

Discussion Paper Series

RIEB

Kobe University

DP2016-18

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April 4, 2016



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The impact of Japanese Regulatory Changes on Accrual-Based and Real Earnings Management

Abstract

The purpose of this study is to investigate the changes in accrual-based earnings management (AEM) and real earnings management (REM) in response to Japanese regulatory changes. After the U.S. Sarbanes-Oxley Act (SOX) in 2002, the Financial Instruments and Exchange Act of 2006 (J-SOX) was introduced in June 2006 in Japan, has been effective since the fiscal year ending on March 31, 2009. We shed light on the time lag between the introduction of SOX and J-SOX as a transition period. During this period, several regulatory bodies addressed the issue of internal control, considering both the SOX and the forthcoming J-SOX. This study, therefore, focuses on the J-SOX and a series of related laws and regulations in this transition period, and their effects on AEM and REM. Our results show that the level of AEM changes during the transition period before the introduction of J-SOX, while that of REM decreases after the introduction of J-SOX. The evidence generally supports the view that J-SOX and the series of regulatory changes before its implementation have an impact on the financial reporting quality of Japanese firms.

Keywords: Accrual-based earnings management, Real earnings management, Financial Instruments and Exchange Act of Japan

JEL Classification: G38 M41 M42 M48

1. Introduction

The Financial Instruments and Exchange Act of 2006 (J-SOX), the so-called Japanese version of the Sarbanes-Oxley Act (SOX), was established in June, 2006 and effective as of the fiscal year ending March 31, 2009. The Act was introduced, based on the SOX, after the accounting scandals (e.g., Seibu Railway, Kanebo, and Livedoor) in the mid-2000s. The purpose of this study is to investigate whether accrual-based earnings management (AEM) and real earnings management (REM) change in response to J-SOX and the related regulatory changes before J-SOX. In the period between the SOX and the J-SOX, several regulatory bodies addressed the issue of internal control, considering the SOX. We shed light on this period as a transition period as well as that after J-SOX, because it includes the deliberation and enactment of laws and regulations around internal control and audit standards in response to the U.S. accounting scandals and the subsequent SOX implementation.

The SOX was introduced in July 2002 to improve corporate governance and suppress certain managerial behaviors that influence earnings. The Act was established to reduce opportunistic financial reporting including the certification of financial statement accuracy by CEOs and CFOs, external auditor assessment of internal controls, and increased legal penalties on CEOs and CFOs for financial misreporting. Japanese firms under J-SOX have a substantially equivalent system of internal control for financial reporting as do U.S. firms under the SOX.

Cohen, Dey, and Lys (2008) focus on the change in earnings management before and after SOX implementation. They document that managers tended to engage in REM instead of AEM after SOX was enacted. However, there is no sufficient and detailed evidence regarding the effect of J-SOX on earnings management.

Prior studies have conducted two-period comparisons of J-SOX and have ignored that the related laws and regulations before J-SOX are also likely to have affected managerial behaviors. We, therefore, divide our sample period from 2000 to 2014 into three periods: pre-SOX, transition (post-SOX and pre-J-SOX), and post-J-SOX. Five earnings management measures are used to examine the effect of J-SOX, comparing the three periods. We predict that firms were already altering their

level of earnings management due to the changes in the financial reporting environment pre-J-SOX. Comparing the effects of regulatory changes in the three periods may provide useful insights that are not covered in prior studies.

We carried out multivariate analyses on Japanese listed firms, covering 36,478 firm-year observations between 2000 and 2014. The results indicate that AEM decreases in the transition period. In the post-J-SOX period, AEM is marginally higher when compared with the transition period, but lower than in the pre-SOX period. This result can be interpreted as the reversal of negative accruals in the transition period. We find that REM in the post J-SOX period is lower than that in the transition period.

In our additional analysis, we consider auditor size to test our hypothesis, as auditors play an important role in the implementation of J-SOX and laws and regulations in the transition period, which included several audit reforms. Comparing earnings management in the pre-SOX period with that in the transition period, only firms with Big N auditors experience a significant decrease in AEM. A similar decrease is not observed in the firms with non-Big N auditors. The decrease before the enactment of J-SOX suggests that laws and regulations in the transition period already have an effect on the AEM of firms with Big N auditors. REM decreases after J-SOX implementation for both firms with Big N auditors and those with non-Big N auditors. We demonstrate that earnings quality improves in both the transition and the post-J-SOX periods.

We contribute to the existing literature in two ways. First, we extend prior research on the method-shifting of earnings management in response to the laws and regulations in our three-period comparison. Our results imply that the effective laws and regulations of internal control and their appropriate enforcement could restrain a manager's tendency to manage earnings through accruals. Extant research such as Cohen et al. (2008), has found the substitution effect where strict accounting regulations alter the earnings management method from AEM to REM. We provide new evidence, adding to prior literature regarding the relationship between regulatory change and earnings management by using a unique setting in Japan.

The uniqueness of this study compared with the existing ones is in the inclusion of the

transition period. This allows us to independently observe the effect of a series of regulatory changes, triggered by SOX, pre-J-SOX implementation. By comparing among three periods, we show that firms already changed their AEM level in transition period that is, before J-SOX implementation.

Second, we contribute to existing literature by providing evidence of the relationship between changes in earnings management and auditor size under regulatory reform. We report that the improvement in earnings quality by the reduction in AEM in the transition period is limited to firms with Big N auditors which affiliated with U.S. big audit firms.

The remainder of the paper is as follows. Section 2 provides background and hypothesis development. Section 3 describes our research design and data. The results of our test are shown in section 4 and the additional analysis in section 5. Section 6 presents our conclusion and the limitation of the paper.

2. Background and Hypothesis Development

2.1 Background

The U.S. Congress passed SOX in July 2002, triggered by a chain of accounting scandals. Along with the U.S., the Japanese government and regulatory bodies started discussions to improve internal controls in firms for financial reporting. A series of laws and regulations in Japan were established after the passage of SOX.

J-SOX was passed by the Japanese Diet in June 2006 and effective since the fiscal year ending March 31, 2009. It was established to make listed firms construct an internal control system to ensure the reliability of financial reporting, and thus, enable stakeholders to obtain accounting information at an equivalent level to a U.S. firm.¹ Similar to the SOX, the purpose of J-SOX is to

¹ J-SOX is designed to avoid the issue of efficiency in the SOX. The six major differences between SOX and J-SOX are listed below (see "On the Setting of the Standards and Practice Standards for Management Assessment and Audit concerning Internal Control Over Financial Reporting (Council Opinions))." These are the Council Opinions (but the following major differences are maintained).

- (1) Using top-down/risk-based approach,
- (2) Classification of deficiencies of internal controls,
- (3) Not adopting direct reporting,
- (4) Integration of internal control audit with audit of financial statements,
- (5) Preparation of internal control audit report and financial statement audit, and
- (6) Coordination with corporate auditors/audit committee and internal auditors.

reinforce corporate governance on financial reporting. According to J-SOX, “internal control” is constructed to achieve four objectives: (1) Effectiveness and efficiency of business operations, (2) Reliability of financial reporting, (3) Compliance with applicable laws and regulations relevant to business activities, and (4) Safeguarding of assets.²

J-SOX requires a manager’s confirmation of financial statement accuracy, a manager’s assessment of internal controls and preparation of internal control reports, and an external audit of internal control reports. Further, it imposes penalties on managers for misstatement of internal control reports. Through the assessment of internal control, J-SOX builds a structure that produces higher quality financial reporting.

