Discretion in the Deferred Tax Valuation Allowance and Its Impact on Firms' Dividend Payouts

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Abstract: Prior studies document that firms manage earnings by exercising discretion in valuing deferred tax assets. Drawing from a hand-collected sample of more than 10,000 firm-year observations of Japanese listed firms, we extend the literature by focusing on dividend policy as a motive to manage earnings. If reported earnings are central to determining dividends, managers have incentives to manage earnings upward to avoid dividend cuts. Therefore, we test whether and how firms exercise discretion in valuation allowance account for deferred tax assets in order to manage earnings. We find that discretionary changes in the valuation allowance are related to dividends, particularly among firms that favor increased and stable dividends. We also find that firms likely establish lower valuation allowance when pre-managed earnings and distributable profits fall short of levels needed to maintain dividends. We provide new evidence of dividend-based earnings management and the economic consequences of using managerial estimates as measurement inputs.

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1. Introduction

Prior studies have sought evidence that firms manage earnings using discretion in their valuation of deferred tax assets (DTA) (e.g., Burgstahler et al. 2002; Schrand and Wong 2003; and Frank and Rego 2006). While early prior literature concerning the US firms show the mixed results (Hanlon and Heitzman 2010; Graham et al. 2012), studies repeatedly document that managers exercise considerable discretion in establishing a valuation allowance (VA) for DTA to meet certain earnings targets, especially prior earnings and analysts' forecasts.[1]

We extend the literature by focusing on dividend policy and argue that managers exercise discretion in the VA to adjust current dividends (i.e., dividend-based earnings management, Daniel et al. 2008). Linter's (1956) seminal work indicates that managers are reluctant to change and/or cut dividend payments. In their survey of CFOs, Brav et al. (2005) report that managers prefer to sell assets, lay off employees, or even abandon positive-NPV projects before reducing dividends. Whereas these behaviors are puzzling in the context of dividend irrelevance yet reflect managers' great concerns for negative consequences of cutting dividends such as stock price reactions (Grullon et al. 2002; Brav et al. 2005). Indeed, Daniel et al. (2008) empirically show that dividend-paying firms manage earnings upward when they otherwise fall short of supporting expected dividends. This is particularly evident when managers determine their dividends solely based on dividend payout ratio (i.e., dividends as a proportion of accounting earnings)[2] and/or when either or both of corporate law and debt covenants stipulate their

[1] Hanlon and Heitzman (2010) and Graham et al. (2012) comprehensively review research in accounting for income taxes. They sort studies of earnings management into three strands: VA, the tax contingency account, and the US tax expense on foreign profits.

[2] While Linter (1956) finds that the starting point for most dividend decisions was the dividend payout ratio, Brav et al. (2005) document that the importance of targeting the payout ratio has declined in the US. On the other hand, Hanaeda and Serita (2008) report most of Japanese firms

maximum funds available for dividends on the basis of reported accounting earnings (Leuz et al. 1998; Bradley and Roberts 2004). Hence, those studies suggest that a desire to maintain dividends motivates earnings management.

Examining the relationship between discretion in the VA and dividend payments is important for several reasons. First, it indicates economic consequences of using managerial estimates as measurement inputs. Managers' valuations of DTA include their forecasts and estimates of firm's future profitability as measurement inputs. In the context of fair value measurements using level-three inputs, numerous studies have criticized that discretion in measurement inputs create an earnings management tool rather than providing useful information (Ball 2006; Ramanna 2008; Kothari et al. 2010). Nonetheless, little is known about the extent to which the use of such measurement inputs ties in with managerial behavior (Beatty 2007; Biondi and Suzuki 2007; Brüggemann et al. 2013). Second, the relationship between the VA and dividends implies distribution of unrealized gains, which has been concerned from the perspective of regulators and creditors (Pellens and Sellhorn 2006; KPMG 2008; Goncharov and van Triest 2011). The VA is a contra-asset that reduces the value of DTA to the extent the future tax benefits are "more likely than not" to not to be realized (FASB 1992, p.5). Therefore, when managers exercise discretion in establishing the VA in order to pay dividends, such dividends are likely paid on the basis of earnings that are less "more likely than not" realized. This is a partial rationale for deducting the net amount of DTA from distributable profits in German corporate law (HGB, Section 268 (8)).

We examine the relation between the VA and dividends in a sample of Japanese listed firms from 2003 to 2013. We focus on Japanese firms for three reasons. First, they are more likely to pay dividends than firms in other countries. As Denis and Osobov (2008) report, Japan has the highest percentage of dividend-paying firms among six developed countries (the US,

determine dividends on the basis of dividend payout ratio.

the UK, Canada, Germany, France, and Japan).[3] Moreover, Takasu and Nakano (2012) show that Japanese firms have clear preference for avoiding decreased dividends. They document that most Japanese firms have paid stable or increased dividends per share (DPS) over past 15 years. In short, Japanese firms are dividend-sticky and therefore excellent subjects for investigating dividend-based earnings management.

Second, Japanese firms are more likely than firms in other countries to establish deferred tax assets rather than deferred tax liabilities (hereafter, DTL). Figure 1 shows arithmetic means for DTA, DTL, and net amounts scaled by total assets for 23 countries. Japan has the highest net DTA and the Republic of South Africa the lowest. Given that DTA and DTL offset each other with respect to future income taxes, net DTA is more likely to be subject to managers' discretion. Therefore, data imply that Japanese firms have more room to manage earnings using the VA than firms elsewhere.[4]

Insert Figure 1 about here

Third, unlike Germany, Japanese corporate law does not stipulate adjustments for DTA/DTL in determining distributable profits. Since DTA represents tax expense in prior years and expected future tax benefits, creditors regard such assets as unreliable collateral. With respect to creditors' legal protections, it is rational to remove the effect on earnings from evaluating such assets. Absence of legal requirements can create opportunities and incentives

[3] Fama and French (2001) highlight the decline in number of dividend-paying firms in the US. On the other hand, Sasaki and Hanaeda (2010) document that more than 80% of Japanese firms pay dividends and that the ratio remained unchanged for three decades.

[4] Possible reasons that Japan has the highest net DTA among those countries are as follows. First, as amended in 1998, Japanese Corporation Tax Act restricts conservative accounting choices in calculating firms' taxable income for the purpose of taxation fairness. This results in more accounting items to be considered as DTA (mainly 12 items) rather than as DTL (mainly four items). Second, Japanese economic condition and accounting standards may affect DTA. Japanese accounting standards for retirement allowance was introduced in 2000 and mark-to-market for available-for-sale securities in 2001. Since then, expenses for retirement allowance exceeding allowable amounts by law generate new DTA. Also, impairment losses of securities stemming from dot-com bubble are treated as deductive temporary differences which results in higher DTA.

to manage earnings via the VA in order to support dividends.

We conduct several tests for the relationship between the VA and dividends. First, following Lintner (1956), we apply the partial adjustment model and examine whether discretionary VA relates to current dividend changes. These tests reveal whether and how current dividend policy embodies discretionary changes in VA. Second, we analyze a logit regression to obtain specific implications. Japanese firms are likely to determine current dividends based on prior DPS (Takasu and Nakano 2012), so we construct four dummies for DPS (increase, stable, decrease, and omission) and test whether changes in the VA relate to increased or stable dividends. Third, following Daniel et al. (2008), we test dividend-based earnings management. We particularly analyze discretionary changes in the VA among firms whose pre-managed earnings fall short of supporting expected dividends. This analysis provides more direct and stronger evidence on dividend-based earnings management.

Among several new empirical findings, we document that discretionary changes in the VA relate negatively to dividend changes, implying that managers establish lower VAs to facilitate paying higher dividends. Our results also show that discretionary changes in the VAs relate to increased and stable dividends, which suggests that managers adjust VAs to raise or stabilize dividend payments. We find that firms likely establish lower VAs when pre-managed earnings miss expected dividend levels. Furthermore, we demonstrate that firms with a shortfall in legal distributable profits are more likely to reduce the VA in order to pay dividends. These results withstand numerous sensitivity checks. Overall, we present new evidence that managers exercise discretion in the VA for the purpose of dividend payments.

This study makes several contributions to the literature. First, we report new evidence of dividend-based earnings management. Literature concerning earnings management generally examines motivations originating in Positive Accounting Theory (Watts and Zimmerman 1986) and earnings targets (Shuto 2010). Few studies examine earnings management for the sake of meeting dividend targets. Our results imply that firms' dividend policies or managers'

adherence to dividends prompts earnings management. In this regard, we support findings in Daniel et al. (2008).

Second, we examine a hand-collected dataset of more than 10,000 firm-year observations, many more than prior studies in the US.[5] Therefore, our findings are more generalizable for earnings management via the VA.

Third, our empirical evidence reveals the economic consequence of using managerial estimates as measurement inputs. Few studies provide convincing evidence that use of such inputs influences managerial behaviors, particularly regarding dividends.[6] Further, our results imply that dividends could be based on unrealized earnings. From the perspective of corporate law and creditor protection, it is undesirable to pay dividends based on earnings that are unrealized and measured with excessive discretion. We highlight for regulators the shortcomings of using such soft measurement inputs.

This paper proceeds as follows. Section 2 reviews the literature and hypotheses. Section 3 explains our research design and sampling methodology. Section 4 examines the relationships among evaluation of the VA, dividend policies, and dividend-based earnings management. Section 5 summarizes and concludes.

2. Hypothesis Development

2.1. Earnings management using discretion in valuation allowance

Prior studies explore whether managers exercise discretion in determining the VA for DTA to manage earnings. SFAS No.109 in the US specifies four sources of taxable income to consider when determining the VA: future reversals of DTL, taxable income in past years, tax-planning

[5] Miller and Skinner (1998) use a sample of 173 firm-year observations. Christensen et al. (2008) use 888 firm-year observations, including controls. Frank and Rego (2006) analyze a slightly larger sample of 2,243 firm-years. Graham et al. (2012) note that they sample a narrow set of firms, making it clear whether results are generalizable.

