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Can Anglo-Saxon audit committee scheme improve earnings quality in non-Anglo-Saxon environments?

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ABSTRACT

Inspired by the debate about globally uniform governance standards on setting up an Anglo-Saxon model of audit committee, this study investigates whether firms adopting audit committee system vis-à-vis a local governance scheme can improve earnings quality. We exploit a unique setting in Japan where firms are allowed to switch to the audit committee from the statutory auditor board under the conventional two-tier structure. We find that improvements in earnings quality cannot be achieved by merely adopting the audit committee but are reaped by firms that converge to the audit committee with substance. Our results indicate that many Japanese firms may adopt audit committee as a fashionable “label” without embracing shareholder primacy.

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1. Introduction

This study is motivated by the recent trend toward adoption of the Anglo-Saxon corporate governance system with an audit committee (AC) in the board of directors (Tafara, 2006; Vanasco, 1994), and the debate over whether one corporate governance system can fit all institutional environments. Recent studies have called for research on examining the relation between AC and earnings quality in countries that do not follow the Anglo-Saxon governance model (e.g., Carcello et al., 2011). Bédard and Gendron (2010) indicated that there is scant knowledge on the

effectiveness of importing the AC scheme in countries which do not follow the Anglo-Saxon model.

The common view of corporate governance has traditionally respected the institutional background of each country and the individual governance system for each country. However, in recent years, a global standard for corporate governance has been advocated by the Organization for Economic Cooperation and Development (OECD). The idea is that, within a global economy, a global standard can best facilitate international investments, and leveling diverse playing fields can reduce the cost of capital for multinational firms. However, some concerns have been raised with regard to the appropriateness of the Anglo-Saxon governance model in other countries where legal traditions, enforcement standards, investor protections and ownership structures are clearly different from those of the U.S. or the U.K. Dallas and Scott (2006) asserted that “no one

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system of corporate governance is the benchmark for all companies in all jurisdictions and no system of governance is without its own vulnerabilities.” Due to the call for global convergence of corporate governance by the OECD, some non-Anglo-Saxon countries might merely be following the trend or the fashion in choosing the audit committee approach (Abrahamson, 1991; DiMaggio and Powell, 1983;). Functional convergence in corporate governance is unlikely to be achieved simply by harmonizing the forms of corporate governance alone. The convergence of form can be attained easily by importing a common governance scheme, but convergence in the effectiveness of monitoring – convergence of function – is highly dependent on whether the exotic scheme corresponds to domestic institutional characteristics.

In this study, we investigate whether importing the Anglo-Saxon-type audit committee in Japan can lead to a convergence of function, in addition to a convergence of form, such that earnings quality improves among Japanese firms that switched to the audit committee scheme. We take advantage of a unique setting in Japan where companies from April 2003 were allowed to choose either (1) the Anglo-Saxon board scheme with an audit committee (AC) for the oversight of financial reporting or (2) the conventional two-tier board structure, in which statutory auditors monitor the board of directors and attempt to ensure the accuracy of financial reports. There are many difficulties in operationalizing global convergence with this AC scheme in Japan (Bebchuk and Roe, 1999; Guillen, 2000; Gilson, 2004). Unlike those in Anglo-Saxon countries, corporations in Japan are managed for a range of stakeholders other than shareholders, including employees, banks, suppliers and business partners. Some might argue that the strong economy during the post-war period in Japan and the competitiveness of Japanese lean production are linked to conventional corporate governance in which main bank system enables the promise of lifetime employment by shielding managers and employees from shareholder demands (Aoki and Okuno, 1996; Porter, 1992). However, in response to prolonged slow growth in the 1990s and the 2000s and under pressure from foreign investors, Japan's Commercial Code has been revised many times to move from a stakeholder-oriented management approach toward a shareholder-oriented style of management (Hashimoto, 2002). The objective is to promote the shareholders to a status and position that is higher than that of other stakeholders so that shareholder value is the dominant concern. In addition, one may expect the members of an audit committee that embraces shareholder primacy to be better at safeguarding earnings quality than statutory auditors under a two-tier board structure. Prior literature also finds that an audit committee can ensure that managers act in the interests of outside shareholders and firms, and improve the quality of their financial statements in the U.S. and U.K. (Klein, 2002; Peasnell et al., 2005).

To test whether the Anglo-Saxon AC can function well in Japan, we benchmark earnings quality of the firms that adopt audit committees against earnings quality of the other firms that have not switched to audit committees during the sample period. We use two methods of earnings management to proxy earnings quality. Following prior literature

(Klein, 2002), we first employ a modified cross-sectional Jones model to measure accrual-based earnings management (Dechow et al., 1995) and examine the association between estimated discretionary accruals and the type of governance scheme that the firm chooses. Second, as Herrmann et al. (2003) found that Japanese firms tend to sell fixed assets and securities to meet management forecasts, we follow their approach and see if firms choosing audit committees have a lower tendency to manage forecast errors by selling investments. After controlling for self-selection, we do not find evidence that the adoption of audit committees can improve earnings quality.

Institutional theory suggests that firms may adopt the AC only symbolically, resulting in convergence of form (Abrahamson, 1991; Cohen et al., 2004; DiMaggio and Powell, 1983). In contrast, firms may adopt the AC seriously, leading to convergence of function with a high quality AC as represented by high proportion of outside directors, having the chair of the AC being an outsider, and including financial experts and diligent directors in the AC (e.g., Agrawal and Chadha, 2005; DeZoort et al., 2002; Klein, 2002). We therefore examine whether convergence of form or convergence of function can affect the effectiveness of adopting the AC. We construct one composite measure to aggregate the dimensions of AC quality and split the sample into two groups: a substantive group if the composite score is above the median and a symbolic group if the score is equal to or below the median. We find that substantive adopters experience an increase in earnings quality but we find no improvements for the symbolic group. The results suggest that where AC adoption is symbolic – more a matter of convergence of form than of convergence of function (Gilson, 2004) – the AC does not lead to improved earnings quality.

We contribute to the literature by providing evidence that corporate governance schemes need to be matched against the institutional features of a given country, and that incentives play an important role in reshaping a stakeholder-centered scheme into a shareholder-centered one. Our findings are in line with prior literature (Ball et al., 2000; Cohen et al., 2004) indicating that firms' reporting incentives are different and only firms adopting the AC with substance can improve earnings quality. We also contribute to the literature on global convergence of corporate governance and to the debate about whether the Anglo-Saxon-type audit committee is a scheme that can fit all countries as a means of enhancing monitoring power (Dallas and Scott, 2006; Gilson, 2004).

2. Institutional background and hypothesis development

2.1. Statutory auditor board (SAB) and the audit committee (AC)

Unlike countries that mandate the adoption of the AC scheme (e.g., Australia, Canada, Mexico and Singapore), Japan employs a voluntary approach and allows firms to choose between the AC scheme and the SAB scheme that Japanese firms have conventionally adopted. The conventional

governance scheme in Japan consists of a board of directors and an SAB. The board of directors is legally responsible for management decision making, and the board of statutory auditors is set up separately from the board of directors to counterbalance the power of the board (Special Law, Article 18-2). Their responsibility is to supervise all the affairs of the directors (Commercial Code, Article 274-1), and to ensure the quality of financial statements (Commercial Code, Article 281-3).

Japanese companies from 2003 on have been allowed to switch from the conventional SAB scheme to the Anglo-Saxon AC scheme. If Japanese firms choose to adopt the AC scheme, they need to abolish the conventional SAB and set up an AC within the board of directors. The AC consists of three or more directors (Special Law, Article 21-8-4) and has strong and detailed legal powers for overseeing financial reporting.¹ The law also provides that members cannot concurrently serve as officers or other employees of the corporation or its subsidiaries (Special Law, Article 21-8-7), and more than half of the members on the AC should be “outside” independent directors (Special Law, Article 21-8-4).

While both the SAB and AC are primarily set up to safeguard financial reporting quality, the SAB is separate from the board of directors and the AC is set up within the board of directors. The arrangement in the conventional Japanese scheme is intended to mitigate the self-audit concern. However, the SAB does not have the right to participate and vote in the audit-related decisions made by the directors. Thus, many commentators in Japan have suggested that the adoption of the AC scheme should enhance the efficiency of monitoring financial reporting for the benefit of shareholders’ interests (Allen et al., 2008; Hashimoto, 2002).