Many studies document that the improvement of corporate governance quality through the SOX increased the earnings quality (higher quality of accounting accruals). Lobo and Zhou (2006) report an increase in conservatism in financial reporting post-SOX. Cohen et al. (2008) show that managers switched from AEM to REM post-SOX. Chambers and Payne (2010) provide evidence that accrual persistence, a proxy for earnings quality, increased significantly post-SOX. Hossain, Mitra, Rezaee, and Sarath (2011) compare earnings management in firms with weak governance structures with that of other firms.³ They observe a difference in earnings management between the two types of firms pre-SOX, but the difference is absent in the post-SOX period. Holder, Karim, and Robin (2013) provide evidence that the reporting quality (discretionary accruals and their standard deviation) for non-accelerated filers, temporarily exempt from SOX Section 404b, deteriorates significantly compared to accelerated filers. Gilliam, Heflin, and Paterson (2014) report that zero-earnings discontinuity disappears post-SOX. As the substance of the J-SOX is similar to the SOX,

² The details of the four objectives are as follows:

- (1) Effectiveness and efficiency of business operations means promoting effective and efficient operations in order to achieve the objectives of business activities,
- (2) Reliability of financial reporting means ensuring the reliability of financial statements and the information that could have a material effect on financial statements,
- (3) Compliance with applicable laws and regulations relevant to business activities means promoting compliance with laws, ordinances and other codes relevant to business activities, and
- (4) Safeguarding of assets means to ensure that assets are acquired, used and disposed of in accordance with proper procedures and approvals.

Differing from J-SOX, “Safeguarding of assets” is described in the other three objectives in SOX. The objective is more emphasized in J-SOX.

³ They define firms that were implicated by the Securities and Exchange Commission for backdating stock options as firms with weak governance structures.

we can assume that its influence on managerial behavior in Japanese firms shows no significant difference from that in the U.S. In other words, if the aims of J-SOX are achieved, we may posit our hypotheses that AEM decreases post-J-SOX.

Although J-SOX is expected to restrain earnings management as well as SOX, there are no studies that clearly show the explicit method-shifting of earnings management as presented in Cohen et al. (2008). Nakashima (2015) provides evidence that the level of AEM and REM changes before and after SOX and J-SOX implementation in Japanese firms. However, her sample size is limited as she focuses on firms with internal control deficiencies and production cost is used as the only REM measure.⁴ Our study covers 36,478 firm-year observations from 2000 to 2014. We employ one AEM and four REM measures to capture the changes in earnings management more comprehensively as well as a three-period comparison, considering that various changes regarding corporate governance and financial reporting occurred during the lag between the SOX and J-SOX implementation.

Figure 1 presents that in the transition period, the regulatory changes to improve financial reporting quality triggered by the U.S. accounting scandals and subsequent SOX implementation are carried out by authorities. First, we should indicate the change of audit. Japanese audit standards were revised by the Business Accounting Council in November 2002 and February 2005.⁵ Furthermore, Japanese big audit firms play important roles as part of the global network of U.S. big audit firms. They have been subjected to the similar requirements of the more rigorous auditing of U.S. big audit firms arising from SOX.⁶ Thus, the auditing environment changes considerably

⁴ Enomoto and Yamaguchi (2015) demonstrate that the discontinuity in earnings change distribution at zero disappeared after the J-SOX implementation, indicating earnings management to avoid earnings decreases became less prevalent after the J-SOX implementation, but the discontinuity in earnings distribution at zero did not disappear altogether after the J-SOX implementation. Meanwhile, they do not cover methods of earnings management.

⁵ One of the aims of the revisions is international coordination of auditing practices. Audit standards revised in November 2002 were effective from the fiscal year ending March 2003. Those revised in February 2005 were effective from the fiscal year ending March 2006 and were allowed to be adopted from the fiscal year ending March 2005.

⁶ For example, the "Legend Clause" on the audit report of Japanese firms was removed starting March 2004. This clause explained that the financial statements were prepared by Japanese accounting standards and audits in accordance with Japanese auditing standards. The "Legend Clause" was added in the English annual report of Japanese firms that were clients of Big N audit firms from March 1999. It is said that the Big N firms had recognized the improvement in Japanese audit standards and practice compared with others when this problem occurred. For example, the footnote of the financial statements of the Tokyo Electric Power Company includes the following sentence (emphasis added): "T(t)he accompanying non-consolidated financial statements of The Tokyo Electric Power Company, Incorporated have been prepared from the accounts and records maintained by the Company in accordance with the provisions of the Commercial Code of Japan and on the basis of accounting principles and practices generally accepted and

during the post-SOX and pre-J-SOX periods.

[Insert Figure 1 around here]

Further, other several laws and regulations were established to improve internal control and the reliability of accounting numbers in the lag between the SOX and J-SOX implementation. First, in April 2003, the Commercial Code was partially revised to make construction of internal control compulsory at a firm with a committee governance structure. Second, Cabinet Office Ordinance 28, which requires the disclosure of corporate governance and internal control, was enacted in April 2003. A firm may attach a Confirmation Letter to an annual report voluntarily. This corresponds to the Certification of the Chief Executive Officer (CEO) in SOX Section 302. Third, the Certified Public Accountants and Auditing Oversight Board (CPAAOB) was established in April 2004, based on the Certified Public Accountants Act. CPAAOB is comparable to the PCAOB (Public Company Accounting Oversight Board) in the U.S. Fourth, starting in January 2005, the Tokyo Stock Exchange required listed firms to attach a certification by a company representative of the fair disclosure of the Annual Report.⁷ Fifth, the Financial Service Agency disclosed “Standards for Management Assessment and Audit concerning Internal Control over Financial Reporting” (exposure draft) and held a public hearing in July 2005. In February 2007, this was stated as “On the Setting of the Standards and Practice Standards for Management Assessment and Audit concerning Internal Control over Financial Reporting,” (Council Opinions). Sixth, the Companies Act, which establishes the basis of the Commercial Code, became effective in May 2006. The Act requires managers to develop an internal control system. Finally, “Practical Guidance for Audits of Internal Control over Financial Reporting” (Auditing and Assurance Practice Committee Statement

applied in Japan, which are different in certain respects as to the application and disclosure requirements of International Accounting Standards” (Tokyo Electric Power Company’s annual report, 2002). The following sentences are cited from the audit report in the annual report of Nissan Motors in 2002 (the underlined part is added). “Our examinations were made in accordance with auditing standards, procedures and practices generally accepted and applied in Japan and, accordingly, included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances (Nissan Motors’ annual report, 2002).”

⁷ The Tokyo Stock Exchange merged with the Osaka Securities Exchange on January 1, 2013 and the Japan Exchange Group was established.

No. 82), was published by The Japanese Institute of Certified Public Accountants in October 2007.

After the establishment of the above laws and regulations, J-SOX is effective as of the fiscal year ending March 31, 2009.

2.2 Hypotheses Development

Japanese corporate reforms are gradually accomplished through the construction of systems of internal control and audits in the pre-J-SOX period. Prior literature on J-SOX has ignored the above changes pre-J-SOX. The period post-SOX and pre-J-SOX can be considered a transition period until a new system is established. Since all the reforms shown in Figure 1 aim to improve the financial reporting quality, it is reasonable that a series of reforms pre-J-SOX would influence the magnitude of earnings management. We, therefore, divide the periods before J-SOX into two, “before SOX period” and “transition period,” and compare the level of earnings management in them.