[6] The possible exception is Goncharov and van Triest (2011), who find that unrealized gains from mark-to-market accounting affect dividends.

strategy, and expected future taxable income. Although managers must comply with those criteria, the accounting standards still allow substantial discretion in evaluating these four competing sources and their impact on the realization of future tax benefits. Hence, Frank and Rego (2006) consider the VA an ideal account for studying managerial discretion within Generally Accepted Accounting Principles.

A pioneering work of Miller and Skinner (1998) explore determinants of the VA under SFAS No.109. They show that managers likely establish the VA in accord with accounting standards and find little evidence that managers manipulate it to manage earnings. Visvanathan (1998) examines whether changes in the VA relate to factors identified by SFAS No.109 and to incentives to manage earnings in the context of debt covenants and bonus plans. Like Miller and Skinner (1998), he finds no direct evidence that changes in the VA are associated with debt- and compensation-based incentives. Using a contextual approach, Bauman et al. (2001) also find no cross-sectional evidence consistent with systematic manipulation of the VA to manage earnings.

However, later studies present a different view. Burgstahler et al. (2002) find that firms with small profits are more likely to reduce the DTA reserved by the VA than firms with small losses. They conclude that firms opportunistically use the subjectivity allowed under SFAS No.109 in establishing the VA to avoid losses. Sampling commercial banks, Schrand and Wong (2003) find that managers adjust the VA to smooth earnings. They particularly associate discretionary changes in the VA with deviations in unadjusted earnings from analysts' consensus forecasts and average historical earnings. Their findings suggest managers exercise discretion over the VA to meet earnings targets.

Frank and Rego (2006) estimate discretionary changes in the VA by regression and examine whether they are associated with analysts' forecasts, loss avoidance, and prior years' reported earnings. They find that firms manipulate the VA to steer earnings toward analysts' consensus forecasts, but they report no direct evidence of earnings management toward the

other two targets. Chirstensen et al. (2008) document that firms with higher-than-expected VAs would rather report subsequent poor performance than create a "cookie jar" for future earnings management. However, they also find that certain firms use a reversal in the VA to meet or beat analysts' forecasts.

Japan's "Operational Guidelines Concerning Tax Effect Accounting in Unconsolidated Financial Statements" specifies requirements similar to SFAS No.109 for establishing the VA.[7] Guidelines require managers to evaluate the "recoverability" of DTA according to three criteria: future taxable income based on future profitability, tax-planning, and future reversals of DTL. As in the US, the guideline specifies detailed criteria for the VA yet leaves substantial room for managerial discretion, particularly concerning future estimates.[8]

Although few studies examine Japan, some consistently report evidence of earnings management using the VA. Ichinomiya (2005) finds that bankrupt Japanese firms are likely to establish smaller VAs in order to increase earnings (and thus net assets) in the period just before bankruptcy. Yamagata (2005) shows that Japanese managers manipulate the VA to manage current earnings for meeting the managerial earnings forecasts. Kometani (2012) finds that firms opportunistically adjust the VA to meet three earnings targets: loss avoidance, prior year's earnings, and managerial earnings forecasts.

Although early works concerning the US present little evidence of earnings management via the VA, recent studies using larger samples show that managers exercise discretion in the VA to meet or beat analysts' forecasts.[9] In contrast, Japanese studies find repeated evidence of earnings management through the VA. These findings are consistent with data in Figure 1,

[7] "Operational Guidelines Concerning Tax Effect Accounting in Unconsolidated Financial Statements" (Report No.10, the accounting system committee of the Japanese Institute of Certified Public Accountants), published in 1998, final revision in 2011.

[8] One possible difference from US accounting standards is the existence of the gradual criteria in Audit Committee Report No.66, guidance regarding accounting for income taxes in Japan. The guidance divides firms into five groups based on firms' past performance, and then requires to establish the VA for each group.

[9] See Hanlon and Heitzman (2010) and Graham et al. (2012) for reviews.

which suggest that Japanese firms report more net DTA and thus have more leeway in managing earnings through the VA.

2.2. Hypotheses development: dividend-based earnings management

The seminal work of Lintner (1956) shows that managers clearly prefer stable dividends and are reluctant to change or reduce them. Brav et al. (2005) report that 90% of CFOs try to avoid reducing DPS and to maintain a smooth dividend stream from year to year. They show that CFOs are willing to sell assets, lay off employees, borrow heavily, or bypass positive NPV projects before cutting dividends. Their rationale for stable dividends is the negative consequences of reducing dividends. Brav et al. (2005) report that 88% of CFOs believe there is a large penalty for reducing them. On this point, prior studies consistently demonstrate that stock prices fall significantly after firms announce dividend reductions.[10]

The importance of reported earnings in determining dividend is well established (Jensen and Meckling 1976; Watts 1977). Lintner (1956) formalizes the relationship between reported earnings and dividends. Based on interviews with 28 companies, he offers a partial adjustment model that explains dividends as a function of current earnings and past dividends. Subsequent studies support his view by showing that dividends correlate strongly with reported accounting earnings.[11] Further, in the context of public and private regulations on funds available for dividends, both corporate law and debt covenants often restrict firms' ability to pay dividends based on accounting earnings (Leuz et al. 1998). Kalay (1982) and Bradley and Roberts (2004) document that debt covenants typically cap funds available for dividends on the basis of reported earnings and equity. Similarly, most of Japanese financial covenants effectively stipulate maximum dividend funds by requiring the maintenance of earnings and net assets

[10] See Pettit (1972), Kane et al. (1984), Aharony and Swary (1980), and Grullon et al. (2002).
[11] See Edwards and Mayer (1985), DeAngelo et al. (1992), Jagannathan et al. (2000), Grullon et al. (2002), Brav et al. (2005), and Gocharov and van Triest (2011).

(Kochiyama and Nakamura 2014). Hence, given that reported earnings are important in determining dividends, managers have incentive to maneuver earnings upward to avoid dividend cuts particularly when reported earnings would fall short of expected dividend levels (Watts and Zimmerman 1986; Daniel et al. 2008). Daniel et al. (2008) show that the US dividend-paying firms use discretionary accruals to manage earnings upward when they otherwise would fall levels that support expected dividends. Aoki's (2008) sample of Japanese firms mirrors results in Daniel et al. (2008).

Following the strand of literature on earnings management through the VA and dividend-based earnings managements, we predict that firms manage earnings for their dividends payouts using the discretion in the VA. We formulate two hypotheses:

H1: Managers likely reflect discretionary changes in the VA in current dividend payouts

H2: Managers exercise discretion in adjusting the VA to meet expected dividend thresholds.

Our hypotheses have two assumptions. First, the link between dividends and accounting earnings is conditional on earnings attributes, specifically earnings persistence. Managers are likely to determine dividends based on the persistence of earnings.[12] Brav et al. (2005) and Hanaeda and Serita (2008) document that US and Japanese CFOs appraise long-term changes in accounting income over temporal changes in determining dividends. Hence, whether discretionary changes in the VA contribute to earnings persistence may relate to dividend payouts. We preliminarily examine the persistence of earnings stemming from changes in the VA. If such earnings are temporal but related to dividends, this can be deemed as indirect evidence on dividends-based earnings management using the VA.

Second, we presume that reported earnings are only a target of earnings managements. Daniel et al. (2008, p.3) stress the importance of reported earnings for firms' ability to pay

[12] See Edwards and Mayer (1985), Kormendi and Zarowin (1996), Jagannathan et al. (2000), Skinner and Soltes (2011). Goncharov and van Triest (2011) and Ito and Kochiyama (2014) show that the temporal component of earnings also influences current dividends.

dividends even though managing earnings does not alter that ability by generating cash, nor do they count toward legal distributable profits, which frequently are represented as accumulated earning surplus.[13] Even if firms report lower earnings, however, they can continue to pay dividends or maintain dividend levels if their retained earnings and cash are sufficient. In other words, managers can plug deficits in reported earnings using accumulated earnings surpluses. Therefore, firms, particularly distressed firms constrained by legal distributable profits, may be more likely to manage earnings to obtain legal dividend resources. We investigate this possibility through additional analyses in Section 4.4.

We first test whether earnings arising from changes in the VA relate to dividends. Then, we follow Daniel et al. (2008) and investigate whether managers exercise discretion in the VA to manage earnings upward when they would fall below dividend support levels. Results present direct evidence of earnings management.

3. Research Design

3.1. Dividend Policy Analysis

We conduct two sets of tests to examine relationship between dividends and discretionary changes in the VA. They determine whether earnings arising from changes in the VA relate typically to dividends (H1) and whether managers exercise discretion over the VA to manage earning upward when they would fall below dividend support levels (H2). These tests comprehensively reveal whether and how discretion in the VA ties to dividend policies.

To evaluate whether earnings from discretionary changes in the VA relate to dividends, we apply Lintner's (1956) partial adjustment model, expressed by following regression:

$$\Delta Div_{i,t} = \alpha_1 + \alpha_2 NI_{i,t} + \alpha_3 Div_{i,t-1} + \varepsilon_{i,t} \qquad \text{Eq. (1)}$$

[13] Dividend restrictions under US corporate law differ by states. Leuz et al. (1998) compare the legal dividend restrictions in the US, the UK, and Germany.

where $\Delta Div_{i,t}$ and $Div_{i,t-1}$ are dividend changes from year *t−1* to year *t* and lagged dividends, respectively; $NI_{i,t}$ is net income in year *t*. We use total assets as a deflator (Fama and French 2002; Goncharov and van Triest 2011). Whereas Brav et al. (2005) and Skinner (2008) show that the power of the partial adjustment model is diminished in explaining dividends of the US firms, Sasaki and Hanaeda (2010) find that the R^2 remains relatively high over the past three decades in Japan. We consider Lintner's model appropriate for investigating Japanese dividends.