2.2. Hypothesis 1: the audit committee scheme and earnings quality

In this study, we hypothesize that firms adopting the AC scheme in Japan achieve better earnings quality. While financial reporting is a device for mitigating information asymmetry between management and shareholders, and SAB oversees financial reporting quality, SAB is established under the institutional environment where management is accountable to various classes of stakeholders (e.g., Hashimoto, 2002). In contrast, AC is established under the Anglo-Saxon institutional environment in which shareholders’ interest is the primary concern of corporate governance. According to Holmström (1979), the agent (managers) need to choose an action that can align the in-

terests of all principals; thus, the agent under the SAB may compromise the interests among all principals. Thus, the agent under the AC is more focused than that under the SAB in choosing the actions in the best interest of shareholders and will be more effective in improving financial reporting quality if AC is seriously implemented.

In terms of implementation, three factors also lead to the differential effect on improving financial reporting quality between AC and SAB schemes. First, whereas an AC is set up within the board of directors, the SAB is positioned separately from the board of directors. Although this structure is intended to mitigate the self-audit concern, the statutory auditors have no right to vote in the accounting and auditing-related decisions of the board of directors. Under this structure, statutory auditors are not entitled to hire audit firms, appoint/remove financial executives or internal auditors, or block a problematic financial reporting decision beforehand. Second, even though the statutory auditors monitor *ex post* the decisions of the board of directors, such monitoring is limited. This is because the statutory auditors do not have the power to appoint/remove members of the board of directors. In the absence of that power, the statutory auditors’ influence on the behavior of the board of directors is weak. Finally, the litigation costs pertaining to fraudulent financial reporting are higher for the directors than for the statutory auditors (Companies Act, Articles 847–853 and 960). This is in contrast to AC members who hold the same liability as other members of the board of directors, AC members themselves being board members. Thus, compared to the AC scheme, statutory auditors may have fewer incentives to safeguard financial reporting quality. This leads to the following hypothesis:

H1. Firms switching to the audit committee scheme will improve earnings quality.

2.3. Hypothesis 2: convergence of form and convergence of function

In addition, we investigate whether the effect of adopting audit committees on constraining earnings management depends on whether the adoption is convergence of form or convergence of function. According to the institutional theory (Abrahamson, 1991; DiMaggio and Powell, 1983), companies might merely follow the trend or the fashion in choosing the audit committee approach because of the call for global convergence of corporate governance by the OECD. Prior researchers have argued that the adoption of the AC may be primarily symbolic (Kalbers and Fogarty, 1998) and that the benefits associated with it are more rhetorical than substantive (Cohen et al., 2004). Similarly, Gilson (2004) indicated that firms may voluntarily adopt the AC merely to acquire the label without seriously implementing the oversight functions for shareholders, leading to convergence of form but not convergence of function. We expect earnings quality to improve for convergence of function, but not for convergence of form. Thus, we form our hypothesis 2 as follows:

H2. Earnings quality will improve more for firms with convergence of function than with convergence of form.

¹ The relevant provisions of the Special Law for the audit committee include (1) the right to demand the accounting firm to report on its audit (Special Law, Article 21-10), (2) the right to audit the acts of directors and officers (Special Law, Article 21-8) and the right to demand them to report on the business (Special Law, Article 21-10), (3) the duty of the audit firm to deliver its audit report to the audit committee and the right of the audit committee to demand an explanation of the audit report (Special Law, Article 21-28), (4) the duty to report the results of the audit conducted by the accounting firm if it is not appropriate (Special Law, Article 21-29), and (5) the right of the audit committee to dismiss the accounting firm (Special Law, Article 21-8).

3. Sample selection and research design

3.1. Sample selection

As Japanese companies could choose to switch to the AC from 2003 on, we first identified the firms that switched to the AC scheme during 2003–2007 from Japan Corporate Auditors Association (*nihon kansayaku kyokai*). We collected all financial data, including management forecasts and accounting data, from the NEEDS – FinancialQUEST (Nikkei Economic Electronic Databank System). For AC characteristics, we hand-collected the data from annual reports (*yukashoken hokokusho*). We also hand-collected Big 4 audit firm information through the EDINET (Electronic Disclosure for Investors Network) provided by the Financial Services Agency of the Japanese government. We eliminate 48 observations from financial institutions, 48 observations that have missing data for financial variables and 60 observations that have missing data about the AC composition. This reduces the sample to 252 observations of AC adopters, which comprise our treatment sample. Panel A of Table 1 details the selection process. Panel B reports the scheme choice of unique sample firms, and provides a breakdown of the sample by time period, which shows that very few firms adopt the AC scheme. Specifically, most adopting companies (i.e., 40 unique firms) adopted the AC scheme in 2003. In our sample, we find that only 7 firms, 5 firms, 4 firms and 1 firm switched to the AC scheme in 2004, 2005, 2006 and 2007, respectively. Our observations for AC sample, therefore, consist of 40 observations in 2003, 47 in 2004, 52 in 2005, 56 in 2006 and 57 in 2007. Panel C of Table 1 presents a breakdown of the treatment sample by industry, and indicates that a wide range of industries are covered, with most companies in the electric appliances industry.

3.2. Research design

This section explains the empirical models to be tested. We employ two metrics for estimating earnings management in Japan: discretionary accruals and the sale of assets to manage earnings. We benchmark earnings quality for firm-year observations from firms that adopted audit committees against the SAB sample, which had not yet adopted audit committees during the sample period. In sensitivity analysis, we also use each adopting firm as its own control and compare the same firm's earnings quality before and after adoption of the AC (see Section 5.1).

3.2.1. Regression model for discretionary accruals

In equation (1), ABS_DA_{it} represents the absolute value of discretionary accruals (see Appendix); AC_{it} is an indicator variable that is equal to 1 when a firm adopts the AC in year t and 0 if a firm retains the SAB. We expect the estimated coefficient on AC_{it} in (1) to be significantly negative if adopting the AC works effectively to improve earnings quality compared to retaining the conventional board with statutory auditors.

Table 1

Distribution of samples by year and industry.

Panel A: Sample selection process.						
Firms-year observations – between 2003 and 2007	408					
Samples for “Discretionary Accruals”	48					
Deduct: Financing institutions (credit, securities and insurance firms)	48					
Missing data for financial variables	60					
Missing AC composition data	60					
Firm-year observations available	252					
Panel B: Sample distribution by year.						
AC adopters (unique firms)	2003	2004	2005	2006	2007	
	40	7	5	4	1	
AC adopters (observations)	2003	2004	2005	2006	2007	Total
	40	47	52	56	57	252
Panel C: Sample distribution by industry.						
Industry	AC (%)					
Air Transportation	0.00					
Chemicals	4.76					
Construction	2.38					
Electric Appliances	28.57					
Electric Power & Gas	0.00					
Fishery, Agriculture & Forestry	0.00					
Foods	0.00					
Glass & Ceramics Products	0.00					
Information & Communication	0.00					
Iron & Steel	7.14					
Land Transportation	2.38					
Machinery	7.14					
Marine Transportation	0.00					
Metal Products	2.38					
Mining	0.00					
Nonferrous Metals	0.00					
Oil & Coal Products	0.00					
Other Products	4.76					
Pharmaceutical	11.90					
Precision Instruments	4.76					
Pulp & Paper	0.00					
Credit and Leasing	0.00					
Securities	0.00					
Insurance	0.00					
Real Estate	4.76					
Retail Trade	7.14					
Rubber Products	0.00					
Services	7.14					
Textile & Apparel	0.00					
Transport Equipment	0.00					
Warehousing and Harbor Transportation	0.00					
Wholesale Trade	4.76					
Total	100.00					

$$\begin{aligned}
 OLS \quad ABS_DA_{it} = & \beta_0 + \beta_1 AC_{it} + \beta_2 LEV_{it} + \beta_3 SIZE_{it} + \beta_4 OCF_{it} \\
 & + \beta_5 GROWTH_{it} + \beta_6 ABS_ANI_{it} + \beta_7 NEGNI_{it} \\
 & + \beta_8 BIG4_{it} + \beta_9 VOL_OCF_{it} + \beta_{10} VOL_SALE_{it} \\
 & + \sum Year + \sum Industry + \varepsilon_{it} \quad (1)
 \end{aligned}$$

Several variables are included in the model to control for factors other than AC that may affect the level of absolute discretionary accruals (Chung et al., 2005; Hadani et al.,

2011; Klein, 2002). LEV_{it} is the ratio of total debt to total shareholders' equity; $SIZE_{it}$ is the natural log of total sales; $GROWTH_{it}$ is the percentage change in sales between the current and previous periods. LEV_{it} , $SIZE_{it}$ and $GROWTH_{it}$ are indicators of incentives for earnings management. OCF_{it} is operating cash flows deflated by lagged total assets, included to control for potential correlation between accruals and cash flows; ABS_ANI_{it} is the absolute value of the change in net income between the previous year and current year deflated by the previous year's assets; $NEGNI_{it}$ is an indicator for firms having two or more consecutive years of negative income and zero otherwise, to control for potential differences in earnings quality between loss-making and profitable firms. $BIG4_{it}$ is an indicator variable with a value of 1 when firm i chooses a Big 4 audit firm and 0 otherwise. To control for performance volatility (Hribar and Nichols, 2007), we include volatility of cash flows from operations (VOL_OCF_{it}), as measured by the standard deviation of OCF_{it} over the current and prior 4 years and volatility of sales (VOL_SALE_{it}), as measured by the standard deviation of sales, deflated by total assets, over the current and prior 4 years.

