

# Accounting Conservatism and Income Smoothing after the Japanese Sarbanes–Oxley Act

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## ABSTRACT

**Manuscript type:** Research paper

**Research aims:** The Japanese Sarbanes-Oxley Act (J-SOX) was implemented for the fiscal years ending on or after March 31, 2009 to ensure the reliability of financial reporting by listed firms. This study examines the effect of J-SOX on financial reporting quality, proxied by accounting conservatism and income smoothing.

**Design/Methodology/Approach:** This study conducts empirical analyses using a sample of Japanese listed firms with fiscal year-ends of March 31 from 2007 to 2010. We obtain financial data and stock price data from the *Nikkei NEEDS Financial QUEST*, stock return data from *NPM Monthly Stock Return Data*, and auditor data from *eol*. The sample consists of 7,752 and 7,594 firm-years regarding accounting conservatism, and 7,380 firm-years regarding income smoothing. We perform multiple regression analyses with a dummy variable for the post-J-SOX period to compare the levels of accounting conservatism and income smoothing between the pre- and post-J-SOX periods.

**Research findings:** We find that accounting conservatism increased and income smoothing decreased immediately after J-SOX implementation. In additional analyses, we extend the sample period to 2012 and find the evidence indicating that the increasing effect of J-SOX on accounting conservatism may have persisted, but the decreasing effect on income smoothing has not persisted. These findings suggest that financial reporting quality in Japanese firms may have improved following J-SOX implementation through increased accounting conservatism (timely loss recognition).

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**Theoretical contribution/Originality:** This study adds new evidence to the literature regarding the effect of internal control regulations on managerial accounting behaviour.

**Practitioner/Policy implication:** Our findings suggest that J-SOX may be effective in improving financial reporting quality although the procedures are relatively concise. Therefore, policy makers and accounting standard setters should consider not only strictness but also cost-effectiveness.

**Research limitation/Implications:** We cannot rule out the possibility that factors other than J-SOX occurred during our study period affected our results.

**Keywords:** Accounting Conservatism, Income Smoothing, Internal Control Regulation, Japan, Sarbanes-Oxley Act

**JEL Classification:** G38, M41, M48

## 1. Introduction

Japan experienced major financial reporting scandals in the 2000s. In October 2004, Seibu Railway announced that it underreported its major shareholders in financial reporting for nearly 50 years. According to Tokyo Stock Exchange rules, a listed company cannot be owned by 80% or more by its top 10 shareholders. As a result, Seibu Railway falsely reported its major shareholder's ownership ratio as 63.7% at the end of March 2004, when it was actually 88.6%. After the announcement, the company's stock price plummeted, and more than 200 individual shareholders filed a class action lawsuit seeking damages of 350 million yen, equivalent to the drop in their investment value. In April 2005, Kanebo revealed that former executives dressed up the company's earnings by roughly 200 billion yen over a five-year period from 1999. Following the scandal, three former Kanebo executives and four ChuoAoyama PricewaterhouseCoopers accountants were arrested.

Since the financial reporting scandals at Kanebo and Seibu Railway, international concern regarding the reliability of Japanese corporate financial reporting has been growing. Consequently, the Japanese Diet passed the Internal Control Reporting System as a part of the Financial Instruments and Exchange Act to ensure the reliability of corporate financial reporting. The internal control regulation is commonly referred to as the Japanese Sarbanes-Oxley Act (J-SOX) because it imitates the United States Sarbanes-Oxley Act (US-SOX). J-SOX is applicable for the fiscal years ending on or after March 31, 2009.

To enhance internal control over financial reporting, J-SOX requires listed firms to submit internal control reports that provide

an evaluation of the validity of the internal control over financial reporting for each fiscal year. Such reports are subject to audits by certified public accountants or auditing firms. Listed firms are obliged to submit certification by managers, stating that descriptions in financial statements are appropriate and in compliance with the relevant laws and regulations. Further, submitting false reports is subject to criminal or civil monetary penalties (Financial Services Agency, 2006, 2007).

This study examines the effect of J-SOX on corporate financial reporting. Specifically, we focus on accounting conservatism and income smoothing as measures of financial reporting quality and investigate whether they changed before and after J-SOX. Accounting conservatism can be classified into conditional and unconditional conservatism.<sup>1</sup> Of these, we focus on the former, which is defined as the extent to which earnings reflect bad news more quickly than good news (Basu, 1997).<sup>2</sup> Income smoothing is defined as the deliberate dampening of fluctuations about some level of earnings considered to be normal for the firm (Barnea, Ronen, & Sadan, 1976). Financial reporting quality is defined as the extent to which accounting information timely reflects the underlying economic situation of the firm (Ball, Robin, & Wu, 2003). In general, accounting conservatism increases the financial reporting quality through timely loss recognition that more reflects the underlying economic situation (Ball et al. 2000a; Ball, Robin, & Wu, 2000b; García Lara, García Osma, & Penalva, 2007), whereas income smoothing reduces financial reporting quality because it conceals the underlying economic situation by reducing the variability of reported earnings (Ball et al., 2000a; Leuz, Nanda, & Wysocki, 2003).<sup>3</sup>

We focus on accounting conservatism and income smoothing because they are known to be characteristic of Japanese firms' accounting behaviour (Ball et al., 2000a; Leuz et al., 2003; Enomoto, Kimura, & Yamaguchi, 2015). Japanese firms are characterised by stakeholder corporate governance under code-law. In code-law countries, accounting income tends to be viewed as the pie to be divided among groups (e.g., dividends to shareholders, taxes to governments, and bonuses to managers and employees), and insider communication solves the information asymmetry between managers and stakeholders (Ball et al., 2000a). Thus, accounting income should be influenced more by the preference for stable payouts from stakeholders and less by the demand for the timely disclosure of economic losses (Ball et al., 2000a). Consistent with this discussion, international comparative research on accounting behaviour provides

evidence that Japanese firms' earnings are less conservative and more smoothed than those in other countries. For example, Ball et al. (2000a) indicate that earnings in code-law countries (France, Germany, and Japan) are less conservative and more smoothed than those in common-law countries (Australia, Canada, UK, and US). Moreover, they demonstrate that earnings in Japan are the least conservative and the most smoothed among their sample countries. Similarly, Leuz et al. (2003) and Enomoto et al. (2015) reveal that the level of income smoothing in Japanese firms tends to be higher than that in other countries' firms. Thus, from the perspective of accounting conservatism and income smoothing, financial reporting in Japan seems less quality than that in other countries.

However, financial reporting quality is expected to improve under the stricter rules on internal control in J-SOX. Specifically, we predict that accounting conservatism increases after J-SOX implementation because aggressive financial reporting is more likely to be subjected to shareholder litigation and punishment in courts than conservative financial reporting (Watts, 2003b; DuCharme, Malatesta, & Sefcik, 2004) and fines and regulatory scrutiny for misreporting increase under J-SOX. We also predict that income smoothing behaviour decreases after J-SOX implementation through the improvements in internal control and audit under J-SOX. In our main analyses, we find an increase in the level of accounting conservatism and a decrease in that of income smoothing after J-SOX compared to before J-SOX. Given that accounting conservatism (income smoothing) increases (decreases) the financial reporting quality, this finding suggests that such quality may have improved after J-SOX implementation.

This study makes four contributions to the literature. First, it contributes to the literature regarding the effect of J-SOX on managers' accounting behaviour. To the best of our knowledge, this study is the first to analyse the effect of J-SOX on accounting conservatism and income smoothing behaviour in Japanese firms. Nakashima and Ziebart (2015) examine the levels of accrual-based and real earnings management before and after J-SOX. Enomoto and Yamaguchi (2017) investigate the effect of J-SOX on earnings management to avoid losses and earnings decreases. The current study extends them by focusing on accounting conservatism and income smoothing that reflect the characteristic accounting behaviour of Japanese firms.

