section, I use revaluation profits and losses from securities on the income statements. Since these are aggregate numbers, it is impossible to distinguish which securities have positive or negative revaluation adjustments. With respect to revaluation profits, it is natural to infer that they come from trading securities. However, it is impossible to state that this is true for revaluation losses because such figures might include amounts related to the impairment of securities or revaluation losses from

[1] Nikkei Middle Classification classifies all Japanese listed companies into 36 industries.
[2] See Ross[1977], Bhattacharya[1979] and Fama and French[1998] for signaling hypothesis, see Grossman and Hart[1980], Easterbrook[1984], Jensen[1986] for free cash flow hypothesis, and see Grullon et al. [2002] and DeAngelo et al.[2006] for life-cycle hypothesis.

other types of securities. Table 2 reports descriptive statistics for the test variables.

Insert Table 2 about here

4 Empirical findings

4.1 Dividend policy analysis

First, to test my first hypothesis, I use the estimating model (3) for all sample periods. The results of the estimating model (3) for the full sample are reported in Table 3. The second column of Table (3) shows the results using the *REV* variable, which substitutes both revaluation profits and losses (model (a)). The third column of Table 3 shows the results using cross-terms with respect to the *REV* variable.

Insert Table 3 about here

Consistent with Lintner's partial adjustment model, Table 3 reports a negative coefficient on lagged dividends and a positive coefficient on contemporaneous net income. However, as shown in Table 3, the coefficients for $REV_{i,t}$, $REV * REV\_D\_PLUS_{i,t}$ and $REV * REV\_D\_MINUS_{i,t}$ are positive and statistically significant. In particular, the coefficients for$REV_{i,t}$ and $REV * REV\_D\_MINUS_{i,t}$ are significant at the 1% level. In other words, even after controlling for persistent earnings and distributable profits, a positive association between fair value adjustments and changes in dividends is observed, and thus the possibility exists that revaluation profits and losses have an impact on dividends. As a result, my first hypothesis, which predicts that revaluation profits and losses have no effect on distribution, is rejected.

Next, to test my second hypothesis, I use estimating model (3) for two divided sample periods, the Commerce Law period (2002−2005) and the Company Act period (2006−2008). The results are reported in Table 4.

Insert Table 4 about here

The second and third columns show results for model (a), and the fourth and fifth columns show results for model (b) for each the Commerce Law period and the Company Act period. Model (a) shows statistically significant positive coefficients on $REV_{i,t}$ for both periods. This implies that no matter how the institutional environment changed, revaluation adjustments have an impact on changes in dividends. However, focusing on model (b), the results seem to change. In the Commerce Law period, no statistically significant association exists between revaluation profits and changes in dividends, but a significantly positive association exists between them at the 10% level during the Company Act period. I believe this suggests that a portion of the companies decided their dividend policies in light of revaluation profits as the distribution rule changed. In contrast, there is a significantly positive association between revaluation losses and changes in dividends for both periods at the 1% level. As a result, my second hypothesis, which predicts that revaluation profits and losses have no effect on distribution for both the Commerce Law period and the Company Act period, is rejected.

4.2 Earnings persistence test

My hypotheses are conditional on the persistence of earnings components. I assumed that revaluation profits and losses are transitory, and thus are assumed not associated with dividends. However, from the above regression analyses, positive associations between them were observed. This might suggest that the underlying assumption of my hypotheses was incorrect. Therefore, I conduct additional tests to assess the persistence of revaluation adjustments using earnings persistence regression, which was introduced in Goncharov and van Triest [2011] and is similar to that of Sloan [1996]. Equation (4) below is the regression model:

$$NI_{i,t} = \Upsilon_0 + \Upsilon_1 NIREV_{i,t-1} + \Upsilon_2 REV_{i,t-1} + \xi_{i,t} \qquad (4)$$

where the variables are defined above. The sign and the magnitude of γ_2 depend on the persistence of revaluation adjustments. If fair value adjustments are fully transitory, revaluation profits and losses do not explain future earnings, and thus γ_2 is expected to be zero. If fair value adjustments convey some information about future earnings, they are considered persistent, thus, with respect to future earnings, γ_2 should be greater than zero for good news (profits) and less than zero for bad news (losses).

