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Income smoothing and disposal-constrained available-for-sale securities: evidence from Japan

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Abstract

This study investigates whether Japanese non-financial firms employ disposal-constrained available-for-sale (AFS) securities as a tool for income smoothing. Using 51,360 firm-year observations from 2004 to 2019, this study conducts regressions incorporating firm- and year-fixed effects. The findings reveal that disposal gains and losses on AFS securities are negatively associated with earnings, and that firms engaging more frequently in AFS disposals exhibit lower earnings volatility; both results are particularly pronounced for firms with stable dividend policies. These findings demonstrate the continued use of constrained AFS securities for smoothing and provide insights relevant to ongoing debates on International Financial Reporting Standard 9.

1. Introduction

This study examines whether managers use disposal-constrained available-for-sale (AFS) securities as income-smoothing tools. According to Moses (1987), smoothing behavior refers to efforts to reduce fluctuations in reported earnings (p. 360); further, income smoothing, aimed at reporting a less volatile earnings stream, constitutes a form of earnings management. Such earnings management reflects a widely practiced accounting behavior (Graham, Harvey, and Rajgopal 2005).

Such income smoothing is achieved through accrual-based earnings man-

agement, real earnings management, or both. Although some studies have demonstrated that income smoothing is typically observed as a behavior that smooths cash flow volatility, primarily through accruals (Francis et al. 2004; Dechow, Ge, and Schrand 2010), other studies have indicated that management smooths earnings through real activities manipulation (Mande, File, and Kwak 2000; Baik et al. 2022). Real earnings management involves managing earnings by manipulating business activities, and earnings management through the sale of AFS securities falls under this category.

Notably, AFS is an accounting category for securities introduced into U.S. GAAP by the Statement of Financial Accounting Standards (SFAS) No. 115 (now Accounting Standards Codification (ASC) Topic 320), under which AFS securities are measured at fair value; fair value changes are recognized in other comprehensive income (OCI). A similar category existed under the previous International Financial Reporting Standards (IFRS) financial instruments standard, the International Accounting Standard (IAS) 39, and exists under Japanese financial instruments accounting standards. For such AFS securities, changes in fair value are recognized in OCI during the holding period, with the realized gains and losses reclassified as net income upon disposal. Consequently, by exercising discretionary control over sales—one of the triggers for realization—management can smooth net income through the disposal of AFS securities.

The literature on income smoothing through the sale of AFS securities primarily investigates U.S. banks. Barth et al. (2017) employed a sample of banks from 1996 to 2011 to demonstrate that banks use realized gains and losses on AFS securities to smooth income or increase low levels of regulatory capital. Furthermore, prior studies have suggested that banks and nonfinancial firms engage in income smoothing using sales of AFS securities (Dong and Zhang 2018; Lu, He, and Zhang 2023).

However, these studies assumed that management can trade AFS securities freely. In particular, AFS securities are classified as the 'residual category' under accounting standards for financial instruments [1]. This cate-

gory encompasses diverse instruments, ranging from those with no disposal constraints to those with significant disposal constraints. Most AFS securities held by banks are government bonds and debt instruments. Indeed, freely tradable markets have developed for such bonds, and management is likely to trade them at its discretion. However, some AFS securities are subject to disposal constraints. A typical example is relational shareholdings (seisaku-hoyu-kabushiki) in Japan [2].

Relational shareholdings refer to equity stakes held not for pure investment—that is, not solely to obtain profits from fluctuations in share value or dividends—but rather to maintain or strengthen relationships with business partners. In some cases, they assume the form of cross-shareholdings, whereby partners mutually hold each other's shares. Among Japanese listed companies, this practice initially emerged in the 1960s as a defense against the threat of takeovers. Despite witnessing a decline in recent years, it continues to maintain a notable presence in the Japanese stock market. The disposal of such holdings may be constrained by concerns regarding the potential deterioration of business relationships or the risk of share price decline associated with the unwinding of cross-shareholdings.

An article by Sue Lloyd—former Vice-Chair of the International Accounting Standards Board (IASB) and current Vice-Chair of the International Sustainability Standards Board (ISSB)—noted that relational shareholdings in Japan were also considered in the development of IFRS 9 Financial Instruments (IFRS Foundation 2018). Under IFRS 9, for the accounting treatment of equity instruments, the option of measuring them at fair value and recognizing changes in fair value through OCI (Fair Value Through Other Comprehensive Income: FVOCI) (hereinafter, the FVOCI option) may be selected. If this option is selected, subsequent recycling is prohibited. In this article, among the factors cited for prohibiting recycling under the FVOCI option for equity instruments in IFRS 9 is academic evidence that AFS securities had been utilized for earnings management (Barth et al. 2017). An important question is whether such evidence on earnings management

through AFS securities can be generalized to all AFS securities. Specifically, does it also extend to equity instruments that fall within the FVOCI option's scope under IFRS 9?

Prior earnings management research has suggested that whether a particular earnings management tool is employed within a portfolio of such tools depends on its associated costs (Cohen, Dey, and Lys 2008; Cohen and Zarowin 2010; Zang 2012). In the case of relational shareholdings, disposal constraints—such as the potential deterioration of business relationships with partner firms—may impose non-trivial earnings management costs on managers. This study provides empirical evidence on whether equity securities subject to disposal constraints, such as relational shareholdings, are also utilized for earnings management.

To examine these issues, this study conducts empirical analysis targeting Japanese non-financial firms. Japan offers an appropriate setting for investigating relational shareholdings because such firms typically hold a relatively large number of these shareholdings and, unlike banks, have limited bond holdings.

This study employs two approaches to examine income smoothing through AFS securities. The approach widely adopted in prior research on income smoothing via the disposal of AFS securities tests whether gains and losses on such disposals are negatively associated with the level of or changes in earnings (e.g., Barth et al. 2017; Lu, He, and Zhang 2023). Additionally, this study focuses on the notion that income smoothing represents the suppression of earnings stream fluctuations over time. Specifically, it measures and empirically evaluates the extent of income smoothing using the standard deviation of earnings indicators. The latter approach has been widely employed in prior studies on income smoothing using accruals, research and development (R&D) expenditures, and other tools (e.g., Francis et al. 2004; Baik, Choi, and Farber 2020).

Using these two approaches, multiple regression analyses incorporating fixed effects are conducted. The results reveal a significant negative associa-

tion between gains and losses on the disposal of AFS securities and the level of or changes in earnings, as well as a significant negative association between the income-smoothing measure based on standard deviations and the frequency of AFS securities disposals. The findings are consistent with the view that Japanese non-financial firms use the disposal of AFS securities for income smoothing.

Furthermore, to gain insights into the incentives for undertaking income smoothing, even at the cost of incurring certain earnings management costs, additional analyses are conducted. Prior research has suggested that in Japan, incentives related to maintaining stable dividends are closely associated with income smoothing (Suda and Hanaeda 2008). Accordingly, the additional analyses focus on incentives tied to dividend stability—a key motive for income smoothing in Japan—and indicate that such incentives may also contribute to income smoothing through the disposal of AFS securities.

This study makes three main contributions to the literature. First, it examines whether AFS securities serve as a means of income smoothing even in an environment where their disposal is constrained. Prior studies on income smoothing through AFS securities generally assume that managers can exercise discretion in trading securities with relative freedom. Indeed, many AFS securities held by banks—the focus of much of the existing literature—are government bonds and other debt instruments that can typically be traded freely under normal conditions. However, because AFS represents a residual category, it encompasses diverse securities, including those subject to disposal constraints, such as relational shareholdings in Japan. These constraints may increase the costs of earnings management, thereby lowering the relative priority of this mechanism as a smoothing tool. By analyzing Japanese non-financial firms, where the holding of AFS securities subject to disposal constraints is widespread, this study extends prior literature by providing evidence consistent with the use of AFS securities as a tool for income smoothing even under such constraints.

