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Accrual-Based and Real Activities Based Earnings Management Behavior of Family Firms in Japan*

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ABSTRACT

We have explored the extent of accrual-based and real activities-based earnings management using data from family and non-family firms in Japan. Family firms are expected to have lower agency costs because family shareholders and management are more congruent in their pursuit of mutual firm goals and seek lower levels of earnings management. However, this collusion may lead to entrenchment and higher levels of earnings management, which becomes opaque to outside shareholders. A founding family is concerned with the reputation of their firm for sustained socioemotional wealth and family firms may conduct cosmetic earnings management to conceal bad news. We empirically assess the levels of earnings management and investigate whether the level will be lower or higher for family or non-family firms, and identify which method is more costly. The level of accruals and cost may vary among the family firm

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types; that is, whether or not shareholdings are large or the CEO is from the founding family. We find that the level of both accrual-based and real activity measures is lower for family firms. With cross-section regressions, we find that family shareholding increase the level of abnormal accruals management, whereas the family CEO decreases the level of abnormal accruals, but in both cases the amounts were not significant. We also find that family-related variables decrease the levels of real-activities earnings management. When we introduce economic measures related to the costs of earnings management, we find that Japanese family firms utilize accrual-based earnings management more often than real activities-based earnings management.

JEL Classification: M41; G32; M14
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1. Introduction to Japanese Family Firms

Among the literature on earnings quality (Sloan, 1996; Xie, 2001; Desai et al., 2004; Richardson et al., 2005), few studies use US family firm data except for Ali et al. (2007) and Wang (2006). Although the financial performance of family firms with Japanese data has been investigated by Claessens et al. (2000), Allouche et al. (2008), Saito (2008), Asaba (2013), and Mehrotra et al. (2013), few studies adopt the perspective of financial disclosure quality. Ebihara et al. (2012) find that the earnings quality of Japanese family firms is lower than that of non-family firms from univariate analysis using the Jones and modified Jones models and find that earnings quality is higher for family firms with founding family shareholdings of up to 33% using multivariate pooled regressions. However, the study's sampling period is limited to three years, and the study investigated only accrual-based earnings management. Kubota and Takehara (2013) find that family firms adopt more conservative earnings reporting than non-family firms.

In the current paper, we explore both accrual-based earnings management (hereafter AEM) and real activities-based earnings management (hereafter REM) of family firms in Japan using data from all family and non-family firms listed on the Tokyo Stock Exchange from the year 2004 to the year 2011. We chose Japanese family firm data for our research for the following reasons. First, Bennedsen and Fan (2014) argued that Japanese family firms have a unique history and culture relative to other countries' family firms including those of other East Asian countries; this uniqueness provides motivation for research on Japanese family firms. Although earnings management for family firms has been investigated in detail (Prencipe et al., 2014), the test sample is mainly limited to US and European firms with the exception of for Kim and Yi (2006), who study Korean firms.

Although European family firms have a longer history than their US counterparts, the histories of Japanese family firms far surpasses those of European family firms and many date from the eighth century AD (the private family firms Kongo Gumi and Hoshi Ryokan, for example). Moreover, the management culture of family firms in Japan may be substantially different from the culture of European (Achleintner et al., 2014) and US family firms (Ali et al., 2007 and Wang, 2006).

Second, the proportion of Japanese public firms owned by families is approximately equal to the proportion of American firms owned by families. Among the large listed family firms in Japan are Toyota Motor Corporation, Panasonic, Kikkoman Corporation, and Epson. These multinational family firms have a strong influence on the Japanese and world economies. Accordingly, it is imperative for accounting researchers to explore the degree of earnings management of family firms versus non-family firms.

Third, we consider it important to explore whether the paternalistic Japanese management style (Itami, 2002) is still practiced among family firms versus non-family firms. If this is the case, management may be more concerned with the redistribution of revenue to their employees than the base-line net income. Because employees are sometimes considered family members of firms (Miller and Le Breton-Miller, 2005), we explore whether family firms in Japan are less subject to earnings management of net income.

Finally, the type of corporate governance structure of the majority of Japanese firms is conventional and defined in the Companies Act. At least one internal auditor and outside CPA firm are required to check board performance and the fair representation of financial statements. Another type of governance also defined in the Companies Act is committee style governance, for

which three committees composed of board members and a CPA firm oversee the management performance and the fairness of financial statements, as in the US. However, few Japanese firms adopt this latter form of governance (Sony, for example). The generated income numbers for the former type of corporate governance may be subject to higher earnings management because board members and an internal auditor may function as insiders, and this tendency may be stronger among family firms.

Family firms are expected to have lower agency costs because family shareholders and management are more congruent in their pursuit of mutual firm goals by family shareholders and/or executive positions and seek a lower level of earnings management. However, such collusion may lead to entrenchment, a higher level of earnings management, and outside shareholders may be excluded from the real situation.

A founding family will also be concerned with the reputation of their product/services, firm name, and family name to sustain family socioemotional wealth although this requires a level of sacrifice in economic performance.[1] Thus, in this case, we infer that the level of earnings management will be lower for family firms compared to non-family firms for reputational purposes, and we investigate the level of earnings management identifying which method is more costly for family firms. Family firms may conduct cosmetic earnings management and conceal bad news (Gomes-Mejia et al., 2014).

We consider that the level of accruals and cost (Zang, 2012) may also vary among the type of family firm; that is, whether or not shareholdings are large and whether the CEO is from the founding family. We conduct empirical analyses using correlation analysis, portfolio analysis, univariate analysis, and cross-section regressions and find evidence to test these assertions.

Section 2 explains the motivation for our study, and Section 3 reviews previous studies. Section 4 establishes our hypotheses. Section 5 explains the data and reports basic statistics. Section 6 reports empirical results in detail, and Section 7 concludes.

2. Motivation for the Study

Family firms are typically fortified by management that is compatible with a family norm and/or value regardless of whether the CEO is a family member (Ward, 2004). Accordingly, we expect that management possesses stronger real authority inside firm organization, according to the definition of Aghion and Tirole (1997). However, this force can function in one of two ways.

First, family firms may suffer less from agency cost problems that arise between managers and share owners (Jensen and Meckling, 1976) because a large portion of shares are owned by founding families, and the family CEO holds authority from the family. These factors provide greater efficiency with less agency cost. Anderson et al. (2009) note that family firms can provide stronger control and oversight with less agency cost and deliver direct control over corporate social activity decisions to managers. The authors call this strong tendency the "control in-place" hypothesis.