We then decompose $NI_{i,t}$ into two components: net income before "income taxes – deferred" ($NIBT_{i,t}$) and "income taxes – deferred" ($TaxExp_{i,t}$). Since we investigate earnings stemming from changes in the VA, we further decompose $TaxExp_{i,t}$ into changes in the VA ($\Delta VA_{i,t}$) and changes in other components of DTA/DTL ($\Delta Other_{i,t}$). After these decompositions, we modify Eq. (1) as follows:

$$\Delta Div_{i,t} = \beta_1 + \beta_2 NIBT_{i,t} + \beta_3 \Delta VA_{i,t} + \beta_4 \Delta Other_{i,t} + \beta_5 Div_{i,t-1} + \zeta_{i,t} \qquad \text{Eq. (2)}$$

As a final step, we again decompose $\Delta VA_{i,t}$ into two variables. As noted, managers can enjoy substantial discretion in determining the VA. However, it is irrational to regard the total change in VA as discretionary because a certain portion can be systematically determined by firm-specific factors such as future profitability, current financial condition, and tax strategy. Following Frank and Rego (2006) and Christensen et al. (2008), we decompose $\Delta VA_{i,t}$ into a discretionary and a non-discretionary part. Appendix 2 details the procedure for estimating the discretionary part. This provides our final testing model:

$$\Delta Div_{i,t} = \gamma_1 + \gamma_2 NIBT_{i,t} + \gamma_3 \Delta ABVA_{i,t} + \gamma_4 \Delta NORVA_{i,t} + \gamma_5 \Delta Other_{i,t} + \gamma_6 Div_{i,t-1} + \eta_{i,t} \qquad \text{Eq. (3)}$$

where $\Delta ABVA_{i,t}$ and $\Delta NORVA_{i,t}$ are discretionary and non-discretionary changes in the VA from year *t−1* to year *t*, respectively. As implied in the equation, we test whether and how each component of the VA earnings affects dividends. A decrease in $\Delta VA_{i,t}$ increases current net income. Therefore, if current divined policy incorporates discretionary changes in the VA, the

coefficient of $\Delta ABVA_{i,t}$, γ_3, should be statistically significant and negative, providing indirect evidence that managers exercise discretion in the VA for adjusting dividend. Note that we extend Eq. (3) by including variables to control for cross-sectional and time-series variation in dividend policy (Appendix 1 defines testing variables). To control firm- and year-fixed effects, we estimate a fixed-effect regression model for the equations above.

3.2. Earnings Management Analysis

Second, we more directly examine dividend-based earnings management via the VA (H2). Following Daniel et al. (2008), we estimate following model:

$$\Delta ABVA_{i,t} = \tau_1 + \tau_2 Deficit\_NI_{i,t} + \tau_3 Payer_{i,t-1} + \tau_4 NIBT_{i,t-1} + \tau_4 Size_{i,t-1} + \tau_5 Lev_{i,t-1} + \tau_6 TobinQ_{i,t-1} + \tau_7 Retain_{i,t-1} + \tau_8 DAC_{i,t-1} + \theta_{i,t} \quad \text{Eq.(4)}$$

As our key independent variable, $Deficit\_NI_{i,t}$ takes a value of zero when expected dividends are below pre-managed earnings (net income before discretionary changes in the VA). When expected dividends exceed pre-managed earnings, $Deficit\_NI_{i,t}$ equals expected dividends minus pre-managed earnings (earnings shortfall). In short, the variable equals Max(0, earnings shortfall). Following DeAngelo et al. (1994), Daniel et al. (2008), and Takasu and Nakano (2012), we assume expected dividends equal the prior year's dividends. The remaining independent variables in Eq. (4) control for factors influencing earnings management (Appendix 1 defines the testing variables).[14] We lag values for control variables following Bergstresser and Philippon (2006) and Daniel et al. (2008).

If managers opportunistically use the discretion in the VA when their earnings would be

[14] Our testing model mirrors Daniel et al. (2008) but with several differences in control variables. First, they include variables related to CEO compensation that we exclude because comprehensive data for CEO compensation are unavailable. Second, we incorporate discretionary accruals ($DAC_{i,t-1}$) for controlling other earnings management behavior. Although we cannot predict managers' preferences for earnings management tools, they might manage earnings via discretionary accruals before exercising discretion over the VA. Therefore, we control for ordinal preferences in earnings management tools.

lower than expected dividend levels, it is expected that they are likely to decrease the level of the VA (to increase current earnings). Therefore, if this is true, the coefficient of Deficit_$NI_{i,t}$, τ_2, should be statistically significant and negative. As well as dividend policy analyses, we again control the firm- and year-fixed effects by using fixed-effect regression model for equation (4).

3.3. Sample and Summary Statistics

We analyze relationships between the VA and dividend policies in a sample of Japanese listed firms that met the following criteria from 2003 to 2013:

1. Firms must be non-financial (no banks, insurers, or investment firms).
2. Firms' fiscal periods must have 12 months.
3. Firms must be listed on the first section of the Tokyo Stock Exchange.
4. Firms' fiscal years must end in March.
5. All data must be available for the estimation of Eqs. (3) and (4).

The third and fourth criteria stem from our data collecting procedure. Since footnotes to firms' annual report (*Yukashouken Houkokusho*) disclose data related to the VA, they are not included comprehensively in commercial databases. Therefore, we hand-collected relevant data individually. We acknowledge that our sample may be biased and limit ability to generalize our results, but firms that meet these criteria are representative of listed Japanese firms.[15]

We obtain financial and stock price data from the NEEDS FinancialQUEST database and from firm's annual reports in the EOL database. Our data are from firm's unconsolidated financial statements. Amounts of DTA and the VA in consolidated financial statements include all subsidiaries. Therefore, consolidated accounting data and reported levels of the VA for DTA may not correspond. Also, Japanese managers are likely to base dividends on unconsolidated

[15] Total market capitalization of our sampled firms equals 72.2% of the market capitalization of the entire Japanese stock markets for each observed year. Although our sample may be biased, it is highly representative of firms significant to Japan's economy.

earnings (Aoki 2008; Hanaeda and Serita 2008), as Japanese corporate law restricts firm's distributable profits on the basis of unconsolidated financial statements. Our final sample comprises 10,863 firm-year observations representing 1,162 firms. Our sample covers 10,218 firm-year observations of dividend-paying firm (94.3% of the full sample).

Table 1 reports descriptive statistics. To mitigate the influence of outliers, we winsorize all continuous variables at the 0.5% and 99.5% levels at the firm-year level. Values of the first quartile and the median of $\Delta Div_{i,t}$ are zero, which indicates managers' preference for stable dividends. The mean and median of $\Delta ABVA_{i,t}$ approach zero because it is the residual stemming from regressions (Appendix 2). In our earnings management analysis, the third quartile of $Deficit\_NI_{i,t}$ takes zero because 2,610 observations (24.1% or our sample) indicate firm-years with positive values for $Deficit\_NI_{i,t}$.

Insert Table 1 about here

Table 2 shows correlations among testing variables. Correlations between $\Delta Div_{i,t}$ and $\Delta ABVA_{i,t}$ are nearly zero, and signs are unstable (−0.02 and 0.01), indicating no clear relationship between dividend policies and discretionary changes in the VA on univariate basis. However, correlations between $\Delta ABVA_{i,t}$ and $Deficit\_NI_{i,t}$ are negative (−0.02 and −0.22). This finding suggests managers reduce the VA when earnings fall short of expected dividend levels. To discern multicollinearity, we calculate variance inflation factors and find they are below five for every estimate.

Insert Table 2 about here

4. Empirical findings

4.1. Preliminary Analysis on Earnings Persistence

Section 2.2 established that the relation between earnings and dividends is conditional on

earnings persistence. Therefore, we first preliminarily estimate the persistence of each earnings component. Prior studies regard persistence as quality of earnings and define it as a slope coefficient of lagged earnings regressed by current earnings (Francis et al. 2006; Goncharov and van Triest 2011). Using this measurement, we test each earnings component in Eq. (3) for persistence ($NIBT_{i,t}$, $\Delta ABVA_{i,t}$, $\Delta NORVA_{i,t}$, $\Delta Other_{i,t}$), as shown in Table 3. Slopes for $NIBT_{i,t}$ and $\Delta Other_{i,t}$ are statistically significant at the 1% level, suggesting these earnings components affect future earnings. In contrast, slopes for $\Delta ABVA_{i,t}$ and $\Delta NORVA_{i,t}$ are negative but not significant (*t*-value = −1.16 and −1.25, respectively). This finding indicates that earnings stemming from changes in the VA are temporal and do not affect dividends according to prior studies.

Insert Table 3 about here

4.2. Dividend Policy Analysis

Table 4 reports the results for dividend policy analysis (H1). For other determinants of dividends, we include a set of control variables following Denis and Osobov (2008), Goncharov and van Triest (2011), and Takasu and Nakano (2012). They are $Size_{i,t}$, $Lev_{i,t}$, $Cash_{i,t}$, $Growth_{i,t}$, $TobinQ_{i,t}$, $Retain_{i,t}$, $FSH_{i,t}$, and $Increase\_D_{i,t}$. Column (1) shows the results for Linter's original model. Consistent with his implications, the coefficient on $NI_{i,t}$ is positive and that of $Div_{i,t-1}$ is negative. Column (2), (3), and (4) present the results when we decompose $NI_{i,t}$ into earnings components. Column (4) presents evidence that discretionary changes in the VA are negatively associated with changes in current dividends. That is, the estimated coefficient of $\Delta ABVA_{i,t}$ is negative and statistically significant at the 1% level (*t*-value = −3.66). In contrast to findings from earnings persistence analysis, this implies that earnings stemming from discretionary changes in the VA are likely to be incorporated in current dividends.

Insert Table 4 about here

To obtain more specific implications about the relationship, we test whether and how $\Delta ABVA_{i,t}$ relates to selected dividend policies. We focus on firms that paid dividends in the prior year (N = 10,141) and construct four dependent variables based on changes in DPS: $D\_Increase_{i,t}$, $D\_Stable_{i,t}$, $D\_Decrease_{i,t}$, and $D\_Ommission_{i,t}$. In other words, we examine which dividend targets managers use when exercising discretion over the VA. We replace the dependent variable in Eq. (3) with the four dummy variables above and estimate logit regression models.[16]

Table 5 shows the results. Column (1) through (4) show results using the full sample. Column (5) through (7) specify the benchmark observation that takes zero for each dependent variable. Results for the full sample reveal that discretionary changes in the VA are negatively associated with increased and stable dividends. However, no significant coefficients of $\Delta ABVA_{i,t}$ appear in Column (3) and (4), where dependent variables are $D\_Decrease_{i,t}$ and $D\_Ommission_{i,t}$. Similar results are obtained from estimations with benchmark specification (Columns (5) through (7)). Firms that increase dividends are more likely to have smaller $\Delta ABVA_{i,t}$ than firms preferring stable dividends, and firms that prefer stable dividends are more likely to have smaller $\Delta ABVA_{i,t}$ than firms that reduce dividends. These results suggest that managers may exercise discretion over the VA to raise or stabilize dividends.