Second, we contribute to the literature that examines the determinants of accounting conservatism and income smoothing in Japanese firms. Previous studies focus on managerial ownership

(Shuto & Takada, 2010), main bank relationship (Sakawa & Watanabel, 2020), and the adoption of International Financial Reporting Standards (Shimamoto and Takeda, 2020) as the determinants of accounting conservatism. Previous research focuses on firm size, income taxes, capital intensity, deviation in operating activities, earnings variability (Hermann & Inoue, 1996), stable shareholdings (Shuto & Iwasaki, 2014), and stock price crash risk (Kuang, 2022) as the determinants of income smoothing. We add new evidence by shedding light on J-SOX as the determinants of accounting conservatism and income smoothing.

Third, this study contributes to the literature regarding the effects of internal control regulations on accounting conservatism and income smoothing. Previous research finds that since the passage of US-SOX, accounting conservatism has increased (Lobo & Zhou, 2006, 2010; He, El-Masry, & Wu, 2008; Zhou, 2008; García Lara, García Osma & Penalva, 2009; Iliev, 2010; Jenkins & Velury, 2011; Mitra, Jaggi, & Hossain, 2013) and income smoothing has decreased (Black, Pierce, & Thomas, 2022). Baik, Gunny, Jung, and Park (2022) find that managers are more likely to use R&D management to smooth earnings because the use of accruals to smooth earnings is more constrained in the post-US-SOX period. Machuga and Teitel (2007) reveal that accounting conservatism increased and income smoothing decreased after the implementation of Mexican internal control regulations. Brown, Pott, and Wömpener (2014) observe an increase in accounting conservatism and a decrease in income smoothing after the enactment of German internal control regulations. While these studies focus on internal control regulations other than J-SOX, the current study complements them by focusing on J-SOX.

Fourth, our study contributes to the literature investigating if the effects of internal control regulations on managerial accounting behaviour persist. Cohen, Dey, and Lys (2008) find that accrual-based earnings management decreased and real earnings management increased in the post-US-SOX period (2002-2005). Pincus, Wu, and Hwang (2022) examine if the results of Cohen et al. (2008) extend to recent periods. They find accrual-based earnings management generally declines over their entire extended post-US-SOX period (2002-2017). They also find that REM increases in both the 2002-2005 and 2010-2017 post-US-SOX sub-periods, but real earnings management decreases in the 2006-2007 post-US-SOX sub-period. In additional analyses, we extend our sample period and divide post-J-SOX period into two sub-periods and confirm if the effects of J-SOX on accounting conservatism and income smoothing persist.

The rest of this paper is organised as follows. Section 2 discusses background and develops the hypotheses. Section 3 explains the research design. Section 4 reports the main results and Section 5 presents the results from additional analyses. Section 6 concludes.

## **2. Literature review and hypotheses development**

### *2.1 Literature review*

There are many studies investigating the effect of internal control regulation on accounting conservatism. Lobo and Zhou (2006, 2010) indicate that the level of accounting conservatism increased and discretionary accruals decreased following US-SOX implementation. Zhou (2008) suggest that firms report more conservatively and engage in less earnings management following US-SOX implementation. Iliev (2010) and Kim, Dandu, and Iren (2019) document that accounting conservatism has increased since the passage of US-SOX. Similar results are observed in countries other than the United States. Machuga and Teitel (2007) reveal that accounting conservatism increased after the implementation of Mexican internal control regulations. Brown et al. (2014) find that accounting conservatism increased after the enactment of German internal control regulations.

Several studies suggest that the impact of internal control regulation on accounting conservatism varies by firm characteristics. He et al. (2008) focus on cross-listed firms issuing American Depository Receipts (ADRs) and find that, US-SOX-exposed Levels II and III ADRs become more conservative during the post-US-SOX period, while the US-SOX-unexposed Level I ADRs exhibit no increase in the level of accounting conservatism. They also find that only Levels II and III ADRs from code-law (weak shareholder protection) countries become more conservative, and Levels II and III ADRs from common law (strong shareholder protection) countries exhibit no change in accounting conservatism. Jenkins and Velury (2011) indicate that there is a general increase in accounting conservatism in the post-US-SOX period and that the greater conservatism in this period is more pronounced for clients of Big N and second-tier audit firms than those of other audit firms. Mitra et al. (2013) demonstrates that firms with internal control weaknesses exhibit greater accounting conservatism in the post-US-SOX period than firms with effective internal controls. Biddle, Ma, and Song (2022) show that relations between accounting conservatism and bankruptcy risk strengthen with US-SOX enactment.

There are also many studies that examine the effect of internal control regulation on earnings management. Depken II and Ouyang (2006) suggest that earnings management to avoid losses declined immediately after the enactment of US-SOX. Aono and Guan (2008) focus on earnings manipulation to round earnings such that they result in an upward bias report and find that such behaviour noticeably decreased after the implementation of US-SOX. Caylor (2010) provides evidence that managers prefer using discretion in deferred revenue relative to accounts receivable to avoid negative earnings surprises but that US-SOX has mitigated this preference. Gilliam, Heflin, and Paterson (2015) use an earnings distribution approach and show that zero-earnings discontinuity has disappeared since the implementation of US-SOX, indicating that earnings management to avoid losses has decreased. Contrary to these studies, Ghosh, Marra, and Moon (2010) find no evidence to suggest that earnings management declined after US-SOX implementation.

Several studies suggest that the impact of internal control regulation on earnings management varies by firm characteristics. Graham and Moore (2018) use discretionary accruals, total accruals, and book-tax differences as measures of accounting distortions and indicate greater reductions in accounting distortions for high-growth firms relative to low-growth firms after US-SOX. Kama and Melumad (2020) argue that firms can camouflage their accrual-based earnings management by accrual conversion cash management aimed at aligning cash and accruals with earnings and sales (e.g., by factoring of receivables) and indicate that firms are more likely to engage in accrual conversion cash management after the passage of US-SOX, and that this tendency was particularly pronounced among firms with strong incentives to perform and hide earnings management. Kim and Luo (2022) demonstrates that firms with lower customer concentration reduced accrual-based earnings management more than those with higher customer concentration after US-SOX implementation, suggesting that large customers act as a mechanism to reduce agency problems by pressuring supplier firms to be more efficient and firms with higher customer concentration had already engaged in less accrual-based earnings management before the introduction of US-SOX.

Some studies examine both accrual-based and real earnings management. Cohen et al. (2008) indicate that accrual-based earnings management has declined since the passage of US-SOX, while real earnings management has increased. Hsieh, Bedard, and Johnstone (2014) find that overconfident CEOs are more likely to

conduct real and accrual-based earnings management following US-SOX implementation, suggesting that overconfident CEOs feel less constrained by US-SOX and act against regulators' attempts to constrain earnings management. Mughal, Tao, Sun, and Xiang (2021) find that the target firms of successful acquisitions engage in real earnings management before and after US-SOX implementation but engage in accrual-based earnings management only before US-SOX implementation, suggesting that the firms' use of accrual-based earnings management decreases after US-SOX implementation. Pincus et al. (2022) find that accrual-based earnings management generally declines over their entire post-US-SOX period (2002-2017). They also find that real earnings management increases in both the 2002-2005 and 2010-2017 post-US-SOX sub-periods, but real earnings management decreases in the 2006-2007 post-US-SOX sub-period.

A few studies focus on income smoothing. Machuga and Teitel (2007) find that income smoothing behaviour decreased after the implementation of Mexican internal control regulations. Brown et al. (2014) detect a decrease in income smoothing after the enactment of German internal control regulations. Black et al. (2022) reveal that income smoothing to achieve prior-year earnings is less prevalent in the post-US-SOX period than in the pre-US-SOX period. Baik et al. (2022) find that managers are more likely to use R&D management to smooth earnings because the use of accruals to smooth earnings is constrained after the passage of US-SOX.

## 2.2 *The effect of J-SOX on managerial accounting behaviour*

Since J-SOX is modeled after US-SOX, they have numerous points in common. First, both aim to reinforce corporate governance of financial reporting. Second, they regulate listed firms and follow the COSO Report framework. Third, they require a manager's confirmation of the accuracy of the firm's financial statements and an assessment of the effectiveness of internal control over financial reporting. Finally, they impose legal penalties on managers for misreporting.