Insert Table 5 about here

The results of estimating model (4) are reported in Table 5. Here, I separately estimate the coefficients for a sample group of revaluation profits (second column) and a sample group of revaluation losses (third column). From Table 5, while the coefficient for γ_2 for revaluation profits is positive but not statistically significant, the coefficient for γ_2 for revaluation losses is positive and statistically significant at the 1% level. These results imply that while revaluation profits from securities are transitory components of earnings, revaluation losses are persistent components.

Given these results, I have to reconsider the results from the previous regression analyses. In other words, my first hypothesis is half-supported and half-rejected. With respect to revaluation losses, since they are considered persistent earnings components, they have positive association with changes in dividends. However, with respect to revaluation profits, although they are considered transitory components of earnings, they have a significantly positive association with changes in dividends during the Company Act period.

4.3 Additional analysis

Why do revaluation profits, which are found to be transitory, have an impact on dividends in Japan? Many previous studies imply that transitory earnings

components do not have any distribution consequences. In this subsection, I conduct additional analysis to examine why revaluation profits are associated with changes in dividends.

Previous studies explain that financially distressed companies have incentives to manage accounting earnings to retain distributable profits. For example, Suda et al.[2007] explains that financially distressed companies have an incentive to continue to pay dividends because they want to avoid signaling bad news about future earnings to the capital markets. Then, such companies attempt to manage accounting earnings to retain their dividend resources. If so, the possibility exists that financially distressed companies tend to post revaluation profits on income statements to retain dividend resources.

The Japanese accounting standard for securities allows for some discretion in managing accounting earnings. For example, managers can post revaluation profits on the income statements when they reclassify companies' securities (see Table 1). In particular, when managers reclassify available-for-sale securities with positive fair value adjustments into trading securities, the revaluation profits are recognized and included in distributable profits.

Here, I examine whether such earnings management behavior exists in financially distressed companies. To do so, I first define "financially distressed" companies. Then, I compare their ratio of revaluation profits to distributable profits (namely, *REV/RETAIN*) to "non-financially distressed" companies. If "financially distressed" companies exhibit greater ratios than "non-financially distressed" companies, this implies that "financially distressed" companies may be managing accounting earnings. In addition, since the Company Act allows companies to include revaluation profits in distributable profits, I predict that companies tend to manage earnings during the Company Act period, not during the Commerce Law period.

I use a discriminant model, SAF2002 which was introduced by Shirata [2003] to define "financially distressed" companies. The model is as follows :

$$SAF2002 = 0.01036X_1 + 0.02682X_2 - 0.06610X_3 - 0.02368X_4 + 0.070773$$

where X_1 is retained earnings divided by total capital (percentage), X_2 is net income before taxes divided by total assets (percentage), X_3 is inventory assets multiplied by 12 divided by sales, and X_4 is interest costs divided by sales (percentage). In this model, the dicriminant point is 0.68. Therefore, if a company's *SAF2002* is smaller than 0.68, the company is defined as "financially distressed." Also, a company whose *SAF2002* is larger than 0.68 is defined as "non-financially distressed." I apply this model to samples that pay dividends and have revaluation profits, for both the Commerce Law and the Company Act periods.

Insert Table 6 about here

Panel A of Table 6 shows mean and median values for *REV/RETAIN* for four groups. The group with the highest mean and median of *REV/RETAIN* contains the "financially distressed companies in the Company Act period." This result is consistent with an *ex ante* prediction. Next, I test whether there are statistically significant differences among the four groups. Panel B of Table 6 reports the results of the Welch's t–test and the Mann–Whitney's U test. From Panel B, although no significant difference exists between "financially distressed" companies and "non-financially distressed" companies in the Commerce Law period, there is a strong significant difference between "financially distressed" companies and "non-financially distressed" companies in the Company Act period. Moreover, there is only a weak significant difference between the Commerce Law period and the Company Act period for "financially distressed" companies, where the latter has a larger *REV/RETAIN* than the former.