Insert Table 5 about here

4.3. Earnings Management Analysis

Next, we conduct direct tests on dividend-based earnings management (H2). First, we examine whether firms with deficits manage earnings upward—namely, whether they exhibit negative $\Delta ABVA_{i,t}$. Panel A of Table 6 shows the results. Following Daniel et al. (2008), we focus on

[16] For model specification, we replace $Div_{i,t-1}$ in Eq. (3) with $\Delta Div_{i,t-1}$ to control for prior dividend policy. Takasu and Nakano (2012) adopt similar specifications. Results are nearly identical when we use $Div_{i,t-1}$.

firms that paid dividends in the prior year in Table 6. Among firms with deficits, 69.1% exhibit negative $\Delta ABVA_{i,t}$ and 30.9% positive $\Delta ABVA_{i,t}$.

In Panel B of Table 6, we examine whether $\Delta ABVA_{i,t}$ declines with $Deficit_{i,t}$. We sort firms into six groups based on $Deficit\_NI_{i,t}$, including a group with no deficit. Within each group, we report the mean of $\Delta ABVA_{i,t}$ and the portion of firms with a positive $Deficit\_NI_{i,t}$ that eliminate the deficit through $\Delta ABVA_{i,t}$. We document that the mean of discretionary changes in the VA approaches zero for firms without deficits. By contrast, $\Delta ABVA_{i,t}$ for firms with deficits are negative and slightly decreasing with $Deficit\_NI_{i,t}$, although the highest group shows the highest value. The final column of Panel B reveals that approximately 19.8% of firms with positive $Deficit\_NI_{i,t}$ eliminate deficits through $\Delta ABVA_{i,t}$. The lowest group shows the highest portion (55.3%), which suggests managers adjust the VA to eliminate relatively smaller deficits.

Insert Table 6 about here

Table 7 shows the results of our multivariate tests on earnings management. We use a sample containing all firm-years with dividends in year *t* (N = 10,218) to infer the causality between earnings management and current dividends per Daniel et al. (2008). Column (1) presents the results of a baseline regression using only control variables. We include a set of control variables based on evidence in prior studies (Section 3.2). Column (2) shows the results of Eq. (4). The coefficient of $Deficit\_NI_{i,t}$ is significant and negative (*t*-value = −2.36), suggesting firms with greater deficits discretionally reduce the VA.

In Column (3) of Table 7, following Daniel et al. (2008), we consider the difference of $Deficit\_NI_{i,t}$ for firms that paid dividends in the prior year ($Payer_{i,t-1}$) and those that did not ($Non\text{-}Payer_{i,t-1}$). Among the former, $Deficit\_NI_{i,t}$ indicates the shortfall in pre-managed earnings in terms of expected dividends (i.e., dividends in the prior year). For firms that paid no dividends, expected dividends are zero, and therefore $Deficit\_NI_{i,t}$ represents the shortfall in

pre-managed earnings with respect to zero, which equals the shortfall with respect to loss-avoidance (Daniel et al. 2008). The coefficient of $Deficit\_NI_{i,t}$*$Payer_{i,t-1}$ is significant and negative (*t*-value = −2.36), whereas the coefficient of $Deficit\_NI_{i,t}$*$Non\text{-}Payer_{i,t-1}$ is not statistically significant (*t*-value = −1.40). This finding implies that the expected dividend level is an important earnings threshold and that firms that paid dividends in the prior year are more likely to reduce the VA to eliminate deficits. This behavior is consistent with the notion dividends are sticky (Brav et al. 2005).

The final column of Table 7 reports that pre-managed earnings are positively associated with $\Delta ABVA_{i,t}$. This finding supports the view that firms with lower pre-managed earnings are more likely to increase earnings by reducing the amount of the VA, and vice versa. Consequently, findings in Table 7 suggest that managers exercise discretion over the VA to manager earnings upward when they are below expected dividend levels.

Insert Table 7 about here

4.4. Additional Analysis: Distributable Profits Management?

Results thus far indicate that firms with expected dividends in excess of pre-managed earnings try to maintain dividends by discretionarily reducing the VA. However, the analyses presume that firms determine current dividends largely on the basis of reported earnings. This presumption might not be valid for firms with sufficient distributable profits because they can pay expected dividends regardless of current reported earnings if they hold sufficient cash and distributable profits. Also, Japanese corporate law does not stipulate adjustments for DTA/DTL in determining distributable profits, so managed earnings directly affect distributable profits (Section 1).[17] In short, Japanese law might create opportunities to manage distributable profits

[17] Japanese corporate law restricts companies' distributable profits on the basis of "surplus" (i.e., "earned surplus" and "other capital surplus") on balance sheets (Companies Act, section 461 and 462; Ordinance on Company Accounting, section 158). Then, (1) the book value of

by manipulating the VA.

Therefore, we conduct additional analyses of whether firms with deficits in distributable profits manage earnings upward—i.e., whether they exhibit negative $\Delta ABVA_{i,t}$. We replace $Deficit\_NI_{i,t}$ with $Deficit\_DP_{i,t}$ in Eq. (4), which equals Max(0, expected dividends minus pre-managed distributable profits). Again, expected dividends equal the prior year's dividends, and pre-managed distributable profits are distributable profits before discretionary changes in the VA.

Panel A of Table 8 presents results of the univariate analysis. We again focus on firms that paid dividends in the prior year in Table 8. Unlike Table 6, firms with deficits in distributable profits are a quiet few (116 firm-years), primarily because distributable profits approximate accumulated earnings, which generally exceed current net income. Among firms with deficits, 56.0% exhibit negative $\Delta ABVA_{i,t}$ and 44.0% positive $\Delta ABVA_{i,t}$.

Panel B of Table 8 again sorts firms into six groups based on $Deficit\_DP_{i,t}$, including a group with no deficit. On average, firms with no deficits show no discretionary changes in the VA. By contrast, negative $\Delta ABVA_{i,t}$ appears among firms with deficits. The mean of $\Delta ABVA_{i,t}$ is lowest for firms in the lowest group, suggesting managers adjust the VA to eliminate relatively small deficits. The final column of Panel B reveals that 28.4% of firms with positive $Deficit\_DP_{i,t}$ eliminate the deficits through $\Delta ABVA_{i,t}$.

Insert Table 8 about here

Table 9 shows the results of multivariate tests using Eq. (4) modified by using $Deficit\_DP_{i,t}$. We sample all firm-years that pay dividends in year *t* (N = 10,218). Results again mirror those in Table 7: negative coefficients for $Deficit\_DP_{i,t}$ (Column (2), *t*-value = −5.53)

treasury stocks, (2) revaluation reserves for lands, (3) revaluation reserves for available-for-sale securities, and (4) adjustments for goodwill are deducted from "surplus." We calculate distributable profits in accordance with legal requirements at the time of relevant laws are in effect.

and Deficit_DP$_{i,t}$*Payer$_{i,t-1}$ (Column (3), *t*-value = −5.67), and positive coefficients of PreManaged_DP$_{i,t}$ (Column (4), *t*-value = 7.80). The difference from Table 7 is in the coefficient of Deficit_DP$_{i,t}$*Non-Payer$_{i,t-1}$. Although not statistically significant in Table 7, its equivalent in Table 9 is significant and negative (Column (3) in Table 9, *t*-value = −5.24). This finding indicates that whether firms paid dividends in the prior year is irrelevant to managing earnings for obtaining dividend resources. In other words, firms may also enjoy discretion over the VA when they start or restart to pay dividends. These results collectively provide evidence of dividend-based earnings management and suggest that firms with deficits in distributable profits are more likely to reduce the VA to secure them.

Insert Table 9 about here

4.5. Robustness Tests

We conduct numerous tests to evaluate robustness of our empirical results. First, for the dividend policy analysis, we include lagged net income in Linter's partial adjustment model, as suggested by Fama and Babiak (1968). Our findings remain quantitatively similar to those in Tables 4 and 5.

Second, we exclude observations whose *year* equals 2009 and 2010 in order to mitigate influence from the 2008 financial crisis. The crisis may have affected VA and dividend policy significantly as managers revised judgements of their firms' prospects. Our findings are robust for selection of sampled years and remain unchanged.

Third, we use an alternative deficit measure to analyze earnings management. Whereas the max value of Deficit_NI$_{i,t}$ is 0.168, approximately 74.5% of our sample takes zero for Deficit_NI$_{i,t}$ (Table 1). To test whether this disproportionate distribution of Deficit_NI$_{i,t}$ affects our results, we change Deficit_NI$_{i,t}$ to a dummy variable that equals one if expected dividends exceed pre-managed earnings and zero otherwise. Although findings remain similar to those in

Table 7, the coefficient of Deficit_$NI_{i,t}$*Non-$Payer_{i,t-1}$ is negative and statistically significant at the 1 % level in model (2). This finding implies that the loss avoidance threshold is also important for these firms.

Finally, we exclude firm-years that do not establish the VA for both current and prior years because these firm-years differ systematically from those that report non-zero values for VA (Miller and Skinner 1998; Frank and Rego 2006). In this sense, our analyses above included firm-years with zero VA (3,041 firm-year observations, 28.0 % out of full sample). Our findings do not quantitatively and significantly change when we exclude firm-years in which VAs are zero for both year *t* and *t−1*. Collectively, our main findings are robust to different model specification, sample selections, and alternative measures.