There are some differences between US-SOX and J-SOX. Following the criticism that US-SOX burdens firms with high costs, J-SOX was developed to avoid imposing excessive costs for managers' assessments and auditors' audits of internal control over financial reporting. In particular, according to the Business Accounting Council (2007), J-SOX includes the following six measures that differ from US-SOX:



- 1) use of a top-down/risk-based approach,
- 2) classification of internal control deficiencies (two categories),
- 3) no direct reporting,
- 4) integration of internal control audits with financial statement audits,
- 5) preparation of a unified internal control and financial statement audit report, and
- 6) coordination between external and internal auditors (corporate auditors or audit committee). Overall, the procedures required under J-SOX are less onerous than those required under US-SOX due to its emphasis on cost-effectiveness.

These differences may exhibit different effects on managers' accounting behaviour. Compared with US-SOX, J-SOX may not affect managers' accounting behaviour due to its relatively concise system, such as the non-adoption of direct reporting. However, J-SOX may have an impact if an effective and efficient audit is performed by integrating internal control audit and financial statements audit.

Empirical evidence regarding the effect of J-SOX on managers' accounting behaviour is inconsistent. For example, Nakashima and Ziebart (2015) find evidence of accrual-based earnings management even after J-SOX implementation and claim that it failed to improve corporate governance. However, they also reveal that earnings quality improved following J-SOX and state that it may have resulted in more effective internal control systems. Enomoto and Yamaguchi (2017) find that since the implementation of J-SOX, earnings management to avoid losses has not decreased, but earnings management to avoid decline in earnings has decreased. Since previous studies provide inconsistent evidence, whether J-SOX has affected accounting behaviour is an empirical issue.

### *2.3 Hypothesis development of accounting conservatism following J-SOX*

Previous research suggests aggressive financial reporting is more likely to be subjected to shareholder litigation and punishment in courts than conservative financial reporting (Watts, 2003b; DuCharme et al., 2004). Since the expected litigation costs of overstatement are higher than those of understatement, managers have incentives to report more conservative values for earnings (Watts, 2003a). Further, when managers face increased legal liability, they should have greater incentives to avoid using their discretion to overstate earnings and, thus, be more conservative.

Consistent with these arguments, many prior studies predict and find that US firms have been more conservative in their financial reporting since US-SOX implementation because fines and regulatory scrutiny have increased (Lobo & Zhou, 2006, 2010; Zhou, 2008; Iliev 2010; Kim et al, 2019). Prior studies also suggest that greater accounting conservatism in the post-US-SOX period is more pronounced for firms issuing the US-SOX-exposed Levels II and III ADRs (He et al., 2008), firms audited by Big N and second-tier audit firms (Jenkins & Velury, 2011), and firms with internal control weaknesses (Mitra et al., 2013).

Using a sample of Mexican firms, Machuga and Teitel (2007) reveal that accounting conservatism increased after the implementation of Mexican internal control regulations. In the case of German firms, Brown et al. (2014) find that accounting conservatism increased after the enactment of German internal control regulations.

As with US-SOX, J-SOX imposes severe penalties on managers for misreporting. Specifically, fines and penalties have increased to \10,000,000 and 10 years in prison for submitting false annual securities reports and \5,000,000 and five years in prison for submitting false internal control reports (Financial Instruments and Exchange Act, Article 197). The increase in fines and regulatory scrutiny under J-SOX implies that the expected penalty for aggressive financial reporting is greater after J-SOX implementation. Therefore, it is likely that managers have become more conservative in their financial reporting following the implementation of J-SOX.

Moreover, J-SOX aims to improve the confidence of the securities market by ensuring the reliability of corporate financial reporting (Business Accounting Council, 2007). It requires a manager's confirmation of financial statement accuracy, assessment of internal control, preparation of internal control reports, and an external audit of such reports. These requirements under J-SOX make it more difficult for managers to hide their firms' economic losses and should therefore induce timely loss recognition. Consequently, managers are likely to incorporate losses more quickly in the post-J-SOX period than they did in the pre-J-SOX period. Therefore, our first hypothesis is as follows:

*H<sub>1</sub>: Firms are more conservative in their financial reporting in the post-J-SOX period than in the pre-J-SOX period*

## 2.4 Hypothesis development of income smoothing following J-SOX

Many studies provide evidence that internal control regulation affects earnings management (Depken II & Ouyang, 2006; Aono & Guan, 2008; Cohen et al., 2008; Caylor, 2010; Hsieh et al., 2014; Gilliam et al., 2015; Nakashima & Ziebart, 2015; Enomoto & Yamaguchi, 2017; Graham & Moore, 2018; Kama & Melumad, 2020; Mughal et al, 2021; Kim & Luo, 2022; Pincus et al., 2022). Although income smoothing is a form of earnings management (Leuz et al., 2003; Enomoto et al., 2015; Scott & Obiren, 2019), these studies do not focus on this.

A few studies examine the effect of internal control regulations on income smoothing. Machuga and Teitel (2007) find that income smoothing behaviour decreased after the implementation of Mexican internal control regulations. Brown et al. (2014) detect a decrease in income smoothing after the enactment of German internal control regulations. Black et al. (2022) demonstrate that income smoothing to achieve prior-year earnings has decreased following US-SOX implementation. In summary, previous studies provide evidence of a decrease in income smoothing after internal control regulations. Baik et al. (2022) find that managers are more likely to use R&D management to smooth earnings because the use of accruals to smooth earnings is constrained after the passage of US-SOX.

As previously noted, J-SOX requires a manager's confirmation of financial statement accuracy, their assessment of internal control and preparation of internal control reports, and external auditors' audit of these reports. Through these tighter regulations, J-SOX is expected to improve internal control over financial reporting. In fact, Takada, Uchiyama, Ogura, Kaneda, Nakamura, Fujiwara, and Machida (2010) provide evidence that J-SOX improves internal control over financial reporting. They conduct a questionnaire survey among corporate internal control managers and audit firms and report that more than 70 per cent of respondents stated that J-SOX had strengthened the corporate control system. Specifically, they find that J-SOX improved workflow, enhanced internal audit functions, increased managers' awareness of financial reporting, and strengthened compliance systems.

In addition, J-SOX was developed with an emphasis on effective and efficient audit practice. Specifically, the Business Accounting Council (2007) states that as audit evidence obtained through internal control audits and financial statement audits can be reciprocally utilised in the respective audits, effective and efficient audit practice should be ensured.

These improvements in internal control and audit are likely to restrain managers' earnings management attempts to deteriorate financial reporting quality. Considering that income smoothing is a form of earnings management that may reduce the financial reporting quality, we predict that it would decrease following J-SOX implementation.<sup>4</sup> Our second hypothesis is therefore as follows:

*H<sub>2</sub>: Firms engage in less income smoothing in the post-J-SOX period than in the pre-J-SOX period.*

### **3. Research method**

#### **3.1 Sample selection**

We obtain consolidated financial statement data and stock price data from the *Nikkei NEEDS Financial QUEST*, returns data from *NPM Monthly Stock Return Data*, and auditor data from *eol*. We exclude firms in financial industries (banks, securities companies, insurance companies, and other financial companies) and use 32 of 36 industries, where industry is based on the Nikkei industry classification code (*Nikkei gyousyu chu-bunrui*). We select Japanese listed firms that adopt Japanese accounting standards and fiscal year-ends of March 31.<sup>5</sup> As J-SOX has been in force since the fiscal year ending March 31, 2009, observations with the fiscal years ending March 31, 2007 and 2008 (March 31, 2009 and 2010) serve as the pre-J-SOX (post-J-SOX) sample in this study.<sup>6</sup>

To ensure an equal number of observations before and after J-SOX implementation for each firm, we adopt the same selection procedure as Lobo and Zhou (2006). Specifically, we include only firms that have complete data in the years immediately before and after J-SOX implementation. If a firm also has complete data two years before J-SOX implementation and the second year after J-SOX implementation, then we include these two years as well, resulting in four annual observations for such a firm.