We focus on AEM and REM as earnings management methods. AEM changes the accrual process to manage earnings. It results in the accruals reversals in subsequent periods, but does not directly affect the cash flows. REM means real activities to manage earnings by altering the timing and/or structure of an operating, investment, or financial decision.

J-SOX is based on SOX and has substantially the equivalent provisions as the SOX regarding internal control. One of the objectives of J-SOX is the “Reliability of financial reporting,” which directly relates to the improvement in the quality of accounting numbers. Further, J-SOX requires a manager’s confirmation of financial statement accuracy, the construction of an internal control system to ensure financial reporting quality, and imposes penalties on managers for misstatement. Hence, according to prior studies regarding SOX, AEM is likely to decrease in the J-SOX period compared with the pre-J-SOX period.

Next, a primary objective of the internal control of J-SOX is the effectiveness and efficiency of business operations. We infer that better internal control prevents managers from engaging in

REM because non-effective and non-efficiency behaviors, such as REM, which do not maximize firm value, should be avoided under appropriate internal control. The other three J-SOX objectives other than the “Reliability of financial reporting” are also associated with quality improvements through appropriate business activities. Therefore, the achievement of the four objectives of J-SOX mentioned above should reduce REM.

The goals of a series of regulatory changes pre-J-SOX are likely to be similar to that of J-SOX itself as they are also establishing improvements in the financial reporting quality through internal control. Furthermore, many firms prepared for the establishment of internal control systems before J-SOX. Therefore, AEM and REM would decrease in the transition and post-J-SOX periods.

Moreover, Leuz, Nanda, and Wysocki (2003) state that effective laws and regulations restricting insider acquisition of private control benefits curb manager incentives to manage earnings. Based on the above discussions, we propose the following hypotheses:⁸

H1a: AEM decreases in the transition period compared with that in the pre-SOX period.⁹

H1b: AEM decreases in the post-J-SOX period compared with that in the transition period.

H2a: REM decreases in the transition period compared with that in the pre-SOX period.

H2b: REM decreases in the post-J-SOX period compared with that in the transition period.

⁸ There is another prediction with respect to changes in REM before and after SOX and J-SOX implementation. A substitution between two types of earnings management might occur with the introduction of stricter regulations (Cohen et al., 2008; Ewert and Wagenhofer, 2005; Zang, 2012). While stricter regulations restrain managers from utilizing AEM, they are more likely to engage in REM instead of AEM. In this case, it is likely to raise the possibility that REM will be used. However, considering the aims of regulatory changes before J-SOX and J-SOX, they should restrain two types of earnings management as H2a and H2b.

⁹ If H1a is supported, the effect of J-SOX might be ambiguous. However, in other words, if one (or both) hypotheses are supported, we can show the effect of regulatory reforms. The relationship between H2a and H2b is the same as that between H1a and H1b.

3. Research Design and Sample Selection

3.1. Earnings Management Measures

3.1.1 Accrual-based Earnings Management Measure

The first earnings management measure is discretionary accruals. Consistent with DeFond and Jiambalvo (1994), and Dechow, Sloan, and Sweeney (1995), we employ the cross-sectional version of the modified Jones (1991) model for the AEM measure. Specifically, the coefficients of the following regression model are estimated by industry year, where industry is identified by the Nikkei industry classification codes (*Nikkei gyoushu Chu-bunrui*).¹⁰ We require at least eight observations in each industry-year group.¹¹ The estimated residuals from the equation are abnormal accruals.

$$ACC_{it} = \beta_1 (1 / A_{it-1}) + \beta_2 (\Delta S_{it} - \Delta AR_{it}) + \beta_3 PPE_{it} + \varepsilon_{it}. \quad (1)$$

where,

ACC = Accruals divided by lagged total assets; accruals are calculated by the difference between net income and operating cash flows reported in the statement of cash flows,¹²

A = Total assets,

ΔS = Change in net sales divided by lagged total assets,

ΔAR = Change in accounts receivable divided by lagged total assets,

PPE = Net property, plant, and equipment divided by lagged total assets, and

ε = Error term.

The subscripts refer to firm *i* and time *t*.

¹⁰ We divided our sample firms into 36 industries by *Nikkei gyoushu chu-bunrui*. It is widely used in empirical accounting research for Japanese firms (e.g., Shuto and Iwasaki, 2014).

¹¹ Cash flow data from statement of cash flow in Japan is available from the fiscal year ending March 31, 2000. Hence, each industry-year group is formed by collecting firm-years whose fiscal year-ends are from March 31 to March 30 next year in the same industry.

¹² We calculate accruals from the cash flow statement to avoid the problems arising from the computation of accruals from the balance sheet and income statement (see Hribar and Collins, 2002).

3.1.2. Real Earnings Management Measures

Following Roychowdhury (2006), we employ three measures of REM: (1) Sales manipulation, (2) Reduction of discretionary expenses, and (3) Overproduction.

Sales manipulation and overproduction result in abnormally high production costs relative to sales and abnormally low cash flow from operating activities relative to sales, and the reduction of discretionary expenditures lead to abnormally low discretionary expenses (Roychowdhury, 2006, 340-341). We estimate the coefficients of the three regression models through equations (2) to (4) in order to compute the abnormal levels of cash flow from operations (A_CFO), discretionary expenses (A_DE), and production costs (A_PD). The regression models are estimated by industry year in the same way as equation (1).

$$CFO_{it} = \beta_1 (1 / A_{it-1}) + \beta_2 S_{it} + \beta_3 \Delta S_{it} + \varepsilon_{it} \quad (2)$$

$$DE_{it} = \beta_1 (1 / A_{it-1}) + \beta_2 S_{it-1} + \varepsilon_{it} \quad (3)$$

$$PD_{it} = \beta_1 (1 / A_{it-1}) + \beta_2 S_{it} + \beta_3 \Delta S_{it} + \beta_4 \Delta S_{it-1} + \varepsilon_{it} \quad (4)$$

where,

CFO = Cash flow from operations divided by lagged total assets,

DE = Selling, general, and administrative expenses divided by lagged total assets,

PD = Production costs divided by lagged total assets; production costs are calculated by the cost of goods sold plus the change in inventory, and

S = Net sales.

A_CFO represents the residuals from equation (2) multiplied by minus one and A_DE the residuals from equation (3) multiplied by minus one so that the firm year with greater income-increasing earnings management has a higher value. A_PD represents the residuals from equation

(4). Three proxies are aggregated to one REM measure (*Total_REM*). Based on Cohen et al. (2008), *Total_REM* is the sum of the standardized *A_CFO*, *A_DE*, and *A_PD*, measuring the total effect of REM.