5. Conclusion

Prior studies argue that managers opportunistically exercise discretion over the valuation allowance for deferred tax assets to meet earnings targets. We extend the literature by examining the association between discretionary use of the valuation allowance and dividend policy. Using a sample of Japanese listed firms, we found that discretionary changes in the VA relate to dividends, particularly to increased and stable dividend policies, and that firms likely establish smaller valuation allowance when pre-managed earnings and pre-managed legal distributable profits fall short of expected dividend levels. These findings imply that managers enjoy discretion over the valuation allowance in determining current dividends. Also, firms consider expected dividend levels as important earnings thresholds (Daniel et al. 2008).

This study makes several contributions to the literature. First, we find new evidence for dividend-based earnings management. Earlier studies identify Positive Accounting Theory (Watts and Zimmerman 1986), earnings targets (Shuto 2010), and external financing events (Shivakumar 2000) as motivations for earnings management but seldom examine whether firms manage earnings to meet dividend targets. Our results imply that firms' dividend policies and

managers' adherence to dividends can motivate earnings management. In this respect, we support the findings of Daniel et al. (2008).

Second, we employ a hand-collected sample exceeding 10,000 firm-year observations of Japanese listed firms to generate our conclusions. Although prior studies find plausible evidence for discretionally use of the valuation allowance, their sample sizes are small and lack the generalizability of our findings.

Third, our findings reveal the economic consequences of using managerial estimates as measurement inputs. Few studies demonstrate whether use of such inputs influence managerial behaviors, particularly with respect to dividend payouts. Our results imply the existence of dividends based on unrealized earnings. From the perspective of corporate law and creditor protection, it is undesirable to pay dividends based on earnings that are unrealized and discretionally measured. This study highlights the regulatory concerns of using such soft measurement inputs.

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Appendix 1: Variable definitions

Dividend Policy Analysis	
$\Delta Div_{i,t}$	Change in dividends from year *t−1* to year *t* for firm *i*, scaled by total assets. The change in dividends is calculated as changes in dividend per share (DPS) multiplied by outstanding shares.
$NI_{i,t}$	Net income for firm *i* in year *t* (*t−1*), scaled by total assets.
$Div_{i,t-1}$	Dividends for firm *i* in year *t−1*, scaled by total assets.
$NIBT_{i,t}$	Net income before "income taxes – deferred" for firm *i* in year *t* (*t−1*), scaled by total assets.
$TaxExp_{i,t}$	"Income taxes – deferred" for firm *i* in year *t*, scaled by total assets.
$\Delta VA_{i,t}$	Change in the valuation allowance account for deferred tax assets from year *t−1* to year *t* for firm *i*, scaled by total assets.
$\Delta ABVA_{i,t}$	Change in abnormal (discretionary) valuation allowance from year *t−1* to year *t* for firm *i*, as measured as residuals of regression. See Appendix 2.
$\Delta NORVA_{i,t}$	Change in normal (non-discretionary) valuation allowance from year *t−1* to year *t* for firm *i*, as measured as $\Delta VA_{i,t}$ minus $\Delta ABVA_{i,t}$.
$\Delta Other_{i,t}$	Change in other deferred tax assets/liabilities components from year *t−1* to year *t* for firm *i*, as calculated as $TaxExp_{i,t}$ minus $\Delta VA_{i,t}$.
$Size_{i,t}$	Natural log of total assets for firm *i* in year *t*.
$Lev_{i,t}$	Amount of interest-bearing debt for firm *i* in year *t*, scaled by total assets. Interest-bearing debt is the sum of short- and long-term borrowings, bonds, and lease obligations.
$Cash_{i,t}$	Amount of cash and its equivalents for firm *i* in year *t*, scaled by total assets.
$Growth_{i,t}$	Geometrical mean of annual sales growth for last five years.
$TobinQ_{i,t}$	Ratio of the sum of market value of equity and interest-bearing debt to the sum of net assets and the interest-bearing debt.
$Retain_{i,t}$	Amount of distributable profits for firm *i* in year *t*, scaled by total net assets. Distributable profits are calculated on the basis of Japanese corporate law.
$FSH_{i,t}$	Percentage of shares held by foreign companies/financial institutions for firm *i* at the fiscal year end *t*.
$Increase\_D_{i,t}$	A dummy variable that equals one if net income for firm *i* increases from year *t−1* to year *t* and zero otherwise.

Dividend Policy (DPS basis)	
$D\_Increase_{i,t}$	A dummy variable that equals one if $\{DPS_{i,t} > DPS_{i,t-1}\}$for firm *i* and zero otherwise.
$D\_Stable_{i,t}$	A dummy variable that equals one if $\{DPS_{i,t} = DPS_{i,t-1}$ and $DPS_{i,t-1} > 0\}$ for firm *i* and zero otherwise.
$D\_Decrease_{i,t}$	A dummy variable that equals one if $\{DPS_{i,t} < DPS_{i,t-1}\}$for firm *i* and zero otherwise.
$D\_Omission_{i,t}$	A dummy variable that equals one if $\{DPS_{i,t} = 0$ and $DPS_{i,t-1} > 0\}$ for firm *i* and zero otherwise.

Earnings Management Analysis	
$Deficit\_NI_{i,t}$	A variable that equals Max(0, earnings shortfall) where earnings shortfall is defined as expected dividends (dividends in the prior year) minus pre-managed earnings (net income before discretionary changes in the VA). Earnings shortfall is scaled by total assets.
$Deficit\_DP_{i,t}$	A variable that equals Max(0, earnings shortfall) where earnings shortfall is defined as expected dividends (dividends in the prior year) minus pre-managed distributable profits in accordance with Japanese corporate law ($Retain_{i,t}$ before discretionary changes in the VA). Earnings shortfall is scaled by total assets.
$PreManaged\_NI_{i,t}$	Net income before discretionary changes in the VA for firm *i* in year *t*, scaled by total assets.

$PreManaged\_DP_{i,t}$	Distributable profits before discretionary changes in the VA for firm *i* in year *t*, scaled by total assets.
$DAC_{i,t-1}$	The discretionary accruals for firm *i* in year *t−1*, as measured by the regression model suggested in Dechow et al. (1995), that is so-called modified Jones (1991) model.
$Payer_{i,t-1}$	A dummy variable that equals one if firm *i* pays dividends in year *t−1* and zero otherwise. $Non\text{-}Payer_{i,t-1}$ is defined as one minus $Payer_{i,t-1}$.

Appendix 2: Estimation of discretionary valuation allowance

In assessing DTA, managers have substantial discretion in determining the VA. However, it is irrational to treat the total change in the VA as discretionary because a portion of the VA can be determined systematically by firm-specific factors such as future profitability, current financial condition, and tax strategy. Following Frank and Rego (2006) and Christensen et al. (2008), we distinguish discretionary changes in VA (i.e., $\Delta ABVA_{i,t}$) using the following regression model:

$$\Delta VA_{i,t} = \alpha_1 + \alpha_2 \Delta Future_{i,t} + \alpha_3 \Delta TaxCF_{i,t} + \alpha_4 \Delta ROA_{i,t} + \alpha_5 \Delta MtB_{i,t} + \alpha_6 \Delta SAF_{i,t} + \alpha_7 Loss_{i,t} + \alpha_8 \Delta Strategy_{i,t} + Industry + \varepsilon_{i,t} \quad \text{Eq.(A)}$$

where $\Delta VA_{i,t}$ is change in the VA taken from the change in the valuation allowance account for DTA from year *t−1* to year *t*; $\Delta Future_{i,t}$ is change in net DTA/DTL calculated as the change in DTA from year *t−1* to year *t* minus the change in DTL from year *t−1* to year *t*; $\Delta TaxCF_{i,t}$ is the change in "tax loss carryforward" from year *t−1* to year *t*; $\Delta ROA_{i,t}$ is the change in operating income from year *t−1* to year *t*; $\Delta MtB_{i,t}$ is the change in market-to-book ratio from year *t−1* to year *t*; $\Delta SAF_{i,t}$ is the change in the value of SAF2002 (Shirata 2003) from year *t−1* to year *t*;[18] $Loss_{i,t}$ is a dummy variable that equals one if firm *i* reports net losses before tax (i.e., negative NIBT) in year *t*; and $\Delta Strategy_{i,t}$ is the change in the ratio of tax expense to earnings before tax (NIBT) from year *t−1* to year *t*. $\Delta VA_{i,t}$, $\Delta Future_{i,t}$, $\Delta TaxCF_{i,t}$, and $\Delta ROA_{i,t}$ are scaled by total assets at the fiscal year-end of *t*. Unlike prior studies, we include $Loss_{i,t}$ because Japan's Audit Committee Report No.66, which provides auditing guidance for DTA/DTL, requires firms that report losses in the current year to evaluate the "recoverability" of DTA smaller. We use the residual from the regressions as our measure of discretionary change in the VA.

Although prior studies use by-industry estimations to calculate discretionary changes in

[18] Shirata (2003) develops a formula for predicting bankruptcy using Japanese data. SAF2002 indicates the likelihood of bankruptcy in a manner resembling Altman's Z-Score (Altman 1968). The formula is as follows: SAF2002 = 0.01036*(Retained Earnings/Total Assets*100) + 0.02682*(net earnings before taxes/Total Assets*100) − 0.06610*(Inventories*12/Sales) − 0.02368*(Interest expenses/Sales*100)+0.70773. The discrimination point is 0.68.

the VA (Frank and Rego 2006; Christensen et al. 2008), we estimate Eq. (A) above by-year to obtain sufficient observations for each estimation. We include industry dummies to absorb the fixed effects. The estimation period spans from 2002 to 2013. Sample criteria are the same as in Section 3.3. Our estimation sample contains 12,046 firm-year observations representing 12 year groups.

For illustration, we present arithmetic averages by year for coefficients and calculate Fama-Macbeth (1973) *t*-statistics based on their standard error. The table below summarizes the results. Coefficients of $\Delta Future_{i,t}$, $\Delta TaxCF_{i,t}$, and $\Delta SAF_{i,t}$ are consistent with predicted signs and statistically significant. By contrast, $\Delta ROA_{i,t}$ exhibits the opposite significant sign. On this point, Japanese managers may smooth earnings using the VA as shown in Tazawa et al. (2005). Therefore, managers can establish higher VAs when earnings increase and vice versa. Finally, the mean of R^2 (52.6%) suggests that the model fits as well as prior US studies (Frank and Rego 2006; Christensen et al. 2008).

