# Value Relevance of Profit Available for Dividend

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**Abstract**

According to some research, the profit available for dividend is undervalued. This paper examines the determinants of undervaluation based on the tax and agency hypotheses. First, the influence of taxation on dividend income on the valuation of companies in Japan is examined. However, evidence supporting the tax hypothesis cannot be provided. Next, this paper examines the agency hypothesis, employing the ratio *dividend divided by the profit available for dividend* as the proxy variable of agency cost. The result is consistent with the hypothesis: the profit available for dividend in a company with insufficient dividend payout is undervalued.

*JEL classifications:* G15, M41

*Keywords:* value relevance, profit available for dividend, taxation on dividend income, agency problem

## 1. Introduction

The new Company Law of Japan came into effect on May 1, 2006, with the underlying goal to reform the law in line with the contemporary business environment. The revised law facilitates corporate establishment, operation, and reorganization. It also alters the rules related to accounting, such as minimum capital requirements and the calculation regarding the amount available for dividend. With regard to creditor protection, there used to be restrictions on the minimum amount of lower bound, which did not allow individuals to establish a company without investing at least 10,000,000

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yen in a stock company. Minimum capital restrictions have been abolished under the new Company Law; individuals can now set up a company with only one yen as the initial capital. However, a new restriction concerning the dividend has been placed from the viewpoint of creditor protection. For example, the surplus cannot be divided when the total net assets are less than 3,000,000 yen, irrespective of the amount of capital. Thus, the regulation regarding the amount available for dividend, which corresponds to the concept of the profit available for dividend in the Commercial Law, continues to prevail.[1]

This paper investigates the information content of the profit available for dividend by examining how it is valuated in the Japanese capital market. Previous research revealed that as compared with the remaining shareholders' equity, the profit available for dividend is underpriced in the stock market. However, thus far, its robustness and the reason for undervaluation have not been sufficiently examined. This paper examines the difference in the valuation between the profit available for dividend and the remaining shareholders' equity from the viewpoint of taxation on dividend income and the agency cost.

Inoue (2002) classifies the shareholders' equity of listed Japanese companies into three categories: (1) capital and legal reserve, (2) retained earnings, and (3) revaluation reserve for land. He then analyzes the manner in which the capital market valuated these constituents of shareholders' equity.[2] Inoue (2002) suggests that retained earnings are undervaluated as compared with capital and legal reserve, although no statistical tests have been conducted to support this. Even though retained earnings are different from the profit available for dividend, it is expected that they will show a high degree of correlation. Thus, the result of Inoue (2002) suggests that the profit available for dividend is undervaluated as compared with the remaining shareholders' equity.

Harris *et al*. (2001) examine the difference between the profit available for dividend and the remaining shareholders' equity in a more direct manner. They hypothesize that the profit available for dividend is valuated lower than the remaining shareholders' equity because taxation on the dividend income of shareholders should be reflected in the valuation of retained earnings of the company. On examining capital markets including those of the United States and Japan, they find evidence that is consistent with their hypothesis. However, on examining the model proposed by Harris *et al*. (2001) and their empirical results, Hanlon *et al*. (2003) and Dhaliwal *et al*. (2003) conclude that the

[1] The profit available for dividends is a stock variable and is a source of payout. Managers can pay regular and commemorative dividends, make stock repurchases, or retain earnings within the profit available for dividends.

[2] Inoue (2002) examines how the constituents of the profit forecast for the forthcoming year are reflected in the stock price using four models: (1) the basic model, (2) the "constituent model of net assets book value," (3) the "constituent model of net profit," and (4) the "constituent model of net profit and net assets book value." The first model studies the effects of the book value of net assets and the profit forecast for the forthcoming year on the stock price. The second model studies the effects of the constituents of net assets book value on the stock price. The third and fourth models study the effects of the constituents of net profit on the stock price and both the net profit and the net assets book value, respectively. In this paper, we refer only to the second model.

result obtained by Harris *et al*. (2001) is non-diagnostic.[3] Therefore, this paper considers the result obtained by Harris *et al*. (2001) not as evidence but as a hypothesis. We analyze the valuation of the profit available for dividend from a different perspective. Hereafter, the viewpoint that taxation on dividend income results in undervaluation is referred to as the "tax hypothesis."