What, then, are the incentives for using AFS securities for income

smoothing, despite the potentially high costs of such earnings management? This study's second contribution is that it provides insights into one possible incentive. Few studies have examined the specific managerial incentives associated with income smoothing through AFS securities. The current study addresses this literature gap by assessing dividend stability—a critical incentive for income smoothing in Japan.

Third, most prior studies have examined income smoothing through AFS securities by focusing on the relationship between gains and losses on their disposal and the level or variability of earnings. However, because income smoothing represents a reduction in fluctuations in earnings streams over time, an approach that relies solely on single-year variables may not fully capture smoothing behavior. Accordingly, in addition to the approaches employed in earlier research on income smoothing through AFS securities, this study analyzes earnings variability across multiple periods. Adopting this composite approach provides more robust empirical evidence.

This study has several important policy implications. Under the FVOCI option in IFRS 9, recycling is prohibited, even when fair value changes in the equity instruments designated under this option are realized. On this point, numerous stakeholders, including those in Japan, have expressed opposition (IASB 2022, paras. 18–28). One reason for prohibiting recycling under the FVOCI option is that the recycling procedure could create opportunities for earnings management through the disposal of equity instruments (IFRS Foundation 2018; IASB 2021, p.18). The instruments at issue in IFRS 9, for which non-recycling treatment has been debated, are equity instruments. However, whether the findings of previous research—largely based on banks in the United States—are equally applicable to equity instruments remains unclear. By focusing on Japanese non-financial firms, wherein equities constitute a relatively large proportion of AFS securities, this study provides more direct evidence that can inform the international debate on the non-recycling treatment of equity instruments under IFRS 9.

2. Institutional background, literature review, and hypothesis development

2.1. Institutional background

In Japan, securities have traditionally been accounted for at cost or at the lower of cost or market. However, with the introduction of the Accounting Standard for Financial Instruments in 2001, fair value measurement for securities was adopted. Similar to SFAS No. 115, this standard requires securities to be classified according to managerial intent. Specifically, they are categorized into four groups: held-to-maturity debt securities, AFS securities, trading securities, and shares in subsidiaries and affiliates. Debt securities intended to be held to maturity are classified as held-to-maturity securities; those held for trading purposes are classified as trading securities; and all other securities—except for shares in subsidiaries and affiliates—are classified as AFS securities. Accordingly, AFS securities under Japanese GAAP are broadly equivalent to AFS securities (or AFS financial assets) under U.S. GAAP (SFAS No. 115) and the former IAS 39 under IFRS.

I now examine the quantitative characteristics of AFS securities held by Japanese non-financial firms. For Japanese listed companies (excluding banks, securities firms, insurance companies, and other financial institutions) from 2001 to 2023, the book value of AFS securities deflated by total assets at the end of the previous fiscal year had a mean of 0.041 and a median of 0.019 (based on 87,002 firm-year observations). By comparison, Lu, He, and Zhang (2023) analyzed Chinese listed firms from 2009 to 2016 and reported that the corresponding values for AFS securities deflated by total assets were 0.015 (mean) and 0.000 (median). Additionally, for the same sample of Japanese listed firms, the proportion of firm-year observations with holdings of AFS securities—defined as firm-years in which the acquisition cost of AFS securities exceeded zero—was 78.2%.

Subsequently, we examine the proportion of equity securities within AFS securities. Barth et al. (2017) reported that in a sample comprising banks, the

proportion of AFS equity securities was low, with the median at zero and the 75th percentile value below 1%. Likewise, Park, Park, and Ro (1999) documented that on a book-value basis, when combining AFS and held-to-maturity securities, the average value of debt securities was 2,065.6, while that of equity securities was 22.1; accordingly, equity securities accounted for only 1.1% of the total. By contrast, for Japanese listed firms applying domestic accounting standards (excluding banks, securities firms, insurers, and other financial institutions) during the fiscal years ending from March 2001 to March 2022, the proportion of equity securities within AFS securities measured at balance sheet values was, on average (median), 85.5% (100%), which is extremely high [3]. Hence, Japanese non-financial firms can be regarded as a suitable sample for investigating AFS equity securities, given that they hold AFS securities widely, such holdings are not of negligible magnitude, and the proportion of equity securities is substantial.

The high proportion of equities included in AFS securities among Japanese non-financial firms lies in the prevalence of relational shareholdings. In Japan, cross-shareholdings—where firms mutually hold each other's shares—were originally widespread as a defensive measure against takeover threats (Muramiya and Takada 2020; Miyajima 2022). Firms' equity holdings for purposes other than pure investment, including cross-shareholdings, are referred to as relational shareholdings. However, these holdings have been criticized for reducing capital efficiency and weakening the disciplinary force of corporate governance. In recent years, their unwinding has progressed. In particular, the introduction of Japan's Corporate Governance Code in 2015 required a detailed disclosure of relational shareholdings. This has pressured managers to reduce relational shareholdings deemed unnecessary for enhancing corporate value. Although such pressure for reduction has intensified, relational shareholdings remain at a non-negligible level (Muramiya and Takada 2020), and, as noted above, the proportion of equities within AFS securities held by Japanese non-financial firms continues to be high.

In summary, the prevalence of relational shareholdings as a form of stra-

tegic investment in Japan has resulted in a high proportion of equities in AFS securities among Japanese non-financial firms. Therefore, this institutional setting provides an appropriate context to examine whether AFS securities subject to disposal constraints can also be employed as a tool for income smoothing.

2.2. Literature review

Income smoothing is a widely observed accounting practice aimed at reporting a less volatile stream of earnings (Graham, Harvey, and Rajgopal 2005). Managers engage in income smoothing for various reasons, including reducing the cost of capital and conveying private information regarding earnings persistence (Francis et al. 2004; Graham, Harvey, and Rajgopal 2005; Tucker and Zarowin 2006). In Japan, the motives for income smoothing are closely associated with the maintenance of stable dividend payments (Suda and Hanaeda 2008).

Prior research has often regarded income smoothing as a behavior undertaken primarily through accrual-based earnings management, to reduce cash flow volatility (Francis et al. 2004; Dechow, Ge, and Schrand 2010). However, income smoothing is also achieved through real activities manipulation (Mande, File, and Kwak 2000; Baik et al. 2022). Of particular relevance to this study is the stream of research analyzing income smoothing via the disposal of AFS securities, which constitutes one form of real activities manipulation.

Barth et al. (2017) provided evidence suggesting that U.S. commercial banks undertake income smoothing using realized AFS securities gains and losses. Moreover, they suggest that this income-smoothing behavior is influenced by the level of unrealized gains and losses on AFS securities. Building on Barth et al. (2017), Cao (2022) found that this behavior is mitigated by the enhanced clarity fostered through the presentation of comprehensive income and OCI. Dong and Zhang (2018) provided further support for income smoothing through the disposal of AFS securities. Collectively, these studies indicate that the literature has predominantly accumulated evidence in the context of

U.S. banks.

By contrast, studies on non-financial firms are limited. Lu, He, and Zhang (2023) reported that Chinese non-financial firms undertake income smoothing through realized gains and losses on AFS securities. Moreover, Ni et al. (2025) found a positive association between stock price crash risk and holdings of AFS securities; their finding suggested that, particularly in emerging markets characterized by strong information asymmetry, AFS securities may be employed as a more aggressive form of *garbling* earnings management—that is, earnings management that distorts rather than enhances the informativeness of reported earnings.

However, the existing literature on income smoothing through AFS securities exhibits certain limitations. These studies seemed to assume that managers can dispose of AFS securities at their discretion and thus provided limited insights into the constraints that may restrict such discretion. However, AFS securities represent a residual category of securities, within which considerable heterogeneity exists with respect to disposal constraints. Consequently, these studies' findings may not offer broad implications for AFS securities as a whole.