Appendix 2: By-year Estimations for Discretionary Changes in Valuation Allowance

Dependent Variable: $\Delta VA_{i,t}$					
	Predict Sign	Average Coef.	Fama-Macbeth *t*-statistic	Proportion with predicted sign (%)	Proportion of significant Coef. (%)
Intercept		0.002	[2.06]*		
$\Delta Future_{i,t}$	+	0.319	[5.65]***	100.0%	83.3%
$\Delta TaxCF_{i,t}$	+	0.347	[4.48]***	91.7%	91.7%
$\Delta ROA_{i,t}$	−	0.030	[2.07]*	25.0%	75.0%
$\Delta MtB_{i,t}$	−	0.000	[1.09]	25.0%	41.7%
$\Delta SAF_{i,t}$	−	−0.018	[−4.15]***	100.0%	91.7%
$Loss_{i,t}$	+	0.002	[1.06]	58.3%	41.7%
$\Delta Strategy_{i,t}$	−	−0.000	[−0.93]	41.7%	8.3%
Industry-fixed effects		Yes			
Mean of Adj. R^2		0.526			
N		12,046 (12 year-groups)			

***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively. For illustrative purposes, we present averages of the year coefficients and calculate the Fama and MacBeth (1973) *t*-statistics based on their standard errors.

Figure 1. International Comparison of DTA, DTL, and Net DTA

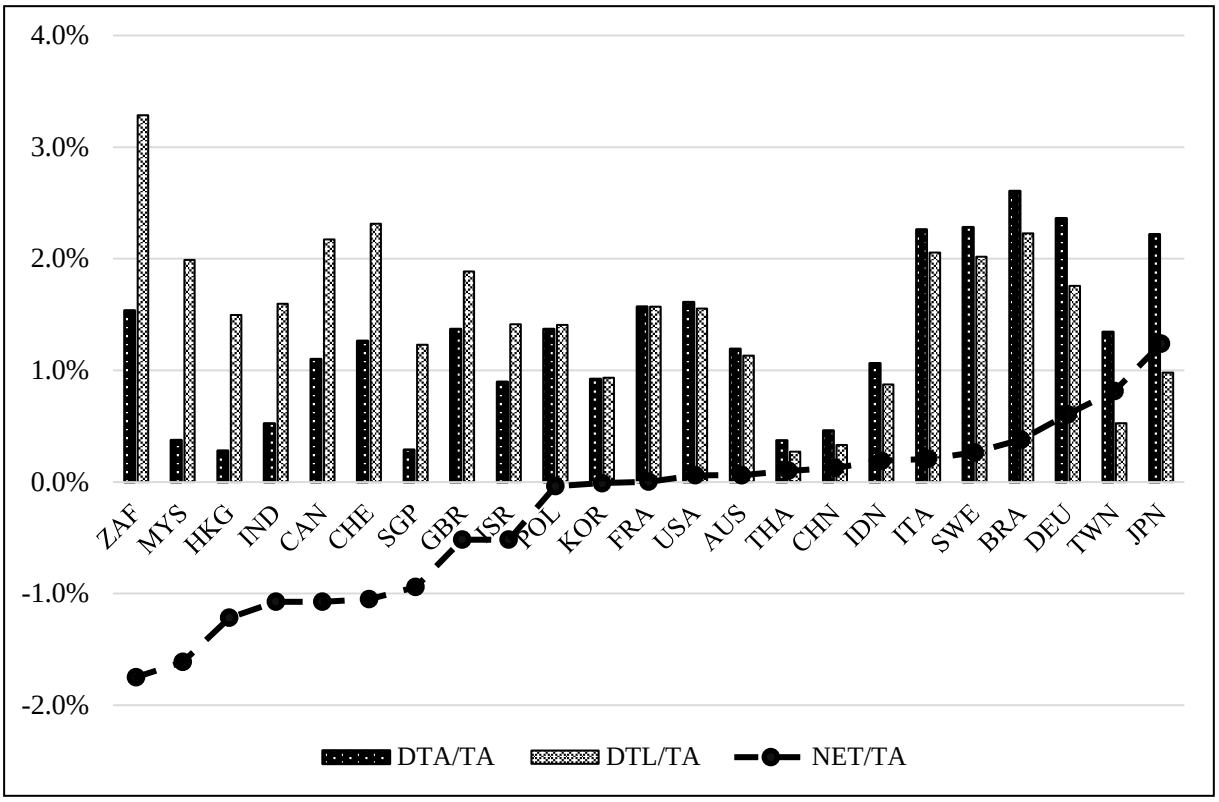

Figure 1 shows arithmetic means of deferred tax assets (DTA), deferred tax liabilities (DTL), and net amounts of DTA and DTL scaled by total assets for each country. We collected data for all listed firms in each country from 2004 to 2013 using Compustat Capital IQ.

Table 1. Descriptive Statistics

Variables	N	Mean	Std. Dev.	Min	Q1	Median	Q3	Max
$\Delta Div_{i,t}$	10,836	0.001	0.004	−0.015	0.000	0.000	0.002	0.021
$NI_{i,t}$	10,836	0.023	0.039	−0.204	0.009	0.021	0.041	0.184
$Div_{i,t-1}$	10,836	0.011	0.009	0.000	0.005	0.009	0.013	0.056
$NIBT_{i,t}$	10,836	0.024	0.040	−0.194	0.009	0.022	0.042	0.188
$TaxExp_{i,t}$	10,836	0.001	0.010	−0.056	−0.003	0.000	0.004	0.048
$\Delta VA_{i,t}$	10,836	0.002	0.014	−0.072	0.000	0.000	0.001	0.106
$\Delta ABVA_{i,t}$	10,836	0.000	0.010	−0.042	−0.004	0.000	0.003	0.052
$\Delta NORVA_{i,t}$	10,836	0.002	0.010	−0.042	−0.002	0.001	0.004	0.062
$\Delta Other_{i,t}$	10,836	−0.001	0.013	−0.084	−0.004	0.000	0.004	0.058
$Size_{i,t}$	10,836	11.457	1.290	7.830	10.547	11.241	12.223	15.523
$Lev_{i,t}$	10,836	0.194	0.175	0.000	0.031	0.163	0.310	0.775
$Cash_{i,t}$	10,836	0.102	0.093	0.000	0.036	0.076	0.140	0.587
$Growth_{i,t}$	10,836	1.006	0.094	0.487	0.972	1.005	1.042	1.541
$TobinQ_{i,t}$	10,836	1.179	0.551	0.376	0.880	1.043	1.308	5.903
$Retain_{i,t}$	10,836	0.456	0.271	−1.821	0.307	0.483	0.639	0.959
$FSH_{i,t}$	10,836	0.125	0.110	0.000	0.034	0.094	0.191	0.503
$Increase\_D_{i,t}$	10,836	0.583	0.493	0.000	0.000	1.000	1.000	1.000
$D\_Increase_{i,t}$	10,836	0.389	0.487	0.000	0.000	0.000	1.000	1.000
$D\_Stable_{i,t}$	10,836	0.423	0.494	0.000	0.000	0.000	1.000	1.000
$D\_Decrease_{i,t}$	10,836	0.130	0.337	0.000	0.000	0.000	0.000	1.000
$D\_Omission_{i,t}$	10,836	0.016	0.125	0.000	0.000	0.000	0.000	1.000
$Deficit\_NI_{i,t}$	10,836	0.007	0.022	0.000	0.000	0.000	0.000	0.168
$Deficit\_DP_{i,t}$	10,836	0.002	0.014	0.000	0.000	0.000	0.000	0.162
$PreManaged\_NI_{i,t}$	10,836	0.023	0.039	−0.161	0.008	0.022	0.041	0.181
$PreManaged\_DP_{i,t}$	10,836	0.261	0.183	−0.160	0.116	0.233	0.385	0.767
$DAC_{i,t-1}$	10,836	0.000	0.049	−0.187	−0.025	−0.001	0.024	0.203
$Payer_{i,t-1}$	10,836	0.936	0.245	0.000	1.000	1.000	1.000	1.000

The sample comprises firm-year observations for the period 2003 to 2013. Section 3.3 reports selection criteria. To mitigate the influence of outliers, we winsorize all continuous variables at the 1% and 99% at the firm-year level. Appendix 1 defines all variables.