3.2. Regression Model

According to Roychowdhury (2006) and Cohen et al. (2008), we specify equations (5) and (6) to test the effect of regulatory changes in the transition period and J-SOX on earnings management.

$$\begin{aligned}
 AEM_{it} = & \beta_0 + \beta_1 Time_{it} + \beta_2 TP_{it} + \beta_3 J-SOX_{it} + \beta_4 Non-BigN_{it} + \beta_5 Stockoption_{it} + \beta_6 Size_{it-1} + \beta_7 \\
 & MTB_{it-1} + \beta_8 ROA_{it} + \beta_9 Debt_{it-1} + \beta_{10} NOA_{it-1} + \beta_{11} Total_REM_{it} + \sum \beta Industry_Dummy + \varepsilon_{it}
 \end{aligned}
 \tag{5}$$

$$\begin{aligned}
 REM_{it} = & \beta_0 + \beta_1 Time_{it} + \beta_2 TP_{it} + \beta_3 J-SOX_{it} + \beta_4 Non-BigN_{it} + \beta_5 Stockoption_{it} + \beta_6 Size_{it-1} + \beta_7 \\
 & MTB_{it-1} + \beta_8 ROA_{it} + \beta_9 Debt_{it-1} + \beta_{10} NOA_{it-1} + \beta_{11} AEM_{it} + \sum \beta Industry_Dummy + \varepsilon_{it}.
 \end{aligned}
 \tag{6}$$

<i>AEM</i>	=	Accrual-based earnings management measure (<i>AEM</i>),
<i>REM</i>	=	Real earnings management measure (<i>Total_REM</i> , <i>A_CFO</i> , <i>A_DE</i> , or <i>A_PD</i>),
<i>Time</i>	=	A trend variable equal to the current year minus 2000,
<i>TP</i>	=	A dummy variable that equals 1 if the fiscal year end is after August 1, 2002,
<i>J-SOX</i>	=	A dummy variable that equals 1 if the fiscal year end is after March 31, 2009,
<i>Non-BigN</i>	=	A dummy variable equal to 1 if the firm's auditor is a non-Big N auditor, ¹³

¹³ Non-Big N auditors are audit firms other than Asahi Audit Corporation, Century Ota Showa and Co., Chuo Aoyama Audit Corporation, Deloitte Touche Tohmatsu LLC, Ernst & Young Shin Nihon LLC, KPMG Azsa and Co., Misuzu Audit Corporation, and Price Waterhouse Coopers Arata. Century Ota Showa and Co. is now Ernst and Young Shin Nihon LLC. Asahi Audit Corporation is now KPMG Azsa and Co. Chuo Aoyama Audit Corporation is the predecessor of Misuzu Audit Corporation and Price Waterhouse Coopers Arata. To understand more easily the results of firms with Big N firms occupying 78% in our sample, we use Non-Big N dummy in primary and additional analysis. By doing so, the coefficient of *TP* represents the effect on firms with a Big N auditor. The results are same as those using a Big N dummy.

<i>Stockoption</i>	=	A dummy variable equal to 1 if the firms introduced a stock option plan,
<i>Size</i>	=	Natural logarithm of the market value of equity,
<i>MTB</i>	=	Market to book ratio,
<i>ROA</i>	=	Net income divided by lagged total assets,
<i>Debt</i>	=	Total debt divided by the total assets, and
<i>NOA</i>	=	Net operating assets divided by the sales

The test variables for the hypotheses are *TP* and *J-SOX*. When regulatory changes in the transition period (J-SOX) decrease earnings management, the coefficient of *TP* (*J-SOX*) has a significantly negative value. *TP* is set to compare the level of earnings management in the J-SOX period with that in the transition period. The transition period starts from March 1, 2003, when the audit standards are revised largely, and ends on March 30, 2009. However, *TP* equals one if the fiscal year end is from March 1, 2003 to the sample period end (not March 30, 2009). This is because by doing so, the coefficient of *J-SOX* indicates the difference between the transition period (from March 1, 2003 to March 30, 2009) and the post-J-SOX period (from March 31, 2009 to March 30, 2014).¹⁴

In equation (5), *Non-BigN* is included to control the audit quality caused by auditor size. We include net operating assets (*NOA*) that reflect the extent of previous earnings management, as prior studies have indicated that *NOA* affects earnings management (Barton and Simko, 2002; Zang, 2012). To address the possibility that the measures of earnings management correlate with firm performance (Kothari, Leone, and Wasley, 2005), *ROA* is included as a control variable. *Stockoption* and *Debt* are expected to control for earnings management related to the debt ratio and stock options. We include the natural logarithm of the market value of equity as a proxy for firm size and the market to book ratio as a proxy for growth. Finally, we incorporate *Total_REM* in equation (5) for controlling the simultaneous use of AEM and REM (Cohen et al., 2008; Kuo, Ning, and Song, 2014).

¹⁴ J-SOX is effective from the fiscal year ending March 31, 2009. When *TP* equals 1 if the fiscal year end is from August 1, 2002 to March 30, 2009; the coefficient of *J-SOX* reports the difference between the pre-SOX and post-J-SOX periods.

AEM is also added in the regression (6) for REM measures in the same way (Achleitner, Fichtl, Kaserer, and Siciliano, 2014; Kuo et al., 2008).

3.3. Sample Selection Procedure

The sample comprises Japanese listed firms with available financial data. The sample period starts in 2000 to calculate accounting accruals from cash flow statements. The base sample used in this study is selected as follows:

- (1) Firms whose fiscal years end from March 31, 2000 to March 30, 2014;¹⁵
- (2) Firms listed on any of the markets in Japan as on each balance sheet date;
- (3) Firms that disclose consolidated financial statements based on Japanese accounting standards; and
- (4) Firms that are not banks, insurance companies, securities traders, or other financial institutions.

In addition to meeting these four requirements, firms must have the required data.¹⁶ Financial data are obtained from the *Nikkei-Needs Financial Quest* (Nikkei Media Marketing). Auditor data are hand-collected from annual reports for each firm, *Who Audit Japan* (Zeimu Kenkyukai), and *KigyoKihon* data (Nikkei Media Marketing). We obtain annual reports for each firm from the *eol DB Service* (Proquest). Stock price data are obtained from *NPM* (Financial Data Solutions). This approach yields 36,478 firm-year observations for a base sample to test our hypotheses.

4. Empirical Results

Table 1 summarizes the descriptive statistics of the entire sample. Table 2 is a correlation matrix.

¹⁵ The reason why the sample period starts from March 31, 2000 is that the operating cash-flows from the cash flow statement are available from the fiscal year ending March 31, 2000. Therefore, earnings management measures are calculated by the grouping firms with their fiscal year end from March 31 to March 30 next year. In addition, the revised consolidated accounting standards, which are a major revision of the former standards, are effective from the fiscal year ending March 31, 2000 and J-SOX is mandatorily adopted from the fiscal year ending March 31, 2009 because more than 70% of listed firms have their fiscal year ending on March 31. Hence, the sample period starts on March 31, 2000 and ends on March 30, 2014 to calculate earnings management measures by industry-year group with all the fiscal end month.

¹⁶ The firm year with liabilities exceeding assets is deleted from our sample to compute *MTB*.

[Insert Table 1 around here]

[Insert Table 2 around here]

We estimate regressions (5) and (6) for five dependent variables of earnings management. We winsorize the top and bottom 1% of all variables in the regressions except the dummy variables. Table 3 reports the regression results. First, we focus on the results for the transition period. The coefficient of *TP* for AEM in column (1) is significantly negative, suggesting the decrease in AEM in the transition period. The result is consistent with H1a and implies that managers are unlikely to engage in AEM compared with the pre-SOX period. In other words, this suggests that the laws and regulations in the transition period restrain AEM.

[Insert Table 3 around here]

The coefficient of *TP* is not significantly negative for any of the REM measures in columns (2), (3), (4), and (5). The results prove that REM does not decrease in the transition period. The laws and regulations in the transition period have an effect on only AEM. The results are inconsistent with H2a.

Regarding the post-J-SOX period, we focus on the coefficients of J-SOX, which indicate the *change* between the transition and post-J-SOX periods. For *AEM*, the coefficient of J-SOX is significantly positive at a marginal level, suggesting an increase in the income-increasing AEM. This result is not consistent with H1b. One possible explanation is the occurrence of accrual reversals. However, since the sum of the coefficients of *TP* and *J-SOX* ($\beta_2 + \beta_3 = 0.000$) is insignificant, AEM in the post-J-SOX period is not higher than in the pre-SOX period. The coefficients of *J-SOX* for REM in columns (2), (3), (4), and (5) have a significant negative value, suggesting that firms tend to avoid REM in the post-J-SOX period. The results are consistent with H2b.