However, stronger authority may be counterproductive, and entrenchment may increase within the firm. Stronger authority with less agency cost may increase opaqueness in disclosures because management and the owner have less concern for other stakeholders. Thus, family firms

[1] See Berrone et al. (2010, 2012) and Gomez-Mejia et al. (2007, 2011) for the definition of socioemotional wealth (SEW) used in family firm research literature. Gomez-Mejia et al. (2014) discuss the impact of the family control and influence dimension and the family identity dimension on the extent of earnings management.

may fall into a state of autarky, and non-family managers and employees in fear of losing their jobs may be defenseless against the firm. For example, both Dyer and Whetten (2006) and Anderson et al. (2009) state that families can be self-centered and more interested in protecting their well-being, and Anderson et al. (2009) calls this tendency the "entrenchment hypothesis." Stockmans et al. (2010) uses Flemish private firm data to conclude that socioemotional wealth motivates upward earnings management. Gomez-Mejia et al. (2014) present a similar argument and establish their alternative hypotheses that are comparable to the hypotheses in this study. We also present the entrenchment hypothesis as an alternative hypothesis, which implies lower earnings quality against the null hypothesis. This set constitutes our null and alternative hypotheses.

Additionally, from the perspective of preserving a family firm's socioemotional wealth (SEW), which is a new concept in family firm research literature, Gomez-Mejia et al. (2007, 2011) argue that family firms are willing to yield financial performance to attain and preserve greater socioemotional wealth. The authors suggest that family firms are concerned with persistent positive profit, but do not necessarily maximize profits and may spend on social causes such as museum, charity and/or educational institution donations at the same time as investing in the well-being of company employees. In this case, net profit is not the ultimate goal.

Enforcing these management actions requires a stronger real authority (Aghion and Tirole, 2007) with lower agency cost, which might allow the quality of earnings to better maintain the reputation of the firm and the family or vice versa.[2] This can be a significant implication of our research framework. We establish our first null hypothesis to determine which story is consistent in Section 4.

To test our first hypothesis that compares the lower agency cost argument with the entrenchment effect, we focus on earnings quality. Earnings quality is one of the major properties that accounting reports ought to reflect (Ronen and Yarri, 2008 and Francis et al., 2006), and the evidence for Japanese family business data is less known except in Ebihara et al. (2012). To investigate the level of AEM, we use abnormal accruals as presented by Dechow et al. (1995) and other standard earnings quality measures from the accounting literature. We also investigate the level of REM as devised by Roychowdhury (2006).

In our second hypothesis and the subsequent sub-hypothesis in Section 4, we compare family and non-family firms by highlighting various cost measures accompanied by both AEM and REM, which was first proposed and tested by Zang (2012) on US data. The authors' method compares the relative cost of earnings management. Achleitner et al. (2014) apply the same method to German family business data. The study sample is composed of 99 to 291 listed family firms spanning 11 years, and the authors find that family firms in Germany choose to employ AEM more than REM. Because the sample is composed of public firms, the results are comparable to ours. However, as the introduction suggested, Japanese family firms tend to have longer history, and the management culture may be unique (Bennedsen and Fan, 2014; Itami, 2002); thus, their behavior may be different from that of European family firms.[3]

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[2] This corresponds to the family control and influence dimension (Gomez-Mejia et al., 2014, Berrone et al., 2012).

[3] We thank Sasson Bar-Yosef and Annalisa Prencipe for their discussion that posits that Italian firms have the longest history among European family firms, but Japanese firms have longer history and differ significantly in terms of corporate culture.

In this paper, with minor modifications on the cost measures used by Zang (2012) in the context of Japanese firms, we compare the relative cost of two earnings management methods for family and non-family firms in Japan. This leads us to establish the second hypothesis and the sub-hypothesis defined in Section 4. We review previous studies related to this current study in the next section.

3. Previous Evidence on Family Firms' Earnings Management

Among the literature on earnings quality (Sloan, 1996; Xie, 2001; Desai et al., 2004; Richardson et al., 2005), few studies use US family firm data. Ali et al. (2007) find that US family firms show better quality financial disclosures, are followed by more analysts, and trade their stocks with smaller bid-ask spreads. Wang (2006) finds that earnings quality is higher for US family firms versus non-family firms. Similarly, Jiraporn and DeDalt (2009) find that stronger control by the founding family leads family firms to a lower level of earnings management by US firms and emphasize the role of family reputation, which we use to construct our hypotheses in Section 4.

For evidence on other countries, Stockmans et al. (2010) find family firms have greater incentive to engage in upward earnings management to preserve their socioemotional wealth and use Finnish data from their own questionnaires. Cascino et al. (2010) use Italian listed firm data and find that family firms have a higher quality of financial information disclosure than non-family firms. Achleitner et al. (2014) use a sample of 402 German listed family firms and find that family firms in Germany use less REM and adopt earning-decreasing accruals-based earnings management. Using Taiwan family firm data, Yang (2010) finds the greater the share of insider ownership, the higher the level of earnings management. With respect to Korean data, Kim and Yi (2006) find that the greater the disparity between control (voting rights) and ownership (cash flow rights), the greater the extent of earnings management.[4]

The previous studies investigated only AEM, except Achleitner et al. (2014). In the current paper, we explore both AEM and REM (Roychowdhurry, 2006 and Zang, 2012) and compare relative costs for three types of family firms, which we define in Section 5. For the former earnings management measure, we decompose total accruals into normal and abnormal components using the CFO-modified Jones model proposed by Kasznik (1999), and for the latter measure we use the method by Roychowdhury (2006).

In one of the most widely cited research articles on Asian family business, Claessens et al. (2000) investigated ownership structure among East Asian countries for evidence on management behavior and financial performance of Japanese family firms. The authors include 1,240 Japanese listed firms (op. cit., p.104) and note that 13.1% of firms are controlled by families with a 10% shareholding cutoff level for founding families, and 9.7% of firms are controlled by families with a 20% cutoff level. Saito (2008) finds that family firms slightly outperformed non-family firms from the year 1990 to the year 1998, but their superiority was limited to the founders' reign. Allouche et al. (2008) find that family firms outperform the matched sample of non-family firms with a smaller sample. More recently, Asaba (2013) investigates the investment behavior of the electric machinery industry in Japan. The author's sample of 184 family firms from the year 1995 to the year 2006 demonstrates aggressive investment behavior during a boom and persistent investment behavior during a recession. Mehrotra et al. (2013) investigate Japanese

[4] The Companies Act in Japan contains a clause that states one voting right for one unit share.

family business succession problems and demonstrate that adopted heirs can avoid the succession problem. The authors studied Japanese firms between 1949 and 1970 and followed the data up to 2000.