These results imply that a change in the distribution rule has given new

incentives to financially distressed companies to retain distributable profits. In other words, a change in the distribution rule may create methods for generating dividend resources in financially distressed companies. This seems a self-contradiction of the Company Act, because a change in the distribution rule — whose purpose is to protect companies' creditor — may encourage financially distressed companies to pay dividends.

5 Conclusion

This research investigated the economic consequences of fair value accounting and a change in the distribution rule. The main questions addressed were whether revaluation profits and losses from fair value accounting are related to dividends, and whether a change in the distribution rule influences companies' dividend policies. I analyzed the relationship between fair value adjustments and dividends using Lintner's partial adjustment model. In addition, I hypothesized that if revaluation profits and losses are transitory, they have no effect on distribution, and a change in the distribution rule does not impact companies' dividend policies. Next, I evaluated these hypotheses using a large sample of Japanese companies. The Japanese institutional setting provides a unique opportunity to assess the effects of fair value accounting and a change in the distribution rule because the distribution rule for revaluation profits from securities changed in 2006.

There are three main findings. First, a statistically significant positive relationship between fair value adjustments and changes in dividends was observed. In particular, while revaluation profits have a positive correlation with dividend changes at the 10% level, revaluation losses have a positive correlation at the 1% level. Second, while revaluation profits from securities were found to be transitory components of earnings, the losses were found to be persistent components. Thus, in

Japan, positive fair value adjustments are positively related to changes in dividends, even if they are transitory. Third, from additional analysis, I found that financially distressed companies tended to have greater *REV/RETAIN* ratios than non-financially distressed companies during the Company Act period. This implies that if the Company Act allows for the inclusion of revaluation profits in distributable profits, financially distressed companies tend to make use of such an institutional setting to generate dividend resources.

These results indicate that the introduction of fair value accounting affects distribution, and that a change in the distribution rule has economic consequences. In particular, the consequences of a change of distribution rule may be helping financially distressed companies with their dividend policies. If so, this seems a self-contradiction of the Company Act, whose purpose is to protect companies' creditors.

I contribute this research to the literature on the economic consequences of fair value accounting by evaluating the impact of fair value on dividend policies. In addition, I contribute to the arguments about institutional designing or regulators involved in reforming the Company Act around the world.

Table 1: Summary of Japanese standard for securities

Classification of Securities	Valuation Basis	Procedure of Fair Value Adjustments
Trading securities	Fair value	Include on income statement.
Held-to-maturity securities	Historical cost or amortized cost	—
Securities of subsidiaries and affiliated company	Historical cost	—
Available-for-sale securities	Fair value	1) Report on net assets in balance sheet. 2) Report on net assets for positive fair value adjustments, and report on income statement for negative ones.

This table is based on Japanese accounting standard for financial instruments.

Table 2: Descriptive statistics

Variable	Mean	Std dev	Q1	Median	Q3
$NIREV_{it}$	0.01764	0.07602	0.00738	0.02309	0.04577
$NIREV_{it-1}$	0.02151	0.06510	0.00807	0.02332	0.04589
NI_{it}	0.01162	0.08505	0.00462	0.02021	0.04316
NI_{it-1}	0.01642	0.07110	0.00509	0.02036	0.04348
REV_{it}	−0.00528	0.01632	−0.00286	−0.00009	0.00000
$REV\_D\_PLUS_{it}$	0.01553	0.12367	0	0	0
$REV\_D\_MINUS_{it}$	0.54080	0.49834	0	1	1
$REV * REV\_D\_PLUS_{it}$	0.00001	0.00010	0	0	0
$REV * REV\_D\_MINUS_{it}$	−0.00529	0.01631	−0.00286	−0.00009	0.00000
DIV_{it-1}	0.00822	0.00836	0.00267	0.00651	0.01100
ΔDIV_{it}	0.00082	0.00418	0.00000	0.00000	0.00153
$CASH_{it}$	0.34453	0.19400	0.19882	0.32552	0.46968
LEV_{it}	0.50848	0.22397	0.33583	0.51527	0.68178
$GROWTH_{it}$	1.06929	0.20799	0.98082	1.02682	1.09340
$SIZE_{it}$	10.18671	1.59926	9.13176	10.06661	11.10701
FSH_{it}	0.07278	0.10159	0.00308	0.02757	0.10334
$RETAIN_{it}$	0.20497	0.27578	0.07513	0.20237	0.36316