Recent research has revealed that managers manipulate reported earnings using a portfolio of earnings management tools and that their choice among these tools is influenced by the associated costs. Cohen et al. (2008) demonstrated that accrual-based earnings management declined following the enactment of the Sarbanes–Oxley Act (SOX), while real activities manipulation increased. This finding implies that SOX increased the costs of accrual-based earnings management. Moreover, using a sample of seasoned equity offering (SEO) firms, Cohen and Zarowin (2010) examined the multiple costs associated with accrual-based earnings management, emphasizing that these costs are positively associated with the propensity to employ real activities manipulation in SEO years. Extending this line of inquiry, Zang (2012) reported that firms' choices between accrual-based and real activities earnings management are determined by their relative costs.

Disposal constraints on AFS securities may increase the costs of managing earnings through their sale. For instance, such constraints can reduce managerial flexibility in timing disposals, thereby raising the cost of using AFS securities for earnings management purposes. Consequently, AFS securities subject to higher earnings management costs may be deprioritized within the portfolio of available earnings management tools. Thus, whether the disposal of AFS securities with disposal constraints is employed for income smoothing remains an open question.

2.3. Hypothesis development

Prior studies have indicated that income smoothing is widely practiced by managers in Japan (Takasu and Nakano 2012). One underlying factor is that Japanese managers tend to favor stable dividend policies (Suda and Hanaeda 2008). Further, the proportion of dividend-paying firms is higher in Japan than in other countries (Denis and Osobov 2008), suggesting that the maintenance of stable dividend payments is particularly emphasized in the Japanese context. Notably, unexpected dividend cuts or omissions elicit negative reactions from the stock market (Ghosh and Woolridge 1989), while firms with higher payout ratios exhibit stronger earnings response coefficients (Kallapur 1994); hence, the maintenance of dividends per share and payout ratios is likely to be important for capital market evaluations. Therefore, under a stable dividend policy, managers are motivated to sustain dividend payments.

Such stable dividend policies provide incentives for income smoothing. When the net income fluctuates substantially from the previous year, maintaining dividends per share results in a large change in the payout ratio. Conversely, maintaining the payout ratio under such circumstances causes dividends per share to fluctuate significantly. By smoothing net income, managers can reduce fluctuations in the payout ratio while sustaining dividends per share. Accordingly, firms with stable dividend policies have stronger incentives to engage in income smoothing (Liu and Espahbodi 2014) [4].

As income smoothing is widely practiced under stable dividend policies

in Japan, an important question is whether disposal of AFS securities can be used as a means of income smoothing. Prior research has indicated that managers' choices among earnings management methods are influenced by the associated costs (Cohen, Dey, and Lys 2008; Cohen and Zarowin 2010; Zang 2012). Accordingly, in developing the hypothesis, I consider the factors affecting the costs of employing the disposal of AFS securities as an earnings management tool in Japanese non-financial firms.

As noted above, the average characteristics of AFS securities held by Japanese non-financial firms indicate that they predominantly consist of equities subject to business-related disposal constraints. For example, when two firms maintain a reciprocal shareholding relationship, one firm may find it difficult to proceed unilaterally with the sale of its cross-shareholdings. First, the large-scale sale of such shares in the market could depress the share price of the counterpart firm, thereby damaging business relationships. Accordingly, the costs of disposing of these AFS securities for earnings management purposes are likely to be high.

Nevertheless, considering the recent trend toward a reduction in relational shareholdings, the costs of using AFS securities for earnings management purposes cannot necessarily be regarded as uniformly high. The rationale for holding relational shareholdings has diminished over time. Historically, such holdings served purposes such as defending against hostile takeovers and supporting share prices, but their significance has gradually waned. Moreover, as it has been suggested that reciprocal shareholdings no longer function to sustain or strengthen business relationships to the extent of influencing accounting numbers, their continuing value has been questioned (Tsumuraya 2020). The main related disadvantages lie in the decline in capital efficiency due to resources being tied up in relational shareholdings, and the weakening of corporate governance through the assurance of stable shareholders. In response, foreign institutional investors are increasingly demanding a reduction in relational shareholdings. Additionally, the Corporate Governance Code, issued by the Tokyo Stock Exchange in 2015, called

for disclosure related to relational shareholdings, and its 2018 revision further stipulated that firms with relational shareholdings must not interfere with the disposal decisions of investee firms. These developments suggest that while the costs of maintaining relational shareholdings have increased, the relative costs of disposing of such holdings may have declined.

The foregoing analysis of earnings management costs associated with the disposal of relational shareholdings suggests that two competing predictions are equally plausible: first, that earnings management costs are high, implying that AFS securities are not utilized as an earnings management tool; and second, that earnings management costs are not as high as to constrain earnings management behavior. Accordingly, this study tests the following null hypothesis:

Hypothesis: In Japanese non-financial firms, no relationship exists between the disposal of AFS securities and income smoothing.

3. Design and sample

3.1. Design

This study employs two approaches to test the above hypothesis. The first examines whether gains and losses from the disposal of AFS securities are negatively associated with the level of or changes in earnings. This method has been widely adopted in previous research on income smoothing through the disposal of AFS securities (Barth et al. 2017; Lu, He, and Zhang 2023). The second approach measures the extent of income smoothing using the standard deviation of earnings measures and then tests its determinants. This method has been extensively applied in the literature on income smoothing using accruals, R&D expenditures, and other accounting variables (Francis et al. 2004; Baik, Choi, and Farber 2020).

(1) Tests focusing on the relationship between gains and losses from the disposal of AFS securities and the level of or changes in earnings

In prior research on income smoothing through the disposal of AFS securities, the primary empirical approach was to test models examining the

relationship between gains and losses from AFS disposals and either the level of or changes in earnings from the previous year (Barth et al. 2017; Lu, He, and Zhang 2023). Consistent with this literature, I employ a similar model. Specifically, for hypothesis testing, I estimate the following linear regression model using ordinary least squares (OLS), constructed based on the approach of Lu, He, and Zhang (2023), who analyzed the selective disposal behavior of AFS securities in non-financial firms:

$$\begin{aligned} RGL_{i,t} = \beta_0 + \beta_1 \mathrm{EM}_{i,t} + Controls + Firm\ Fixed\ Effects \\ + Year\ Fixed\ Effects + \varepsilon_{i,t} \\ \mathrm{EM}_{i,t} = \{\, EBR_{i,t}, \Delta EBR_{i,t} \,\} \end{aligned} \tag{1}$$

The dependent variable, $RGL_{i,t}$, is defined as the gains and losses from the disposal of AFS securities in year t, scaled by total assets at the beginning of the year. To examine income smoothing through the disposal of AFS securities, an alternative specification of the dependent variable could include the total amount of recycling from AFS securities—that is, both realized gains and losses on disposal and impairment losses. However, failing to distinguish between impairment losses and disposal gains and losses conflates accrual-based earnings management with real activities manipulation and may lead to substantial measurement errors (Dong and Zhang 2018). To focus directly on income smoothing through the disposal of AFS securities, this study employs realized gains and losses on AFS securities as the dependent variable.

The key independent variable, $\mathrm{EM}_{i,t}$, is alternatively specified as either $EBR_{i,t}$ or $\Delta EBR_{i,t}$. $EBR_{i,t}$ is calculated as the net income attributable to owners of parent in year t, excluding gains and losses from the disposal of AFS securities, while $\Delta EBR_{i,t}$ represents the change in $EBR_{i,t}$ from year t–1. Income smoothing is achieved if firms realize gains (losses) when the pre-disposal net income is low (high). Accordingly, in equation (1), significantly negative coefficients on $EBR_{i,t}$ or $\Delta EBR_{i,t}$ would lead to the rejection of the

null hypothesis and provide evidence consistent with income smoothing through the disposal of AFS securities.