We include year and industry fixed effects. We winsorize all variables at the 1% and 99% levels to reduce the effects of extreme observations and outliers. Following Petersen (2009), we cluster the robust standard errors by firm and by year.

3.2.2. Regression model: uses of asset sales to manage earnings

We adopt another measure that pertains to the Japanese institution. Herrmann et al. (2003) found that Japanese firms tend to sell fixed assets and securities to manage earnings in an attempt to meet management forecasts. In Japan, all listed firms need to provide management forecasts on next-period sales, ordinary income and net income at the beginning of each fiscal year, simultaneously with their announcement of actual earnings for the previous fiscal year. While the requirement to provide the two levels of earnings forecasts (ordinary income and net income) is to prevent insider trading, the insider trading regulations in Japan only impose penalties on forecast errors for net income, not on forecast errors for ordinary income. Specifically, if the difference between forecast net income and actual net income (i.e., forecast error for net income) is larger than 30%, any trading of the firm's stock by related parties before the earnings announcement date, or before the issue date for a revised management earnings forecast, is regarded as insider trading. As a consequence, Japanese firms have greater incentives to manage net income forecast errors than ordinary income forecast errors, using non-operating income or special items. Herrmann et al. (2003) found that gains and losses from sales of fixed assets and marketable securities are the most frequently used ways to reduce forecast errors for net income.

Following Herrmann et al. (2003), we use equation (2) to examine whether adopting the audit committee structure can help mitigate earnings management.

$$\begin{aligned}
 \text{OLS } EISA_{it} = & \alpha_0 + \alpha_1 AC_{it} + \alpha_2 CP_{it} + \alpha_3 CP_{it} * AC_{it} \\
 & + \alpha_4 FP_{it} + \alpha_5 LEV_{it} + \alpha_6 SIZE_{it} \\
 & + \alpha_7 GROWTH_{it} + \alpha_8 \text{Lagged}(EISA)_{it} \\
 & + \sum \text{Year} + \sum \text{Industry} + \varepsilon_{it}
 \end{aligned} \tag{2}$$

The dependent variable in this equation, excess income from the sale of assets ($EISA_{it}$), is measured as income from the sale of fixed assets and marketable securities minus the median for the corresponding industry and year. CP_{it} is the forecast error for ordinary income at time t , which equals current ordinary income for fiscal year t minus the forecasted ordinary income for year t . When CP_{it} is negative (positive), managers have an incentive to realize gains (losses) through the sale of assets, which can offset some forecast errors in ordinary income and give rise to lower forecast errors in net income. Therefore, the coefficient on CP_{it} , α_2 , is expected to be negative. Our main variable of interest is the interaction term, $CP_{it} * AC_{it}$, which captures the extent to which the audit committee mechanism can control earnings management better than statutory auditors in the two-tier board structure. We expect α_3 to be significantly positive if H1 is supported. Finally, we control for expected future performance (FP_{it}), LEV_{it} , $SIZE_{it}$, $GROWTH_{it}$, and last year's $EISA$ ($\text{Lagged}(EISA_{it})$). FP_{it} equals management's forecast of ordinary income for year $t + 1$, minus ordinary income for year t .

3.2.3. Self-selection concern

In examining the association between voluntary adoption of the AC scheme and earnings quality, we recognize the existence of self-selection concern due to the voluntary nature of adoption. We employ two approaches to control for self-selection. First, we employ the propensity score matching approach to create a non-AC control sample with the closest predicted probabilities of AC adoption (Francis et al., 2012). This matching procedure, which assigns to each control firm an artificial adoption year even though it has never adopted the AC, yields 252 pairs of AC and the SAB sample. More specifically, we estimate a multivariate probit model in which the dependent variable is the probability that a firm will adopt the audit committee structure.

$$\begin{aligned}
 \text{Probit } AC_{it} = & \alpha_0 + \alpha_1 BANK_{it} + \alpha_2 FOREIGN_{it} \\
 & + \alpha_3 BIG4_{it} + \alpha_4 GROWTH_{it} + \alpha_5 ISSUE_{it} \\
 & + \alpha_6 CROSS_{it} + \alpha_7 SIZE_{it} + \alpha_8 LOSS_{it} \\
 & + \alpha_9 LEV_{it} + \alpha_{10} ELEC_{it} + \varepsilon_{it}
 \end{aligned} \tag{3}$$

where AC_{it} is a dummy variable that is equal to 1 when a firm has adopted the AC scheme and 0 otherwise; $BANK_{it}$ indicates the proportion of shares owned by banks; $FOREIGN_{it}$ indicates the proportion of shares owned by foreign institutional investors; $BIG4_{it}$ is set equal to 1 when a firm is audited by a Big 4 audit firm and 0 otherwise; $GROWTH_{it}$ is the percentage change in sales between the current and previous period; $ISSUE_{it}$ is an indicator variable equal to 1 if the firm issues equity equal to or greater than 10% of its beginning equity capital; $CROSS_{it}$ is an indicator variable equal to 1 if the firm is cross-listed in the U.S. and 0 otherwise;

$SIZE_{it}$ is the natural log of total sales; $LOSS_{it}$ is an indicator variable equal to 1 if the firm reports a loss in year t and 0 otherwise; LEV_{it} is the ratio of total debt to total shareholders' equity; $ELEC_{it}$ is an indicator variable equal to 1 if the firm is in the electric appliances industry and 0 otherwise. Following prior studies (e.g., Aoki and Okuno, 1996; Chizema and Shinozawa, 2012), we expect that the likelihood that companies switch to the AC decreases with $BANK_{it}$ and increases with $FOREIGN_{it}$, $GROWTH_{it}$, $ISSUE_{it}$ and $CROSS_{it}$. In line with prior studies (Adams, 1997; Klein, 2002), we also control for $SIZE_{it}$, $LOSS_{it}$, $BIG4_{it}$, LEV_{it} and $ELEC_{it}$.

In addition, we also use the full sample of non-AC adopters as control sample and control for self-selection using two-stage Heckman approach (Heckman, 1979). Equation (3) serves as the first stage; equation (1) and equation (2) serve as the second stage linking earnings quality with the choice of board scheme and other firm-specific variables, including inverse Mills ratios (IMR) obtained from estimation of equation (3).

3.2.4. Convergence of form and convergence of function

Prior literature (DeZoort et al., 2002) has argued that three AC characteristics are associated with the effectiveness of the AC: independence, expertise and diligence. Klein (2002) found that earnings quality is positively associated with the percentage of outside directors on the AC. Similarly, Abbott et al. (2000) and Agrawal and Chadha (2005) found that the likelihood of earnings restatement significantly decreases if the AC includes at least one financial expert. Abbott et al. (2000) and DeZoort et al. (2002) also suggested that when outside directors devote more time to AC duties, the likelihood that their firms will produce misleading financial reporting decreases.