In addition, we indicate the possibility that the difference in valuation may be caused by the agency problem. According to Jensen (1986), the management should be monitored in order to prevent wasteful investment and to ensure that profit is adequately distributed among shareholders.[4] This implies that an agency problem occurs in a company with insufficient dividend payout. Furthermore, DeAngelo *et al*. (2006) show that in the United States there exists a highly significant relation between the decision to pay dividends and the ratio of earned equity to total equity. If we assume that the greater the profit available for dividend, the more is the dividend payout, the company with a low dividend payout will incur a comparatively higher agency cost than the one with a high dividend payout. Therefore, as compared with other companies, the profit available for dividend in the case of a company with a low dividend payout is expected to be undervaluated in the market. Hereafter, we refer to the viewpoint that an agency problem results in the undervaluation of the profit available for dividend as the "agency hypothesis."

First, we show that the market valuation of the profit available for dividend is lower than that of the remaining shareholders' equity. This result is consistent with the findings of previous research such as Harris *et al*. (2001) and Inoue (2002). Then, we analyze the difference between the profit available for dividend and the remaining shareholders' equity from the viewpoint of the tax and agency hypotheses.

Our paper considers the tax hypothesis from a different viewpoint — that of Harris *et al*. (2001). Generally, individual and foreign shareholders face a higher tax rate. Therefore, if the tax hypothesis is correct, then the higher the shareholding ratio of individual and foreign stockholders, the lower will be the valuation of the profit available for dividend. Further, we examine the second hypothesis. The revision of Commercial Law in June 2001 allows the legal reserve (i.e., capital surplus and earned surplus) to be a resource of dividend payment. If the tax hypothesis is correct, then after the revision of Commercial Law in June 2001, the legal reserve would be more undervaluated by the stock market than before. We investigate the tax hypothesis by examining these two different conditions, but we cannot provide evidence to support the tax hypothesis.

Finally, we examine the difference in valuation from the viewpoint of the agency hypothesis. As discussed above, our agency hypothesis states that as compared with other companies, the profit available for dividend in the case of a company with a low dividend payout is expected to be undervaluated in the market. We employed the ratio *dividend divided by the profit available for dividend* as the proxy variable of agency cost. The result indicates that the stock market does not undervaluate the profit available

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[3] For more comprehensive reviews on empirical research on accounting and tax, see Shackelford and Shevlin (2001).

[4] See also Stulz (1990). However, growing companies may have an incentive to use retained earnings for investment rather than for dividend because underinvestment leads to debt overhang (Myers, 1977).

for dividend in a company with a sufficient dividend payout, but it does undervaluate the profit available for dividend in a company with insufficient dividend payout. This result is consistent with the agency hypothesis.

The remainder of this paper is organized as follows. In the second section, we develop the hypotheses and the research design. We describe the data and the basic statistics in the third section. The results are shown in the fourth section; the summary and the implications of the results are presented in the last section.

## 2. Hypotheses and the research design

### *2.1 Basic Hypothesis*

This paper aims to examine the information content of the components of shareholders' equity. In particular, we investigate how the profit available for dividend and the remaining shareholders' equity are valuated differently in the stock market. We examine this from two different perspectives, i.e., taxation on dividend income and the agency problem between the shareholders and the management. Prior to this discussion, we estimate the following basic model.[5]

$$P_{it} = \alpha_{10} + \alpha_{11} SE_{it} + \alpha_{12} X_{it} + \varepsilon_{it}, \tag{1}$$

where

$P_{it}$ is the market value of firm $i$'s equity at time $t$,

$SE_{it}$ is the reported book value of shareholders' equity of firm $i$ at time $t$, and

$X_{it}$ is the reported earnings of firm $i$ at time $t$.

All the variables are divided by the market value of firm $i$'s equity at time $t-1$ in order to exclude the influence of the size of the firm. Next, we divide the reported book value of shareholders' equity into the profit available for dividend and the remaining shareholder's equity. We estimate the following regression in order to investigate how these components are valuated differently in the stock market.

$$P_{it} = \alpha_{20} + \alpha_{21} CNAD_{it} + \alpha_{22} PAD_{it} + \alpha_{23} X_{it} + \varepsilon_{it}, \tag{2}$$

where

$CNAD_{it}$ is the capital that is not available for the dividend of firm $i$ at time $t$, and

$PAD_{it}$ is the profit available for the dividend of firm $i$ at time $t$.

To exclude the influence of the size of the firm, all the variables are divided by the market value of firm $i$'s equity at time $t-1$. The profit available for dividend is defined as the sum of the voluntary reserve and the unappropriated retained earnings.

In equation (2), if the null hypothesis $\alpha_{21} = \alpha_{22}$ is rejected, then it is possible that the profit available for dividend and the remaining shareholders' equity may be valuated differently in the market.

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[5] This model is based on the model proposed by Collins *et al*. (1997).