The set of control variables follows Lu, He, and Zhang's (2023) study and includes $AUGL_{i,t-1}$, $CF_{i,t}$, $SEC_{i,t-1}$, $SIZE_{i,t-1}$, $LEV_{i,t-1}$, $BM_{i,t-1}$, $FOREIGN_{i,t}$. For variables related to balance sheet items, data at the beginning of the year are employed to ensure a clearer causal interpretation. $AUGL_{i,t-1}$ is defined as the balance of net unrealized gains and losses on AFS securities at the beginning of year t, scaled by total assets at the beginning of the year. As firms are assumed to manage reported earnings by realizing disproportionately large amounts of unrealized gains and losses on AFS securities, I control for $AUGL_{i,t-1}$ to focus on discretionary disposals of AFS securities. $CF_{i,t}$ is the operating cash flow scaled by beginning total assets, which controls for the possibility that AFS disposal may be driven by financing needs, such as responding to cash shortfalls. $SEC_{i,t-1}$ is the acquisition cost of AFS securities outstanding at the beginning of year t, scaled by beginning total assets, and is included to control for the scale of AFS securities holdings. $SIZE_{i,t-1}$ is the natural logarithm of total assets at the beginning of year t, controlling for firm size. $LEV_{i,t-1}$ is the ratio of total liabilities to total assets at the beginning of year t, while $BM_{i,t-1}$ is the ratio of the book value of equity to the market value of equity at the beginning of year t. $FOREIGN_{i,t}$ is the proportion of shares held by foreign institutional investors in year t, controlling for the monitoring influence of foreign ownership on the disposal of AFS securities. Finally, as disposals of AFS securities may also be affected by year-specific factors such as overall stock market conditions, year-fixed effects are included in the estimation models.

All regression specifications include firm fixed effects, and 1% winsorization is applied at both tails of the distributions. t-statistics are based on robust standard errors clustered at the firm level. The definitions of all variables are summarized in Table 1.

(2) Tests using an income smoothing measure based on the standard deviation of earnings

The results obtained from this approach may also capture behaviors such as loss avoidance or target beating, where firms seek to meet benchmarks such as prior-year earnings; thus, the model may not exclusively identify income smoothing. Therefore, I construct an income-smoothing measure based on the standard deviation of earnings, which has been widely used in prior research on income smoothing, and examine the hypothesis from this alternative perspective.

As a measure of income smoothing, prior studies have widely employed the ratio of the standard deviation of earnings to that of operating cash flows (Leuz, Nanda, and Wysocki 2003; Francis et al. 2004; Burgstahler, Hail, and Leuz 2006) [5]. This measure controls for cross-sectional differences in the variability of firms' underlying economic performance and captures the extent to which managers use accruals to smooth earnings relative to economic performance (Leuz et al. 2003; Jung et al. 2013; Cao, Myers, and Zhang 2023).

Thus, much of the prior literature has focused on income smoothing through accruals, and the measures commonly used to capture income smoothing have typically been based on this assumption. Accordingly, modification is required to apply these measures in setting income smoothing through the disposal of AFS securities. The difference between net income attributable to owners of parent and operating cash flows includes not only accruals but also numerous other items that may affect the variability of earnings, apart from gains and losses from AFS disposals. Consequently, using the standard deviation of operating cash flows in the denominator makes it difficult to obtain implications specific to income smoothing through AFS disposals. Therefore, I replace the denominator with the standard deviation of $EBR_{i,t}$. This allows a focus on the extent to which gains and losses from the disposal of AFS securities affect variability in the net income attributable to owners of parent. Based on this adjustment, the income smoothing

measure through AFS disposals is defined as follows, where smaller values indicate greater smoothing through AFS securities. Following prior research, the measure is calculated using a five-year rolling window from year t to year t+4 (Jung et al. 2013; Baik, Choi, and Farber 2020; Cao, Myers, and Zhang 2023).

$SMOOTH\_SD_{t,t+4}$ = (standard deviation of net income attributable to owners of parent over t to t+4) / (standard deviation of $EBR_{i,t}$)

Next, the model for testing the hypothesis is considered. If the disposal of AFS securities is used for income smoothing, firms that dispose of AFS securities more frequently should exhibit a greater degree of smoothing in their reported net income. Accordingly, I examine the association between the frequency of AFS disposals and the smoothing measure defined above, and estimate the following OLS specification, constructed with reference to Baik, Choi, and Farber (2020):

$$SMOOTH\_SD_{t,t+4} = \beta_0 + \beta_1 N\_AFSS_{t,t+4} + Controls + Firm\ Fixed\ Effects + Year\ Fixed\ Effects + \varepsilon_{i,t} \quad (2)$$

The dependent variable is $SMOOTH\_SD_{t,t+4}$, the income-smoothing measure through AFS disposals. The independent variable of interest is $N\_AFSS_{t,t+4}$, which represents the number of AFS disposal events calculated over a five-year rolling window from year t to year t+4. Specifically, $N\_AFSS_{t,t+4}$ takes a value of zero (minimum) if no AFS disposals occur during the five-year window and five (maximum) if a disposal is recorded in each year. In practice, $N\_AFSS_{t,t+4}$ is computed by counting the number of years within the window in which gains or losses from the disposal of AFS securities are recognized. A significantly negative coefficient on $N\_AFSS_{t,t+4}$ would indicate that firms with more frequent AFS disposals exhibit smoother net income, thereby rejecting the null hypothesis and supporting the view that income smoothing is undertaken through the disposal of AFS securities.

Following Lang, Lins, and Maffett (2012) and Baik, Choi, and Farber

(2020), I include a set of control variables to account for factors related to income smoothing: $SIZE_{i,t}$, $LEV_{i,t}$, $BM_{i,t}$, $Vol\_Sales_{i,t}$, $Loss_{i,t}$, $Growth\_Sales_{i,t}$, $LEV\_OP_{i,t}$, $AVE\_CFO_{i,t}$. $SIZE_{i,t}$ is the natural logarithm of total assets in year t. $LEV_{i,t}$ is the ratio of total liabilities in year t to total assets at the beginning of the year. $BM_{i,t}$ is the book-to-market ratio, calculated as the book value of equity divided by market capitalization in year t. $Vol\_Sales_{i,t}$ is the standard deviation of sales over the five-year period from year t–4 to t, scaled by beginning total assets. $Loss_{i,t}$ is the proportion of years in which a net loss is reported over the five-year period from year t–4 to t. $Growth\_Sales_{i,t}$ captures the annual sales growth, defined as the change in sales from year t–1 to year t, scaled by sales in year t–1. $LEV\_OP_{i,t}$ is the ratio of tangible fixed assets in year t to beginning total assets. $AVE\_CFO_{i,t}$ is the mean operating cash flow measured over the five-year period from year t–4 to t, scaled by beginning total assets. Unlike Baik, Choi, and Farber (2020), I do not include the natural logarithm of the operating cycle as a control variable, as this measure is considered specific to income smoothing through accruals [6].

Furthermore, to mitigate the influence of confounding factors on the results, I control for key variables that may affect the disposal of AFS securities. Specifically, I include $AUGL_{i,t}$, $SEC_{i,t}$, and $FOREIGN_{i,t}$ in the regression specification. $AUGL_{i,t}$ is defined as the balance of net unrealized gains and losses on AFS securities in year t, scaled by total assets at the beginning of the year. $SEC_{i,t}$ is the acquisition cost of AFS securities in year t, scaled by beginning total assets. $FOREIGN_{i,t}$ is the proportion of shares held by foreign institutional investors in year t.

To address potential omitted variable bias, both firm and year fixed effects are included in the regressions. All continuous variables are winsorized at the 1% level in both tails, and t-statistics are based on robust standard errors clustered at the firm level. The definitions of all variables are summarized in Table 1.