In the accounting literature investigating Japanese firm earnings quality, Kubota and Takehara (2013) find that family firms adopt more conservative earnings reporting compared to non-family firms and report losses earlier using the Basu (1995) conditional conservatism regression model. Ebihara et al. (2012) find that earnings quality is lower for family firms than non-family firms with univariate analysis, but the quality is higher for founding-family shareholdings of up to 33% using multivariate analysis. However, this prior research is limited by the length of the sampling period (only three years) and the measurement of accruals-based earnings only.

4. Hypotheses

Based on the reasoning in Sections 2 and 3, we establish two hypotheses and one sub-hypothesis in this section. First, considering the robust real authority (Aghion and Tirole, 1997) and lower agency cost in family firms because of the close relationship between management and owners, we predict that family firms will be unwilling to boost their reported earnings and will have strong executing power not to do. Given real authority, management and owners are not concerned with manager compensation geared towards firm performance and will not engage in income-boosting strategies. Given lower agency cost, the founding family and management with greater firm share may be more concerned with long-run value appreciation than non-family firms and may be less concerned with earnings performance in the short run. Additionally, with respect to the preservation motive to maintain socioemotional wealth (Gomez-Mejia et al., 2007, 2011; Berrone 2010, 2012) of family firms, we predict that managers of family firms will not choose income-increasing earnings management practices because it will reduce the founding family firm reputation and, consequently, detract from the accumulation of family specific socioemotional wealth.

However, there may be a greater entrenchment effect by owners, management, and internal auditors from collusion. This can lead to a higher level of earnings management and exhibits strong real authority that is functioning in the opposite direction.

As a null hypothesis, we predict that the amount of earnings management in family firms is lower than that of non-family firms. We call this reasoning "founding family's reputation hypothesis" and establish our first hypothesis.[5] We call the alternative hypothesis the "entrenchment hypothesis."

Hypothesis 1: *Family firms will conduct a lower level of income-increasing earnings management than non-family firms.*

If the alternative hypothesis is supported, the cause may be the entrenchment effect arising from the collusion of management, family owners, and an internal auditor, and this phenomenon can be explained by a particular Japanese governance style. In such a case, managers and the founding family may extract more cash by compensating a family CEO and/or paying out higher dividends with inflated earnings. Management may incur higher expenditures for perks (Jensen

[5] This corresponds to the family identity dimension (Gomez-Mejia et al., 2014, Berrone et al., 2012).

and Meckling, 1976). Outside shareholders, both current and future, may suffer from the income-boosting efforts of family firms. Stockmans et al. (2010) find such behavior in Flemish private family firms, and Kim and Yi (2006) find similar behavior in Korean private family firms versus public family firms. Our sample is composed of public firms in Japan, and our evidence will complement these prior findings whatever the direction.

The second hypothesis addresses the type of earnings management method that family firms in Japan pursue: AEM or REM.

Subsequent to Hypothesis 1, we predict that family firms sacrifice cost for earnings management because owners and/or family CEOs are (is) insider(s), do (does) not want to incur cost, and would rather conduct earnings management. Outside shareholders may place a high level of confidence on family management if the CEO is a family member. Family firms may consider that a family-member CEO avoids unnecessary expenditure to boost earnings unlike a non-family-member CEO, who may conduct earnings management to enhance their professional reputation.[6]

We call this hypothesis the "earnings management cost hypothesis" for family firms because family firms avoid incurring real economic cost solely for income-boosting purposes.

Hypothesis 2: *Family firms will sacrifice less economic cost through real earnings management to increase earnings than non-family firms*

Then, given that Hypothesis 2 is accepted for family firms in Japan, we establish an additional sub-hypothesis as a corollary to Hypothesis 2 using the same reasoning that family firms do not want to sacrifice economic cost even in cases where they want to conduct earnings management. We call this the "accrual method choice hypothesis. "

Hypothesis 2.A: *Family firms prefer accruals-based earnings management to real earnings management.*

From the two hypotheses and sub-hypothesis, we explore the extent of earnings management and the cost differences for Japanese family firms.

5. Data and Variables Construction

5.1 Data

Our primary observation period is from the year 2004 to the year 2011, and the sample includes all listed firms on the Tokyo Stock Exchange. The numbers of firm types in the sample are listed in Table 1. We construct unbalanced panel data without survivorship and new firm bias.

We classify family firms into three types in Table 1: Type 1: firms with more than 10% of shares owned by a founding family and the CEO is a family member; Type 2: firms with more than 10% of shares owned by a founding family, but the CEO is not a family member, and Type

[6] The CEO of Toyota Motor Company, Mr. Akio Toyoda, is a grandson of the founder, and the family owns less than 2% of the shares and voting rights unlike the family of Ford Motor Company. See also Bennedesen and Fan (2014) for a related discussion on the uniqueness of family firm CEO postings in Japan.

TABLE 1. SUMMARY OF FIRM-YEAR OBSERVATIONS

	Non Family	Type 1	Type 2	Type 3	Total
2004	921	304	58	131	1,414
2005	928	317	59	136	1,440
2006	960	340	67	144	1,511
2007	1,035	379	85	165	1,664
2008	1,018	393	88	165	1,664
2009	991	406	96	164	1,657
2010	975	417	102	159	1,653
2011	998	426	104	152	1,680
TSE First Section (TSE1)	821	209	73	154	1,257
TSE Second Section (TSE2)	208	104	29	25	366
Other than TSE1 and TSE2	301	261	82	38	682
Consumption Goods	303	131	46	51	531
Investment Goods	603	145	51	105	904
Services	250	236	73	42	601
Transportion	62	13	4	10	89
Utility	20	1	0	1	22
Real Estate	55	22	5	6	88
%Family Firms	57.852	24.519	8.009	9.620	100.000

Note: Type 1, more than 10% shareholdings and CEO from family, Type 2, more than 10% shareholdings, but CEO not from founding family, Type 3, less than 10% shareholdings, CEO from the founding family. The observation period is from 2004 through 2011.

3: less than 10% of shares are owned by a founding family and the CEO is a family member.[7] Based on these classifications, and using a sample of non-family firms, we investigate the hypotheses 2 and 2A based on cost differences for these four types of firms (Zang, 2012).

The differences in family firm types may reveal distinct management and financial reporting behavior. The differences may depend on the size of the shareholding of the founding family and/or whether the CEO is a family member. The finding will provide new insight into the quality of earnings of Japanese family firms.