*2.2 Tax Hypothesis*

Harris *et al*. (2001) provide evidence that retained earnings are valuated lower than the capital contributed because the former is distributable as taxable dividend and paid-in equity, as a tax-free return on capital.[6] Our paper considers the tax hypothesis from a different viewpoint — that of Harris *et al*. (2001). Generally, individual and foreign shareholders face a higher tax rate. Therefore, if the tax hypothesis is correct, then the higher the shareholding ratio of individual and foreign stockholders, the lower will be the valuation of the profit available for dividend. This constitutes the following hypothesis.

**Hypothesis 1:** *The higher the shareholding ratio of individual and foreign stockholders, the lower is the valuation of the profit available for dividend.*

In order to examine this hypothesis, we divide all sample companies into five groups according to the level of the shareholding ratio of individual and foreign shareholders and estimate the following regression.

$$P_{it} = \alpha_{30} + \alpha_{31} CNAD_{it} + \alpha_{32} PAD_{it} \times D\_in_1 + \alpha_{33} PAD_{it} \times D\_in_2 + \alpha_{34} PAD_{it} \times D\_in_3 + \alpha_{35} PAD_{it} \times D\_in_4 + \alpha_{36} PAD_{it} \times D\_in_5 + \alpha_{37} X_{it} + \varepsilon_{it}, \quad (3)$$

where

$D\_in_j$ is a dummy variable that takes the value of 1 if the company belongs to the $j$th shareholding quintile of individual and foreign shareholders, and 0 otherwise.

If hypothesis 1 is correct, then the coefficients in equation (3) should be such that $\alpha_{32} > \alpha_{33} > \alpha_{34} > \alpha_{35} > \alpha_{36}$.

The second tax hypothesis focuses on the revision of Commercial Law in June 2001 that allows the legal reserve (i.e., capital surplus and earned surplus) to be a resource of dividend payment. If the tax hypothesis is correct, then after the revision of Commercial Law in June 2001, the legal reserve would be more undervaluated by the stock market than before. The following is the second hypothesis.

**Hypothesis 2:** *After the revision of Commercial Law in June 2001, which allows legal reserve to be a resource of dividend payment, the legal reserve is more undervaluated than it was before.*

In order to test the second hypothesis, the following equations are derived.

$$P_{it} = \alpha_{40} + \alpha_{41} CAP_{it} + \alpha_{42} LR_{it} + \alpha_{43} PAD_{it} + \alpha_{44} X_{it} + \varepsilon_{it}, \quad (4)$$

$$P_{it} = \alpha_{50} + \alpha_{51} CAP_{it} + \alpha_{52} LR_{it} + \alpha_{53} LR_{it} \times D\_change + \alpha_{54} PAD_{it} + \alpha_{55} X_{it} + \varepsilon_{it}, \quad (5)$$

where

[6] Dhaliwal *et al*. (2003) and Hanlon *et al*. (2003) also consider the influences of the existence of tax clientele and tax-exempt shareholders on the capitalization of dividend tax into equity valuation.

$CAP_{it}$ is the capital of firm $i$ at time $t$,

$LR_{it}$ is the legal reserve of firm $i$ at time $t$, and

*D_change* is a dummy variable that takes the value of 1 after the fiscal year 2002 and the value of 0 before the fiscal year 2001.

All the variables are divided by the market value of firm $i$'s equity at time $t$–1. If hypothesis 2 is correct, then the sign of coefficient $\alpha_{53}$ in equation (5) should be negative.

### *2.3 Agency Hypothesis*

On examining the agency problem between the shareholders and the management, it is found that there is a particular reason for the undervaluation of the profit available for dividend as compared with the remaining shareholders' equity. According to Miller and Modigliani (1961), a dividend policy is irrelevant to corporate valuation. However, previous research suggests that a dividend policy can have an impact on the valuation through the signaling effect or the agency problem. Jensen (1986), in particular, advocates that the management should be monitored in order to prevent wasteful investment and to ensure that profit is adequately distributed among shareholders. This implies that the agency problem occurs in a company with insufficient dividend payout.

Furthermore, DeAngelo *et al*. (2006) show that, in the United States, a highly significant relationship exists between the decision to pay dividends and the ratio of earned equity to total equity. If we assume that the greater the profit available for dividend, the more is the dividend payout, then the company with a low dividend payout will face a comparatively higher agency cost than the one with a high dividend payout. Therefore, compared to other companies, the profit available for dividend in the case of a company with a low dividend payout is expected to be more undervaluated in the market. This paper considers the magnitude of the ratio *dividend divided by the profit available for dividend* as an indication of the agency cost.[7]

In light of the above discussion, our agency hypothesis is as follows.