This selection procedure yields 7,752 observations, including 3,876 observations in both the pre-J-SOX and the post-J-SOX periods. The 7,752 firm-year observations includes 2,029 firms and in detail, 1,847 (182) firms have two years (one year) of data both before and after J-SOX implementation.<sup>7</sup>

### 3.2 Regression model for testing H1 with Basu's (1997) accounting conservatism measure

We use the following Basu (1997) model to measure accounting conservatism:

$$X_{it}/P_{it-1} = \alpha_0 + \alpha_1 DR_{it} + \beta_0 R_{it} + \beta_1 R_{it} * DR_{it} + \varepsilon_{it} \quad (1)$$

where, for firm  $i$  and year  $t$ :

$X$  = annual earnings per share;

$P$  = price per share;

$R$  = stock returns (from nine months before fiscal year-end to three months after fiscal year-end);

$DR = 1$  if  $R < 0$ , and 0 otherwise; and

$\varepsilon$  = error term.

We winsorise the top and bottom 1 per cent of  $X/P$  and  $R$  to mitigate the influence of outliers. The coefficient on  $R*DR$  measures the level of accounting conservatism as the extent to which earnings incorporate bad news (negative returns) more quickly than good news (positive returns). This coefficient is predicted to be positive in the presence of accounting conservatism.

Like Lobo and Zhou (2006), we augment Basu's (1997) model by interacting all variables with  $JSOX$  as follows:

$$X_{it}/P_{it-1} = \alpha_0 + \alpha_1 DR_{it} + \beta_0 R_{it} + \beta_1 R_{it} * DR_{it} + \gamma_0 JSOX_{it} + \gamma_1 JSOX_{it} * DR_{it} + \gamma_2 JSOX_{it} * R_{it} + \gamma_3 JSOX_{it} * R_{it} * DR_{it} + \varepsilon_{it} \quad (2)$$

where, for firm  $i$  and year  $t$ :

$JSOX = 1$  in the post-J-SOX period, and 0 otherwise.

Model (2) allows us to test for differences in accounting conservatism between the pre- and post-J-SOX periods. The coefficient on  $R$  measures how quickly good news is reflected in earnings in the pre-J-SOX period, while the coefficient on  $JSOX*R$  measures the difference in how quickly good news is incorporated in earnings between the pre- and post-J-SOX periods. The coefficient on  $R*DR$  measures the level of accounting conservatism in the pre-J-SOX period, while the coefficient on  $JSOX*R*DR$  measures the difference in accounting conservatism between the pre- and post-J-SOX periods. Based on  $H_1$ , which proposes that firms' financial reporting is more conservative in the post-J-SOX period, the predicted sign of its coefficient is positive.

### 3.3 Measuring discretionary accruals

Prior studies provide evidence consistent with managers using discretionary accruals to expedite the recognition of bad news rather than good news (Pae, 2007; García Lara et al., 2009). More timely loss recognition through accounting discretion should lead to lower discretionary accruals. Hence, lower discretionary accounting accruals signify higher accounting conservatism (Lobo & Zhou, 2006, 2010; Iliev, 2010). In addition to Basu's (1997) model, we therefore use discretionary accruals to test the change in accounting conservatism following J-SOX implementation. We calculate discretionary accruals based on the modified Jones model (Dechow, Sloan, & Sweeney, 1995) as follows:

$$TACC_{it} = \alpha_1 (1/TA_{it-1}) + \alpha_2 ((\Delta REV_{it} - \Delta REC_{it})/TA_{it-1}) + \alpha_3 (PPE_{it}/TA_{it-1}) + \varepsilon_{it} \quad (3)$$

where, for firm  $i$  and year  $t$ :

$TACC$  = total accruals deflated by lagged total assets, where total accruals are calculated as net income minus cash flow from operations;

$TA$  = total assets;

$\Delta REV$  = change in revenues;

$\Delta REC$  = change in receivables; and

$PPE$  = gross property, plant, and equipment.

We estimate model (3) for industry-years with at least six observations, where the industry classification is based on the Nikkei industry classification code (*Nikkei gyousyu chu-bunrui*). We winsorize the top and bottom 1 per cent of  $TACC$  to mitigate the influence of outliers. Discretionary accruals ( $DACC$ ) are calculated as the estimated residuals from model (3).

### 3.4 Regression model for testing H1 with discretionary accruals

We estimate the following regression model (4) to test  $H_1$ :

$$DACC_{it} = \alpha + \beta_1 BIGN_{it} + \beta_2 SIZE_{it} + \beta_3 CFOTALG_{it} + \beta_4 SMDECR_{it} + \beta_5 SMLOSS_{it} + \beta_6 LEV_{it} + \beta_7 SHAREDECR_{it} + \beta_8 SHAREINCR_{it} + \beta_9 JSOX_{it} + \varepsilon_{it} \quad (4)$$

where, for firm  $i$  and year  $t$ :

- $DACC$  = discretionary accruals;
- $BIGN$  = 1 if the firm is audited by a Big N auditor, and 0 otherwise;<sup>8</sup>
- $SIZE$  = natural log of sales;
- $CFOTALG$  = cash flow from operations deflated by lagged total assets;
- $SMDECR$  = 1 if [(current year's net income before undeflated discretionary accruals – last years' net income)/lagged market value of equity] is between (-0.015, 0), and 0 otherwise;<sup>9</sup>
- $SMLOSS$  = 1 if (current year's income before undeflated discretionary accruals/lagged market value of equity) is between (-0.03, 0), and 0 otherwise;
- $LEV$  = long-term debt deflated by total assets;
- $SHAREDECR$  = 1 if the firm has a decline of more than 10 per cent of total outstanding shares during the year, and 0 otherwise; and
- $SHAREINCR$  = 1 if the firm has an increase of more than 10 per cent of total outstanding shares during the year, and 0 otherwise.

We winsorise the top and bottom 1 per cent of  $DACC$ ,  $SIZE$ ,  $CFO$ , and  $LEV$ . Our main interest is the coefficient on  $JSOX$ . Based on  $H_1$ 's prediction that firms are more conservative in their financial reporting in the post-J-SOX period, the predicted sign of this coefficient is negative. The independent variables other than  $JSOX$  are control variables that may affect  $DACC$ . These control variables are based on Lobo and Zhou (2006) and the predicted signs of their coefficients are shown in Table 3.

### 3.5 Measuring income smoothing

We measure the level of income smoothing with the following model:

$$SMOOTH_{it} = (|EBDA_{it} - EBDA_{it-1}| - |E_{it} - E_{it-1}|) / SALES_{it-1} \quad (5)$$

where, for firm  $i$  in year  $t$ :

- $SMOOTH$  = an income smoothing measure;
- $EBDA$  = net earnings before undeflated discretionary accruals;
- $E$  = net earnings; and
- $SALES$  = sales.

Model (5) is based on Herrmann and Inoue (1996), who focus on income smoothing using a change in depreciation method. Since our focus is on income smoothing using discretionary accruals, we replace depreciation in their model with discretionary accruals. This model assumes a random walk expectations model for earnings before discretionary accruals and for earnings. Under this assumption, the prior year's earnings ( $E_{it-1}$ ) are regarded as expected (or normal) earnings. If the absolute value of change in net income before undeflated discretionary accruals ( $|EBDA_{it} - EBDA_{it-1}|$ ) exceeds the absolute value of the change in earnings ( $|E_{it} - E_{it-1}|$ ), we interpret this as evidence of income smoothing through discretionary accruals. Thus, positive values of SMOOTH are consistent with income smoothing.

### 3.6 Regression model for testing $H_2$

We use the following regression model to test  $H_2$ :

$$SMOOTH_{it} = \alpha + \beta_1 SIZE_{it} + \beta_2 TAX_{it} + \beta_3 COMP_{it} + \beta_4 DASSET_{it} + \beta_5 DEV_{it} + \beta_6 VAR_{it} + \beta_7 JSOX_{it} + \varepsilon_{it} \quad (6)$$

where, for firm  $i$  in year  $t$ :

$SMOOTH$  = an income smoothing measure;

$TAX$  = income taxes deflated by sales;

$COMP$  = managerial compensation deflated by sales;<sup>10</sup>

$DASSET$  = depreciable assets deflated by total assets;

$DEV$  = the absolute value of change in sales deflated by lagged sales; and

$VAR$  = the absolute value of the change in earnings deflated by sales averaged over the previous three years.