The first subpanel reports the number of observations for each year followed by the stock exchange listings and the sector-wise observations. This sector classification scheme follows that of Kubota and Takehara (2007), who investigate the cost of capital in Japan. The details of this scheme are shown in Appendix 1. The first column lists the number of non-family firms; the second column, Type 1 firms (more than 10%, and a CEO from the founding family); the third column, Type 2 firms (more than 10%, and a CEO not from the founding family); the fourth column, Type 3 firms (less than 10%, and a CEO from the founding family); and the fifth, the

[7] The non-family firm group includes family firms with a shareholding percentage of less than 10%, and family firms with a CEO who is not a family member. When we established our own database, this group was classified as non-family firms.

total number of firms. For example, for 2011, there are 998, 426, 104, 152, and 1,680 firms.

The CEOs of Japanese family firms are often members of the founding family, even if the family shareholding is less than 10%. The data reveals that 9.62% of the firms conform to this Type 3, and we determine that there are more large firms (Toyota, for example) than small firms from the listings on different stock markets. This represents a unique phenomenon not found anywhere else in the world (Bennedsen and Fan, 2014). The phenomenon may come from a corporate culture whereby the employees respect that the descendant may have inherited the original entrepreneur's spirit, a reflection of historical traditions dating from medieval times, or a characteristic of Japanese management culture. However, this paper does not identify the reason because it may be a sociological paradigm.

We find that the number of family firms of all types increases over the years with a pace more rapid than that of non-family firms. For stock exchange listings, we find the largest listing is from other emerging stock markets in Japan with 261 firms and 82 firms for Type 1 and Type 2 firms, respectively. For Type 3 firms, we find the largest listing on the Tokyo Stock Exchange, with Toyota Motor Company and Panasonic in this category. For sector-wise observations, for Type 1 and Type 2 firms, the largest listing is from the service industry, whereas for Type 3 firms the largest listing is from the investment goods industry. Overall, we find that 42% of the firms are classified as listed family firms in Japan.

5.2 Measures of Earnings Management

For the sample firms, we use financial statement and stock price data from the Nikkei NEEDS Database and compute earnings numbers and managed numbers.

In this study, we define accruals (*ACC*) as the difference between earnings before extraordinary items (*EBEI*) and cash flow from operations (*CFO*).[8] First, we compute *EBEI* from the corresponding items on the income statement and obtain *CFO* directly from the cash flow statement. Because *EBEI* is equal to (*CFO* + *ACC*) by definition, accruals in this study are computed as *EBEI* - *CFO*.

We decompose total accruals into normal and abnormal components using the modified Jones model proposed by Dechow et al. (1995). We estimate the following cross-section regression equation separately by each industry for each sample year.[9]

$$\begin{aligned} ACC_{j,t}/TA_{j,t-1} = \quad & \alpha_0 + \alpha_1 \cdot 1/TA_{j,t-1} \\ & + \beta_1 \Delta ADJREV_{j,t}/TA_{j,t-1} + \beta_2 PPE_{j,t}/TA_{j,t-1} + \nu_{j,t}. \end{aligned} \tag{1}$$

In equation (1), $\Delta ADJREV$ is the difference between changes in sales and accounts receivables, *PPE* is property, plant, and equipment measured at net book value, and $v_{j,t}$ is a residual term. The fitted values from OLS estimation were used to construct normal accruals (*NAC*) components, and their residual terms were used as abnormal accruals (*ABNAC*). The abnormal accruals components represent firm-specific accrual components in excess of industry averages.

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[8] Based on the observation by Hribar and Collins (2002), we use the data from the cash flow statement instead of the balance sheet. The authors thank an anonymous referee for this suggestion.

[9] Based on the original 33 industry classifications of the Tokyo Stock Exchange, we classified all non-financial firms into 24 industries.

In addition to abnormal accruals, we use two other measures of accounting-based earnings quality measures - measures of variability and smoothness of earnings. Variability of earnings (*EBEISD*) in this study is defined as the past five-year standard deviation of earnings before extraordinary items (*EBEI*). The "smoothness" measure is the ratio of the standard deviation of *EBEI* to the standard deviation of *CFO*.

For measures to assess the level of REM, we follow the method employed by Roychowdhury (2006), and the data construction method is almost identical. First, by conducting cross-sectional regressions for every industry and year, we compute abnormal cash-flows from operations, *ABNCFO*, which is defined as a residual term from the following regression model (2).

$$CFO_{j,t}/TA_{j,t-1} = \alpha_0 + \alpha_1 \cdot 1/TA_{j,t-1} + \beta_1 SLS_{j,t}/TA_{j,t-1} + \beta_2 \Delta SLS_{j,t}/TA_{j,t-1} + \varepsilon_{j,t}. \quad (2)$$

We also compute two additional measures of *REM*, abnormal production (*ABNPROD*) and abnormal expenditures (*ABNEXP*), by employing the following regression models (3) and (4) proposed by Roychowdhury (2006).[10] Roychowdhury (2006) hypothesizes that *ABNPROD* will be higher and *ABNEXP* will be lower for the suspect firm sample with unusually low profit.

$$\begin{aligned} PROD_{j,t} = \quad & \alpha_0 + \alpha_1 \cdot 1/TA_{j,t-1} \\ & + \beta_1 SLS_t/TA_{j,t-1} + \beta_2 \Delta SLS_{j,t}/TA_{j,t-1} + \beta_3 \Delta SLS_{t-1}/TA_{j,t-1} + \varepsilon_{j,t}. \end{aligned} \quad (3)$$

$$DISEXP_{j,t}/TA_{j,t-1} = \alpha_0 + \alpha_1 \cdot 1/TA_{j,t-1} + \beta_1 SLS_{t-1}/TA_{j,t-1} + \varepsilon_{j,t}. \quad (4)$$

Table 2 reports the means of the various measures of earnings management as well as financial characteristics and *p*-values of the differences for each category of family and non-family firms.[11]

To measure accrual-based earnings quality (Francis et al., 2008), we choose three variables, abnormal accruals (*ABNAC*), earnings variability (*EBEISD*), and smoothness. Reported in the first row are the percentage of shares owned by the founding family, and the differences are all significant.

For abnormal accruals, the smallest is Type 3 firms at -0.053, although the difference with non-family firms is not significant. *ABNAC* for Type 1 family firms is also negative at -0.019. These results imply that the type of firms in which CEOs are founding-family members (Types 1 and 3) tend to decrease their earnings among all firm types, supporting Hypothesis 1 for these types of family firms.

However, for variability (*EBEISD*), non-family firms show the smallest value at 2.108 defined as the past five-year volatility of earnings, although the differences are not significant.

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[10] Using equations (2) and (3) of Roychowdhury (2006), we computed two additional measures of REM: abnormal cost of goods sold and abnormal inventory growth. However, the Pearson correlation between abnormal production (*ABNPROD*) and abnormal cost of goods sold in our pooled sample is high at 0.916. Thus, we decided not to use abnormal cost of goods sold and abnormal inventory growth in the analysis and to focus on abnormal production (*ABNPROD*).