**Hypothesis 3:** *The smaller the ratio dividend divided by the profit available for dividend, the lower the valuation of the profit available for dividend.*

In order to test this hypothesis, we divide the entire sample into five groups according to the magnitude of the ratio *dividend divided by the profit available for dividend* and derive the following equation. [8]

$$P_{it} = \alpha_{60} + \alpha_{61} CNAD_{it} + \alpha_{62} PAD_{it} \times D\_div_1 + \alpha_{63} PAD_{it} \times D\_div_2 + \alpha_{64} PAD_{it} \times D\_div_3 + \alpha_{65} PAD_{it} \times D\_div_4 + \alpha_{66} PAD_{it} \times D\_div_5 + \alpha_{67} X_{it} + \varepsilon_{it}, \quad (6)$$

where

[7] We adopt a measure that is similar to the ratio of dividends to retained earnings used in Harris and Kemsley (1999).

[8] These dividends include not only regular dividends but also commemorative dividends.

$D\_div_j$ is a dummy variable that takes the value of 1 if the company belongs to the *j*th quintile of the *dividend divided by the profit available for dividend*, and 0 otherwise.

If hypothesis 3 is correct, then the coefficients in equation (6) should be such that $\alpha_{62} > \alpha_{63} > \alpha_{64} > \alpha_{65} > \alpha_{66}$.

In addition, it is often argued that the payment of dividend varies according to the growth rate of firms. Fama and French (2001) find that firms with low profit/high growth tend to retain profits.[9] Therefore, this paper examines another model by adding the fiscal growth rate of sales as a control variable to equation (6). This model is described as follows.

$$P_{it} = \alpha_{70} + \alpha_{71} CNAD_{it} + \alpha_{72} PAD_{it} \times D\_div_1 + \alpha_{73} PAD_{it} \times D\_div_2 + \alpha_{74} PAD_{it} \times D\_div_3 + \alpha_{75} PAD_{it} \times D\_div_4 + \alpha_{76} PAD_{it} \times D\_div_5 + \alpha_{77} SGR_{it} + \alpha_{78} X_{it} + \varepsilon_{it}, \quad (7)$$

where

$SGR_{it}$ is the sales growth rate of firm *i* at time *t*. This variable is divided by the market value of firm *i*'s equity at time *t–1*.

## 3. Data and Basic Statistics

### *3.1 Data*

We use the financial data and the stock price data obtained from the NIKKEI NEEDS Financial Data CD-ROM and NIKKEI FINANCIAL QUEST, respectively. We use parent-only financial data because the Company Law of Japan regulated the calculation regarding the amount available for dividend only using parent-only financial statements. The sample period includes the fiscal years from 1990 to 2003. We select this period in order to exclude the influence of the revision made to the taxation system in the fiscal year 1989. Owing to data availability, we select companies that were listed on the first section of the Tokyo Stock Exchange on March 31, 2004. Furthermore, we restrict our research to companies whose fiscal year-ends are on March 31 and whose financial data can be obtained for more than two consecutive years, whose net assets are not negative, and whose fiscal year has not been changed.[10] In order to eliminate outliers, we exclude 1% of the highest and lowest values of the net assets, profit after tax, and stock prices. Our sample contains 13,233 observations.

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[9] On the other hand, Grullon *et al*. (2002) point out that dividend increases in a firm that is in transition from a higher to a lower growth phase. For more discussions, see DeAngelo and DeAngelo (2006) and DeAngelo *et al*. (2006).

[10] Further, we restrict our research to companies whose *PAD* is positive. However, the results are unchanged. Therefore, we do not present these results.

### *3.2 Basic Statistics*

The basic statistics are listed in Table 1. Panel A presents the gross values of the variables. Panel B presents the values divided by the total market value at *t*–1. Overall, the profit available for dividend is approximately half the shareholders' equity, and the legal reserve is approximately a quarter of the shareholders' equity.[11]