Following prior literature on governance (Abbott et al., 2000), we employ a composite proxy for four measures of AC quality: (1) whether the audit committee includes directors with financial expertise ($EXPERT_{it}$); (2) the average number of directorships or positions in other firms that are taken by audit committee members ($BUSY_{it}$); (3) the proportion of outside directors on the audit committee ($OUTSIDER_{it}$); and (4) whether the chair of the audit committee is an outside director ($OUTCHAIR_{it}$). We construct the composite measure of AC quality as follows: We define $EXPERT_{it}$ to be 1 (0) if the AC includes (excludes) directors with financial expertise, and $OUTCHAIR_{it}$ to be 1 (0) if the chair of the AC is (is not) an outsider. $OUTSIDER_{it}$ is equal to 1 (0) if the proportion of outside directors is equal to or above (below) the median in year t . Similarly, $BUSY_{it}$ is defined to be 1 (0) if the average number of other firms' directors taken by the firm's AC members is equal to or below (above) the median in year t . The sum of the scores across the four dimensions constitutes the multi-dimensional measure of AC quality, ranging from 0 to 4. We then separate the whole AC sample into two groups. If the composite AC quality measure of a firm is above 2, we define the firm as a "substantive AC adopter", meaning that it is likely to adopt the AC seriously. If the AC quality measure of a firm is equal to or below 2, we define it as a "symbolic AC adopter" as the firm may adopt the AC primarily for symbolic purposes.

4. Empirical results

4.1. Descriptive statistics

Table 2 presents descriptive statistics for the firm characteristics or factors that associate with the scheme choice. The table separately reports the mean (median) value for firms that adopted the AC scheme and the SAB sample, which did not change to the AC scheme (i.e., retained the SAB scheme) from 2003 to 2007. Compared with the sample of SAB firms, AC firms have significantly lower levels of shares owned by banks ($BANK_{it}$), significantly higher foreign ownership ($FOREIGN_{it}$), significantly higher growth opportunities ($GROWTH_{it}$), and a significantly higher proportion of cross-listed firms ($CROSS_{it}$). For new equity issues ($ISSUE_{it}$), although AC firms are more likely to issue new equity than SAB firms, the difference is only marginal significant. Further, there is some evidence that AC firms are more likely to have Big 4 auditors ($BIG4_{it}$), be in the electronic appliance industry, and have better performance ($LOSS_{it}$). Panel B also finds that switching to the AC scheme is negatively associated with $BANK_{it}$, and positively associated with $FOREIGN_{it}$, $BIG4_{it}$, $GROWTH_{it}$, $ISSUE_{it}$ and $CROSS_{it}$.

Table 3 reports coefficient estimates of the probit model. The model is statistically significant with a pseudo adjusted-squared of 15%. We find that the probability of adopting the AC scheme is negatively associated with $BANK_{it}$ (-0.14 , $p < 0.01$) and is positively associated with $BIG4_{it}$ (1.06 , $p < 0.01$), and $FOREIGN_{it}$ (0.01 , $p < 0.01$). We also find that the probability of adopting the AC scheme is positively associated with $GROWTH_{it}$ (0.23 , $p < 0.05$), and $CROSS_{it}$ (0.21 , $p < 0.01$). Cross-listing in the U.S. or having more growth opportunities invokes higher demand for reducing information asymmetry between management and shareholders and therefore a need for adopting the AC scheme. However, we do not find any significance for $ISSUE_{it}$.

4.2. The switch to the audit committee scheme and discretionary accruals

Panel A of Table 4 provides our results of testing whether switching to the AC can mitigate discretionary accrual management. Column (1) reports results using control firms matched by propensity scores, and Column (2) reports results using all SAB firms as control firms. The results show that firms that adopt the AC report discretionary accruals not significantly different from those reported by firms that do not switch to the Anglo-Saxon scheme. The coefficient on the AC dummy (AC_{it}) is negative, but insignificant in Column (1) (-0.003 , $t = -0.76$) and Column (2) (-0.006 , $t = -0.102$). The coefficients on the control variables are generally consistent with prior literature. For example, consistent with Klein (2002), ABS_DA_{it} is negatively associated with size (-0.003 with $t = -2.75$ in Column (1), and -0.003 with $t = -6.73$ in Column (2)), and positively associated with leverage (0.004 with $t = 2.93$ in Column (1), and 0.005 with $t = 8.56$ in Column (2)) and earnings uncertainty (0.174 with $t = 3.44$ in Column (1), and 0.169 with $t = 11.68$ in Column (2)).

This suggests that importing the AC to Japan voluntarily to replace the conventional scheme with a separate board

Table 2
Descriptive statistics for variables used in discretionary accrual models.

Panel A: Summary statistics.											
Variables	Whole sample (N = 6366)					Variable	AC group (N = 252)		SAB group (N = 6114)		
	Mean	Std. dev.	25th pctl	Median	75th pctl		Mean	Median	Mean	Median	
ABS_DA	0.03	0.04	0.01	0.02	0.04	ABS_DA	0.03	0.02	0.03	0.02	
BANK	0.36	0.14	0.16	0.40	0.75	BANK	0.29	0.23	0.37***	0.41***	
FOREIGN	0.04	0.06	0.01	0.06	0.09	FOREIGN	0.08	0.10	0.04***	0.05***	
GROWTH	0.08	0.21	0.00	0.07	0.12	GROWTH	0.09	0.14	0.08**	0.07**	
CROSS	0.02	0.13	0	0	0	CROSS	0.04	0	0.02***	0***	
ISSUE	0.06	0.24	0	0	0	ISSUE	0.10	0	0.06*	0	
BIG4	0.83	0.38	1	1	1	BIG4	0.95	1	0.83***	1***	
ELEC	0.10	0.30	0	0	0	ELEC	0.29	0	0.09***	0***	
LOSS	0.05	0.22	0	0	0	LOSS	0.01	0	0.05***	0***	
SIZE	11.35	1.39	10.54	11.47	12.61	SIZE	11.25	11.14	11.35	11.44	
LEV	1.67	1.79	0.644	1.15	2.28	LEV	1.49	1.30	1.68	1.34	

Panel B: Pearson correlations.												
Variables	AC	BANK	FOREIGN	BIG4	GROWTH	ISSUE	ELEC	CROSS	SIZE	LEV	LOSS	
AC	1											
BANK	-0.16***	1										
FOREIGN	0.13***	-0.02	1									
BIG4	0.38***	-0.04	0.17**	1								
GRWOTH	0.14***	-0.04	0.03***	0.11	1							
ISSUE	0.06*	-0.02	0.05*	0.03	0.03	1						
ELEC	0.07*	-0.03	0.08**	0.08***	0.07*	0.16***	1					
CROSS	0.17***	-0.01	0.05*	0.02	0.04	0.02	0.09**	1				
SIZE	-0.08**	0.15***	-0.03	0.08**	-0.05	0.02	0.04	0.13**	1			
LEV	-0.06*	0.07*	-0.03	0.04	0.02	-0.03	0.04	-0.03	0.05	1		
LOSS	0.03	0.02	-0.07*	-0.02	-0.08**	-0.04	-0.05	-0.10**	-0.05	0.07*	1	

Notes: This table reports summary statistics (Panel A) and Pearson correlations (Panel B). Variable definitions: ABS_DA is the absolute value of discretionary accruals; AC is a dummy variable that is equal to 1 when a firm has adopted the AC scheme and 0 otherwise; BANK indicates the proportion of shares owned by banks; FOREIGN is the percentage of foreign ownership; BIG4 is equal to 1 when a firm is audited by a Big 4 audit firm and 0 otherwise; GROWTH is the percentage change in sales between the current and previous period; ISSUE is an indicator variable equal to 1 if the firm issues equity equal to or greater than 10% of its beginning equity capital; ELEC is an indicator variable equal to 1 if the firm is in the electric appliances industry and 0 otherwise; CROSS is an indicator variable equal to 1 if the firm is cross-listed in the U.S. and 0 otherwise; SIZE is the natural log of total sales; LEV is financial leverage, defined as the ratio of total debt to total shareholders' equity; LOSS is an indicator variable equal to 1 if the firm reports a loss and 0 otherwise; ABS_DA is the absolute value of discretionary accruals.

*, **, and *** indicate significance at the 10%, 5%, and 1% level respectively in a two-tailed test.