We winsorise the top and bottom 1 per cent of all variables excluding  $JSOX$ . Our main interest in the model is the coefficient on  $JSOX$ . Under our hypothesis that firms engage in less income smoothing in the post-J-SOX period, we expect the coefficient on  $JSOX$  to be negative. The independent variables other than  $JSOX$  are control variables that may affect income smoothing behaviour. These control variables are based on Herrmann and Inoue (1996), and the predicted signs of their coefficients are shown in Table 4.



## 4. Results

### 4.1 Descriptive statistics

Table 1 reports the descriptive statistics, comparing the pre-J-SOX and post-J-SOX samples. Panel A presents the variables used in the Basu (1997) regression and Panel B reports the variables used to test accounting conservatism based on discretionary accruals. Consistent with our prediction, Panel B shows that the post-J-SOX sample has a significantly lower mean of *DACC* than the pre-J-SOX sample, suggesting a decrease in discretionary accruals following J-SOX implementation. Panel C shows the variables used to test income smoothing. As predicted, the mean of *SMOOTH* for the post-J-SOX sample is significantly lower than that for the pre-J-SOX sample, suggesting a decrease in income smoothing following J-SOX implementation.

**Table 1: Descriptive statistics**

	pre-J-SOX		post-J-SOX		Difference in	
	mean	median	mean	median	mean ( <i>t</i> -stat)	median ( <i>z</i> -stat)
Panel A: Variables to test accounting conservatism based on Basu's (1997) model (n = 7,752)						
<i>X/P</i>	0.032	0.045	-0.014	0.034	-0.046*** (-12.72)	-0.011*** (-8.00)
<i>DR</i>	0.738	1.000	0.705	1.000	-0.033*** (-3.25)	-0.000*** (-3.24)
<i>R</i>	-0.134	-0.151	-0.093	-0.112	0.041*** (6.47)	0.039*** (7.37)
Panel B: Variables to test accounting conservatism based on discretionary accruals (n = 7,594)						
<i>DACC</i>	-0.001	-0.000	-0.008	-0.005	-0.007*** (-4.99)	-0.005*** (-4.96)
<i>BIGN</i>	0.799	1.000	0.757	1.000	-0.042*** (-4.45)	-0.000*** (-4.45)
<i>SIZE</i>	24.743	24.584	24.635	24.490	-0.108*** (-3.11)	-0.094*** (-3.12)
<i>CFO</i>	0.053	0.054	0.056	0.057	0.003** (2.44)	0.003*** (2.64)

	pre-J-SOX		post-J-SOX		Difference in	
	mean	median	mean	median	mean ( <i>t</i> -stat)	median ( <i>z</i> -stat)
<i>SMDECR</i>	0.090	0.000	0.048	0.000	-0.042*** (-7.22)	-0.000*** (-7.19)
<i>SMLOSS</i>	0.085	0.000	0.078	0.000	-0.007 (-1.17)	-0.000 (-1.17)
<i>LEV</i>	0.087	0.053	0.097	0.061	0.010*** (4.23)	0.008*** (2.89)
<i>SHAREDECR</i>	0.004	0.000	0.004	0.000	0.000 (0.37)	0.000 (0.37)
<i>SHAREINCR</i>	0.079	0.000	0.039	0.000	-0.040*** (-7.53)	-0.000*** (-7.50)
Panel C: Variables to test income smoothing (n = 7,380)						
<i>SMOOTH</i>	0.018	0.014	0.014	0.011	-0.004*** (-3.64)	-0.003*** (-4.58)
<i>SIZE</i>	24.811	24.643	24.701	24.541	-0.110*** (-3.21)	-0.102*** (-3.25)
<i>TAX</i>	0.023	0.018	0.016	0.012	-0.007*** (-14.51)	-0.006*** (-16.88)
<i>COMP</i>	0.004	0.001	0.002	0.000	-0.002*** (-11.75)	-0.001*** (-28.00)
<i>DASSET</i>	0.182	0.164	0.188	0.171	0.006** (2.02)	0.007** (2.21)
<i>DEV</i>	0.089	0.062	0.119	0.090	0.030*** (12.34)	0.028*** (14.53)
<i>VAR</i>	0.027	0.013	0.029	0.015	0.002 (1.58)	0.002*** (3.97)

Notes: \*\* and \*\*\* represent significance at the 5% and 1% levels in a two-tailed test, respectively. See the Appendix for variable definitions.

## 4.2 Tests of accounting conservatism

Table 2 shows the results of the regression comparing the level of accounting conservatism before and after J-SOX implementation using the Basu (1997) measure. The third column of Table 2 shows the regression results of model (1). Consistent with Basu (1997), the coefficient on  $R^*DR$  is significantly positive (0.235,  $t$ -stat = 9.73). This

finding confirms the existence of accounting conservatism, where earnings reflect bad news more quickly than good news.

The last column of Table 2 reports the regression results of model (2). The coefficient on  $R*DR$  is significantly positive (0.150,  $t$ -stat = 7.34), indicating the existence of accounting conservatism in the pre-J-SOX period. Consistent with our prediction, the coefficient on  $JSOX*R*DR$  is significantly positive (0.251,  $t$ -stat = 5.54). This result supports  $H_1$  and indicates that the level of accounting conservatism is higher in the post-J-SOX period than in the pre-J-SOX period.<sup>11</sup>

**Table 2: Regression results on the relationship between Basu’s (1997) accounting conservatism measure and J-SOX (n = 7,752)**

	Predicted Sign	X/P	X/P
Intercept	?	0.043*** (11.26)	0.049*** (19.01)
$DR$	?	0.013*** (2.59)	0.020*** (4.61)
$R$	+	0.025* (1.67)	0.027** (2.44)
$R*DR$	+	0.235*** (9.73)	0.150*** (7.34)
$JSOX$	?		-0.012* (-1.67)
$JSOX*DR$	?		-0.001 (-0.07)
$JSOX*R$	-		-0.003 (-0.12)
$JSOX*R*DR$	+		0.251*** (5.54)
Adjusted $R^2$		0.077	0.124
$F$ -statistic		124.64***	79.62***

Notes: \*, \*\*, and \*\*\* represent significance at the 10%, 5%, and 1% levels in a two-tailed test, respectively.  $t$ -statistics in parentheses are based on robust firm-clustered standard errors (Rogers, 1993; Petersen, 2009). See the Appendix for variable definitions.

Table 3 presents the regression results of model (4) using discretionary accruals as the dependent variable. As expected, the coefficient on  $JSOX$  is significantly negative (-0.004,  $t$ -stat = -4.40). This result is also consistent with  $H_1$  and indicates that firms employ

lower discretionary accruals in the post-J-SOX period than in the pre-J-SOX period.<sup>12</sup>

**Table 3: Regression results on the relationship between discretionary accruals and J-SOX (n = 7,594)**

	Predicted Sign	DACC
Intercept	?	-0.022 (-1.55)
<i>BIGN</i>	-	0.009*** (4.85)
<i>SIZE</i>	?	0.001*** (2.71)
<i>CFOTALG</i>	-	-0.452*** (-26.23)
<i>SMDECR</i>	+	0.008*** (4.13)
<i>SMLOSS</i>	+	0.010*** (5.40)
<i>LEV</i>	+	-0.005 (-0.73)
<i>SHAREDECR</i>	-	-0.007 (-0.73)
<i>SHAREINCR</i>	+	-0.012*** (-3.11)
<i>JSOX</i>	-	-0.004*** (-4.40)
Adjusted <i>R</i> <sup>2</sup>		0.282
<i>F</i> -statistic		123.99***

Notes: \*\*\* represent significance at the 1% level in a two-tailed test. *t*-statistics in parentheses are based on robust firm-clustered standard errors (Rogers, 1993; Petersen, 2009). See the Appendix for variable definitions.

In summary, the results suggest that the level of accounting conservatism increased following J-SOX implementation. These findings are consistent with prior studies' findings on internal control regulations in other countries (Lobo & Zhou, 2006, 2010; Machuga & Teitel, 2007; Zhou, 2008; Iliev, 2010; Jenkins & Velury, 2011; Brown et al., 2014; Kim et al., 2019).