**Table 1: Descriptive Statistics of the Sample (N = 13,233)**

| Variable | Mean | Std. Dev. | Min. | Max. |
|---|---|---|---|---|
| **Panel A: Gross Value** | | | | |
| ***P* (Billion Yen)** | 194.6 | 554.0 | 1.2 | 20,134.3 |
| ***SE* (Billion Yen)** | 101.1 | 233.0 | 0.5 | 5,984.7 |
| ***LR* (Billion Yen)** | 25.9 | 50.2 | 0.0 | 858.3 |
| ***PAD* (Billion Yen)** | 49.4 | 161.1 | –206.2 | 5,631.9 |
| ***X* (Billion Yen)** | 3.5 | 17.8 | –286.2 | 634.1 |
| **Panel B: Gross Value Divided by Market Value at Time *t* – 1** | | | | |
| ***P*** | 1.00 | 0.36 | 0.41 | 2.99 |
| ***SE*** | 0.78 | 0.53 | 0.11 | 3.10 |
| ***LR*** | 0.22 | 0.19 | 0.00 | 3.16 |
| ***PAD*** | 0.32 | 0.34 | –4.98 | 2.72 |
| ***X*** | 0.01 | 0.06 | –0.49 | 0.16 |

Variable Definitions
*P:* Share price at time *t* times shares outstandings at time *t*.
*SE:* Shareholders' equity at time *t*.
*LR:* Legal reserve at time *t*.
*PAD:* Profit available for dividend at time *t*.
*X:* Net income after taxes at time *t*.
All variables in Panel B are divided by market value at time *t–1*.

## 4. Empirical Results

### *4.1 Results of the Basic Models*

The results of the basic models are shown in Table 2.[12] First, we regress the shareholders' equity *SE* and the net income *X* on the market value *P*. The coefficient

[11] The maximum value of the correlation coefficients between the independent variables is 0.61, which is the correlation coefficient between *CAP* and *LR*, and the other correlation coefficients are below 0.3. Furthermore, the maximum value of VIF is 1.67. These results suggest that the multicollinearity problem is negligible.

[12] We tested the regressions, using the Breusch-Pagan test and the Jarque-Bera test and rejected the null hypothesis that the residuals are homogeneous and normally distributed. This is because we calculated standard errors, using White's (1980) method. Furthermore, we estimated the model, using least median regression, and the results are similar to those obtained using OLS.

of *SE* is 0.18; this result is consistent with the expected sign, and this coefficient is statistically significant at the 1% level. The coefficient of *X* is 1.25; this result is consistent with the expected sign, and this coefficient is statistically significant at the 1% level.

Second, the results for the model in which the shareholders' equity is divided into *PAD* and *CNAD* are also shown in Table 2. The coefficient of *X* is 1.48; this coefficient is statistically significant at the 1% level. This result is the same as that in equation (1). With regard to the constituents of the shareholders' equity, the coefficients of *CNAD* and *PAD* are 0.24 and 0.08, respectively. Both coefficients are statistically significant at the 1% level. A comparison between the two coefficients reveals that the coefficient of *PAD* is lower than that of *CNAD* by 0.16. This difference is statistically significant because the *t*-value of the difference test is 8.95. Therefore, the market valuation of the profit available for dividend is lower than that of the remaining shareholders' equity. These results are consistent with the findings of previous research (e.g., Inoue, 2002).[13]

**Table 2: Results of Preliminary Tests**[a]

| Variable | Coefficients | Eq. 1 | Eq. 2 |
|---|---|---|---|
| **Constant** | $\alpha_{10},\alpha_{20}$ | 0.85<br>(158.77)*** | 0.84<br>(156.77)*** |
| ***SE*** | $\alpha_{11}$ | 0.18<br>(27.03)*** | |
| ***CNAD*** | $\alpha_{21}$ | | 0.24<br>(22.79)*** |
| ***PAD*** | $\alpha_{22}$ | | 0.08<br>(7.36)*** |
| ***X*** | $\alpha_{12},\alpha_{23}$ | 1.25<br>(21.87)*** | 1.48<br>(23.00)*** |
| **Adj.** $R^2$ | | 0.11 | 0.13 |
| **N** | | 13,233 | 13,233 |
| **Test for Linear Restriction** | | | |
| $\alpha_{21},-\alpha_{22}$ | | | 0.16<br>(8.95)*** |

*CNAD:* Capital not available for dividend at time *t*.
All other variables are defined in Panel B of Table 1.
[a] *t*–ratios are provided within parentheses. Standard errors are robust to heteroskedasticity, which is in line with White (1980).
*** Significant at the 1% level.
** Significant at the 5% level.
* Significant at the 10% level.

[13] Conroy *et al.* (2000) and Inoue (2002) suggest that the earnings forecast also has information content in the Japanese capital market. Therefore, we reestimated the models using earnings forecast instead of actual earnings, but the results are qualitatively similar to those in Table 2.