[11] Appendix 2 shows the descriptive statistics for these earnings management measures.

TABLE 2. DIFFERENCES BETWEEN FAMILY FIRMS AND NON-FAMILY FIRMS

	Non-FB	Type 1	*p*-value	Type 2	*p*-value	Type 3	*p*-value
FFO	0.570	31.509	0.000	24.102	0.000	4.011	0.000
ABNAC	0.026	-0.019	0.671	0.005	0.930	-0.053	0.577
EBEISD	2.108	2.130	0.572	2.363	0.003	2.186	0.226
Smoothness	0.649	0.599	0.000	0.615	0.114	0.719	0.000
ABNCFO	-0.001	0.002	0.006	0.002	0.237	-0.002	0.457
ABNPROD	0.010	-0.018	0.000	-0.007	0.002	0.009	0.790
ABNEXP	-0.009	0.016	0.000	0.002	0.029	-0.007	0.521
lnTA	11.082	10.156	0.000	10.221	0.000	11.175	0.017
ROA	1.453	1.787	0.006	1.378	0.777	1.637	0.308
LEV	18.329	14.455	0.000	12.584	0.000	16.012	0.000
SLSG	1.045	1.018	0.224	1.106	0.491	1.010	0.116
LP	23.887	16.212	0.000	20.313	0.048	19.428	0.000

Note: FFO: percentage of shares held by the founding family (in %). ABNAC: abnormal accruals to total assets (in %), Persistence: Persistency measure of earnings which is defined as first order autocorrelation of earnings, EBEISD: Past 5 year S.D. of earnings before extraordinary items (in %), Smoothness: Smoothness measure defined as S.D. of earnings to S.D. of cash-flows from operations, ABNCFO: Abnormal cash-flows from operations to total assets (in %), ABNCOGS: Abnormal cost of goods sold (in %), ABNPROD: Abnormal product to total assets (in %), ABNEXP: Abnormal R&D expenditures to total assets, lnTA: Natural logarithm of total asset, ROA: Past 5 year average return on assets (in%), LEV: Firm's financial leverage defined as non-current liabilities to total asset, SLSG: Past 5 year growth rate of sales (in %), LP: Labor productivity defined as value added per employee (in million Yen). Numbers shown in the third, fifth and seventh columns are the *p*-values corresponding to two-sided Student *t*-test on the differences for each category of family (Type 1, Type 2 and Type 3) and non-family firms (non-FB).

Smoothness is measured by the ratio of variability to the standard deviation of cash flows from operations, and Type 3 firms have the highest number at 0.719, which shows the lowest earnings quality. However, we find that Type 2 firms show a lower number than other types of firms at 0.599, which implies higher earnings quality. For Type 2 firms, the managers are hired managers and perhaps more concerned with their own reputation as capable managers and/or their own empire building (Berk and DeMarzo, 2011). We infer that Type 2 firms without family CEOs may be more concerned with stable earnings patterns to secure a stable and higher salary.

Overall, for the various measures of AEM for different types of family firms, we find that the level of earnings management is somewhat higher for family firms although not significant in all cases. Therefore, the evidence for AEM supports Hypothesis 1 at least for *ABNAC*.

For the measures of REM, the means of abnormal cash flows from operations (*ABNCFO*) of Type 1 family firms are higher than those of non-family firms, and the difference is statistically significant. In the case of abnormal production (*ABNPROD*), the means are lowest (negative) for both Type 1 and Type 2 firms at -0.018 and -0.007, respectively, and significantly. These results imply that Type 1 and Type 2 family firms utilize less REM.

Abnormal expenditures (*ABNEXP*) for these two types of firms are larger at 0.016 and 0.002, which implies that family firms expend more and do not conduct upward earnings management. The stronger real authority of family firms (Aghion and Tirole, 1997) may allow management to spend on necessary investment expenditure and employee compensations even to the extent of sacrificing profit.

Overall, except for abnormal expenditures, we find that Type 1 and Type 2 family firms use less REM than non-family firms and Type 3 firms. From the univariate analysis result for REM, we support Hypothesis 1, similar to the cases for AEM. Because the size of Type 3 firms is large at 11.175 (see the rows of lnTA below) and these are listed firms, it is reasonable that Type 3 firms show a similar tendency to non-family firms as far as accrual-based and real activities-based earnings management are concerned.

In the lowest subpanels, we report the basic financial characteristics of our sample. *Size* (lnTA: Natural logarithm of total assets) is used as a dummy variable in cross-section regressions, and the other four variables are also used as control variables. That is, *ROA*: Past five-year average return on equity, *LEV*: A firm's financial leverage defined as non-current liabilities to total assets, *SLSG*: Past five-year growth rate of sales, and *LP*: Labor productivity defined as value added per employee. The return on assets (ROA) is highest for Type 1 family firms at 1.787% followed by Type 3 firms at 1.637%. Leverage is lowest for Type 2 firms at 12.584%. Sales growth (*SLSG*) is higher for Type 2 family firms at 1.106%, but the difference is not significant. Labor productivity (*LP*) for non-family firms is higher than all types of family firms at 23.887 million yen and is an interesting result.

5.3 Costs of Earnings Management

We analyze the costs of earnings management in Section 6 and use the following variables as surrogates for the cost of earnings management. We follow Zang (2012) and, particularly, three variables each for AEM and REM. We use similar variables as Zang because US and Japanese GAAP and their disclosure regulations based on Sarbanes and Oxley type laws are more similar to each other than to European country ones with IFRS standards.

That is, we use a dummy variable for the selection of a large auditing firm (Big Four in the Japanese case) or not, the number of following analysts (Athanasakou et al., 2011), and the length of operating cycle as a cost of AEM. The rationale is as follows: 1) The larger the auditors, the more difficult it is to avoid adhering to Japanese GAAP to conduct earnings management, 2) The greater the attention the firm receives from analysts and the media, the more difficult it is to conduct earnings management, and 3) The longer the operating cycle as measured by the turnover of accounts receivables, the easier it is to use less stringent credit policy for sales.