However, the empirical model described above has analytical limitations, as it focuses solely on the frequency of AFS disposals and does not consider

Table 1: Definition of variables

Variables	Definition
$RGL_{i,t}$	Gains and losses on the sale of AFS securities / total assets at the end of the previous year
$EBR_{i,t}$	Net income for the current year excluding gains and losses on the sale of AFS securities / total assets at the end of the previous year
$\Delta EBRi,t$	Change in EBR_i from year t–1 to t / total assets at the end of the previous year
$AUGL_{i,t-1}$	Accumulated unrealized gains and losses on AFS securities at the end of the previous year / total assets at the end of the previous year
$CF_{i,t}$	Operating Cash flow / total assets at the end of the previous year
$SEC_{i,t-1}$	Total acquisition cost of AFS securities at the end of the previous year / total assets at the end of the previous year
$SIZE_{i,t-1}$	Natural logarithm of total assets at the end of the previous year
$LEV_{i,t-1}$	Ratio of total liabilities to total assets at the end of the previous year
$BM_{i,t-1}$	Ratio of net asset book value to market capitalization at the end of the previous year
$FOREIGNi,t$	Ratio of the number of shares owned by foreign shareholders to the total number of shares owned by all shareholder categories, as reported in the section of shareholding by shareholder category of the annual securities report.
$SMOOTH\_SD_{t,t+4}$	Standard deviation of net income attributable to owners of parent / standard deviation of net income attributable to owners of parent before gains and losses on sales of AFS securities
$N\_AFSS_{t,t+4}$	Number of sales of AFS securities calculated over a five-year rolling window from year t to year t+4
$SIZE_{i,t}$	Natural logarithm of total assets at the end of year t
$LEV_{i,t}$	Total liabilities divided by total assets
$BM_{i,t}$	Net assets divided by market capitalization
$Vol\_Sales_{i,t}$	Standard deviation of sales over the five-year period from year t–4 to year t, divided by total assets at the end of the previous year
$Loss\%_{i,t}$	Percentage of years reporting a net loss during the five-year period from year t–4 to year t
$Growth\_Sales_{i,t}$	(sales in year t – sales in year t–1) / sales in year t–1
$LEV\_OP_{i,t}$	Ratio of tangible fixed assets to total assets
$AVE\_CFO_{i,t}$	Average operating cash flow measured over the five-year period from year t–4 to year t, divided by the total assets of the previous year
$AUGL_{i,t}$	Accumulated unrealized gains and losses on AFS securities at the end of the year t / total assets at the end of the previous year
$SEC_{i,t}$	Total acquisition cost of AFS securities at the end of the year t / total assets at the end of the previous year

the magnitude of the associated gains and losses. Therefore, I employ two complementary approaches: the first examines the association between AFS disposal gains and losses and the level of or change in earnings, as specified in equation (1); and the second employs an income smoothing measure based on the standard deviation of earnings, as specified in equation (2). By combining these two approaches, this study provides integrated evidence on income-smoothing behavior through the disposal of AFS securities.

3.2. Sample

This study employs Japanese data from 2000 to 2023, following the introduction of the category of AFS securities under the Accounting Standard for Financial Instruments. As the statement of cash flows has been disclosed only from fiscal year 2000, and $AVE\_CFO_{i,t}$ is constructed using operating cash flows from year t–4 to t, the analysis begins in 2004. Moreover, because $SMOOTH\_SD_{t,\,t+4}$ and $N\_AFSS_{t,\,t+4}$ are calculated over a five-year rolling window from year t to t+4, these variables can only be constructed through 2019. Accordingly, the sample period for the empirical tests is set to 2004–2019.

The sample for this study consists of firms that satisfy the following conditions during the analysis period described above: (1) listed on Japanese stock exchanges; (2) having a fiscal year of 12 months; (3) reporting under Japanese accounting standards; (4) not classified as banks, securities firms, insurance companies, or other financial institutions under the Nikkei industry mid-classification; and (5) having all variables required for the analysis. Applying these criteria yielded 51,360 firm-year observations. The data are obtained from NEEDS-FinancialQUEST, provided by Nikkei Media Marketing, Inc.

4. Results and discussion

4.1. Descriptive statistics and correlations

Table 2 presents descriptive statistics for the variables employed in the estimations. Panel A shows that the mean of $RGL_{i,t}$ is 0.001, indicating that on average, realized gains and losses from AFS disposals amount to 0.1% (a gain)

Table 2: Descriptive statistics

Panel A: Variables used in estimating equation (1)

	Mean	St. Dev.	Min	Q1	Median	Q3	Max
$RGL_{i,t}$	0.001	0.004	–0.002	0.000	0.000	0.000	0.028
$EBR_{i,t}$	0.023	0.067	–0.312	0.007	0.025	0.050	0.206
$\Delta EBRi,t$	0.004	0.058	–0.219	–0.011	0.003	0.017	0.286
$SIZE_{i,t-1}$	10.299	1.584	6.948	9.206	10.180	11.267	14.613
$LEV_{i,t-1}$	0.498	0.210	0.082	0.333	0.502	0.660	0.934
$BM_{i,t-1}$	1.209	0.826	0.068	0.605	1.038	1.608	4.154
$CF_{i,t}$	0.057	0.078	–0.266	0.024	0.058	0.095	0.291
$AUGL_{i,t-1}$	0.010	0.018	–0.012	0.000	0.003	0.013	0.101
$SEC_{i,t-1}$	0.034	0.049	0.000	0.004	0.018	0.042	0.281
$FOREIGN_{i,t}$	0.086	0.107	0.000	0.007	0.040	0.130	0.494

Panel B: Variables used in estimating the equation (2)

	Mean	St. Dev.	Min	Q1	Median	Q3	Max
$SMOOTH\_SD_{t,t+4}$	0.996	0.111	0.538	0.992	1.000	1.006	1.531
$N\_AFSS_{t,t+4}$	2.024	1.721	0.000	0.000	2.000	3.000	5.000
$SIZE_{i,t}$	10.332	1.582	6.972	9.238	10.212	11.300	14.640
$LEV_{i,t}$	0.493	0.208	0.083	0.329	0.496	0.654	0.934
$BM_{i,t}$	1.191	0.797	0.068	0.605	1.030	1.585	3.980
$Vol\_Sales_{i,t}$	0.157	0.170	0.009	0.054	0.102	0.193	1.010
$Loss\%_{i,t}$	0.166	0.238	0.000	0.000	0.000	0.200	1.000
$Growth\_Sales_{i,t}$	0.042	0.162	–0.398	–0.031	0.029	0.096	0.789
$LEV\_OP_{i,t}$	0.282	0.190	0.003	0.135	0.262	0.399	0.805
$AVE\_CFO_{i,t}$	0.052	0.049	–0.153	0.029	0.052	0.077	0.187
$AUGL_{i,t}$	0.012	0.020	–0.012	0.000	0.003	0.015	0.110
$SEC_{i,t}$	0.035	0.051	0.000	0.004	0.018	0.044	0.298
$FOREIGN_{i,t}$	0.086	0.107	0.000	0.007	0.040	0.130	0.494

Note: For each variable's definition, please refer to Table 1.

of beginning total assets. The first quartile, median, and third quartile are all 0.000, suggesting that many observations are zero or close to zero. There are 29,038 observations in which $RGL_{i,t}$ is zero, accounting for 56.5% of the sample. By contrast, the mean and median of $AUGL_{i,t-1}$ are both positive, implying that unrealised gains on AFS securities are prevalent. Only 6,788 observations (13.2% of the sample) have $AUGL_{i,t-1}$ equal to zero. This indicates that AFS securities are widely held among Japanese non-financial firms.