The coefficients of *Non-BigN* are significantly positive for AEM.¹⁷ In Table 3, almost all the coefficients of the other control variables have a significant value.

In summary, the regulatory changes in the transition period decrease AEM. We find that the series of internal control and audit reforms in the transition period already perform successfully before the J-SOX implementation. This implies that many firms had prepared a structure for internal control in response to these regulatory changes pre-J-SOX. Moreover, we find that managers decrease REM in the post-J-SOX period, indicating that the J-SOX is effective for REM in Japan.

We have two possible explanations for our findings contrary to Cohen et al. (2008), which shows the shift from AEM to REM after SOX. First, it can be said that the internal control system of Japanese firms before SOX would be more immature than that of U.S. firms. The construction of the internal control system in Japanese firms after the U.S. accounting scandals and SOX might be more effective than that in U.S. firms. Then, the stronger internal control could affect both types earnings management by strengthening corporate governance. Second, it is possible that the experience of SOX makes Japanese firms introduce J-SOX more smoothly than U.S. firms do. The experience might be shared through Japanese Big N firms affiliated with big U.S. audit firms. Thus, we carry out the additional test to incorporate auditor size in the next section.

5. Additional Analysis and Robustness Checks

5.1 Additional Analysis

The transition period post-SOX includes several additional audit reforms. J-SOX also includes these; specifically, J-SOX requires an external auditor to evaluate the manager's assessment of internal control. The auditor needs sufficient knowledge and experience in the implementation of J-SOX. The internal control audit and the financial statement audit are, in principle, integrated and performed by the same external auditor. The integration of these two audits aims to make them more effective and efficient.¹⁸

¹⁷ The results imply that audits by Non-Big N firms do not restrain AEM and REM. Hence, the effect of Non-Big N auditors is incorporated in detail in the additional analysis.

¹⁸ This is one of the major differences between SOX and J-SOX, which should have an effect on the two types of earnings

As DeAngelo (1981) states that the auditor size influences the quality of the financial statement audit, we predict that the change in earnings management differs based on whether or not the firm is a client of a Big N audit firm.¹⁹ Becker DeFond, Jiambalvo, and Subramanyam (1998), and Francis, Maydew, Sparks, and Building (1999) provide evidence that firms with Big N auditors have higher earnings quality than those with non-Big N auditors.

Japanese big audit firms are affiliated with a global network of Big N firms in the U.S. They are subjected to the requirements of more rigorous auditing of U.S. big audit firms post-SOX to maintain the audit quality worldwide. The audit quality of the internal audit report as well as the financial statement audit of a Big N firm in Japan would be higher than that of a non-Big N firm. Therefore, we posit that firms with Big N auditors restrain earnings management more than those with non-Big N firms do in response to US-SOX and J-SOX.

According to the foregoing discussion, we add two interaction terms, $TP * Non-BigN$ and $J-SOX * Non-BigN$, in equations (5) and (6) to incorporate the possibility that the effects of a series of regulatory changes and J-SOX vary depending on audit quality. The interaction terms enable us to test the effect of auditor size on the relationship between earnings management and Japanese regulatory changes. The regression models allow the relationship to vary by auditor size, which differs from prior research such as Cohen et al. (2008).

$$\begin{aligned}
 AEM_{it} = & \beta_0 + \beta_1 Time_{it} + \beta_2 TP_{it} + \beta_3 J-SOX_{it} + \beta_4 Non-BigN_{it} + \beta_5 TP * Non-BigN_{it} + \beta_6 J-SOX_{it} * \\
 & Non-BigN_{it} + \beta_7 Stockoption_{it} + \beta_8 Size_{it-1} + \beta_9 MTB_{it-1} + \beta_{10} ROA_{it} + \beta_{11} Debt_{it-1} + \beta_{12} NOA_{it-1} + \beta_{13} \\
 & Total_REM_{it} + \sum \beta Industry_Dummy + \varepsilon_{it}. \quad (7)
 \end{aligned}$$

$$REM_{it} = \beta_0 + \beta_1 Time_{it} + \beta_2 TP_{it} + \beta_3 J-SOX_{it} + \beta_4 Non-BigN_{it} + \beta_5 TP * Non-BigN_{it} + \beta_6 J-SOX_{it} *$$

management. The Setting of the Standards and Practice Standards for Management Assessment and Audit concerning Internal Control Over Financial Reporting (Council Opinions) says that “Audits of internal controls are to be performed by the same auditors responsible for auditing the company’s financial statements. Consequently, the effective and efficient practice of audits may be ensured, since the audit evidence obtained through the internal control audits and that obtained through audits of financial statements can be reciprocally utilized in the respective audits.” This difference is (4) in footnote 1.

¹⁹ DeAngelo’s (1981) argument regarding the relationship between auditor size and audit quality appears applicable to the internal control audit.

$$Non-BigN_{it} + \beta_7 Stockoption_{it} + \beta_8 Size_{it-1} + \beta_9 MTB_{it-1} + \beta_{10} ROA_{it} + \beta_{11} Debt_{it-1} + \beta_{12} NOA_{it-1} + \beta_{11} AEM_{it} + \sum \beta Industry_Dummy + \varepsilon_{it} \quad (8)$$

We observe the change in earnings management between pre-SOX, the transition period, and post-J-SOX by using the coefficients of *TP* (β_2), *J-SOX* (β_3), *TP * Non-BigN* (β_5), and *J-SOX * Non-BigN* (β_6) and the combinations. The coefficient of *TP* (the sum of the coefficients of *TP* and *TP * Non-BigN*), $\beta_2 (\beta_2 + \beta_5)$, represents the difference in earnings management between the pre-SOX and the transition periods for firms audited by Big N (non-Big N) firms.

The coefficients of *J-SOX* (sum of the coefficients of *J-SOX* and *J-SOX * Non-BigN*), $\beta_3 (\beta_3 + \beta_6)$ represent the change in the level of earnings management in the post-J-SOX period compared to the transition period among firms audited by Big N (non-Big N) firms.

Columns (1) to (5) of Table 4 present the regression results for equations (7) and (8) when the dependent variables are *AEM*, *Total_REM*, *A_CFO*, *A_DE*, and *A_PD*. Column (1) reports the regression results of *AEM*. The coefficient of *TP* (β_2) is negative and significant. The sum of the coefficients of *TP * Non-BigN* ($\beta_2 + \beta_5$) is negative but insignificant. Thus, Big N auditors might prompt the client firms to engage in more conservative accounting procedures, but firms with non-Big N auditors do not decrease AEM. The results are consistent with the notion that only firms with Big N auditors are more likely to avoid AEM in the transition period compared to the pre-SOX period.

[Insert Table 4 around here]

In columns (2) to (5), the coefficient of *TP* and the sums of *TP* and *TP * Non-BigN* ($\beta_2 + \beta_5$) for none of the REM measures have a significant negative value. The effect of laws and regulations is limited to the AEM of firms with big N auditors.

Regarding the post-J-SOX period, the coefficients of *J-SOX* (β_3) are insignificant in the regression for AEM. However, the coefficients of *J-SOX * Non-BigN* (β_6) and the sums of the

coefficients of *J-SOX* and *J-SOX * Non-BigN* ($\beta_3 + \beta_6$) are significantly positive. Comparing these results with the primary analysis, accrual reversal is observed only in firms with non-Big N auditors.