### 4.2 Results of the Tax Hypothesis Test

*The Influence of the Structure of Shareholders*

First, we investigate the tax hypothesis by examining the influence of the structure of shareholders on the valuation of the profit available for dividend.[14] The result is shown in Column 1 of Table 3. This result is the same as that obtained previously, namely, the coefficient of $X$ is 1.12 and it is statistically significant at the 1% level. The coefficient of *CNAD* is 0.15; this coefficient is statistically significant at the 1% level.

Next, with regard to the profit available for dividend that is ordered by the ratio of individual and foreign shareholders, the coefficients are 0.09, 0.04, –0.00, 0.03, and 0.08 in the descending order of the ratio. The coefficients of $PAD \times D\_in_1$ and $PAD \times D\_in_5$ are positive; these coefficients are statistically significant at the 1% level. On the other hand, the coefficient of $PAD \times D\_in_3$ is negative; this coefficient is not statistically significant. If the hypothesis is correct, then these coefficients should be increasing in the descending order of the ratio. Therefore, this order of the coefficients is inconsistent with the tax hypothesis.

**Table 3: Results of Tax Hypothesis** [a]

| Variable | Coefficients | Eq. 3 | Eq. 4 | Eq. 5 |
|---|---|---|---|---|
| **Constant** | $\alpha_{30},\alpha_{40},\alpha_{50}$ | 0.87<br>(164.31)*** | 0.85<br>(158.48)*** | 0.86<br>(157.68)*** |
| ***CNAD*** | $\alpha_{31}$ | 0.15<br>(17.60)*** | | |
| $PAD \times D\_in_1$ | $\alpha_{32}$ | 0.09<br>(3.25)*** | | |
| $PAD \times D\_in_2$ | $\alpha_{33}$ | 0.04<br>(2.25)*** | | |
| $PAD \times D\_in_3$ | $\alpha_{34}$ | –0.00<br>(–0.21) | | |
| $PAD \times D\_in_4$ | $\alpha_{35}$ | 0.03<br>(1.73)* | | |
| $PAD \times D\_in_5$ | $\alpha_{36}$ | 0.08<br>(4.43)*** | | |
| ***CAP*** | $\alpha_{41},\alpha_{51}$ | | 0.30<br>(12.53)*** | 0.28<br>(11.70)*** |
| ***LR*** | $\alpha_{42},\alpha_{52}$ | | 0.16<br>(5.34)*** | 0.08<br>(2.97)*** |
| $LR \times D\_change$ | $\alpha_{53}$ | | | 0.17<br>(6.29)*** |

[14] This analysis is restricted to samples before the fiscal year 2001 due to the revision of the taxation system for individual shareholders since there is some evidence pertaining to the influence of the revision of the taxation system on the stock price. See Ayers *et al*. (2002), Chetty and Saez (2005), and Lang and Shackelford (2000).

| | | | | |
|---|---|---|---|---|
| ***PAD*** | $\alpha_{43},\alpha_{54}$ | | 0.09<br>(7.71)*** | 0.09<br>(7.37)*** |
| ***X*** | $\alpha_{37},\alpha_{44},\alpha_{55}$ | 1.12<br>(16.67)*** | 1.47<br>(22.85)*** | 1.43<br>(22.54)*** |
| **Adj. $R^2$** | | 0.06 | 0.13 | 0.13 |
| **N** | | 11,260 | 13,233 | 13,233 |

$PAD \times D\_div_1$: Dummy variable that takes the value of 1 if the company belongs to the *j*th shareholding quintile of individual and foreign shareholders, and 0 otherwise.

*D_change:* Dummy variable that takes the value of 1 after the fiscal year 2002, and 0 otherwise.

*CAP:* Capital at time *t*.

*LR:* Legal reserve at time *t*.

All other variables are defined in Panel B of Table 1 and Table 2.

[a] *t*–ratios are provided within parentheses. Standard errors are robust to heteroskedasticity, which is in line with White (1980).

*** Significant at the 1% level.

** Significant at the 5% level.

* Significant at the 10% level.

### *The Influence of the Revision of Commercial Law*

We now analyze the manner in which the revision of Commercial Law modified the valuation of the legal reserve. Column 2 of Table 3 presents the result of the valuation of the legal reserve over the entire period. In this case, we find that the coefficient of *LR* is 0.16; this coefficient is significantly positive at the 1% level. Further, *LR* is valuated lower than *CNAD* and higher than *PAD*. The differences are at least statistically significant at the 10% level.