To measure the cost of REM, the latter, we use market share (Harris, 1998) distance to default (Merton, 1974 and Gray et al., 2006) using the Merton European option pricing model by measuring the distance to the default boundary (standard deviations divided by the means of the geometric Brownian motions) at the end of one year and the effective marginal tax rates (Graham, 1996 and Scholes et al., 2002). We use the weight of firm sales figures over industry sales to compute market shares based on Nikkei mid-industry classifications. To estimate the distance to default for individual firms, we employ the method proposed by Vassalou and Xing (2004). The method to compute the effective tax rates follows Graham (1996) and Kubota and Takehara (2007) and is computed using 10,000 simulation paths for 20 years. We use these proxy variables for cost because 1) the larger the market share, the stronger the market-leader power of a

TABLE 3. EARNINGS MANAGEMENT VERSUS FOUNDING FAMILY'S OWNERSHIP AND CEO POSITIONS

Panel A. Correlation between FFO and Earnings Management Measures

	ABNAC	EBEISD	Smoothness	ABNCFO	ABNPROD	ABNEXP
Pearson	-0.004	0.028	-0.042	0.033	-0.102	0.096
p-value	0.612	0.002	0.000	0.000	0.000	0.000
Spearman	0.008	0.063	-0.008	0.025	-0.075	0.065
p-value	0.387	0.000	0.364	0.004	0.000	0.000

Panel B. Effects of Family CEO on Earnings Management Measures

	ABNAC	EBEISD	Smoothness	ABNCFO	ABNPROD	ABNEXP
DCEO=1	-0.029	2.147	0.634	0.001	-0.010	0.010
DCEO=0	0.024	2.128	0.646	-0.001	0.009	-0.008
p-value	0.566	0.607	0.198	0.095	0.000	0.000

Note: DCEO is a dummy variable which is equal to 1 if the CEO is from the founding family or at least one executive who has a representative right of the firm from the founding family. Definitions of other firms' earnings management measures are the same as Table 2.

firm and its ability to boost sales; 2) the closer the boundary of bankruptcy, the more difficult it is to overproduce or oversell, and 3) the higher the effective tax rate, the higher the extra marginal tax cost to boost earnings.

6. Empirical Results

6.1 Analysis of Family Shares and CEO Positions

In this sub-section, we investigate how ownership affects earnings management behavior and whether it matters if the CEO is a founding-family member.

Table 3 reports Pearson and Spearman rank correlations between the extent of earnings management and the shares owned by a founding family (shown in Panel A). The difference in earnings management depending on whether the CEO is a founding-family member (*DCEO* = 1) or not (*DCEO* = 0) is shown in Panel B.

The Pearson and Spearman correlations between the percentage of shares held by founding families, *FFO* and earnings variability (*EBEISD*) are 0.028 and 0.063, respectively, and both are significant at the 1% level. This implies that the more shares a family owns, the higher the earnings variability. Both for *ANBAC* and smoothness, the Pearson correlations with *FFO* are negative, and the Pearson correlation is significant at the 5% level for smoothness. This result implies that larger family shareholdings lead to less AEM and a smoother earnings stream. We consider this an example of long-term orientation among family firms.

For REM, we find that abnormal production (*ABNPROD*) is negatively correlated with family shares at -0.102 for Pearson and -0.075 for Spearman. Additionally, abnormal expenditures (*ABNEXP*) are positively correlated with family shares at 0.096 for Pearson and 0.065 for Spearman, and this augments our previous findings. That is, a founding family does not conduct

TABLE 4. FIVE PORTFOLIOS RANKED BY PERCENTAGE OF SHARES HELD BY FOUNDING FAMILIES

	P1	P2	P3	P4	P5	(P1-P5)	*p*-value
#Firms	395	980	1113	1153	9042	-----	-----
FFO	57.812	41.494	26.630	14.487	1.033	56.780	0.000
ABNAC	-0.433	0.293	-0.143	-0.009	0.015	-0.448	0.077
EBEISD	2.438	2.209	2.116	2.105	2.118	0.320	0.002
Smoothness	0.634	0.585	0.580	0.627	0.658	-0.024	0.260
ABNCFO	0.001	0.005	0.005	-0.002	-0.001	0.002	0.533
ABNPROD	-0.017	-0.033	-0.017	0.001	0.010	-0.027	0.002
ABNEXP	0.022	0.025	0.012	0.003	-0.009	0.030	0.001
lnTA	9.857	9.936	10.236	10.407	11.094	-1.237	0.000
ROA	0.668	1.892	2.216	1.433	1.478	-0.810	0.006
LEV	17.652	13.531	13.837	13.673	18.017	-0.365	0.655
SLSG	1.000	1.014	1.029	1.067	1.040	-0.041	0.057
LP	16.721	14.210	19.726	16.689	23.288	-6.566	0.000

Note: FFO denotes percentage of shares held by the founding family. P1 is a portfolio of firms whose FFO is equal or greater than 50%. P2 is a portfolio of firms whose FFO is less than 50% but equal to or greater than 1/3. P3 is a portfolio of firms whose FFO is less than 1/3 but equal to or greater than 20%. P4 is a portfolio of firms whose FFO is less than 20% but equal to or greater than 10%. P5 is a portfolio of firms whose FFO is less than 10%. We test the difference of mean of variables between P1 and P5 by Welch's two-sample t-test. Probability values from *t*-tests are shown in the '*p*-value' column.

overproduction to generate extra profits or does not mind incurring extra necessary expenditures, which is consistent with Hypothesis 1. However, it is a pair-wise analysis, and we do not control for other factors that may affect these variables. Therefore, the evidence is temporary.

In the case of the CEO dummy variable shown in Panel B, we do not find significant differences in AEM. However, for REM, we find the abnormal production cost (*ABNPROD*) is lower at -0.010 when the CEO is a family member. We suggest that family-member CEOs do not execute overproduction to increase profit. Abnormal expenditures (*ABNEXP*) are higher in cases where the CEO is a family member (0.010 versus -0.008), and this augments the previous finding. So far, the evidence is consistent with Hypothesis 1.

Table 4 classifies firms into five portfolios based on the percentage of shares owned by the *FFO* and compares the same variables as those in Table 3.
The second to the upper-most right column reports the difference between the highest share-owned group (P1) with more than 50% minus the lowest group (P5) with less than 10% owned, and the upper-most right column shows the corresponding *p*-values.

For this difference in variable (P1 to P5), the values are -0.448, 0.320, and -0.024 for abnormal accruals (*ABNAC*), earnings variability (*EBEISD*), and smoothness, respectively. Thus, earnings are decreased to a greater extent and earnings variability becomes higher as more shares are owned by founding families. This finding is consistent with our previous findings in Tables 2 and 3.

In case of REM, abnormal production costs (*ABNPROD*) is smallest at -0.017 in P1 in which *FFO* is greater than 50% while abnormal expenditures (*ABNEXP*) are positively correlated.

In sum, the result from the ranked portfolio test is consistent with the previous result shown in Tables 2 and 3 both for AEM and REM. Also, note that the shares owned by the founding family are negatively related with all financial characteristics variables, but the result for leverage is not significant.