Table 2. Correlation Matrix

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)
$\Delta Div_{i,t}$	(1)		.45	−.02	.44	−.03	−.15	.01	−.18	.12	.00	−.10	.03	.23	.35	.08	.15	.33	.81	−.40	−.49	−.20	−.40	−.10	.44	.09	.01	−.09
$NI_{i,t}$	(2)	.45		.48	.96	−.05	−.26	−.02	−.25	.19	−.11	−.39	.19	.40	.42	.41	.26	.34	.41	−.18	−.16	−.20	−.67	−.20	.95	.48	.03	.16
$Div_{i,t-1}$	(3)	−.01	.42		.46	−.04	.03	−.01	.06	−.08	−.13	−.46	.20	.19	.28	.41	.28	−.08	.03	.01	.18	−.08	−.10	−.24	.47	.58	.02	.42
$NIBT_{i,t}$	(4)	.44	.97	.41		.17	−.21	.10	−.33	.35	−.09	−.37	.18	.37	.41	.39	.27	.33	.40	−.17	−.16	−.19	−.68	−.20	.96	.46	.03	.15
$TaxExp_{i,t}$	(5)	−.03	−.10	−.04	.15		.15	.52	−.33	.67	.07	.04	−.06	−.10	−.04	−.07	.02	−.02	−.02	.02	−.01	.00	−.11	−.01	.06	−.04	−.01	−.03
$\Delta VA_{i,t}$	(6)	−.21	−.53	.01	−.44	.29		.35	.36	−.44	.07	.05	−.05	.03	−.01	−.04	.04	−.19	−.09	−.02	.13	.14	.21	.03	−.16	−.02	.00	.08
$\Delta ABVA_{i,t}$	(7)	−.02	−.17	−.02	−.01	.62	.59		−.56	.15	.05	.01	−.02	−.04	−.01	−.04	.02	.07	.02	.01	−.04	.02	−.22	−.04	.20	.02	.00	.01
$\Delta NORVA_{i,t}$	(8)	−.25	−.49	.03	−.54	−.22	.63	−.22		−.62	−.01	.02	.00	.05	−.02	.00	.01	−.28	−.13	−.01	.16	.15	.46	.09	−.38	−.01	.00	.08
$\Delta Other_{i,t}$	(9)	.19	.45	−.04	.56	.43	−.71	−.11	−.76		.03	.01	−.03	−.10	.00	−.03	.00	.16	.08	.02	−.12	−.14	−.32	−.05	.21	−.03	−.01	−.09
$Size_{i,t}$	(10)	.00	−.09	−.10	−.08	.04	.02	.02	.01	.00		.25	−.33	−.04	.22	−.04	.56	.01	.05	.00	−.05	.01	.01	.00	−.09	−.14	.00	.04
$Lev_{i,t}$	(11)	−.11	−.32	−.37	−.32	.02	.06	.02	.06	−.05	.28		−.40	−.11	.05	−.48	−.14	−.02	−.12	.02	−.02	.11	.17	.21	−.38	−.70	.00	−.24
$Cash_{i,t}$	(12)	.09	.23	.29	.22	−.04	−.02	−.01	−.01	−.01	−.30	−.36		.00	−.06	.22	−.02	.04	.02	−.05	.05	−.01	−.04	−.02	.19	.31	−.06	.02
$Growth_{i,t}$	(13)	.15	.29	.10	.27	−.06	−.04	−.03	−.03	−.01	−.05	−.11	.08		.26	.19	.11	.06	.21	−.09	−.03	−.10	−.25	−.14	.38	.15	.08	.17
$TobinQ_{i,t}$	(14)	.36	.42	.40	.41	−.03	−.04	−.01	−.05	.02	.10	−.05	.14	.22		−.01	.36	.16	.30	−.22	−.10	−.04	−.21	.02	.41	−.02	.00	.00
$Retain_{i,t}$	(15)	.10	.41	.36	.38	−.08	−.14	−.07	−.09	.07	−.05	−.46	.20	.14	.05		.16	.00	.10	.03	.04	−.15	−.23	−.31	.39	.87	.03	.33
$FSH_{i,t}$	(16)	.13	.22	.30	.22	.01	.00	.01	.00	.00	.55	−.13	.04	.06	.38	.14		.02	.18	−.12	.01	−.05	−.09	−.11	.26	.23	.01	.16
$Increase\_D_{i,t}$	(17)	.28	.34	−.06	.33	.00	−.19	.02	−.27	.19	.01	−.03	.04	.07	.14	.01	.03		.30	−.13	−.22	−.10	−.39	−.04	.35	.00	−.05	−.06
$D\_Increase_{i,t}$	(18)	.55	.35	.02	.34	−.01	−.12	.00	−.15	.11	.05	−.13	.04	.14	.25	.13	.17	.30		−.68	−.31	−.10	−.34	−.14	.40	.12	.00	.02
$D\_Stable_{i,t}$	(19)	−.16	−.09	−.02	−.10	−.01	−.03	−.01	−.03	.03	−.01	.01	−.06	−.08	−.20	.07	−.12	−.13	−.68		−.33	−.11	.04	−.14	−.17	.01	.01	.22
$D\_Decrease_{i,t}$	(20)	−.44	−.15	.17	−.15	.00	.13	−.02	.18	−.13	−.04	−.02	.05	.00	−.05	.05	.01	−.22	−.31	−.33		−.05	.26	−.03	−.16	.05	.01	.10
$D\_Omission_{i,t}$	(21)	−.25	−.30	−.06	−.29	.02	.25	.08	.23	−.23	.01	.12	−.02	−.06	−.04	−.20	−.04	−.10	−.10	−.11	−.05		.25	.23	−.19	−.15	.00	.03
$Deficit\_NI_{i,t}$	(22)	−.33	−.72	−.03	−.73	−.06	.49	−.02	.65	−.55	.00	.14	−.01	−.13	−.08	−.29	−.03	−.29	−.22	−.07	.21	.35		.23	−.72	−.23	−.01	−.08
$Deficit\_DP_{i,t}$	(23)	−.08	−.25	−.13	−.25	.00	.13	−.02	.16	−.12	.00	.18	−.01	−.07	.01	−.55	−.05	−.03	−.10	−.11	−.03	.16	.35		−.22	−.32	−.03	−.49
$PreManaged\_NI_{i,t}$	(24)	.45	.96	.42	.97	.07	−.35	.10	−.55	.41	−.08	−.32	.23	.29	.42	.39	.22	.35	.35	−.10	−.16	−.27	−.73	−.25		.48	.03	.16
$PreManaged\_DP_{i,t}$	(25)	.10	.41	.51	.41	−.02	−.04	.02	−.07	.03	−.14	−.66	.35	.07	.10	.80	.22	−.01	.11	.01	.06	−.15	−.19	−.27	.42		.02	.35
$DAC_{i,t-1}$	(26)	.00	.02	.03	.02	.00	.00	.00	.01	−.01	.01	.01	−.07	.06	.00	.04	.01	−.05	.00	.00	.02	.00	−.01	−.03	.02	.02		.04
$Payer_{i,t-1}$	(27)	−.09	.14	.32	.13	−.04	.04	−.01	.06	−.07	.04	−.26	.03	.10	.01	.45	.13	−.06	.02	.22	.10	.03	−.09	−.38	.14	.34	.05	

Pearson's correlations appear below the diagonal. Spearman's correlations appear above the diagonal.

Table 3. Preliminary Test of Earnings Persistence

	Dependent Variable: $NI_{i,t+1}$	
	Coef.	*t*-value
Constant	0.010	[15.15]***
$NIBT_{i,t}$	0.269	[5.35]***
$\Delta ABVA_{i,t}$	−0.086	[−1.16]
$\Delta NORVA_{i,t}$	−0.096	[−1.25]
$\Delta Other_{i,t}$	−0.394	[−4.07]***
Firm-fixed effect	Yes	
Year-fixed effect	Yes	
Adj. R^2	0.404	
N	10,421	

*** indicates statistical significance at the 1% level. All variables are defined in Appendix 1. All *t*-statistics are corrected for heteroskedasticity using a two-way cluster at the firm and year levels (Petersen 2009). Since we use the value of one year ahead, our sample size declines slightly to 10,421 firm-year observations (415 observations are omitted).

Table 4. Dividend Policy Analysis: Linter's Model Specification

		Dependent Variable: $\Delta Div_{i,t}$			
	Predict Sign	(1)	(2)	(3)	(4)
Constant		0.002 [4.88]***	−0.017 [−3.53]***	−0.015 [−3.33]***	−0.015 [−3.31]***
$NI_{i,t}$	+	0.044 [14.00]***			
$NIBT_{i,t}$	+		0.033 [10.10]***	0.040 [8.94]***	0.040 [8.52]***
$TaxExp_{i,t}$	−		−0.030 [−4.65]***		
$\Delta VA_{i,t}$	−			−0.021 [−4.80]***	
$\Delta ABVA_{i,t}$	**?**				**−0.020** **[−3.66]***
$\Delta NORVA_{i,t}$	−				−0.025 [−3.18]***
$\Delta Other_{i,t}$	−			−0.046 [−5.17]***	−0.046 [−4.97]***
$Div_{i,t-1}$	−	−0.306 [−5.17]***	−0.330 [−6.76]***	−0.336 [−6.94]***	−0.335 [−6.87]***
$Size_{i,t}$	+		0.002 [3.41]***	0.001 [3.27]***	0.001 [3.25]***
$Lev_{i,t}$	−		−0.004 [−3.22]***	−0.004 [−3.11]***	−0.004 [−3.09]***
$Cash_{i,t}$	+		0.001 [0.39]	0.000 [0.16]	0.000 [0.20]
$Growth_{i,t}$	−		−0.000 [−0.46]	−0.001 [−0.84]	−0.001 [−0.82]
$TobinQ_{i,t}$	−		0.002 [9.17]***	0.002 [8.90]***	0.002 [8.99]***
$Retain_{i,t}$	+		0.000 [1.03]	0.000 [0.99]	0.000 [1.11]
$FSH_{i,t}$	+		0.001 [1.19]	0.001 [1.19]	0.001 [1.16]
$Increase\_D_{i,t}$	+		0.000 [5.43]***	0.000 [4.72]***	0.000 [4.72]***
Firm-fixed effect		Yes	Yes	Yes	Yes
Year-fixed effect		Yes	Yes	Yes	Yes
R^2		0.434	0.482	0.485	0.485
Adj. R^2		0.366	0.419	0.422	0.422
N		10,836	10,836	10,836	10,836

*** indicates statistical significance at the 1% level. All variables are defined in Appendix 1. All *t*-statistics are corrected for heteroscedasticity, and cross-sectional and time-series correlation using a two-way cluster at the firm and year level (Petersen, 2009).