Column 3 of Table 3 shows the result regarding the change in the valuation after the revision of Commercial Law. With the exception of the coefficient of $LR \times D\_change$, these results are the same as the previous ones. The coefficient of $LR \times D\_change$ is 0.17; this coefficient is statistically significant at the 1% level. If the tax hypothesis is correct, then this coefficient should be negative due to the influence of taxation on dividend income. Therefore, this result is inconsistent with the tax hypothesis.[15]

With regard to the tax hypothesis, we analyze (1) the influence of taxation on dividend income to individual and foreign shareholders and (2) the influence of the increase in the profit available for dividend after the revision of Commercial Law. These results are inconsistent with the tax hypothesis. Therefore, we do not accept the tax hypothesis that Harris *et al*. (2001) proposed as the reason for the undervaluation of retained earnings.

[15] The Commercial Law was revised in June 2001; it is possible that this has already been reflected in the market at the end of the fiscal year 2000. We examined this possibility and found that the result is almost the same as that shown in Table 3. Furthermore, we have added the sample of fiscal years 2004 and 2005 and have analyzed Eq. 5. The results obtained using these data are similar to those obtained using the data from fiscal years 1990 to 2003. These results also reject Hypothesis 2.

### *4.3 Results of the Agency Hypothesis Test*

We now analyze the agency hypothesis. The result of this hypothesis is shown in Table 4. Column 1 of Panel A shows that the coefficient of *X* is 1.43; this coefficient is statistically significant at the 1% level. The coefficient of *CNAD* is 0.23; this coefficient is statistically significant at the 1% level. These results are consistent with the findings of other models.

Column 1 of Panel A shows the coefficients of *PAD* ordered by the value of the ratio *dividend divided by the profit available for dividend*. The coefficients are 0.29, 0.15, 0.09, 0.10, and 0.07 in the descending order; these coefficients are statistically significant at the 1% level. These values are consistent with the hypothesis, with the exception of the order of the 3rd and 4th quintile. The difference between the coefficients of $PAD \times D\_div_1$ and $PAD \times D\_div_2$ is 0.14, and the *t*-value is 2.90. Therefore, the null hypothesis is rejected at the 1% level. The difference between the coefficients of $PAD \times D\_div_2$ and $PAD \times D\_div_3$ is 0.06, and the *t*-value is 2.71. In this case, the null hypothesis is also rejected at the 1% level. The difference between the coefficients of $PAD \times D\_div_2$ and $PAD \times D\_div_4$ is 0.05, and the *t*-value is 2.51. Therefore, the null hypothesis is rejected at the 5% level.

Considering *PAD* and *CNAD* of the companies with the highest dividend payout in the group, the coefficient of $PAD \times D\_div_1$ is higher than that of *CNAD*. However, we conducted a *t*-test on this difference and obtained a *t*-value of 1.13. This result does not reject the null hypothesis. For the remaining companies that have a lower dividend payout, the profit available for dividend is valuated significantly lower than *CNAD*. These results indicate that while the market valuation of the profit available for dividend and the remaining shareholders' equity was the same in the company with a higher dividend payout, the market valuation of the profit available for dividend was lower than the remaining shareholders' equity in the company with a low dividend payout. This result suggests that the agency cost for companies with a high dividend payout is low since the market does not undervaluate the profit available for dividend.

**Table 4: Results of Agency Hypothesis** [a]

**Panel A: Results of Equation 6**

| Variable | Entire Sample | Before Fiscal 2000 | After Fiscal 2001 |
|---|---|---|---|
| **Constant** | 0.84<br>(155.12)*** | 0.86<br>(146.35)*** | 0.87<br>(59.03)*** |
| ***CNAD*** | 0.23<br>(20.45)*** | 0.15<br>(12.47)*** | 0.27<br>(14.35)*** |
| $PAD \times D\_div_1$ | 0.29<br>(5.99)*** | 0.32<br>(5.61)*** | 0.15<br>(1.69)* |
| $PAD \times D\_div_2$ | 0.15<br>(6.64)*** | 0.13<br>(4.60)*** | 0.14<br>(4.89)*** |
| $PAD \times D\_div_3$ | 0.09<br>(5.25)*** | 0.08<br>(3.86)*** | 0.07<br>(2.30)** |
| $PAD \times D\_div_4$ | 0.10<br>(6.54)*** | 0.09<br>(4.49)*** | 0.06<br>(2.89)*** |

| | | | |
|---|---|---|---|
| $PAD \times D\_div_5$ | 0.07<br>(4.14)*** | 0.01<br>(0.75) | 0.12<br>(4.23)*** |
| ***X*** | 1.43<br>(22.11)*** | 1.11<br>(14.96)*** | 1.82<br>(16.24)*** |
| **Adj.** $R^2$ | 0.13 | 0.06 | 0.19 |
| **N** | 13,233 | 10,224 | 3,009 |