6.2 Cross-sectional Regressions

In this sub-section, we report the results from cross-section regressions of the following specification in equation (6). *EQ* is an earnings management variable. *FFO* and *DCEO* are the percentages of shares owned by the founding family and CEO dummy. *CVs* are control variables, composed of ROA, leverage, sales growth, and labor productivity. *DSize* are firm size dummies (large-cap, mid-cap, and small-cap) defined based on the ranking in each year by book value of total assets, *DSector* is as defined in the Appendix 1, and *DYear* is the year dummies.

$$EQ_{jt} = \alpha + \beta_1 FFO_{jt} + \beta_2 DCEO_{jt} + \beta_3 (FFO_{jt} \times DCEO_{jt}) + \sum_{i=1}^{4} \gamma_i CV_{ijt} + \sum_{i=2}^{3} \delta_{i-1} DSize_{ijt} + \sum_{i=2}^{6} \lambda_{i-1} DSector_{ijt} + \sum_{t=2004}^{2010} \eta_{t-2003} DYear_{ijt} + \varepsilon_{jt} \quad (5)$$

Table 5 reports the results of OLS regressions, where *p*-values are computed with White's (1980) heteroskedasticity corrections.

For the level of AEM, when we look at the family share value *FFO*, we find the slope for the abnormal accruals (*ABNAC*) is positive at 0.006. The slope for *DCEO* is negative at -0.013. However, insignificant slopes for *FFO* and *DCEO* suggest that the characteristic variables to highlight family firms do not contribute to higher earnings management. Because the alternative hypothesis is that the income is boosted upward by earnings management, we do not find evidence of this either. Hence, given the result from the previous univariate analysis, Hypothesis 1 is still maintained. As for the cross-term between *FFO* and *DCEO*, it is negative and shows some synergy effects of these variables concerning a decrease in earnings management, but it is not significant.

As for earnings variability (*EBEISD*), the slopes of *FFO* and *DECO* are positive at 0.012 and 0.086 and significant at the 5% level, which implies that the more shares owned by the family or, if the CEO is from the family, the higher the earnings variability. The cross-term between *FFO* and *DCEO* is negative at -0.012 and may make earnings smoother. The result is significant.

As for smoothness, the slope of *DCEO* is positive, 0.065, and significant at the 1% level, which implies that if the CEO is from the family, the level of smoothness is lower, which is somewhat counterintuitive. For the cross-term between *FFO* and *DCEO*, it is negative at -0.002, and the result is significant.

In the case of REM, the magnitude of coefficients for both *FFO* and *DCEO* become much smaller. We find that the coefficient of family shares (*FFO*) explains the abnormal production cost (*ABNPROD*), which is negative and significant at -0.001. Additionally, the coefficient on abnormal expenditures (*ABNEXP*) is positive at 0.0004 and significant. Again, family firms do not conduct overproduction and are willing to spend necessary expenditures and do not boost earnings. The coefficient for abnormal expenditures of *DCEO* variable is positive at 0.005 and

TABLE 5. RESULTS FROM REGRESSION ANALYSIS

	Intercept	FFO	DCEO	FFO×DCEO	ROA	LEV	SLSG	LP	Adj. R^2
ABNAC	-0.315	0.006	-0.013	-0.008	0.063	0.010	0.003	-0.002	0.010
t-value	-2.286 **	0.958	-0.121	-1.106	6.948 ***	3.125 ***	0.142	-2.738 **	
EBEISD	2.204	0.012	0.086	-0.012	-0.026	0.000	0.004	0.002	0.085
t-value	38.654 ***	3.821 ***	2.101 **	-3.618 ***	-5.398 ***	0.341	0.567	5.898 ***	
Smoothness	0.672	0.001	0.065	-0.002	-0.006	0.003	-0.002	0.000	0.059
t-value	42.936 ***	1.789 *	5.219 ***	-3.542 ***	-7.424 ***	9.420 ***	-2.466	3.869 ***	
ABNCFO	-0.001	0.000	-0.002	0.000	0.002	0.000	0.000	0.000	0.083
t-value	-0.797	0.648	-1.293	0.981	15.687 ***	-5.931 ***	-0.571	5.550 ***	
ABNPROD	0.003	-0.001	-0.003	0.000	-0.002	0.000	0.000	0.000	0.046
t-value	0.815	-3.141 ***	-0.883	-1.041	-7.520 ***	4.002 ***	-0.214	-5.106 ***	
ABNEXP	0.000	0.000	0.005	0.000	-0.001	0.000	0.000	0.000	0.027
t-value	-0.050	2.819 ***	2.131 **	1.102	-3.814 ***	0.240	0.213	1.014	

Note: Definition of variables are the same as Tables 2 and 3 and *t*-values are computed with White heteroskedasticity corrections. *** *p*-value < .01; ** *p*-value < .05; * *p*-value < .10 (two-tailed test.)

significant at the 5% level. As for the cross-terms between *FFO* and *DCEO*, these are all zero for real earnings management variables and are insignificant.

Overall, we find a tendency that CEOs from the founding family play a positive role to improve the earnings quality both on AEM and REM. The results support Hypothesis 1 overall. It means the family CEO is concerned with the reputation of the firm as reliable in terms of disclosure effort leading at the same time to increased socioemotional wealth. The latter may mean that the more shares held by founding families, the less attention will be paid to shareholders outside the family.

6.3 Further Analysis of Costs of Earnings Management

We have confirmed in Tables 2 to 5 that family firms have a general tendency to decrease their reported earnings by utilizing both AEM and REM strategies. These findings support our Hypothesis 1 and suggest that family firms are more concerned with the reputation of investors. Additionally, the magnitude of the income decrease using AEM strategies is greater than that using REM strategies, which supports Hypothesis 2 and Hypothesis 2.A.

The reason family firms utilize accruals-based strategies to a large extent to manage their earnings is worth exploring. One of the possible reasons to explain such family firm earnings management behavior is the ease in managing earnings. The potential cost of managing earnings using an AEM strategy is lower than the cost of an REM strategy. More importantly, family firms may not want to incur economic cost by conducting REM strategies that will deter them from accumulating family socioemotional wealth (Gomez-Mejia et al., 2014). This prediction led to Hypothesis 2 and Hypothesis 2.A.

In this subsection, we further compare the relative cost of earnings management: AEM versus REM, for which variables were defined in Section 5.2

Table 6 reports the cost of earnings management classified by three types of family and non-family firms.