Table 3
Probit regression modeling the likelihood a firm will adopt AC.

$$AC_{it} = \alpha_0 + \alpha_1 BANK_{it} + \alpha_2 FOREIGN_{it} + \alpha_3 BIG4_{it} + \alpha_4 GROWTH_{it} + \alpha_5 ISSUE_{it} + \alpha_6 CROSS_{it} + \alpha_7 SIZE_{it} + \alpha_8 LOSS_{it} + \alpha_9 LEV_{it} + \alpha_{10} INDUSTRY_{it} + \epsilon_{it} \quad (1)$$

Variable	Predicted sign	Coefficient	Z-statistics
Intercept		-1.77	-2.16**
BANK	(-)	-0.14	-3.24***
FOREIGN	(+)	0.01	2.87***
BIG4	(+)	1.06	3.62***
GROWTH	(+)	0.23	2.06**
ISSUE	(+)	0.15	1.33
CROSS	(+)	0.21	3.21***
SIZE	(+)	-0.47	-1.43
LOSS	(-)	-0.07	-0.85
LEV	(+)	-0.52	-1.02
INDUSTRY	(+)	0.37	1.59
Pseudo R ²		0.15	
Obs		6366	

Notes: Z-statistics are reported in parentheses. **, and *** indicate significance at the 5%, and 1% levels respectively in a two-tailed test. Variables are defined in Table 2.

of statutory auditors has not been effective in improving earnings quality. However, one should interpret the results cautiously as the analysis fails to incorporate the possibility that the effect of adopting the AC on discretionary accruals may depend on whether the convergence is merely one of form or of function. We next examine this possibility (H2).

Panel B of Table 4 reports the results. Column (1) gives results for the substantive group and column (2) for the symbolic group. We find that the coefficient on AC_{it} is significant and negative for the substantive group but is insignificant for the symbolic group. The results support our H2. The extent to which adopting the AC can improve earnings quality is positively associated with the presumed seriousness taken by the firms adopting the AC, as measured by indicators of AC quality. This is consistent with the arguments that firms in non-Anglo-Saxon countries might merely follow the trend or the fashion in choosing the audit committee approach (Cohen et al., 2004).

Table 4

Regression analysis for the governance schemes and discretionary accruals: Two-stage regression.

Panel A: Discretionary accruals for the full sample.				
	(1) Control firms matched by propensity scores		(2) All SAB firms as control firms	
	Coefficient	t-Statistics	Coefficient	t-Statistics
Intercept	0.028	(1.42)	0.070	(15.02)***
AC _{it}	-0.003	(-0.76)	-0.006	(-0.102)
LEV _{it}	0.004	(2.93)***	0.005	(8.56)***
SIZE _{it}	-0.003	(-2.75)***	-0.003	(-6.73)***
OCF _{it}	-0.029	(-3.21)***	-0.031	(-3.65)***
GROWTH _{it}	-0.004	(-1.43)	-0.003	(-1.17)
ABS_ΔNI _{it}	0.174	(3.44)***	0.169	(11.68)***
NEGNI _{it}	0.023	(0.65)	0.021	(0.76)
BIG4 _{it}	-0.017	(-2.98)***	-0.019	(-9.55)***
VOL_SALE _{it}	0.006	(1.54)	0.008	(1.76)*
VOL_OCF _{it}	-0.004	(-0.89)	-0.003	(0.78)
IMR			-0.008	(-2.76)***
Fixed effects	Yes		Yes	
Obs	504		6366	
R ²	0.172		0.165	

Panel B: Discretionary accruals for the subsamples.				
	(1) Substantive group		(2) Symbolic group	
	Matched firms as control firms	All SAB firms as control firms	Matched firms as control firms	All SAB firms as control firms
Intercept	0.026 (1.56)	0.067 (16.01)***	0.029 (1.58)*	0.076 (12.01)***
AC _{it}	-0.057 (-2.96)***	-0.013 (-2.05)**	-0.007 (-1.26)	0.002 (0.48)
LEV _{it}	0.006 (3.21)***	0.007 (8.72)***	0.003 (2.65)***	0.005 (7.63)***
SIZE _{it}	-0.004 (-2.86)***	-0.005 (-7.36)***	-0.002 (-2.53)***	-0.003 (-6.62)***
OCF _{it}	-0.033 (-3.63)***	-0.030 (-3.69)***	-0.024 (-2.60)***	-0.031 (-3.71)***
GROWTH _{it}	-0.007 (-1.62)	-0.002 (-1.01)	-0.003 (-1.02)	-0.004 (-1.23)
ABS_ΔNI _{it}	0.158 (3.10)***	0.169 (12.01)***	0.182 (3.45)***	0.165 (11.82)***
NEGNI _{it}	0.030 (0.89)	0.019 (0.60)	0.017 (0.522)	0.020 (0.75)
BIG4 _{it}	-0.022 (-3.01)***	-0.020 (-9.51)***	-0.013** (-2.66)***	-0.017 (-8.60)***
VOL_SALE _{it}	0.007 (1.85)**	0.009 (1.88)*	0.004 (1.50)	0.008 (1.74)*
VOL_OCF _{it}	-0.005 (-0.91)*	-0.004 (0.85)	-0.003 (-0.86)	-0.002 (0.63)
IMR		-0.010 (-2.87)***		-0.007 (-2.73)***
OBS	234	6348	270	6384
R ²	0.062	0.168	0.063	0.165

Notes: *, **, and *** indicate significance at the 10%, 5%, and 1% levels respectively in a two-tailed test.

OCF is operating cash flows deflated by lagged total assets; ABS_ΔNI is the absolute value of the change in net income between the previous year and current year deflated by the previous year's assets; NEGNI is an indicator equal to 1 when firms have two or more consecutive years of negative income and 0 otherwise; BIG4 is equal to 1 when a firm is audited by a Big 4 audit firm and 0 otherwise; VOL_SALE is the standard deviation over the current and prior 4 years of sales deflated by total assets; VOL_OCF is the standard deviation of OCF over the current and prior 4 years; IMR is the inverse Mills ratio obtained from estimating the probit choice model (3).

T-statistics are reported in parentheses.

Other variables are defined in Table 2.

4.3. The switch to the audit committee scheme and use of asset sales to manage earnings

Following Herrmann et al. (2003), we use equation (2) to examine whether adopting the AC can help mitigate earnings management pertaining to the Japanese institutions. Table 5 reports the results. Our results in Panel A indicate that the coefficient on $CP_{it}^*AC_{it}$ is insignificant, but as indi-

cated in Panel B, after separating the sample into two groups, we find the coefficient on $CP_{it}^*AC_{it}$ to be significantly positive in the substantive group, but insignificant in the symbolic group. The results confirm our prior findings that only when companies adopt functional convergence approach to the AC rather than mere convergence in form can we observe a significant improvement in earnings quality from switching to the AC.

Table 5
Regression analysis for the governance schemes and income from sales of assets: Two-stage regression.

Panel A: Income from sale of assets for the full sample.				
	(1) Control firms matched by propensity scores		(2) All SAB firms as control firms	
	Coefficient	t-Statistics	Coefficient	t-Statistics
Intercept	0.022	(1.36)	0.006	(0.68)
AC	0.003	(0.55)	0.004	(1.82)*
CP	-0.341	(-3.74)***	-0.034	(-3.58)***
CP*AC	0.077	(1.20)	0.039	(1.46)
FP	-0.019	(-0.57)	-0.009	(-1.54)
LEV	0.004	(1.81)*	0.003	(1.88)*
SIZE	0.003	(0.65)	-0.001	(-0.32)
GROWTH	0.005	(0.96)	-0.005	(-0.82)
Lagged(EISA)	0.124	(2.81)***	0.182	(10.71)***
IMR	0.006	(1.54)	-0.002	(-1.41)
Fixed effects	Yes		Yes	
Obs	504		6366	
R ²	0.066		0.136	

Panel B: Income from sale of assets for the subsamples.				
	(1) Substantive group		(2) Symbolic group	
	Matched firms as control firms	All SAB firms as control firms	Matched firms as control firms	All SAB firms as control firms
Intercept	0.020 (2.36)**	0.009 (0.73)	0.017 (1.78)*	0.006 (0.65)
AC	0.007 (0.95)	0.007 (2.06)**	0.003 (0.49)	0.002 (0.60)
CP	-0.377 (-4.80)***	-0.042 (-3.90)***	-0.318 (-3.10)***	-0.033 (-3.40)***
CP*AC	0.124 (2.03)**	0.045 (1.89)*	0.060 (0.89)	0.030 (1.24)
FP	-0.023 (-0.87)	-0.015 (-1.97)**	-0.018 (-0.52)	-0.007 (-1.36)
LEV	0.007 (1.93)*	0.002 (1.73)*	0.004 (1.29)	0.007 (2.10)**
SIZE	0.002 (0.59)	-0.002 (-0.40)	0.008 (1.09)	-0.001 (-0.35)
GROWTH	0.005 (0.98)	-0.008 (-1.06)	0.007 (1.29)	-0.003 (-0.73)
Lagged(EISA)	0.157 (2.92)***	0.186 (11.45)***	0.120 (2.05)**	0.176 (9.77)***
IMR		-0.003 (-1.47)		-0.003 (-1.42)
OBS	234	6348	270	6384
R ²	0.042	0.168	0.041	0.165

Notes: EISA is industry-adjusted income from the sale of fixed assets and securities; AC is a dummy variable that is equal to 1 when a firm has adopted the audit committee and 0 otherwise; CP is the forecast error for ordinary income at time t, which equals current ordinary income for fiscal year t minus the forecasted ordinary income for year t; FP is expected future performance, which equals management’s forecast of ordinary income for year t + 1, minus ordinary income for year t; Lagged(EISA) is EISA in period t – 1; IMR is the inverse Mills ratio obtained from estimating the choice model (3). T-statistics are reported in parentheses.