**Panel B: Results of Equation 7**

| Variable | Entire Sample | Before Fiscal 2000 | After Fiscal 2001 |
|---|---|---|---|
| **Constant** | 0.38<br>(11.61)*** | 0.39<br>(10.17)*** | 0.42<br>(6.52)*** |
| ***CNAD*** | 0.24<br>(21.40)*** | 0.16<br>(13.32)*** | 0.27<br>(14.65)*** |
| $PAD \times D\_div_1$ | 0.30<br>(6.18)*** | 0.32<br>(5.85)*** | 0.14<br>(1.67)* |
| $PAD \times D\_div_2$ | 0.17<br>(7.49)*** | 0.15<br>(5.50)*** | 0.15<br>(3.95)*** |
| $PAD \times D\_div_3$ | 0.10<br>(6.02)*** | 0.10<br>(4.92)*** | 0.06<br>(2.21)** |
| $PAD \times D\_div_4$ | 0.11<br>(7.86)*** | 0.11<br>(5.89)*** | 0.07<br>(3.20)*** |
| $PAD \times D\_div_5$ | 0.08<br>(4.93)*** | 0.03<br>(2.09)** | 0.12<br>(4.28)*** |
| ***SGR*** | 0.44<br>(13.68)*** | 0.45<br>(12.06)*** | 0.46<br>(7.17)*** |
| ***X*** | 1.23<br>(19.39)*** | 0.90<br>(12.47)*** | 1.63<br>(14.66)*** |
| **Adj.** $R^2$ | 0.15 | 0.09 | 0.21 |
| **N** | 13,233 | 10,224 | 3,009 |

$PAD \times D\_div_j$*:* Dummy variable that takes the value of 1 if the company belongs to the *j*th quintile of the *dividend divided by the profit available for dividend*, and 0 otherwise.
*SGR:* Sales growth rate at time *t*.
All other variables are defined in Panel B of Table 1 and Table 2.
[a] *t*–ratios are provided within parentheses. Standard errors are robust to heteroskedasticity, which is in line with White (1980).
*** Significant at the 1% level.
** Significant at the 5% level.
* Significant at the 10% level.

Next, we divide the sample data before and after the revision of Commercial Law in 2001 and examine the influence of the revision due to which the legal reserve became distributable. The result is consistent with the agency hypothesis until the fiscal year 2000. After the fiscal year 2001, the result of the companies in the first to fourth quintiles is consistent with the agency hypothesis. On the other hand, the result of the companies in the fifth quintile is inconsistent with the agency hypothesis.

The results mentioned above may have been obtained due to the fact that many high-growth companies have begun adopting the low dividend policy; this situation does not serve as a penalty for a low dividend payout. Panel B presents the result of the same test, with the exception of the control variable of the growth rate. This result is consistent with the result shown in Panel A and also supports the agency hypothesis.

When we use earnings forecast instead of actual earnings, we find that the coefficients of $PAD \times D\_div_5$ are the smallest among those of the interaction terms between *PAD* and the dummy variables. These results seem to be more consistent with the agency hypothesis than the results obtained by using actual earnings, as explained above. When we use earnings forecast in the regression, earnings forecast may reflect firms' future profitability more accurately. Therefore, it appears that the coefficients of $PAD \times D\_div_5$ capture the magnitude of agency cost more clearly.

## 5. Concluding remarks

This paper examines the valuation of the profit available for dividend based on two hypotheses, namely, the tax hypothesis and the agency hypothesis, in order to examine the reason for undervaluation.

First, we investigate the influence that taxation of dividend income has on the valuation of dividend income in Japan. However, we are unable to provide evidence to support the tax hypothesis. Next, we examine the agency hypothesis. We employ the ratio *dividend divided by the profit available for dividend* as the proxy variable of agency cost. The result indicates that the stock market does not undervaluate the profit available for dividend in a company with sufficient dividend payout, but it does undervaluate the profit available for dividend in a company with insufficient dividend payout. This result is consistent with the agency hypothesis.

However, this does not imply that all the profit available for dividend should be entirely distributed among the shareholders. We are unable to provide evidence for the undervaluation of companies with sufficient dividend payout.

This paper clarifies the information content of the profit available for dividend. This implies that there is a significant reason for providing separate financial values to the profit available for dividend and the remaining shareholders' equity. Further, it implies that the shareholders' equity is not merely the difference between assets and liabilities. In addition, the information regarding shareholders' equity serves to reveal the management's intention of distributing equity among shareholders.

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