### 4.3 Tests of income smoothing

Table 4 presents the regression results of model (5), comparing the level of the income smoothing measure before and after J-SOX implementation. The coefficient on *JSOX* is significantly negative (-0.004, *t*-stat = -2.72). This result supports H<sub>2</sub> and indicates that managers engage in less income smoothing in the post-J-SOX period than in the pre-J-SOX period. This finding is consistent with prior papers' findings on internal control regulations in other countries (Machuga & Teitel, 2007; Brown et al., 2014; Black et al., 2022).

**Table 4: Regression results on the relationship between income smoothing and J-SOX (n = 7,380)**

	Predicted Sign	SMOOTH
Intercept	?	0.052*** (3.36)
<i>SIZE</i>	+	-0.001* (-1.81)
<i>TAX</i>	+	0.115** (2.19)
<i>COMP</i>	+	-0.147 (-0.67)
<i>DASSET</i>	+	-0.010 (-1.33)
<i>DEV</i>	+	0.001 (0.07)
<i>VAR</i>	-	-0.267*** (-6.47)
<i>JSOX</i>	-	-0.004*** (-2.72)
Adjusted <i>R</i> <sup>2</sup>		0.043
<i>F</i> -statistic		8.74***

Notes: \*, \*\*, and \*\*\* represent significance at the 10%, 5%, and 1% levels in a two-tailed test, respectively. *t*-statistics in parentheses are based on robust firm-clustered standard errors (Rogers, 1993; Petersen, 2009). See the Appendix for variable definitions.

## 5. Additional tests

### 5.1 Robustness check of accounting conservatism

In this subsection, we check the robustness of the results on accounting conservatism using an accounting conservatism measure proposed by Ball and Shivakumar (2005). They argue that timely gain and loss recognition is a source of positive correlation between accruals and cash flow, thereby mitigating the negative correlation documented by Dechow (1994). In the presence of accounting conservatism, economic losses are likely to be recognised on a timely basis through unrealised accruals, while economic gains are recognised when realised and thus accounted for on a cash basis. This asymmetry implies that the negative correlation between accruals and cash flow is smaller in the case of losses. To test the asymmetry, Ball and Shivakumar (2005) propose the following model:

$$ACC_{it} = \alpha + \beta_1 DCFO_{it} + \beta_2 CFO_{it} + \beta_3 DCFO_{it} * CFO_{it} + \varepsilon_{it} \quad (7)$$

where, for firm  $i$  in year  $t$ :

- $ACC$  = total accruals, defined as net income minus cash flow from operations;
- $CFO$  = cash flow from operations; and
- $DCFO$  = a dummy variable equal to 1 if  $CFO$  is negative and 0 otherwise.

Following García Lara et al. (2009, p.170), we scaled  $ACC$  and  $CFO$  by average total assets and adjust them by subtracting the industry mean of each variable every year to control for the great variation in type and size of accruals across industries. We winsorise the top and bottom 1 per cent of  $ACC$  and  $CFO$  to mitigate the influence of outliers. The coefficient on  $CFO$  is expected to be negative, showing the negative correlation between accruals and cash flow, as documented in Dechow (1994). The coefficient on  $DCFO * CFO$  is expected to be positive in the presence of accounting conservatism, showing that accrued losses are more likely in periods of negative cash flow.

To test for differences in accounting conservatism between the pre- and post-J-SOX periods, we augment Ball and Shivakumar's (2005) model by interacting all variables with  $JSOX$  as follows:

$$ACC_{it} = \alpha + \beta_1 DCFO_{it} + \beta_2 CFO_{it} + \beta_3 DCFO_{it} * CFO_{it} + \beta_4 JSOX_{it} + \beta_5 DCFO_{it} * JSOX_{it} + \beta_6 CFO_{it} * JSOX_{it} + \beta_7 DCFO_{it} * CFO_{it} * JSOX_{it} + \varepsilon_{it} \quad (8)$$

We expect the coefficients on  $DCFO * CFO * JSOX$  to be positive, indicating that the level of accounting conservatism is higher in the post-J-SOX period than in the pre-J-SOX period.

The third column of Table 5 presents the regression results of model (7). As expected, the coefficient on  $DCFO * CFO$  is significantly positive (0.403,  $t$ -stat = 6.47), indicating the existence of accounting conservatism. The last column of Table 5 shows the regression results of model (8). The coefficient on  $DCFO * CFO * JSOX$  is significantly positive (0.169,  $t$ -stat = 1.76). This result is consistent with our prediction and indicates that the level of accounting conservatism is higher in the post-J-SOX period than in the pre-J-SOX period. The coefficient on  $DCFO * CFO$  in model (8) is also significantly positive (0.319,  $t$ -stat = 4.06), indicating significant conservatism in the pre-J-SOX period. In sum, the results using Ball and Shivakumar's (2005) measure of accounting conservatism are essentially the same as those using Basu's (1997) measure of accounting conservatism.

**Table 5: The relationship between Ball and Shivakumar's (2005) accounting conservatism measure and J-SOX (n = 8,804)**

	Predicted Sign	ACC	ACC
Intercept	?	0.009*** (7.53)	0.004** (2.33)
$DCFO$	?	0.008*** (3.43)	0.011*** (4.06)
$CFO$	-	-0.642*** (-20.35)	-0.584*** (-14.65)
$DCFO * CFO$	+	0.403*** (6.47)	0.319*** (4.06)
$JSOX$	?		0.012*** (5.59)
$DCFO * JSOX$	?		-0.007** (-1.97)
$CFO * JSOX$	-		-0.115** (-2.35)
$DCFO * CFO * JSOX$	+		0.169* (1.76)
Adjusted $R^2$		0.224	0.226
F-statistic		431.92***	203.70***

Notes: \*, \*\*, and \*\*\* represent significance at the 10%, 5%, and 1% levels in a two-tailed test, respectively.  $t$ -statistics in parentheses are based on robust firm-clustered standard errors (Rogers, 1993; Petersen, 2009). See the Appendix for variable definitions.

## 5.2 Robustness check of income smoothing

In our main analysis of income smoothing, we follow Herrmann and Inoue (1996) and assume a random walk expectations model not only for earnings but also for earnings before discretionary accruals. To check the robustness of our results regarding income smoothing, we use another measure of income smoothing based on Moses (1987) that assumes a simple random walk model only for earnings. In particular, the income smoothing measure (*SMOOTH\_MOSES*) is calculated as follows:

$$SMOOTH\_MOSES_{it} = (|EBDA_{it} - E_{it-1}| - |E_{it} - E_{it-1}|) / SALES_{it-1} \quad (9)$$

When we estimate model (9) using *SMOOTH\_MOSES* as the dependent variable instead of *SMOOTH*, the untabulated results reveal that the coefficient on *JSOX* is significantly negative (-0.003, *t*-stat = -2.56). In summary, the result using Moses's (1987) income smoothing measure is essentially the same as using Herrmann and Inoue's (1996) measure. The result still indicates that managers engage in less income smoothing in the post-J-SOX period than in the pre-J-SOX period.

## 5.3 Additional analyses over an extended period

In the main analyses, we used a sample spanning two years immediately before and after J-SOX implementation. This short-period analysis has the advantage of eliminating the effects of regulations other than J-SOX as much as possible. However, it is almost impossible to reveal the effect of J-SOX on financial reporting persists or not. In this regard, Pincus et al. (2022) test the persistence of the effects of US-SOX on accrual-based and real earnings management using a longer sample period than Cohen et al. (2008). In line with Pincus et al. (2022), we conduct additional analyses extending the sample period to four years before and after J-SOX implementation (2005-2012).<sup>13</sup> Specifically, we first check the robustness of our main regression results using the sample of our extended pre-J-SOX period (2005-2008) and our extended post-J-SOX period (2009-2012). Second, we replicate the regression analyses after dividing the extended post-J-SOX period into the first post-J-SOX period (2009-2010) and the second post-J-SOX period (2011-2012). To test this, we replace *JSOX* in our regression models with *JSOX1* and *JSOX2*. *JSOX1* equals 1 in the first post-J-SOX period (2009-2010), and 0 otherwise. *JSOX2* equals 1 in the second post-J-SOX period (2011-2012), and 0 otherwise.