Data sample represents 25,684 firm-year observations of public companies listed in Japan. Samples of revaluation profits include 399 firm-years, samples of revaluation losses include 13,890 firm-years, and samples of no-revaluations include 11,395 firm-years. NI_{it} (NI_{it-1}) is net income in year t (t-1), while $NIREV_{it}$ ($NIREV_{it-1}$) is net income before revaluation profits and losses in year (t-1). REV_{it} is fair value adjustments resulting from revaluations of securities, namely revaluation profits and losses. $REV\_D\_PLUS_{it}$ ($REV\_D\_MINUS_{it}$) is an indicator variable equaling one if a company reports revaluation profits (losses) in year t and 0 otherwise. DIV_{it-1} and ΔDIV_{it} are lagged dividends and changes in dividends, respectively. $CASH_{it}$ is amounts of cash and equivalents at the end of the year, while LEV_{it} is total debt. $GROWTH_{it}$ is the average growth rate of sales for the past three years, while $SIZE_{it}$ is the natural logarithm of total assets at the end of the year. FSH_{it} is the proportion of shares held by foreign investors, while $RETAIN_{it}$ is distributable profits at the end of the year. All variables except for indicator variables, $GROWTH_{it}$, $SIZE_{it}$, and FSH_{it} are scaled by total assets.

Table 3: Dividend policy analysis (full sample periods)

Variable	(a) only REV	(b) separate
Constant	0.002	0.002
	(6.078)***	(5.989)***
$NIREV_{it}$	0.018	0.018
	(43.706)***	(43.735)***
$NIREV_{it-1}$	0.001	0.001
	(1.411)	(1.436)
REV_{it}	**0.011**	
	(7.169)* **	
$REV * REV\_D\_PLUS_{it}$		**0.384**
		(1.687)*
$REV * REV\_D\_MINUS_{it}$		**0.011**
		(7.119)* **
DIV_{it-1}	−0.067	−0.067
	(−18.914)***	(−18.945)***
$CASH_{it}$	0.001	0.001
	(9.328)***	(9.363)***
LEV_{it}	−0.002	−0.002
	(−10.709)***	(−10.686)***
$GROWTH_{it}$	0.001	0.001
	(7.316)***	(7.326)***
$SIZE_{it}$	0.000	0.000
	(−3.150)***	(−3.125)***
FSH_{it}	0.000	0.000
	(15.571)***	(15.572)***
$RETAIN_{it}$	0.000	0.000
	(−5.547)***	(−5.591)***
N	25,684	25,684
Adj. R^2	0.187	0.187

*** and * indicate statistical significance at the 1% and 10% levels, respectively. In this regression model, I exclude $REV\_D\_PLUS_{it}$ and $REV\_D\_MINUS_{it}$ because there are multicollinearities between the dummy variables and the corresponding cross-terms (the VIFs are larger than 10). All variables are defined above.

Table 4: Dividend policy analysis (two sample periods: 2002–2005 and 2006–2008)