* , ** , and *** indicate significance at the 10%, 5%, and 1% levels respectively in a two-tailed test. Other variables are defined above.

5. Additional tests

5.1. Earnings quality before and after adoption of the audit committee

Instead of using firms that do not adopt the AC as a control group, we use each AC firm as its own control and compare the same firms’ earnings quality before and after adoption. This can help address the concern that our results may be driven by the small number of firms that adopt the AC compared to the number of firms that retain the conventional scheme.

To conduct the analysis, we focus only on firms that adopt the AC during 2003–2007, and create an indicator variable

($POST_{it}$) that is 1 if the firm-year observations occur after the firm adopts the AC and 0 otherwise. For this test, our sample period is extended from 2003–2007 to 2001–2007. By replacing AC_{it} with $POST_{it}$, equation (4) is re-framed as follows:

$$\begin{aligned}
 ABS_DA_{it} = & \alpha_0 + \alpha_1 POST_{it} + \alpha_2 LEV_{it} + \alpha_3 SIZE_{it} + \alpha_4 OCF_{it} \\
 & + \alpha_5 GROWTH_{it} + \alpha_6 ABS_ANI_{it} + \alpha_7 NEGNI_{it} \\
 & + \alpha_8 BIG4_{it} + \alpha_9 VOL_OCF_{it} + \alpha_{10} VOL_SALE_{it} + \epsilon_{it}
 \end{aligned} \tag{4}$$

We also adjust the resulting discretionary accruals using a performance-matching approach to control for the effect of performance on measured discretionary accruals (Kothari

et al., 2005). Table 6 Panel A shows that the coefficient for $POST_{it}$ in equation (4a) is statistically insignificant. This result confirms our finding that convergence of form does not in itself help improve earnings quality. When we separate our sample into substantive group and symbolic group by reference to audit committee quality, $POST_{it}$ is significant in the substantive group but not in the symbolic group (Panel B). While there is heterogeneity in the voluntary AC scheme adoption, firms that converge to AC functionally experience an improvement in earnings quality, whereas firms adopting the AC scheme for symbolic purposes do not achieve better earnings quality after switching to the AC scheme.

5.2. Different measures of earnings quality: earnings response coefficients

For robustness, we also consider an alternative measure of earnings quality. Following Warfield et al. (1995), we regress annual returns (denoted as RET_{it}) on both the level of reported earnings (denoted as $EARN_{it}$) and annual changes in earnings (denoted as $\Delta EARN_{it}$) to test the value relevance of accounting earnings (i.e., their effect on contemporaneous stock performance). We also control for leverage, size, growth and audit firms (BIG4), each of which is interacted with $EARN_{it}$ and $\Delta EARN_{it}$. The sum of the coefficients for earnings levels and earnings changes (earnings response coefficients, or ERCs) is our proxy for the capital market's perception of earnings quality. Equation (5a) compares the ERC of the AC firms with that of the SAB firms, whereas Equation (5b) uses the AC firms as their own control and examines the changes in ERC after switching to the AC firms.

$$RET_{it} = \alpha_0 + \alpha_1 EARN_{it} + \alpha_2 \Delta EARN_{it} + \alpha_3 AC_{it} + \alpha_4 EARN_{it} * AC_{it} + \alpha_5 \Delta EARN_{it} * AC_{it} + \sum control(LEV_{it}, SIZE_{it}, GROWTH_{it}, BIG4_{it}) + \varepsilon_{it} \quad (5a)$$

$$RET_{it} = \alpha_0 + \alpha_1 EARN_{it} + \alpha_2 \Delta EARN_{it} + \alpha_3 POST_{it} + \alpha_4 EARN_{it} * POST_{it} + \alpha_5 \Delta EARN_{it} * POST_{it} + \sum control(LEV_{it}, SIZE_{it}, GROWTH_{it}, BIG4_{it}) + \varepsilon_{it} \quad (5b)$$

Untabulated results for equation (5a) indicate that the coefficient on $AC_{it} * (EARN_{it} + \Delta EARN_{it})$ is insignificant, but when we separate the sample into two groups, we find the coefficient on $AC_{it} * (EARN_{it} + \Delta EARN_{it})$ to be significantly positive only in the substantive group (coefficient = 0.31, $t = 2.47$). Similarly, in equation (5b), we find that the coefficient on $POST_{it} * (EARN_{it} + \Delta EARN_{it})$ is insignificant, but when we separate the sample into two groups, we find that the coefficient on $POST_{it} * (EARN_{it} + \Delta EARN_{it})$ is significantly positive only in the substantive group (coefficient = 0.56, $t = 2.02$). These results confirm our prior findings that only when companies converge to the AC in function can we observe a significant improvement in earnings quality.

5.3. A lead-lagged relation

While we have employed the propensity score matching approach and two-stage Heckman approach to control

Table 6

Regression analysis for the governance schemes and discretionary accruals: Two-stage regression.

Panel A: Discretionary accruals for the full sample.		
	Control firms matched by propensity scores	
	Coefficient	t-Statistics
Intercept	0.022	(1.68)*
$POST_{it}$	-0.005	(-1.02)
LEV_{it}	0.012	(2.32)***
$SIZE_{it}$	-0.007	(-2.64)***
OCF_{it}	-0.018	(-3.63)***
$GROWTH_{it}$	-0.003	(-1.18)
ABS_ANI_{it}	0.007	(2.02)**
$NEGNI_{it}$	0.032	(0.66)
$BIG4_{it}$	-0.045	(-2.30)***
VOL_SALE_{it}	0.005	(1.68)*
VOL_OCF_{it}	-0.003	(0.91)
Fixed effects	Yes	
Obs	399	
R ²	0.172	
Panel B: Discretionary accruals for the subsamples.		
	Substantive group	Symbolic group
Intercept	0.017 (0.96)	0.023 (1.30)
$POST_{it}$	-0.015 (-1.71)*	0.004 (0.45)
LEV_{it}	0.014 (2.88)***	0.009 (2.11)***
$SIZE_{it}$	-0.009 (-1.84)*	-0.006 (-1.26)
OCF_{it}	-0.016 (-1.91)*	-0.022 (-2.01)***
$GROWTH_{it}$	-0.005 (-1.50)	-0.003 (-1.06)
ABS_ANI_{it}	0.007 (1.81)*	0.010 (1.97)*
$NEGNI_{it}$	0.036 (0.77)	0.028 (0.60)
$BIG4_{it}$	-0.061 (-2.02)***	-0.051 (-1.67)*
VOL_SALE_{it}	0.005 (1.46)	0.007 (1.78)*
VOL_OCF_{it}	-0.003 (0.88)	-0.004 (0.95)
OBS	188	211
R ²	0.062	0.052

Notes: *, **, and *** indicate significance at the 10%, 5%, and 1% levels respectively in a two-tailed test.

ABS_DA is the absolute value of performance-matched discretionary accruals; $POST$ is a dummy variable that is equal to 1 when a firm adopts the audit committee scheme in year t and 0 otherwise; LEV is financial leverage, defined as the ratio of total debts to total shareholders' equity; $SIZE$ is the natural log of total sales; OCF is operating cash flows deflated by lagged total assets; $GROWTH$ is the percentage change in sales between the current and previous period; ABS_ANI is the absolute value of the change in net income between the previous year and current year deflated by the previous year's assets; $NEGNI$ is an indicator equal to 1 when firms have two or more consecutive years of negative income and 0 otherwise; $BIG4$ is equal to 1 when a firm is audited by a Big 4 audit firm and 0 otherwise; VOL_SALE is the standard deviation over the current and prior 4 years of sales deflated by total assets; VOL_OCF is the standard deviation of OCF over the current and prior 4 years; IMR is the inverse Mills ratio obtained from estimating the probit choice model (3).