When the dependent variables are REM measures, the coefficients of *J-SOX* (β_3) and the sums of the coefficients of *J-SOX* and *J-SOX * Non-BigN* ($\beta_3 + \beta_6$) in the regressions of all REM measures are significantly negative, indicating that J-SOX restrains managers from engaging in REM for both firms with Big N and non-Big N auditors. The coefficients of *J-SOX * Non-BigN* for three of four REM measures are significantly negative, which means that the decreasing degree of REM is larger for firms with non-Big N auditors than for those with Big N auditors.

In summary, strengthened laws and regulations in the transition period could lead to more conservative accounting of firms with Big N auditors. The decrease in AEM is not observed in firms with non-Big N auditors. For REM, we do not find that firms with Big N and non-Big N auditors tend to avoid engaging in REM in the transition period. Thus, the laws and regulations in the transition period appear to be effective on the AEM of firms with Big N auditors. The improvement in earnings quality by the reduction in AEM in the transition period would be limited to firms with Big N auditors, which are affiliated with U.S. big audit firms.

We find evidence that AEM reversals in the post-J-SOX period in the primary results are driven by firms with non-Big auditors and that firms with both Big N and non-Big N auditors reduce REM only after J-SOX implementation. Different from AEM, the results indicate that the influence of a series of regulatory reforms, including SOX, J-SOX, and other laws and regulations in the transition period, on REM reached firms after the J-SOX implementation.

5.2 Robustness Checks

In this subsection, several robustness checks are carried out. We use the Kothari, Leone, and Wasley (2005) model to calculate discretionary accruals.²⁰ When computing discretionary accruals from the Kothari et al. (2005) model, although the results in the transition period are similar to the

²⁰ Based on Kothari et al. (2005), ROA_{it} is added in equation (1).

primary analysis, we find the constraint of AEM in the J-SOX period (not tabulated). Second, we compute the aggregated REM measure as the non-standardized sum of A_CFO , A_DE , and A_PD . The results are qualitatively similar to the earlier ones (not tabulated).

Next, we delete the firm-years with the fiscal year ending in 2009 to mitigate the influence of the global financial crisis. The results in the transition period are similar to those before, although the decrease in AEM in the J-SOX period is observed (not tabulated). Thus, the results in the transition period and the decrease in REM in the post-J-SOX period are robust to using other calculation methods of earnings management measures and the exclusion of firm-years in 2009.

6. Conclusion

The U.S. and Japan established laws aimed at producing higher quality financial reporting through internal control in the 2000s. Prior literature using U.S. data shows a substitution between AEM and REM in the post-SOX period.

We examine the effects of regulatory changes by comparing three periods: pre-SOX, the transition period, and post-J-SOX, to consider a series of important laws and regulations triggered by SOX and established before J-SOX implementation in our analysis. The results show that AEM and REM decrease in the transition period and that REM decreases in the post-J-SOX period, although a reversal of AEM is observed in the post-J-SOX period. These findings imply that the beneficial effects of SOX already existed before the enactment of J-SOX. Regulatory changes in the transition period and J-SOX restrained managers' use of AEM. We contribute new evidence to the literature regarding the relationship between regulatory changes and earnings management.

Next, we explore the effect of auditor size on earnings management in an additional analysis. The decrease in AEM in the transition period in the primary analysis is driven by firms with Big N auditors. It can be interpreted that U.S. big audit firms could affect the financial reporting quality of Japanese firms through affiliated Japanese auditors before J-SOX.

We note a caveat to this study. Although we demonstrate that Japanese regulatory changes decrease earnings management, all the events that relate to earnings management in the sample

horizon are not controlled. There are many factors other than the establishment of laws and regulations during this timeframe. For example, investor, debt holder, and other stakeholder monitoring of managerial behavior has increased year by year. Hence, we must be cautious in interpreting the results of the analysis.

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Figure 1
Regulatory Changes Related to J-SOX

Pre SOX ← July 2002 (SOX) → Transition Period ← March 2009 (J-SOX) → Post J-SOX

Event	
July 2002	SOX was established.
November 2002	Audit standards were revised by the Business Accounting Council.
April 2003	The Commercial Code was partially revised to oblige a firm with a committee governance structure to construct an internal control.
April 2003	Cabinet Office Ordinance 28 was enacted, which requires the disclosure of corporate governance and internal control.
March 2004	The “Legend Clause” on the audit report of Japanese firms was removed.
April 2004	The CPAAOB (Certified Public Accountants and Auditing Oversight Board) was established.
January 2005	Attachment of certification by a firm’s representative on the fair disclosure of the Annual Report was required by the Tokyo Stock Exchange.
February 2005	Audit standards were revised by the Business Accounting Council, effective from fiscal year ending March 2006 and allowed starting from the fiscal year ending March 2005.
July 2005	“Standards for Management Assessment and Audit concerning Internal Control over Financial Reporting (exposure draft)” was disclosed by FSA (Financial Service Agency).
May 2006	The Companies Act became effective.
June 2006	<u>J-SOX was established; effective from the fiscal year beginning April 1, 2008 (fiscal year ending March 31, 2009).</u>
February 2007	“On the Setting of the Standards and Practice Standards for Management Assessment and Audit concerning Internal Control Over Financial Reporting” (Council Opinions) was published by the Business Accounting Council.
October 2007	“Practical Guidance for Audits of Internal Control over Financial Reporting” (Auditing and Assurance Practice Committee Statement No. 82) was published by The Japanese Institute of Certified Public Accountants.

Table 1
Descriptive Statistics

Variable	mean	median	Sd	N
<i>AEM</i>	-0.006	-0.003	0.069	36,478
<i>Total_REM</i>	-0.010	0.151	1.793	36,478
<i>A_CFO</i>	-0.008	0.009	0.074	36,478
<i>A_DE</i>	-0.008	-0.004	0.077	36,478
<i>A_PD</i>	-0.016	-0.002	0.153	36,478
<i>TP</i>	0.813	1	0.390	36,478
<i>J-SOX</i>	0.371	0	0.483	36,478
<i>Non-BigN</i>	0.226	0	0.418	36,478
<i>Stockoption</i>	0.301	0	0.459	36,478
<i>Size</i>	23.511	23.323	1.666	36,478
<i>MTB</i>	1.351	0.915	1.434	36,478
<i>ROA</i>	0.015	0.018	0.058	36,478
<i>Debt</i>	0.544	0.554	0.213	36,478
<i>NOA</i>	0.318	0.246	0.322	36,478

Sd is standard deviation. *AEM*, *Total_REM*, *A_CFO*, *A_DE*, and *A_PD* are abnormal accruals, aggregated REM measure, and abnormal cash flow from operations, abnormal discretionary expenses, and abnormal production costs, respectively. *Total_REM* is the sum of the standardized *A_CFO*, *A_DE*, and *A_PD*. *AEM* and *A_PD* are the estimated residuals from equations (1) and (4). *A_CFO* is the residuals from equation (2) multiplied by minus one and *A_DE* is the residuals from equation (3) multiplied by minus one, and as such, firm-years with greater income-increasing earnings management have higher values. *Time* is a trend variable equal to the current year minus 2000; *TP* is a dummy variable that equals 1 if the fiscal year end is after August 1, 2002; *J-SOX* is a dummy variable that equals 1 if the fiscal year end is after March 31, 2009; *Non-BigN* is a dummy variable equal to 1 if the firm's auditor is non-Big N auditors; *Stockoption* is a dummy variable equal to 1 if the firm has introduced a stock option plan; *Size* is the natural logarithm of the market value of equity; *MTB* is the market to book ratio; *ROA* is the net income divided by lagged total assets; *Debt* is the total debt divided by the total assets; and *NOA* is the net operating assets divided by sales. The subscripts refer to firm *i* and time *t*.