Table 6 shows the results of repeating the regression analysis in Table 2 using the extended sample period. In the regression analysis based on Basu (1997) model, the coefficient on *JSOX* is positive (0.182) and statistically significant ( $t$ -stat = 5.78), indicating that accounting conservatism averagely increased after J-SOX implementation even extending sample period. The coefficient on *JSOX1\**R*\**DR** is significantly positive (0.198,  $t$ -stat = 4.79), and that on *JSOX2\**R*\**DR** is also significantly positive (0.138,  $t$ -stat = 3.04). These results suggest that the increase in accounting conservatism after J-SOX implementation exists not only in the first post-J-SOX period (2009-2010), but also in the second post-J-SOX period (2011-2012).

**Table 6: The relationship between Basu's (1997) accounting conservatism measure and J-SOX using the extended sample period (n = 12,672)**

	Predicted sign	<i>X/P</i>	<i>X/P</i>	<i>X/P</i>
Intercept	?	0.052*** (24.94)	0.043*** (19.21)	0.043*** (19.21)
<i>DR</i>	?	-0.000 (-0.13)	0.009** (2.47)	0.009** (2.47)
<i>R</i>	+	0.059*** (8.57)	0.056*** (8.62)	0.056*** (8.62)
<i>R*DR</i>	+	0.151*** (8.86)	0.063*** (3.51)	0.063*** (3.51)
<i>JSOX</i>	?		0.016*** (3.93)	
<i>JSOX*DR</i>	?		-0.012* (-1.81)	
<i>JSOX*R</i>	-		0.024 (1.44)	
<i>JSOX*R*DR</i>	+		0.182*** (5.78)	
<i>JSOX1</i>	?			-0.004 (-0.68)
<i>JSOX2</i>	?			0.027*** (6.21)
<i>JSOX1*DR</i>	?			-0.002 (-0.17)
<i>JSOX2*DR</i>	?			-0.016**

				(-2.17)
<i>JSOX1</i> *R	-		0.002	(0.08)
<i>JSOX2</i> *R	-		0.031	(1.53)
<i>JSOX1</i> *R*DR	+		0.198***	(4.79)
<i>JSOX2</i> *R*DR	+		0.138***	(3.04)
Adjusted R <sup>2</sup>		0.088	0.110	0.117
F-statistic		258.01***	115.74***	84.84***

Notes: \*, \*\*, and \*\*\* represent significance at the 10%, 5%, and 1% levels in a two-tailed test, respectively. *t*-statistics in parentheses are based on robust firm-clustered standard errors (Rogers, 1993; Petersen, 2009). See the Appendix for variable definitions.

Table 7 replicates the regression analysis based on discretionary accruals in Table 3 using the extended sample period. The coefficient on *JSOX* is negative (-0.003) and statistically significant (*t*-stat = -3.62), indicating that firms use lower discretionary accruals in the post-J-SOX period than in the pre-J-SOX period. Again, these results suggest that accounting conservatism generally increased after J-SOX implementation even using the extended sample period. The coefficient on *JSOX1* is significantly negative (-0.004, *t*-stat = -4.44), but that on *JSOX2* is not significant (-0.001, *t*-stat = -1.53). The results indicate that discretionary accruals are lower in the first post-J-SOX period (2009-2010) than in the pre-J-SOX period, but have no differences between in the second post-J-SOX period (2011-2012) and in the pre-J-SOX period. The result using discretionary accruals suggests that the increase in accounting conservatism after J-SOX implementation exists only in the first post-J-SOX period (2009-2010), but does not persist until the second post-J-SOX period (2011-2012). In sum, the results in Tables 6 and 7 suggest that our main results on accounting conservatism are robust to extending the sample period. Additionally, there is evidence on the persistence of increasing accounting conservatism after J-SOX implementation, albeit sensitive to research methods.

**Table 7: The relationship between discretionary accruals and J-SOX using the extended sample period (n = 12,496)**

	Predicted sign	DACC	DACC
Intercept	?	0.011 (1.05)	0.011 (1.06)
<i>BIGN</i>	-	0.004*** (3.21)	0.004*** (3.22)
<i>SIZE</i>	?	0.001 (1.27)	0.001 (1.26)
<i>CFOTALG</i>	-	-0.496*** (-35.85)	-0.496*** (-35.87)
<i>SMDECR</i>	+	0.010*** (8.37)	0.010*** (8.28)
<i>SMLOSS</i>	+	0.007*** (5.59)	0.008*** (5.64)
<i>LEV</i>	+	-0.004 (-0.77)	-0.003 (-0.73)
<i>SHAREDECR</i>	-	-0.010 (-0.75)	-0.011 (-0.75)
<i>SHAREINCR</i>	+	-0.001 (-0.45)	-0.001 (-0.44)
<i>JSOX</i>	-	-0.003*** (-3.62)	
<i>JSOX1</i>	-		-0.004*** (-4.44)
<i>JSOX2</i>	-		-0.001 (-1.53)
Adjusted $R^2$		0.343	0.344
<i>F</i> -statistic		193.74***	184.51***

Notes: \*\*\* represents significance at the 1% level in a two-tailed test, respectively. *t*-statistics in parentheses are based on robust firm-clustered standard errors (Rogers, 1993; Petersen, 2009). See the Appendix for variable definitions.

Table 8 repeats the regression analysis on income smoothing in Table 4 using the extended sample period. Inconsistent with the main result in Table 4, the coefficient on *JSOX* is no longer significant (0.001, *t*-stat = 0.65). This result indicates that using the extended sample period, there is no difference in the level of income smoothing between before and after J-SOX implementation. The coefficient on *JSOX1* is negative (-0.003) and statistically significant (*t*-stat = -1.94).

This result is similar to the main result and indicates that the level of income smoothing is lower in the first post-J-SOX period (2009-2010) than in the extended pre-J-SOX period (2005-2008). Surprisingly, the coefficient on *JSOX2* is significantly positive (0.004, *t*-stat = 3.10). This result indicates that the level of income smoothing is higher in the second post-J-SOX period (2011-2012) than in the extended pre-J-SOX period (2005-2008). These results suggest that income smoothing was restrained in the two years immediately after J-SOX implementation but may have increased thereafter.

**Table 8: The relationship between income smoothing and J-SOX using the extended sample period (n = 12,296)**

	Predicted sign	SMOOTH	SMOOTH
Intercept	?	0.055*** (4.73)	0.056*** (4.81)
<i>SIZE</i>	+	-0.001*** (-2.97)	-0.001*** (-3.06)
<i>TAX</i>	+	0.182*** (4.24)	0.177*** (4.14)
<i>COMP</i>	+	-0.114 (-0.63)	-0.111 (-0.61)
<i>DASSET</i>	+	-0.016*** (-2.72)	-0.015** (-2.57)
<i>DEV</i>	+	-0.008 (-1.08)	-0.006 (-0.76)
<i>VAR</i>	-	-0.194*** (-7.13)	-0.201*** (-7.29)
<i>JSOX</i>	-	0.001 (0.65)	
<i>JSOX1</i>	-		-0.003* (-1.94)
<i>JSOX2</i>	-		0.004*** (3.10)
Adjusted <i>R</i> <sup>2</sup>		0.030	0.0330
<i>F</i> -statistic		12.26***	13.20***

Notes: \*, \*\*, and \*\*\* represent significance at the 10%, 5%, and 1% levels in a two-tailed test, respectively. *t*-statistics in parentheses are based on robust firm-clustered standard errors (Rogers, 1993; Petersen, 2009). See the Appendix for variable definitions.