T-statistics are reported in parentheses.

for endogeneity concerns, to shed further light on our results, we employ a lead–lagged relation to test the effect of AC adoption in year $t - 1$ on earnings quality in year t . Specifically, we employ the following equation

$$\begin{aligned} \text{OLS } ABS_DA_{it} = & \beta_0 + \beta_1 AC_{it-1} + \beta_2 LEV_{it} + \beta_3 SIZE_{it} + \beta_4 OCF_{it} \\ & + \beta_5 GROWTH_{it} + \beta_6 ABS_ANI_{it} + \beta_7 NEGNI_{it} \\ & + \beta_8 BIG4_{it} + \beta_9 VOL_OCF_{it} + \beta_{10} VOL_SALE_{it} \\ & + \sum Year + \sum Industry + \varepsilon_{it} \quad (6) \end{aligned}$$

We limit our sample to 2004–2007 as 2003 is the first year that Japanese companies could choose to switch to the AC. Our results show that the coefficient on AC_{it-1} is significantly negative for the whole sample and the substantive group. The results reconfirm our conjecture that only firms adopt functional convergence approach to the AC can we observe a significant improvement in earnings quality.

5.4. The interactive role between AC and institutional features

One alternative possibility of our results is that shareholder-oriented firms have better earnings quality than stakeholder-oriented firms. Traditionally most Japanese firms are managed for a wide range of stakeholders including banks. Japanese bank used to take a monitoring role under the bank-centered corporate governance mechanism (e.g., Kaplan and Minton, 1994). Yoshikawa and McGuire (2008) have asserted that rising equity market pressure from foreign ownership in recent years is an important driver leading Japanese firms to adopt practices more consistent with US shareholder-based systems. Our results in Table 3 also point out that more “shareholder oriented” firms (i.e., high foreign ownership, cross-listed status, and low bank ownership) are more willing to switch to the AC model. Thus, it is likely that these “shareholder oriented” firms would have fewer difficulties to converge because their structure is closer to the AC scheme, thereby resulting in higher earnings quality.

To address this possibility, we employ the following model:

$$\begin{aligned} \text{OLS } ABS_DA_{it} = & \beta_0 + \beta_1 AC_{it} + \beta_2 BANK_{it} + \beta_3 FOREIGN_{it} \\ & + \beta_4 CROSS_{it} + \beta_5 AC_{it} \times BANK_{it} + \beta_6 AC_{it} \\ & \times FOREIGN_{it} + \beta_7 AC_{it} \times CROSS_{it} + \beta_8 LEV_{it} \\ & + \beta_9 SIZE_{it} + \beta_{10} OCF_{it} + \beta_{11} GROWTH_{it} \\ & + \beta_{12} ABS_ANI_{it} + \beta_{13} NEGNI_{it} + \beta_{14} BIG4_{it} \\ & + \beta_{15} VOL_OCF_{it} + \beta_{16} VOL_SALE_{it} \\ & + \sum Year + \sum Industry + \varepsilon_{it} \quad (7) \end{aligned}$$

We control for $BANK_{it}$, $FOREIGN_{it}$ and $CROSS_{it}$ in our regression. We expect shareholder oriented firms to have low value of $BANK_{it}$. Firms with the bank-centered governance model use insider communication to resolve the information asymmetry between managers and banks or other stakeholders, and have less demand for high-quality financial reports to resolve information asymmetry (Ball et al., 2000). Similarly, we expect shareholder oriented firms associated with high values of $FOREIGN_{it}$ and $CROSS_{it}$. We also

interact $BANK_{it}$, $FOREIGN_{it}$ and $CROSS_{it}$ with AC_{it} to test the interacting role of institutional feature and AC_{it} .

Table 7 reports the results. For the substantive group, column (1) shows that the coefficients on $FOREIGN_{it}$ and $CROSS_{it}$ are negative and the coefficient on $BANK_{it}$ is positive, consistent with more shareholder-oriented firms having better earnings quality. However, our results are not driven by the shareholder-oriented firms because the coefficient on AC_{it} remains negative after controlling for $BANK_{it}$, $FOREIGN_{it}$ and $CROSS_{it}$. Second, while the coefficient on $AC_{it} \times CROSS_{it}$ is not significant, we find that the coefficient on $AC_{it} \times BANK_{it}$ is significantly positive and the coefficient on $AC_{it} \times FOREIGN_{it}$ is significantly negative. The results suggest that the effect of adopting AC on earnings quality depends on an adopter’s institutional feature. The effect of adopting AC on earnings quality is stronger in firms with lower bank ownership and higher foreign ownership. Thus, our results suggest that adopting AC needs to be matched with institutional features.

In column (2), we do not find the same pattern for the symbolic group. The coefficient on AC_{it} , $BANK_{it}$, $FOREIGN_{it}$ and $CROSS_{it}$ remains insignificant.

5.5. Difference-in-difference design

To test whether switching to the AC increases earnings quality, we employ a difference-in-differences design and compare the change in earnings quality among the AC group before and after the switch, relative to the corresponding change in the SAB group. We include the control group in order to control for changes in earnings quality in firms that are unrelated to the governance schemes. This relationship can be stylized as in Equations (8):

$$\begin{aligned} ABS_DA_{it} = & \beta_0 + \beta_1 AC_{it} + \beta_2 POST_{it} + \beta_3 AC_{it} \times POST_{it} + \beta_4 BANK_{it} \\ & + \beta_5 FOREIGN_{it} + \beta_6 CROSS_{it} + \beta_7 AC_{it} \times BANK_{it} \\ & + \beta_8 AC_{it} \times FOREIGN_{it} + \beta_9 AC_{it} \times CROSS_{it} + \beta_{10} LEV_{it} \\ & + \beta_{11} SIZE_{it} + \beta_{12} OCF_{it} + \beta_{13} GROWTH_{it} \\ & + \beta_{14} ABS_ANI_{it} + \beta_{15} NEGNI_{it} + \beta_{16} BIG4_{it} \\ & + \beta_{17} VOL_OCF_{it} + \beta_{18} VOL_SALE_{it} \\ & + \sum Year + \sum Industry + \varepsilon_{it} \quad (8) \end{aligned}$$

We interact AC_{it} with $POST_{it}$, and our interest is in the coefficient α_3 because it estimates the incremental association between earnings quality and the period after switching to the AC for the AC firms relative to the SAB firms. We expect the coefficient on α_3 to be significantly negative if the AC can lead to better earnings quality. We also control for $BANK_{it}$, $FOREIGN_{it}$ and $CROSS_{it}$, and interact $BANK_{it}$, $FOREIGN_{it}$ and $CROSS_{it}$ with AC_{it} to test the interacting role of institutional feature and AC_{it} .

Table 8 reports the results, which show that the coefficient on $AC_{it} \times POST_{it}$ is insignificant. The results reconfirm our findings of H1 that improvements in earnings quality cannot be achieved by merely adopting the audit committee.

5.6. Other measures of functional convergence

We employ two other measures for functional convergence. First, we define the whole AC sample into substantive and symbolic group by reference to the individual measure

Table 7

Regression analysis for the governance schemes and discretionary accruals: Two-stage regression.

	(1) Substantive group		(2) Symbolic group	
	Matched firms as control firms	All SAB firms as control firms	Matched firms as control firms	All SAB firms as control firms
Intercept	0.024 (1.52)	0.062 (15.02)***	0.031 (1.64)*	0.080 (12.10)***
AC _{it}	-0.056 (-2.84)***	-0.014 (-2.05)**	-0.007 (-1.28)	0.003 (0.51)
BANK _{it}	0.012 (1.85)*	0.008 (-1.34)	0.005 (0.76)	0.005 (0.77)
FOREIGN _{it}	-0.011 (-1.80)*	-0.005 (-1.10)	-0.003 (-0.70)	-0.004 (-0.76)
CROSS _{it}	-0.008 (-1.72)*	-0.006 (-1.51)	-0.004 (-1.33)	-0.002 (-0.53)
AC _{it} *BANK _{it}	0.021 (3.28)***	0.016 (2.08)**	0.005 (0.78)	0.006 (0.84)
AC _{it} *FOREIGN _{it}	-0.016 (-2.29)**	-0.015 (-1.99)**	-0.005 (-0.79)	-0.004 (-0.75)
AC _{it} *CROSS _{it}	-0.006 (-1.08)	-0.004 (-1.13)	-0.002 (-0.58)	-0.003 (-0.61)
LEV _{it}	0.007 (3.34)***	0.007 (8.73)***	0.003 (2.64)**	0.005 (7.63)***
SIZE _{it}	-0.003 (-2.76)***	-0.005 (-7.35)***	-0.002 (-2.51)***	-0.004 (-6.62)***
OCF _{it}	-0.037 (-3.70)***	-0.031 (-3.71)***	-0.026 (-2.64)***	-0.032 (-3.72)***
GROWTH _{it}	-0.008 (-1.66)	-0.002 (-1.03)	-0.003 (-1.10)	-0.006 (-1.30)
ABS_ΔNI _{it}	0.154 (2.97)***	0.170 (12.05)***	0.181 (3.42)***	0.166 (11.84)***
NEGNI _{it}	0.033 (0.94)	0.020 (0.63)	0.017 (0.53)	0.020 (0.73)
BIG4 _{it}	-0.022 (-3.01)***	-0.020 (-9.53)***	-0.015** (-2.71)***	-0.019 (-8.67)***
VOL_SALE _{it}	0.009 (1.90)**	0.008 (1.86)*	0.004 (1.49)	0.009 (1.78)*
VOL_OCF _{it}	-0.006 (-0.95)	-0.004 (0.86)	-0.005 (-0.92)	-0.003 (0.69)
IMR		-0.011 (-2.88)***		-0.010 (-2.78)***
OBS	234	6348	270	6384
R ²	0.066	0.172	0.068	0.166