Table 2
Correlation Matrix

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
(1) <i>AEM</i>	1														
(2) <i>Total_REM</i>	0.219	1													
(3) <i>A_CFO</i>	0.464	0.438	1												
(4) <i>A_DE</i>	0.042	0.854	0.072	1											
(5) <i>A_PD</i>	0.105	0.930	0.325	0.779	1										
(6) <i>Time</i>	-0.005	-0.004	-0.002	0.002	-0.003	1									
(7) <i>TP</i>	-0.004	-0.006	-0.005	-0.005	-0.006	0.692	1								
(8) <i>J-SOX</i>	-0.016	-0.001	0.000	0.005	0.001	0.829	0.368	1							
(9) <i>Non-BigN</i>	-0.013	0.049	0.042	0.024	0.045	0.071	0.024	0.079	1						
(10) <i>Stockoption</i>	-0.039	-0.115	-0.018	-0.109	-0.131	0.039	0.089	-0.002	-0.021	1					
(11) <i>Size</i>	0.013	-0.146	-0.101	-0.096	-0.137	-0.044	-0.017	-0.099	-0.183	0.070	1				
(12) <i>MTB</i>	0.006	-0.121	-0.060	-0.081	-0.146	-0.092	-0.034	-0.164	-0.018	0.201	0.273	1			
(13) <i>ROA</i>	0.341	-0.197	-0.266	-0.016	-0.160	0.060	0.075	-0.005	-0.121	0.005	0.220	0.116	1		
(14) <i>Debt</i>	0.017	0.182	0.110	0.132	0.160	-0.143	-0.113	-0.112	0.021	-0.128	-0.111	0.115	-0.170	1	
(15) <i>NOA</i>	-0.026	-0.116	-0.123	-0.070	-0.086	-0.005	-0.022	0.014	0.002	0.023	0.161	0.139	-0.004	-0.644	1

AEM, *Total_REM*, *A_CFO*, *A_DE*, and *A_PD* are abnormal accruals, aggregated REM measure, and abnormal cash flow from operations, abnormal discretionary expenses, and abnormal production costs, respectively. *Total_REM* is the sum of the standardized *A_CFO*, *A_DE*, and *A_PD*. *AEM* and *A_PD* are the estimated residuals from equations (1) and (4). *A_CFO* is the residuals from equation (2) multiplied by minus one and *A_DE* is the residuals from equation (3) multiplied by minus one, and as such, firm-years with greater income-increasing earnings management have higher values. *Time* is a trend variable equal to the current year minus 2000; *TP* is a dummy variable that equals 1 if the fiscal year end is after August 1, 2002; *J-SOX* is a dummy variable that equals 1 if the fiscal year end is after March 31, 2009; *Non-BigN* is a dummy variable equal to 1 if the firm's auditor is non-Big N auditors; *Stockoption* is a dummy variable equal to 1 if the firm has introduced a stock option plan; *Size* is the natural logarithm of the market value of equity; *MTB* is the market to book ratio; *ROA* is the net income divided by lagged total assets; *Debt* is the total debt divided by the total assets; and *NOA* is the net operating assets divided by sales. N=29,376.

Table 3
Regression Results

		(1) <i>AEM</i>	(2) <i>Total_REM</i>	(3) <i>A_CFO</i>	(4) <i>A_DE</i>	(5) <i>A_PD</i>
<i>Constant</i>	β_0	0.026*** (3.034)	1.146*** (2.794)	0.009 (1.007)	0.043** (2.161)	0.084** (2.360)
<i>Time</i>	β_1	-0.000* (-1.767)	0.039*** (8.790)	0.001*** (7.161)	0.001*** (4.665)	0.003*** (7.415)
<i>TP</i>	β_2	-0.003** (-2.062)	-0.020 (-0.871)	-0.001 (-1.013)	-0.002 (-1.565)	-0.002 (-0.806)
<i>J-SOX</i>	β_3	0.003* (1.787)	-0.296*** (-10.712)	-0.009*** (-7.349)	-0.006*** (-4.887)	-0.024*** (-9.428)
<i>Non-BigN</i>	β_4	0.002** (2.177)	0.028 (0.546)	-0.001 (-0.793)	0.001 (0.511)	0.004 (0.805)
<i>Stockoption</i>	β_5	0.003*** (2.863)	-0.275*** (-5.400)	0.000 (0.372)	-0.012*** (-4.964)	-0.028*** (-6.327)
<i>Size</i>	β_6	-0.002*** (-6.003)	-0.056*** (-3.614)	0.001** (2.399)	-0.003*** (-4.364)	-0.005*** (-3.790)
<i>MTB</i>	β_7	0.001*** (2.631)	-0.137*** (-8.359)	-0.002*** (-4.307)	-0.004*** (-5.641)	-0.015*** (-9.623)
<i>ROA</i>	β_8	0.507*** (40.767)	-8.320*** (-23.233)	-0.644*** (-48.906)	0.024 (1.337)	-0.459*** (-14.263)
<i>Debt</i>	β_9	0.015*** (3.978)	1.003*** (6.279)	-0.022*** (-5.593)	0.055*** (7.273)	0.096*** (6.951)
<i>NOA</i>	β_{10}	0.013*** (5.582)	-0.395*** (-4.866)	-0.042*** (-15.175)	0.001 (0.364)	-0.018** (-2.517)
<i>Total_REM</i>		0.012*** (24.843)				
<i>AEM</i>			7.999*** (36.862)	0.677*** (67.162)	0.039*** (4.419)	0.358*** (18.727)
<i>Industry Fixed effects</i>		<i>included</i>	<i>included</i>	<i>included</i>	<i>included</i>	<i>included</i>
<i>Observations</i>		36,478	36,478	36,478	36,478	36,478
<i>Adj- R²</i>		0.215	0.187	0.448	0.051	0.116

The *t*-statistics are in parentheses and based on robust standard errors clustered by firm. ***, **, and * indicate significance at the 1%, 5%, and 10% levels (two-tailed), respectively. The following regressions are estimated:

$$AEM_{it} = \beta_0 + \beta_1 Time_{it} + \beta_2 TP_{it} + \beta_3 J-SOX_{it} + \beta_4 Non-BigN_{it} + \beta_5 Stockoption_{it} + \beta_6 Size_{it-1} + \beta_7 MTB_{it-1} + \beta_8 ROA_{it} + \beta_9 Debt_{it-1} + \beta_{10} NOA_{it-1} + \beta_{11} Total_REM_{it} + \sum \beta Industry_Dummy + \varepsilon_{it} \quad (5)$$

$$REM_{it} = \beta_0 + \beta_1 Time_{it} + \beta_2 TP_{it} + \beta_3 J-SOX_{it} + \beta_4 Non-BigN_{it} + \beta_5 Stockoption_{it} + \beta_6 Size_{it-1} + \beta_7 MTB_{it-1} + \beta_8 ROA_{it} + \beta_9 Debt_{it-1} + \beta_{10} NOA_{it-1} + \beta_{11} AEM_{it} + \sum \beta Industry_Dummy + \varepsilon_{it} \quad (6)$$