Barth et al. (2017), who examined U.S. commercial banks and bank holding companies over the period 1996–2011 (excluding the financial crisis), report the mean, median, and standard deviation values of realized gains and losses on AFS securities (including impairment losses), scaled by beginning total assets of 0.01, 0.00, and 0.03, respectively. Compared with Barth et al. (2017), the magnitude of $RGL_{i,t}$ in this study is smaller. This difference likely reflects the relative importance of AFS securities for banks as opposed to non-financial firms.

Panel B shows that the mean of $SMOOTH\_SD_{t,\,t+4}$ is 0.996, indicating that the variability in net income is somewhat reduced by the disposal of AFS securities. The mean of $N\_AFSS_{t,\,t+4}$ is 2.024, with a median of 2.000, suggesting that Japanese non-financial firms recognize gains or losses from AFS disposals approximately twice within a five-year period.

Table 3 reports the correlation coefficients for the variables employed in the models. Based on Pearson correlations, the coefficient between EBRi,t and $CF_{i,t}$ is 0.557, while that between $SIZE_{i,t-1}$ and $FOREIGN_{i,t}$ is 0.543. No other pairs of variables exhibit high correlations. As $EBR_{i,t}$ is the independent variable of primary interest, I also conduct estimations excluding $CF_{i,t}$, and confirm that the main findings of this study remain unchanged. Moreover, the maximum variance inflation factor (VIF) observed in the regressions is 2.43, suggesting that multicollinearity is not a serious concern in this study.

Table 3: Correlation coefficients

Panel A: Variables used in estimating equation (1)

Variables	$RGL_{i,t}$	$EBR_{i,t}$	$\Delta EBR_{i,t}$	$SIZE_{i,t-1}$	$LEV_{i,t-1}$	$BM_{i,t-1}$	$CF_{i,t}$	$AUGL_{i,t-1}$	$SEC_{i,t-1}$	$FOREIGN_{i,t}$
$RGL_{i,t}$		**–0.113**	**–0.048**	**0.199**	**0.043**	**–0.019**	**–0.078**	**0.261**	**0.253**	**0.103**
$EBR_{i,t}$	**–0.119**		**0.432**	**0.055**	**–0.315**	**–0.326**	**0.526**	**0.033**	**–0.064**	**0.286**
$\Delta EBRi,t$	**–0.037**	**0.424**		–0.007	**–0.012**	**–0.159**	**0.244**	**–0.034**	**–0.020**	**0.050**
$SIZE_{i,t-1}$	**–0.009**	**0.128**	**–0.025**		**0.135**	**0.083**	**0.080**	**0.347**	**0.282**	**0.595**
$LEV_{i,t-1}$	**–0.011**	**–0.220**	–0.007	**0.153**		**–0.093**	**–0.174**	**–0.064**	**–0.159**	**–0.201**
$BM_{i,t-1}$	**–0.065**	**–0.166**	**–0.086**	**0.019**	**–0.098**		**–0.232**	**0.156**	**0.247**	**–0.192**
$CF_{i,t}$	**–0.082**	**0.557**	**0.178**	**0.096**	**–0.148**	**–0.147**		**–0.030**	**–0.075**	**0.186**
$AUGL_{i,t-1}$	**0.203**	**0.034**	**–0.018**	**0.236**	**–0.091**	**0.071**	**–0.019**		**0.441**	**0.168**
$SEC_{i,t-1}$	**0.140**	–0.004	–0.006	**0.115**	**–0.251**	**0.080**	**–0.031**	**0.246**		**0.078**
$FOREIGN_{i,t}$	**–0.002**	**0.173**	**0.014**	**0.543**	**–0.154**	**–0.203**	**0.132**	**0.098**	**0.050**	

Note: The lower left values are Pearson's correlation coefficients, whereas the upper right values are Spearman's correlation coefficients. Values significant at the 5% level or higher are presented in bold. For each variable's definition, please refer to Table 1.

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Panel B: Variables used in estimating the equation (2)

Variables	$SMOOTH\_SD_{i,t+4}$	$N\_AFSS_{i,t+4}$	$SIZE_{i,t}$	$LEV_{i,t}$	$BM_{i,t}$	$Vol\_Sales_{i,t}$	$Loss\%_{i,t}$	$Growth\_Sales_{i,t}$	$LEV\_OP_{i,t}$	$AVE\_CFO_{i,t}$	$AUGL_{i,t}$	$SEC_{i,t}$	$FOREIGN_{i,t}$
$SMOOTH\_SD_{i,t+4}$		**−0.010**	**−0.016**	**−0.014**	**−0.026**	**0.029**	0.007	**0.009**	**−0.016**	**0.011**	**−0.046**	**−0.013**	**0.009**
$N\_AFSS_{i,t+4}$	**−0.033**		**0.444**	**0.052**	**0.051**	**−0.145**	**−0.016**	**−0.021**	0.007	**−0.083**	**0.351**	**0.483**	**0.241**
$SIZE_{i,t}$	**−0.026**	**0.460**		**0.134**	**0.081**	**−0.245**	**−0.227**	**0.016**	**0.238**	**0.116**	**0.355**	**0.281**	**0.596**
$LEV_{i,t}$	**−0.023**	**0.053**	**0.153**		**−0.095**	**0.151**	**0.242**	**−0.015**	**0.216**	**−0.267**	**−0.063**	**−0.180**	**−0.201**
$BM_{i,t}$	**−0.023**	0.008	**0.019**	**−0.098**		**−0.257**	**0.038**	**−0.279**	**0.179**	**−0.223**	**0.121**	**0.223**	**−0.191**
$Vol\_Sales_{i,t}$	**0.026**	**−0.135**	**−0.257**	**0.142**	**−0.218**		**0.139**	**0.192**	**−0.335**	**−0.033**	**−0.277**	**−0.290**	**−0.031**
$Loss\%_{i,t}$	**0.011**	**−0.041**	**−0.257**	**0.202**	**0.046**	**0.169**		**−0.174**	**−0.010**	**−0.394**	**−0.140**	**−0.088**	**−0.245**
$Growth\_Sales_{i,t}$	**0.015**	**−0.023**	**−0.015**	−0.008	**−0.241**	**0.215**	**−0.103**		**−0.087**	**0.126**	**0.037**	**−0.058**	**0.136**
$LEV\_OP_{i,t}$	**−0.015**	**−0.014**	**0.244**	**0.235**	**0.143**	**−0.296**	**−0.027**	**−0.101**		**0.191**	**0.085**	−0.004	**−0.082**
$AVE\_CFO_{i,t}$	**0.016**	**−0.044**	**0.150**	**−0.214**	**−0.145**	**−0.103**	**−0.459**	**0.048**	**0.180**		0.000	**−0.040**	**0.231**
$AUGL_{i,t}$	**−0.049**	**0.269**	**0.237**	**−0.093**	**0.032**	**−0.182**	**−0.111**	**0.011**	**−0.025**	−0.001		**0.484**	**0.155**
$SEC_{i,t}$	0.008	**0.321**	**0.114**	**−0.262**	**0.056**	**−0.159**	**−0.057**	**−0.011**	**−0.135**	−0.004	**0.265**		**0.096**
$FOREIGN_{i,t}$	0.000	**0.212**	**0.543**	**−0.154**	**−0.203**	**−0.034**	**−0.175**	**0.075**	**−0.062**	**0.170**	**0.093**	**0.059**	

Note: The lower left values are Pearson's correlation coefficients, whereas the upper right values are Spearman's correlation coefficients. Values significant at the 5% level or higher are presented in bold. For each variable's definition, please refer to Table 1.

4.2. Estimation results

Table 4, Panel A reports the estimation results for equation (1), which examines the association between realized gains and losses from AFS securities and the level or change in earnings. Column (1), which focuses on the level of earnings, shows that the coefficient on $EBR_{i\,t}$ is significantly negative. Column (2), which focuses on changes in earnings, shows that the coefficient on $\Delta EBR_{i,t}$ is also significantly negative. These results indicate that when net income excluding realized gains and losses from AFS securities, or its change, is relatively high (low), realized gains and losses on AFS securities tend to be lower (higher). This evidence is consistent with income smoothing through the disposal of AFS securities.