Notes: *, **, and *** indicate significance at the 10%, 5%, and 1% levels respectively in a two-tailed test.

OCF is operating cash flows deflated by lagged total assets; ABS_ΔNI is the absolute value of the change in net income between the previous year and current year deflated by the previous year's assets; NEGNI is an indicator equal to 1 when firms have two or more consecutive years of negative income and 0 otherwise; BIG4 is equal to 1 when a firm is audited by a Big 4 audit firm and 0 otherwise; VOL_SALE is the standard deviation over the current and prior 4 years of sales deflated by total assets; VOL_OCF is the standard deviation of OCF over the current and prior 4 years; IMR is the inverse Mills ratio obtained from estimating the probit choice model (3).

T-statistics are reported in parentheses.

Other variables are defined in Table 2.

of audit committee characteristics (i.e., *EXPERT_{it}*, *BUSY_{it}*, *OUTSIDER_{it}*, *OUTCHAIR_{it}*). Second, we use factor analysis to construct a composite proxy for the four measures of AC quality. We performed principal component analysis and extracted only one factor with an eigenvalue greater than one that explains 84.35% of the variance. The communalities all exceed 0.72. The median of the factor score that represents the composite AC quality measure is 0.34. Using the median, we split the whole AC sample into two groups and repeat the same analysis. Our results are robust to both alternative measures.

6. Conclusion

From April 2003 on, Japanese firms have been allowed to choose either the Anglo-Saxon AC scheme within the

board of directors or the conventional scheme with an SAB separate from the board of directors. Motivated by the debate about the merits of globally uniform governance standards based on the Anglo-Saxon AC model, this study exploits this setting to investigate the determinants of adopting the AC scheme and its effectiveness in improving financial reporting quality. Our results show that adopting the AC alone does not lead to better earnings quality. The results are the same when using different measures of earnings quality. We construct one composite measure of AC quality and use the median of the composite measure to split the sample into substantive and symbolic groups. We find that substantive adopters experience an increase in earnings quality but we find no improvements for the symbolic group. In line with the institutional theory (Abrahamson, 1991; Gilson, 2004), these findings indicate that adopting

Table 8
Regression analysis for the governance schemes and discretionary accruals: Difference-in-difference design.

	Matched firms as control firms
Intercept	0.018 (1.33)
AC _{it}	-0.011 (-0.86)
POST _{it}	-0.012 (-1.02)
AC _{it} *POST _{it}	-0.010 (-0.82)
BANK _{it}	0.015 (1.91)*
FOREIGN _{it}	-0.008 (-1.54)
CROSS _{it}	-0.007 (-1.72)*
AC _{it} *BANK _{it}	0.031 (3.66)***
AC _{it} *FOREIGN _{it}	-0.009 (-1.27)
AC _{it} *CROSS _{it}	-0.006 (-0.92)
LEV _{it}	0.008 (3.45)***
SIZE _{it}	-0.006 (-3.23)***
OCF _{it}	-0.028 (-3.24)***
GROWTH _{it}	-0.006 (-1.55)
ABS_ΔNI _{it}	0.167 (3.42)***
NEGNI _{it}	0.028 (0.82)
BIG4 _{it}	-0.026 (-3.26)***
VOL_SALE _{it}	0.010 (1.92)**
VOL_OCF _{it}	-0.008 (-0.99)
OBS	798
R ²	0.070

Notes: *, **, and *** indicate significance at the 10%, 5%, and 1% levels respectively in a two-tailed test.

OCF is operating cash flows deflated by lagged total assets; ABS_ΔNI is the absolute value of the change in net income between the previous year and current year deflated by the previous year's assets; NEGNI is an indicator equal to 1 when firms have two or more consecutive years of negative income and 0 otherwise; BIG4 is equal to 1 when a firm is audited by a Big 4 audit firm and 0 otherwise; VOL_SALE is the standard deviation over the current and prior 4 years of sales deflated by total assets; VOL_OCF is the standard deviation of OCF over the current and prior 4 years; IMR is the inverse Mills ratio obtained from estimating the probit choice model (3).

T-statistics are reported in parentheses.

Other variables are defined in Table 2.

the AC simply to obtain a fashionable label without seriously implementing the monitoring function for shareholders leads to convergence of form without improving earnings quality.

As our study has the advantage of comparing two governance schemes on a level playing field, our findings contribute to the line of research that emphasizes incentives rather than the mere adoption of an institutional form when the purported goal is to enhance financial reporting quality. We also contribute to the literature on the global

convergence of corporate governance mechanisms by providing evidence that simply following a global trend that does not fit the firm's organizational culture and mindset will not improve the monitoring function (Dallas and Scott, 2006; Hashimoto, 2002). Nevertheless, our findings are based on firms in Japan, and the generalizability may be limited. Currently, there are other countries (e.g., China, Taiwan) that also allow firms to choose between a local governance scheme and the Anglo-Saxon AC scheme. Future research with firms in other countries may be warranted to validate our findings in other institutional environments. Another caveat worth noting is that our sample of firms adopting the AC scheme is relatively small, which might also limit the generality of the results. Nevertheless, we have analyzed and controlled the factors that are associated with the voluntary adoption of the AC scheme.

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Appendix

Measurement of discretionary accruals

Consistent with prior research (Hadani et al., 2011), we use discretionary accruals as a measure of earnings quality. Our primary model for estimating discretionary accruals is a modified cross-sectional Jones model (Dechow et al., 1995).² We estimate discretionary accruals as total accruals minus non-discretionary accruals. We first separately estimate equation (A1) for each three-digit industry code in each year to obtain industry-year estimates of the coefficients in the total accruals model.³ We then use the parameter coefficients obtained from equation (A1) to estimate non-discretionary accruals in equation (A2):

$$\frac{TA_{it}}{Asset_{i,t-1}} = \alpha_0 \frac{1}{Asset_{i,t-1}} + \alpha_1 \frac{\Delta REV_{it}}{Asset_{i,t-1}} + \alpha_2 \frac{PPE_{it}}{Asset_{i,t-1}} + \varepsilon_{it} \tag{A1}$$

$$\frac{NDA_{it}}{Asset_{i,t-1}} = \alpha_0 \frac{1}{Asset_{i,t-1}} + \alpha_1 \frac{(\Delta REV_{it} - \Delta AR_{it})}{Asset_{i,t-1}} + \alpha_2 \frac{PPE_{it}}{Asset_{i,t-1}} \tag{A2}$$

where TA_{it} is total accruals, measured as the difference between ordinary income (earnings before extraordinary

² For sensitivity tests, we also try a modified Jones time-series approach that assumes the temporal coefficients for non-discretionary accruals are stationary for each firm. The results are qualitatively similar.

³ The three-digit Nikkei medium industry classification codes are used to identify a firm's industry affiliation.

items) and operating cash flows for firm i in year t ; ΔREV_{it} is the change in net revenue for firm i in year t ; ΔAR_{it} is the change in accounts receivable for firm i in year t ; PPE_{it} is property, plant and equipment for firm i in year t ; $Asset_{it}$ is total assets for firm i in year t ; NDA_{it} is non-discretionary accruals for firm i in year t .

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