AEM is abnormal accruals. *REM* represents real earnings management proxies—that is, *Total_REM*, *A_CFO*, *A_DE*, or *A_PD*. *Total_REM*, *A_CFO*, *A_DE*, and *A_PD* are aggregated REM measure, and abnormal cash flow from operations, abnormal discretionary expenses, and abnormal production costs, respectively. *Total_REM* is the sum of the standardized *A_CFO*, *A_DE*, and *A_PD*. *AEM* and *A_PD* are the estimated residuals from equations (1) and (4). *A_CFO* is the residuals from equation (2) multiplied by minus one and *A_DE* is the residuals from equation (3) multiplied by minus one, and as such, firm-years with greater income-increasing earnings management have higher values. *Time* is a trend variable equal to the current year minus 2000; *TP* is a dummy variable that equals 1 if the fiscal year end is after August 1, 2002; *J-SOX* is a dummy variable that equals 1 if the fiscal year end is after March 31, 2009; *Non-BigN* is a dummy variable equal to 1 if the firm's auditor is non-Big N auditors; *Stockoption* is a dummy variable equal to 1 if the firm has introduced a stock option plan; *Size* is the natural logarithm of the market value of equity; *MTB* is the market to book ratio; *ROA* is the net income divided by lagged total assets; *Debt* is the total debt divided by the total assets; and *NOA* is the net operating assets divided by sales. The subscripts refer to firm *i* and time *t*.

Table 4
Regression Results: Additional Analysis

		(1) <i>AEM</i>	(2) <i>Total_REM</i>	(3) <i>A_CFO</i>	(4) <i>A_DE</i>	(5) <i>A_PD</i>
<i>Constant</i>	β_0	0.025*** (2.933)	1.176*** (2.869)	0.010 (1.132)	0.044** (2.199)	0.086** (2.420)
<i>Time</i>	β_1	-0.000* (-1.740)	0.039*** (8.727)	0.001*** (7.109)	0.001*** (4.625)	0.003*** (7.368)
<i>TP</i>	β_2	-0.003** (-2.149)	-0.018 (-0.729)	-0.002 (-1.378)	-0.002 (-1.489)	-0.001 (-0.639)
<i>J-SOX</i>	β_3	0.001 (0.684)	-0.244*** (-7.881)	-0.008*** (-6.074)	-0.005*** (-3.439)	-0.021*** (-7.231)
<i>Non-BigN</i>	β_4	-0.001 (-0.485)	0.112* (1.836)	-0.001 (-0.384)	0.003 (0.883)	0.010** (1.975)
<i>TP * Non-BigN</i>	β_5	0.001 (0.450)	0.003 (0.052)	0.003 (1.386)	0.001 (0.292)	-0.000 (-0.087)
<i>J-SOX * Non-BigN</i>	β_6	0.006*** (2.907)	-0.208*** (-3.307)	-0.006*** (-2.855)	-0.005 (-1.622)	-0.015*** (-2.735)
<i>Stockoption</i>	β_7	0.003*** (2.851)	-0.274*** (-5.390)	0.000 (0.388)	-0.012*** (-4.960)	-0.028*** (-6.319)
<i>Size</i>	β_8	-0.002*** (-5.794)	-0.058*** (-3.755)	0.001** (2.250)	-0.003*** (-4.424)	-0.005*** (-3.903)
<i>MTB</i>	β_9	0.001** (2.537)	-0.136*** (-8.259)	-0.002*** (-4.240)	-0.004*** (-5.599)	-0.015*** (-9.543)
<i>ROA</i>	β_{10}	0.507*** (40.754)	-8.319*** (-23.218)	-0.643*** (-48.920)	0.024 (1.340)	-0.459*** (-14.254)
<i>Debt</i>	β_{11}	0.015*** (3.938)	1.007*** (6.303)	-0.022*** (-5.570)	0.055*** (7.282)	0.097*** (6.970)
<i>NOA</i>	β_{12}	0.013*** (5.553)	-0.393*** (-4.836)	-0.042*** (-15.163)	0.001 (0.377)	-0.017** (-2.491)
<i>Total_REM</i>	β_{13}	0.012*** (24.869)				
<i>AEM</i>	β_{13}		8.009*** (36.936)	0.677*** (67.335)	0.039*** (4.439)	0.358*** (18.764)
<i>Industry Fixed Effects</i>		<i>included</i>	<i>included</i>	<i>included</i>	<i>included</i>	<i>included</i>
<i>Observations</i>		36,478	36,478	36,478	36,478	36,478
<i>Adj- R²</i>		0.215	0.188	0.448	0.051	0.116
		$\beta_2 + \beta_5$	-0.002	-0.016	0.001	-0.001
		$\beta_3 + \beta_6$	0.007***	-0.452***	-0.014***	-0.036***

The *t*-statistics are in parentheses and based on robust standard errors clustered by the firm. ***, **, and * indicate significance at the 1%, 5%, and 10% levels (two-tailed), respectively. The following regressions are estimated:

$$AEM_{it} = \beta_0 + \beta_1 Time_{it} + \beta_2 TP_{it} + \beta_3 J-SOX_{it} + \beta_4 Non-BigN_{it} + \beta_5 TP * Non-BigN_{it} + \beta_6 J-SOX_{it} * Non-BigN_{it} + \beta_7 Stockoption + \beta_8 Size_{it-1} + \beta_9 MTB_{it-1} + \beta_{10} ROA_{it} + \beta_{11} Debt_{it-1} + \beta_{12} NOA_{it-1} + \beta_{13} Total_REM_{it} + \sum \beta Industry_Dummy + \varepsilon_{it} \quad (7)$$

$$REM_{it} = \beta_0 + \beta_1 Time_{it} + \beta_2 TP_{it} + \beta_3 J-SOX_{it} + \beta_4 Non-BigN_{it} + \beta_5 TP * Non-BigN_{it} + \beta_6 J-SOX_{it} * Non-BigN_{it} + \beta_7 Stockoption + \beta_8 Size_{it-1} + \beta_9 MTB_{it-1} + \beta_{10} ROA_{it} + \beta_{11} Debt_{it-1} + \beta_{12} NOA_{it-1} + \beta_{13} AEM_{it} + \sum \beta Industry_Dummy + \varepsilon_{it} \quad (8)$$

AEM is abnormal accruals. *REM* represents real earnings management proxies, that is, *Total_REM*, *A_CFO*, *A_DE*, or *A_PD*. *Total_REM*, *A_CFO*, *A_DE*, and *A_PD* are aggregated REM measure, abnormal cash flow from operations, abnormal discretionary expenses, and abnormal production costs, respectively. *Total_REM* is the sum of the standardized *A_CFO*, *A_DE*, and *A_PD*. *AEM* and *A_PD* are the estimated residuals from equations (1) and (4). *A_CFO* is the residuals from equation (2) multiplied by minus one and *A_DE* is that from equation (3) multiplied by minus one, and as such, firm-years with greater income-increasing earnings management have higher values. *Time* is a trend variable equal to the current year minus 2000; *TP* is a dummy variable that equals 1 if the fiscal year end is after August 1, 2002; *J-SOX* is a dummy variable that equals 1 if the fiscal year end is after March 31, 2009; *Non-BigN* is a dummy variable equal to 1 if the firm's auditor is non-Big N auditors; *Stockoption* is a dummy variable equal to 1 if the firm has introduced a stock option plan; *Size* is the natural logarithm of the market value of equity; *MTB* is the market to book ratio; *ROA* is the net income divided by lagged total assets; *Debt* is the total debt divided by the total assets; and *NOA* is the net operating assets divided by sales. The subscripts refer to firm *i* and time *t*.