Table 4, Panel B presents the estimation results for equation (2), which employs the income smoothing measure based on the standard deviation of earnings measures. The coefficient on $N\_AFSS_{t,\,t+4}$ is –0.002 and statistically significant. This implies that on average, each additional year with AFS disposals over the five-year window from year t to t+4 is associated with a 0.2% reduction in the standard deviation of the net income attributable to owners of parent relative to the standard deviation of $EBR_{i,t}$. Accordingly, the results suggest that as the frequency of AFS disposals increases, the net income attributable to owners of parent becomes smoother, thereby providing evidence consistent with income smoothing through the disposal of AFS securities.

This study conducts several robustness checks on the empirical results. First, as $SMOOTH\_SD_{t,t+4}$ and $N\_AFSS_{t,t+4}$ are measured over the same horizon, there is a potential concern regarding reverse causality. To address this issue, I re-estimate the model by measuring $N\_AFSS_{t,t+4}$ over a shifted window from year t–1 to t+3. The results confirm that the main findings of the primary tests reported in this section remain unchanged.

Second, when firms experience high performance variability, they may be less inclined to dispose of AFS securities following periods of strong performance in order to prepare for potential downturns in subsequent periods.

Table 4: Estimated results

Panel A: Estimation results for the equation (1) (Dep.Var. = $RGL_{i,t}$)

	(1)		(2)	
	Estimate	t value	Estimate	t value
$EBR_{i,t}$	−0.007	−12.258 ***		
$\Delta EBR_{i,t}$			−0.003	−5.589 ***
$SIZE_{i,t-1}$	−0.000	−0.547	−0.000	−0.066
$LEV_{i,t-1}$	0.000	0.846	0.001	2.418 **
$BM_{i,t-1}$	−0.000	−0.413	0.000	3.136 ***
$CF_{i,t}$	−0.001	−2.461 **	−0.003	−7.561 ***
$AUGL_{i,t-1}$	0.075	19.548 ***	0.075	19.315 ***
$SEC_{i,t-1}$	0.009	7.547 ***	0.009	7.885 ***
$FOREIGN_{i,t}$	−0.000	−0.427	−0.001	−1.183
Firm FE	Yes		Yes	
Year FE	Yes		Yes	
Adj R^2	0.258		0.253	
N	51,122		51,122	

Panel B: Estimation results for the equation (2) (Dep. Var. = $SMOOTH\_SD_{t,t+4}$)

	(3)	
	Estimate	t value
$N\_AFSS_{t,t+4}$	−0.002	−2.155 **
$SIZE_{i,t}$	0.006	2.087 **
$LEV_{i,t}$	−0.002	−0.218
$BM_{i,t}$	−0.002	−1.313
$Vol\_Sales_{i,t}$	0.002	0.360
$Loss\%_{i,t}$	−0.010	−1.953 *
$Growth\_Sales_{i,t}$	0.003	0.850
$LEV\_OP_{i,t}$	−0.010	−0.834
$AVE\_CFO_{i,t}$	0.000	0.009
$AUGL_{i,t}$	−0.152	−1.409
$SEC_{i,t}$	0.068	2.146 **
$FOREIGN_{i,t}$	−0.002	−0.129
Firm FE	Yes	
Year FE	Yes	
Adj R^2	0.191	
N	51,122	

Note: ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively. t-values are based on robust standard errors clustered at the firm level. Singleton groups have been excluded to mitigate the problem of underestimated standard errors. See Table 1 for each variable's definition.

Therefore, I additionally control for the standard deviation of net income over the five-year period from t–4 to t as a measure of past earnings variability, and confirm that the results are consistent with those of the main analysis.

Third, because income smoothing and loss avoidance may not be distinguishable when $EBR_{i,t}$ is negative, I conduct tests using the subsample in which $EBR_{i,t}$ is positive. The results show that both $EBR_{i,t}$ and $\Delta EBR_{i,t}$ are significantly negative, consistent with the main analysis. Furthermore, when restricting the sample to cases where $EBR_{i,t}$ is positive and $RGL_{i,t}$ is non-positive, the coefficient on $EBR_{i,t}$ is negative but not statistically significant, whereas the coefficient on $\Delta EBR_{i,t}$ remains significantly negative.

Fourth, the estimation results for equation (1) may capture the behavior whereby firms realize gains on AFS securities when earnings are low. To address this concern, I perform an additional test using the subsample excluding observations in which gains from AFS disposals are recorded. The results show that while the coefficient on $\Delta EBR_{i,t}$ remains significantly negative, the coefficient on $EBR_{i,t}$ becomes significantly positive, yielding inconsistent findings. One possible interpretation of these results is that the number of observations with realized losses on AFS securities is limited, and such losses may be used not only for income smoothing but also for big bath reporting (Barth et al. 2017).

In summary, the results from both approaches provide evidence consistent with income smoothing through AFS securities, rejecting the null hypothesis. Accordingly, even for equity-type AFS securities subject to disposal constraints, the associated cost of earnings management does not appear to be prohibitively high. Rather, such securities are likely to be utilized by managers as one of the tools for earnings management.

5. Additional analyses

The main results in Section 4 show that net income is smoothed through the disposal of AFS securities among Japanese non-financial firms. In developing the hypothesis presented in Section 2, it was assumed that the use of AFS

disposals for income smoothing is grounded in the broader tendency of Japanese firms to favor income smoothing, which in turn reflects managers' preference for stable dividend policies. This section focuses on the validity of this assumption and describes additional tests conducted to provide further evidence on the incentives for income smoothing through AFS securities. Specifically, I test whether incentives related to stable dividend policies drive such smoothing behavior.

I identify firms with stable dividend policies and analyze whether they exhibit a higher degree of income smoothing through the disposal of AFS securities. For the additional tests, the sample is divided into three subgroups: (1) stable dividend group, (2) dividend-increasing group, and (3) no-dividend or dividend-decreasing group. The stable dividend group comprises observations in which the dividend per share (DPS) in year t is greater than zero and unchanged from year t–1. The dividend-increasing group comprises observations in which the DPS in year t exceeds that in year t–1. The no-dividend or dividend-decreasing group comprises observations in which the DPS is zero or lower than that in the previous year. Firms classified into the stable dividend group are identified as those with incentives related to stable dividend policies, and the analysis focuses on this group.

As discussed in Section 2, firms in the stable dividend group are expected to exhibit a higher degree of income smoothing because they possess incentives associated with maintaining a stable dividend policy. By contrast, firms in the no-dividend or dividend-decreasing group are considered either not to follow or to have abandoned a stable dividend policy and are therefore expected to exhibit a lower degree of income smoothing from the perspective of dividend-related incentives. On the other hand, the dividend-increasing group is likely to be heterogeneous, comprising both firms that pursue stable dividend increases strategically—leading to higher levels of smoothing—and firms that adjust dividends flexibly in line with earnings performance, which would imply lower levels of smoothing. Consequently, it is difficult to predict the overall direction for the dividend-increasing group.

Therefore, the additional analysis focuses on a comparison between the stable dividend and no-dividend or dividend-decreasing groups [7]. After excluding the observations classified into the dividend-increasing group, the sample for the additional tests comprises 32,122 firm-year observations.

Specifically, the tests proceed as follows. First, I construct a binary variable $D\_Stable_{i,t}$, which takes the value of 1 if the DPS in period t is greater than zero and remains unchanged from the DPS in period t–1, and 0 otherwise. I then add the interaction term between $D\_Stable_{i,t}$ and $EM_{i,t}$ to equation (1) (where $EM_{i,t}$ is alternatively specified as either $EBR_{i,t}$ or $\Delta EBR_{i,t}$), and the interaction term between $D\_Stable_{i,t}$ and $N\_AFSS_{t,t+4}$ to equation (2). Both models are estimated using OLS, and I refer to these augmented specifications as equations (1′) and (2′), respectively.