Variables	Commerce Law (a)	Company Act (a)	Commerce Law (b)	Company Act (b)
Constant	0.001	0.001	0.001	0.001
	(3.840)***	(2.913)***	(3.814)***	(2.840)***
$NIREV_{it}$	0.016	0.020	0.015	0.020
	(29.029)***	(31.763)***	(29.095)***	(31.798)***
$NIREV_{it-1}$	0.002	−0.001	0.002	−0.001
	(3.795)***	(−1.786)*	(3.802)**	(−1.761)*
REV_{it}	**0.011**	**0.012**		
	(4.270)* **	**(5.389)*** **		
$REV * REV\_D\_PLUS_{it}$			**0.130**	**0.700**
			(0.505)	**(1.701)***
$REV * REV\_D\_MINUS_{it}$			**0.011**	**0.012**
			(4.255)* **	**(5.332)*** **
DIV_{it-1}	−0.021	−0.100	−0.021	−0.100
	(−4.348)***	(−18.965)***	(−4.360)***	(−18.985)***
$CASH_{it}$	0.001	0.002	0.001	0.002
	(6.108)***	(7.103)***	(6.116)***	(7.139)***
LEV_{it}	−0.001	−0.002	−0.001	−0.002
	(−6.964)***	(−7.122)***	(−6.956)***	(−7.110)***
$GROWTH_{it}$	0.001	0.002	0.001	0.002
	(4.336)***	(8.003)***	(4.340)***	(8.005)***
$SIZE_{it}$	0.000	0.000	0.000	0.000
	(−2.597)***	(−2.303)**	(−2.590)***	(−2.278)**
FSH_{it}	0.000	0.000	0.000	0.000
	(11.671)***	(10.987)***	(11.672)***	(10.983)***
$RETAIN_{it}$	0.000	0.000	0.000	0.000
	(−4.108)***	(−3.658)***	(−4.120)***	(−3.699)***
N	14,601	11,083	14,601	11,083
Adj. R^2	0.143	0.226	0.143	0.226

***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively. In this regression model, I exclude $REV\_D\_PLUS_{it}$ and $REV\_D\_MINUS_{it}$ because there are multicollinearities between the dummy variables and corresponding cross-terms (the VIFs are larger than 10).

Table 5: Earnings persistence analysis

Variables	Samples of REV_PLUS	Samples of REV_MINUS
Constant	−0.017	0.002
	(−1.540)	(1.781)
$NIREV_{it-1}$	0.775	0.547
	(9.756)***	(46.027)***
REV_{it-1}	13.517	0.839
	(1.054)	(20.228)***
N	381	11,037
Adj. R^2	0.199	0.234

*** indicate statistical significance at the 1%, 5%, and 10% levels, respectively. In this regression model, I use sample periods from 2003−2008, because this regression analysis needs lagged adjustments of fair value accounting, REV_{it-1}. Thus, numbers of samples are slightly smaller than the above analysis. All variables are defined above. With respect to the robustness of this result, the results in Table 5 are the same, when I regress REV_{it} on REV_{it-1}.

Table 6: Additional analysis of financially distressed companies

・Panel A: Comparisons of REV/RETAIN ratios for four groups

		"Financially distressed companies" (SAF2002<0.68, N=25)	"Non-financially distressed companies" (SAF2002≧0.68, N=253)
The Commerce Law period (N=185)	N	12	173
	Mean	-12.07%	0.74%
	Median	0.94%	0.55%
The Company Act period (N=93)	N	13	80
	Mean	13.44%	1.33%
	Median	1.80%	0.54%

・**Panel B : Tests of differences for four groups**

	Welch's t-test	Mann-Whitney' s U-test
"financially distressed / Commerce Law" and "not financially distressed / Commerce Law"	t : −1.018 p : 0.164	z : 0.485 p : 0.628
"financially distressed / Commerce Law" and "financially distressed / Company Act"	t : −1.851** p : 0.041	z : 1.722* p : 0.092
"not financially distressed / Commerce Law" and "not financially distressed / Company Act"	t : −0.223 p : 0.412	z : 0.042 p : 0.966
"financially distressed / Company Act" and "not financially distressed / Company Act"	t : 1.945** p : 0.038	z : 3.058*** p : 0.002

In Table 6, I use samples whose data are available to calculate *SAF2002,* also which pay dividends and have revaluation profits. ***, ** and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively. I use Welch's t-test and Mann-Whitney's U-test to test the differences in REV/RETAIN for each means and medians, respectively. Here, in Panel A, the mean of "financially distressed/Commerce Law" is negative because of one sample whose REV/RETAIN is −1.46. Since this means that the sample may count on "unrealized profits" from securities to pay dividends, I include the outlier. The results described in Panel B have not changed significantly, even if I exclude the sample from this analysis.

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