Table 5. Dividend Policy Analysis: DPS Basis

	Full Sample				$D\_Increase_{i,t}$ vs. $D\_Stable_{i,t}$	$D\_Stable_{i,t}$ vs. $D\_Decrease_{i,t}$	$D\_Decrease_{i,t}$ vs. $D\_Omission_{i,t}$
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dep. Variable	$D\_Increase_{i,t}$	$D\_Stable_{i,t}$	$D\_Decrease_{i,t}$	$D\_Omission_{i,t}$	$D\_Increase_{i,t}$	$D\_Stable_{i,t}$	$D\_Decrease_{i,t}$
$NIBT_{i,t}$	23.204	−6.240	−9.792	−27.589	22.904	6.353	17.813
	[12.01]***	[−2.94]***	[−8.13]***	[−4.49]***	[10.13]***	[3.44]***	[3.66]***
$\Delta ABVA_{i,t}$	**−28.258**	**−8.698**	**6.750**	**4.901**	**−24.771**	**−11.879**	**−1.335**
	[−5.17]* **	**[−3.21]*** **	**[1.39]**	**[0.62]**	**[−4.26]*** **	**[−2.35]** **	**[−0.20]**
$\Delta NORVA_{i,t}$	−34.484	−28.548	29.395	−14.119	−25.063	−42.784	18.221
	[−3.78]***	[−3.21]***	[2.09]**	[−0.88]	[−2.48]**	[−3.33]***	[0.91]
$\Delta Other_{i,t}$	−27.820	6.136	17.467	12.646	−26.967	−11.479	−7.083
	[−4.83]***	[0.97]	[2.26]**	[0.98]	[−4.03]***	[−1.71]*	[−0.58]
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry-fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year-fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R^2	0.208	0.096	0.181	0.536	0.191	0.167	0.492
Log likelihood	−5,377	−6,309	−3,348	−398	−4,776	−2,719	−272
N	10,141	10,141	10,115	9,435	8,544	5,971	1,508

The sample comprises firms that paid dividends in the prior year. ***, **, * indicate statistical significance at the 1%, 5%, and 10% levels, respectively. Control variables are as follows: $Size_{i,t}$, $Lev_{i,t}$, $Cash_{i,t}$, $Growth_{i,t}$, $TobinQ_{i,t}$, $Retain_{i,t}$, $FSH_{i,t}$, $Increase\_D_{i,t}$, and ΔDiv_{t-1}. All variables are defined in Appendix 1. All z-statistics are corrected for heteroscedasticity, and cross-sectional and time-series correlation using a two-way cluster at the firm and year level (Petersen, 2009). Note that 26 and 706 firm-year observations are omitted from estimations in column (3) and (4), respectively, due to perfect correlations between dependent variables and some industry dummies. We include industry and year dummies to control for these fixed effects.

Table 6. Earnings Management Analysis: Univariate Test

Panel A: Are Payers with Deficits More Likely to Manage Earnings Upward?			
	$\Delta ABVA_{i,t} \geq 0$	$\Delta ABVA_{i,t} < 0$	Total
Firm-years with $Deficit\_NI_{i,t} = 0$	4,015	3,722	7,737
	51.9%	48.1%	100.0%
Firm-years with $Deficit\_NI_{i,t} > 0$	743	1,661	2,404
	30.9%	69.1%	100.0%
Total	4,758	5,383	10,141
	46.9%	53.1%	100.0%

Panel B: Do Payers with Higher Levels of Deficits Have Higher Levels of $\Delta ABVA_{i,t}$?			
	N	Mean of $\Delta ABVA_{i,t}$	% of firms that eliminate the $Deficit\_NI_{i,t}$ through $\Delta ABVA_{i,t}$.
$Deficit\_NI_{i,t} = 0$	7,737	0.000	
All firms with $Deficit\_NI_{i,t} > 0$	2,404	−0.003	475 (19.8%)
Low = 1	481	−0.002	266 (55.3%)
2	481	−0.002	128 (26.6%)
3	480	−0.004	59 (12.3%)
4	481	−0.004	18 (3.7%)
High = 5	481	−0.001	4 (0.8%)
Total	10,141		

The sample comprises firms that paid dividends in the prior year. All variables are defined in Appendix 1. Panel A provides a 2 × 2 frequency table based on $Deficit\_NI_{i,t}$ and $\Delta ABVA_{i,t}$. In Panel B, firm-years are sorted into six groups based on the level of $Deficit\_NI_{i,t}$. Panel B reports means of $\Delta ABVA_{i,t}$ and percentages of firms that eliminate the $Deficit\_NI_{i,t}$ through $\Delta ABVA_{i,t}$ for each group.

Table 7. Earnings Management Analysis: Multivariate Test

	Dependent Variable: $\Delta ABVA_{i,t}$			
	(1)	(2)	(3)	(4)
Constant	0.001 [0.06]	−0.005 [−0.30]	−0.004 [−0.24]	−0.021 [−1.20]
$Deficit\_NI_{i,t}$		**−0.068** **[−2.36]****		
$Payer_{i,t-1}$		−0.000 [−0.23]	−0.001 [−0.40]	0.000 [0.11]
$Deficit\_NI_{i,t}$* $Payer_{i,t-1}$			**−0.067** **[−2.36]****	
$Deficit\_NI_{i,t}$* $Non\text{-}Payer_{i,t-1}$			−0.264 [−1.40]	
$PreManaged\_NI_{i,t}$				**0.099** **[5.26]*****
$Div_{i,t-1}$ (expected dividend level)				−0.001 [−0.03]
$NIBT_{i,t-1}$	−0.049 [−3.21]***	−0.049 [−3.33]***	−0.049 [−3.36]***	−0.058 [−3.90]***
$Size_{i,t-1}$	0.000 [−0.25]	0.000 [0.06]	0.000 [0.10]	0.001 [0.90]
$Lev_{i,t-1}$	0.003 [1.21]	0.003 [1.20]	0.003 [1.12]	0.005 [2.11]**
$TobinQ_{i,t-1}$	0.001 [2.60]***	0.001 [2.15]**	0.001 [2.14]**	−0.001 [−1.39]
$Retain_{i,t-1}$	0.006 [1.84]*	0.006 [2.46]**	0.006 [2.37]**	0.008 [3.41]***
$DAC_{i,t-1}$	0.004 [1.38]	0.003 [1.42]	0.003 [1.41]	0.003 [1.79]*
Firm-fixed effect	Yes	Yes	Yes	Yes
Year-fixed effect	Yes	Yes	Yes	Yes
R^2	0.114	0.127	0.127	0.183
Adj. R^2	0.000	0.015	0.015	0.078
N	10,218	10,218	10,218	10,218

The sample comprises firms that paid dividends in year *t*. ***, **, * indicate statistical significance at the 1%, 5%, and 10% levels, respectively. All variables are defined in Appendix 1. All *t*-statistics are corrected for heteroscedasticity, and cross-sectional and time-series correlation using a two-way cluster at the firm and year level (Petersen, 2009).

Table 8. Additional Analysis on Earnings Management: Univariate Test

Panel A: Are Payers with Deficits More Likely to Manage Earnings Upward?			
	$\Delta ABVA_{i,t} \geq 0$	$\Delta ABVA_{i,t} < 0$	Total
Firm-years with $Deficit\_DP_{i,t} = 0$	4,707	5,318	10,025
	47.0%	53.0%	100.0%
Firm-years with $Deficit\_DP_{i,t} > 0$	51	65	116
	44.0%	56.0%	100.0%
Total	4,758	5,383	10,141
	46.9%	53.1%	100.0%

Panel B: Do Payers with Higher Levels of Deficits Have Higher Levels of $\Delta ABVA_{i,t}$?			
	N	Mean of $\Delta ABVA_{i,t}$	% of firms that eliminate the $Deficit\_DP_{i,t}$ through $\Delta ABVA_{i,t}$.
$Deficit\_DP_{i,t} = 0$	10,025	0.000	
All firms with $Deficit\_DP_{i,t} > 0$	116	−0.003	33 (28.4%)
Low = 1	23	−0.011	18 (78.3%)
2	23	−0.001	7 (30.4%)
3	23	−0.000	6 (26.1%)
4	23	−0.002	2 (8.7%)
High = 5	24	−0.002	0 (0.0%)
Total	10,141		

The sample comprises firms that paid dividends in the prior year. All variables are defined in Appendix 1. Panel A provides a 2 × 2 frequency table based on $Deficit\_DP_{i,t}$ and $\Delta ABVA_{i,t}$. In Panel B, firm-years are sorted into six groups based on the level of $Deficit\_DP_{i,t}$. Panel B shows means of $\Delta ABVA_{i,t}$ and percentages of firms that eliminate the $Deficit\_DP_{i,t}$ through $\Delta ABVA_{i,t}$ for each group.

Table 9. Additional Analysis on Earnings Management: Multivariate Test

	Dependent variable: $\Delta ABVA_{i,t}$			
	(1)	(2)	(3)	(4)
Constant	0.001 [0.06]	0.000 [0.01]	0.001 [0.06]	0.003 [0.15]
$Deficit\_DP_{i,t}$		**−0.319** **[−5.53]*** **		
$Payer_{i,t-1}$		−0.000 [−0.29]	−0.001 [−0.63]	0.000 [1.05]
$Deficit\_DP_{i,t}$* $Payer_{i,t-1}$			**−0.301** **[−5.67]*** **	
$Deficit\_DP_{i,t}$* $Non\text{-}Payer_{i,t-1}$			−2.090 [−5.24]***	
$PreManaged\_DP_{i,t}$				**0.047** **[7.80]*** **
$Div_{i,t-1}$ (expected dividend level)				−0.009 [−0.36]
$NIBT_{i,t-1}$	−0.049 [−3.21]***	−0.048 [−3.18]***	−0.048 [−3.22]***	−0.055 [−3.54]***
$Size_{i,t-1}$	−0.000 [−0.25]	−0.000 [−0.25]	−0.000 [−0.16]	−0.002 [−1.15]
$Lev_{i,t-1}$	0.003 [1.21]	0.003 [1.13]	0.003 [0.97]	0.017 [5.58]***
$TobinQ_{i,t-1}$	0.001 [2.60]***	0.001 [2.53]**	0.001 [2.56]**	0.001 [2.65]***
$Retain_{i,t-1}$	0.006 [1.84]*	0.005 [1.79]*	0.004 [1.47]	−0.005 [−1.23]
$DAC_{i,t-1}$	0.003 [1.38]	0.003 [1.40]	0.004 [1.45]	0.003 [1.27]
Firm-fixed effect	Yes	Yes	Yes	Yes
Year-fixed effect	Yes	Yes	Yes	Yes
R^2	0.114	0.124	0.128	0.151
Adj. R^2	0.000	0.012	0.016	0.041
N	10,218	10,218	10,218	10,218

The sample comprises firms that paid dividends in year *t*. ***, **, * indicate statistical significance at the 1%, 5%, and 10% levels, respectively. All variables are defined in Appendix 1. All *t*-statistics are corrected for heteroscedasticity, and cross-sectional and time-series correlation using a two-way cluster at the firm and year level (Petersen, 2009).