Table 5 presents the results of the additional analyses. First, in column (1) of Panel A, $EBR_{i,t}$ is –0.004 and the interaction term between $EBR_{i,t}$ and $D\_Stable_{i,t}$ is –0.010, both of which are significantly negative. This indicates that while realized gains and losses on AFS securities tend to smooth earnings even among firms in the no-dividend or dividend-decreasing group, the tendency to smooth earnings is even stronger in the stable dividend group. Next, in column (2), although $\Delta EBR_{i,t}$ is negative, it is not statistically significant. By contrast, the interaction term between $\Delta EBR_{i,t}$ and $D\_Stable_{i,t}$ is –0.007 and significantly negative. This result suggests that in the stable dividend group, realized gains and losses on AFS securities are recorded in a manner that offsets earnings fluctuations.

In Panel B, the interaction term between $D\_Stable_{i,t}$ and $N\_AFSS_{t,t+4}$ is –0.003 and statistically significant. This indicates that for firms in the stable dividend group, each additional year with AFS disposals over the five-year window from year t to t+4 is associated with a 0.3% reduction, on average, in the standard deviation of net income attributable to owners of parent relative to the standard deviation of $EBR_{i,t}$, compared with firms in the no-dividend or dividend-decreasing group. Thus, even when employing the income-smoothing measure based on standard deviations, the results suggest that the tendency

Table 5: Additional analyses based on dividend incentives

Panel A: Estimation results for (1') (Dep.Var. = $RGL_{i,t}$)

	(1)		(2)	
	Estimate	t value	Estimate	t value
$EBR_{i,t}$	–0.004	–6.397 ***		
$\Delta EBR_{i,t}$			–0.001	–1.276
$D\_Stable_{i,t}$	0.000	0.311	–0.000	–4.805 ***
$EBR_{i,t} \times D\_Stable_{i,t}$	–0.010	–6.257 ***		
$\Delta EBR_{i,t} \times D\_Stable_{i,t}$			–0.007	–5.055 ***
$SIZE_{i,t-1}$	–0.000	–0.969	–0.000	–0.270
$LEV_{i,t-1}$	0.000	0.878	0.001	1.719 *
$BM_{i,t-1}$	–0.000	–0.985	0.000	1.907 *
$CF_{i,t}$	–0.001	–2.297 **	–0.003	–5.680 ***
$AUGL_{i,t-1}$	0.087	16.813 ***	0.087	16.568 ***
$SEC_{i,t-1}$	0.010	6.915 ***	0.011	7.120 ***
$FOREIGN_{i,t}$	0.000	0.424	–0.000	–0.371
Firm FE	Yes		Yes	
Year FE	Yes		Yes	
Adj R^2	0.259		0.255	
N	32,122		32,122	

Panel B: Estimation results for (2') (Dep.Var. = $SMOOTH\_SD_{t,t+4}$)

	(3)	
	Estimate	t value
$N\_AFSS_{t,t+4}$	0.002	1.364
$D\_Stable_{i,t}$	0.005	2.383 **
$N\_AFSS_{t,t+4} \times D\_Stable_{i,t}$	–0.003	–2.640 ***
$SIZE_{i,t}$	0.001	0.292
$LEV_{i,t}$	–0.007	–0.685
$BM_{i,t}$	–0.002	–1.436
$Vol\_Sales_{i,t}$	0.002	0.342
$Loss\%_{i,t}$	–0.016	–2.992 ***
$Growth\_Sales_{i,t}$	0.002	0.430
$LEV\_OP_{i,t}$	–0.007	–0.585
$AVE\_CFO_{i,t}$	–0.009	–0.368
$AUGL_{i,t}$	–0.226	–1.643
$SEC_{i,t}$	0.075	1.962 **
$FOREIGN_{i,t}$	–0.000	–0.001
Firm FE	Yes	
Year FE	Yes	
Adj R^2	0.198	
N	32,122	

Note: ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively. t-values are based on robust standard errors clustered at the firm level. Singleton groups have been excluded to mitigate the problem of underestimated standard errors. See Table 1 for each variable's definition.

to smooth earnings is stronger among firms in the stable dividend group.

These results support the view that income smoothing through the sale of AFS securities is driven by incentives associated with stable dividend policies, thereby validating the underlying premise of the hypothesis in this study.

6. Conclusion

The purpose of this study is to examine whether managers use AFS securities subject to disposal constraints for the purpose of income smoothing. The analysis focuses on the Japanese setting, where non-financial firms hold a substantial proportion of relational shareholdings as AFS securities. Considering that income smoothing represents a reduction in fluctuations in earnings streams, this study examines income smoothing through the sale of AFS securities using two complementary approaches.

The findings of this study suggest that among Japanese non-financial firms, earnings management through the sale of AFS securities is undertaken for income smoothing, and that incentives associated with stable dividend policies play an important role in this behavior. Accordingly, it may be inferred that managers utilize not only debt-type AFS securities held by banks but also equity-type AFS securities subject to disposal constraints as instruments of income smoothing.

Nevertheless, this study has certain limitations. First, in the context of non-financial firms, managers are unlikely to achieve their income-smoothing objectives solely through the sale of AFS securities. Thus, there is scope for a deeper examination of the relationship between this mechanism and other earnings management tools. Second, while the present analysis focused on incentives related to stable dividend policies, additional incentives for income smoothing may exist, which were not fully explored in this study.

Notes

1. Under U.S. GAAP, Accounting Standards Update (ASU) 2016-01 amended the treatment of

equity securities by requiring all such instruments to be measured at fair value, with changes recognized in net income, while the Japanese accounting standards for financial instruments still retain the AFS category for equity securities.

2. In the Japanese Corporate Governance Code, seisaku-hoyu-kabushiki translates to cross-shareholdings. However, as seisaku-hoyu-kabushiki encompasses both reciprocal and unilateral holdings, this study follows Miyajima (2022) and employs the term relational shareholdings.
3. The proportion of equity securities within AFS securities is calculated based on the breakdown of equity, bonds, and others disclosed in the notes to the financial statements regarding the balance sheet value of AFS securities. Specifically, it is computed by dividing the balance sheet value of AFS securities classified as equities by the total balance sheet value of AFS securities.
4. In this section, I develop a hypothesis on income smoothing through the disposal of AFS securities in Japan, focusing on the incentives associated with stable dividend policies. The validity of this assumption is further examined in the additional analyses presented in Section 5.
5. In addition, income smoothing has also been widely measured using correlations between changes in total accruals and operating cash flows (Burgstahler, Hail, and Leuz 2006; Baik, Choi, and Farber 2020; Cao, Myers, and Zhang 2023) or between changes in discretionary accruals and pre-discretionary earnings (Tucker and Zarowin 2006; Baik, Choi, and Farber 2020; Baik et al. 2022; Cao, Myers, and Zhang 2023). From the perspective of constructing smoothing measures based on correlations, one could also consider a measure derived from the correlation between changes in AFS disposal gains and losses and changes in predisposal net income. However, because this relationship is already examined in the first approach, the second approach employs a measure based on the standard deviation of earnings measures.
6. The main findings of this study remain unchanged when the natural logarithm of the operating cycle is included as a control variable.
7. When comparing the stable dividend group with the no-dividend or dividend-decreasing group, it is important to acknowledge the potential influence of confounding factors. Specifically, the no-dividend or dividend-decreasing group may disproportionately identify firms experiencing severe performance deterioration. In such cases, the inability to engage in income smoothing may stem not from the absence of stable dividend incentives but rather from the severity of the performance decline itself. However, in the tests presented in this section, I control for the level of or change in earnings and operating cash flows, which mitigates this concern to some extent.

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