## 6. Conclusion

This study examines the changes in accounting conservatism and income smoothing after the implementation of J-SOX. We find that Japanese firms are more conservative in their financial reporting immediately after J-SOX implementation, consistent with the case of internal control regulations in other countries (Lobo & Zhou, 2006, 2010; Machuga & Teitel, 2007; Zhou, 2008; Iliev, 2010; Jenkins & Velury, 2011; Brown et al., 2014; Kim et al., 2019). We also find that Japanese firms engage in less income smoothing immediately after J-SOX implementation, similar to the case of internal control regulations in other countries (Machuga & Teitel, 2007; Brown et al., 2014; Black et al., 2022). However, in our additional analyses extending sample period, we find the evidence indicating that the increasing effect of J-SOX on accounting conservatism may have persisted, but the decreasing effect on income smoothing has not persisted. These findings suggest that the financial reporting quality in Japanese firms may have improved after J-SOX implementation through increased accounting conservatism.

Our findings are important for international comparative research of accounting practices. Prior research suggests earnings in Japanese firms are less conservative and more smoothed than those in other countries (Ball et al., 2000a; Leuz et al., 2003; Enomoto et al., 2015). However, our findings indicate that the levels of accounting conservatism and income smoothing in Japanese firms may have changed following J-SOX implementation. Therefore, researchers should consider changes in laws and regulations in each country when they compare accounting practices internationally.

Our findings are also important for politicians and accounting standards setters. Although the procedures required under J-SOX are more concise and less costly than those required under US-SOX, our results suggest that J-SOX may be effective in improving the financial reporting quality through increased accounting conservatism. Therefore, policy makers and accounting standards setters should consider not only strictness but also cost-effectiveness when developing laws and accounting regulations.

This study has two important limitations. First, the measures of accounting conservatism and income smoothing used in this study may reflect estimation errors. Second, implementation of J-SOX is not the only important event that occurred during our study period that may have affected managers' accounting discretion. For example, the bankruptcy of Lehman Brothers and revision of Japanese accounting standards for inventory and financial instrument measurement

occurred in 2008. Thus, we cannot rule out the possibility that factors other than J-SOX affected our results.

There are three research questions for future research. First, since our additional analyses extending sample period indicates that the decreasing effect of J-SOX on income smoothing has not persisted, it is necessary to clarify the reasons. Second, the sample period for the additional analyses is from 2005 to 2012, and future research should extend the sample period to the 2020s in order to understand more recent accounting practice. Third, managers can smooth income through not only accrual manipulation but also real activities manipulation (Lambert, 1984; Mande, File, & Kwak, 2000; Khurana, Pereira, & Zhang, 2018; Baik et al., 2022; Kuang, 2022). Although this study focuses on accrual-based income smoothing, it would be interesting to investigate the effect of J-SOX on real income smoothing. These issues can be resolved in future studies.

## Endnote

- <sup>1</sup> Beaver and Ryan (2005, p.269) define conditional conservatism as meaning that “book values are written down under sufficiently adverse circumstances but not written up under favorable circumstances.” Unconditional conservatism is defined as meaning that “aspects of the accounting process determined at the inception of assets and liabilities yield expected unrecorded goodwill.”
- <sup>2</sup> We focus on conditional conservatism because it may involve a higher degree of managerial discretion (Pae, 2007; Chan, Lin, & Strong, 2009; García Lara et al., 2009).
- <sup>3</sup> However, it should be noted that there is also the evidence that income smoothing improves earnings informativeness (Tucker & Zarowin, 2006; Cahan, Liu, & Sun, 2008).
- <sup>4</sup> The signaling theory suggests that managers smooth earnings in order to improve earnings informativeness on future prospects (Tucker & Zarowin, 2006; Cahan et al., 2008). Such informative income smoothing may not necessarily imply the reduction of financial reporting quality. However, the opportunistic view on income smoothing suggests that managers engage in income smoothing to increase their private benefits (Barton, 2001; Leuz et al., 2003; Kanagaretnam, Lobo, & Mathieu, 2004; Eckles, Halek, He, Sommer,

& Zhang, 2011). Such opportunistic income smoothing would reduce financial reporting quality. Improvements in internal controls are expected to increase income smoothing for signaling and decrease opportunistic income smoothing, and the net effect of them is an empirical question. However, we predict that in our hypothesis development, the restraining effect of J-SOX on income smoothing is more dominant because prior studies suggest that income smoothing decreased after internal control regulation (Machuga & Teitel, 2007; Brown et al., 2014; Black et al., 2022).

- <sup>5</sup> The most common fiscal year-end for Japanese firms is March 31.
- <sup>6</sup> Cohen et al. (2008) include 2002 as the post-US-SOX period in their main analysis, but they repeat all analyses after excluding 2002 to check the robustness because the year was a transitional period (US-SOX was enacted on July 30, 2002). However, since J-SOX was applied to all Japanese listed firms from the fiscal year ending March 31, 2009 and we select only firms with fiscal year-ends of March 31, we can exactly include 2009 as the post-J-SOX period.
- <sup>7</sup> The 7,752 observations is for testing accounting conservatism based on Basu (1997) model. When we test accounting conservatism using discretionary accruals, the sample size is 7,594 observations, including 3,797 observations in both the pre-J-SOX and the post-J-SOX periods. The 7,594 firm-year observations consist of 1,979 firms and in detail, 1,818 (161) firms have two years (one year) of data both before and after J-SOX implementation. Regarding income smoothing, the sample size is 7,380 observations, including 3,690 observations in both the pre-J-SOX and the post-J-SOX periods. The 7,380 firm-year observations are composed of 1,915 firms and in detail, 1,775 (140) firms have two years (one year) of data both before and after J-SOX implementation.
- <sup>8</sup> The Big N auditors are Deloitte Touche Tohmatsu LLC, Ernst & Young ShinNihon LLC, PricewaterhouseCoopers Aarata, KPMG AZSA LLC, and their predecessors (Asahi Audit Corporation, Century Ota Showa and Co., Chuo Aoyama Audit Corporation, and Misuzu Audit Corporation).
- <sup>9</sup> Undeclared discretionary accruals are defined as *DACC* multiplied by lagged total assets.

- <sup>10</sup> Although Herrmann and Inoue (1996) use the amount of managerial bonus, this has been included in the total amount of managerial compensation (i.e., salary and bonus) since May 2006 (ASBJ Statement No. 4). Thus, we use managerial compensation as a substitute for managerial bonuses. In addition, Herrmann and Inoue (1996) use operating income as the deflator. We use sales as the deflator instead because small negative operating income leads *COMP* to have extremely large negative values. When operating income is used as the deflator, the results are essentially the same.
- <sup>11</sup> Dietrich, Muller, and Riedl (2007) allege that the Basu (1997) specification of accounting conservatism induces biased results except under very restrictive conditions and probably leads to incorrect interpretations. Hence, they propose using alternative measures to validate the robustness of results based on the Basu (1997) approach. Based on Dietrich et al. (2007), we substitute price-deflated accruals and price-deflated operating cash flow for price-deflated earnings in model (2). Given our prediction that accounting choices are more conservative in the post-J-SOX period and that these choices are implemented using accruals, the coefficient on *JSOX\*R\*DR* should be higher in the regression with accruals. Untabulated results show that, while the coefficient on *JSOX\*R\*DR* is significantly negative (-0.146, *t*-stat = -2.14) in the cash-flow specification, it is significantly positive (0.450, *t*-stat = 5.50) in the accruals specification. This finding supports our prediction that the level of conservative accounting choices is higher in the post-J-SOX period than in the pre-J-SOX period.
- <sup>12</sup> Givoly and Hayn (2000) employ total accruals before depreciation (*TACC\_DEP*) and non-operating accruals (*NOP\_ACCRUALS*) as alternative measures of accounting conservatism. We replace *DACC* in model (4) with *TACC\_DEP* and *NOP\_ACCRUALS* and estimate the model to check the robustness of the results of accounting conservatism. Untabulated results show that the coefficients on *JSOX* are significantly negative for both *TACC\_DEP* and *NOP\_ACCRUALS*. These results are consistent with our main findings that firms employ more conservative financial reporting in the post-J-SOX period than in the pre-J-SOX period.



- <sup>13</sup> We include only firms that have complete data in the four years before and after J-SOX implementation (eight years in total). The results are essentially the same when using a sample of two years before and four years after J-SOX implementation.

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