The results for AEM reveal that the choice of auditors is significantly less for all types of family firms at the 10% level, the number of analysts is significantly less for Type 1 and Type 2 firms at the 1% level, and the operating cycle is significantly less for Type 2 firms at the 10% level, but is longer for Type 1 and Type 3 firms although not significant. Accordingly, we conclude that earnings management will be easier for family firms from these three cost comparisons, except for a shorter operating cycle for Type 2 firms. For the number of analyst variables, Type 3 firms attract more analysts on average (2.644) versus non-family firms (2.541), although the difference is not significant. Moreover, Type 3 and Type 1 firms show a longer operating cycle than non-family firms but, again, the results are not significant.

For REM, market shares (*MShare*) are significantly lower for all types of family firms and, for Type 2, *MShare* is the lowest with 1.503% while the market share for Type 3 firms is 5.040%, comparable to 6.829% of non-family firms, although the difference is not significant. This implies that the cost of earnings management is higher for family firms. For the distance to default (DD) threshold point, all family firms have a significantly smaller likelihood of defaulting.[12] The largest likelihood of default is among Type 1 firms with a distance of 3.754. Type 2 and Type 3 firms

[12] Table 2 shows that family firms are less leveraged. However, this is only one factor, and variability of operating profit is also a consideration. One of the co-authors of this paper has already confirmed that the variability of profit for family firms is lower than that of non-family firms. The result is available upon request from the authors.

TABLE 6. DIFFERENCE OF THE COST OF EARNINGS MANAGEMENT

	Non-FB	Type 1	*p*-value	Type 2	*p*-value	Type 3	*p*-value
Audit4	0.776	0.760	0.074	0.736	0.025	0.731	0.001
NEst	2.541	1.149	0.000	1.351	0.000	2.644	0.455
Cycle	55.431	55.594	0.916	50.615	0.038	58.170	0.359
MShare	6.829	1.610	0.000	1.503	0.000	5.040	0.000
DD	3.312	3.754	0.000	3.491	0.039	3.497	0.003
MTR	30.402	33.431	0.000	31.973	0.011	29.769	0.176

Note: Audit4: Big 4 Audit firm dummy variable, NEst: Number of Analysts who follow the firm, Cycle: Operation cycle (in days), MShare: Market share of the firm (in %), DD: Distance to default, MTR: Marginal tax rate (in %). Numbers shown in the third, fifth and seventh columns are the *p*-values corresponding to two-sided Student *t*-test on the differences for each category of family (Type 1, Type 2 and Type 3) and non-family firms (Non-FB).

TABLE 7. COSTS OF EARNINGS MANAGEMENT, FOUNDING FAMILY'S OWNERSHIP, AND CEO POSITION

Panel A. Correlation between FFO and Cost Proxies

	Audit4	NEst	Cycle	MShare	DD	MTR
Pearson	-0.025	-0.155	0.009	-0.223	0.067	0.083
p-value	0.005	0.000	0.325	0.000	0.000	0.000
Spearman	-0.052	-0.152	-0.041	-0.388	0.058	0.076
p-value	0.000	0.000	0.000	0.000	0.000	0.000

Panel B. Effects of Family CEO on Cost Proxies

	Audit4	NEst	Cycle	MShare	DD	MTR
DCEO=1	0.751	1.582	56.340	2.604	3.680	32.371
DCEO=0	0.773	2.449	55.057	6.415	3.326	30.524
p-value	0.008	0.000	0.374	0.000	0.000	0.000

Note: Definition of variables are the same as Tables 2 and 7.

show distances of 3.491 and 3.497, respectively, which is significantly larger than 3.312 for non-family firms. We find family firms are safer and, for that reason, the cost for upward earnings management will be less. Type 2 and Type 3 firms have higher effective tax rates, which shows that the cost of earnings management is higher. Type 3 firms have lower effective marginal tax rates (Graham, 1996) with 29.769% versus 30.402% for non-family firms. Accordingly, except for the distance to default (DD), the cost of REM for family firms is larger than for non-family firms.

Hence, for Hypothesis 2.A, we conclude that family firms choose AEM over REM. We confirm this with a robustness check in the following two tables.

Table 7 reports Pearson and Spearman rank correlation numbers between the degree of earnings management and shares owned by the founding family in Panel A. The difference in earnings management depending on whether the CEO is a founding-family member (*DCEO* = 1) or not (*DCEO* = 0) is shown in Panel B with corresponding *p*-values.

Panel A shows that the percentage of shares owned by the family are negatively correlated with costs related to the choice of Big Four auditors (-0.025) and the number of analyst (-0.155) variables in the direction of reducing the cost of AEM. The results for operating cycles are mixed; with the Pearson rank it is positive at 0.009 but negative and significant for Spearman at -0.041. For the CEO dummy, again, for the auditor choice and number of analyst variables, CEOs from the founding family tend to reduce earnings management cost (0.751 firms versus 0.773 firms, and 1.582 analysts versus 2.449 analysts, respectively).

For cost proxies for REM, the percentage of shares owned by the family are negatively correlated with market shares at -0.223 and positively correlated with distance to default and effective marginal tax rates at 0.067 and 0.083, respectively. The results for market share and marginal tax rates imply that the costs rise as more shares are owned by families. However, the observation for distance to default reveals that family firms for which a large proportion of stock is held by the founding family are more risk averse to avoid bankruptcy, which is consistent with the theory that a family seeks long-term sustainability and preservation of socioemotional wealth.

Table 8 reports the results from regression analysis as in equation (6) and the logistic regression model for the Big Four auditors (Audit4).

$$\begin{aligned} Cost_{jt} &= \alpha + \beta_1 FFO_{jt} + \beta_2 DCEO_{jt} + \beta_3 (FFO_{jt} \times DCEO_{jt}) \\ &+ \sum_{i=1}^{4} \gamma_i CV_{ijt} + \sum_{i=2}^{3} \delta_{i-1} DSize_{ijt} + \sum_{i=2}^{6} \lambda_{i-1} DSector_{ijt} + \sum_{t=2004}^{2010} \eta_{t-2003} DYear_{ijt} + \varepsilon_{jt} \end{aligned} \tag{6}$$

In (6), the dependent variables are replaced by the costs of two types of earnings management methods instead of the various measures of earnings management tested in (5).

The results for AEM reveal that the choice of auditors with the logistic regression model is not significant, but *DCEO* tends to hamper the choice of big auditors. When we consider the cost of earnings management as in Zang (2012), other results for both *FFO* and *DCEO* variables demonstrate that these variables reduce the cost of AEM because coefficients for the number of analysts are negative at -0.037 and -0.201, respectively, and those for operating cycles are positive at 0.137 and 1.701, although the coefficients for *DCEO* variable are not significant.

For REM, with the exception of distance to default, the costs will be higher because the coefficients for both *FFO* and *DCEO* variables for market shares are negative at -0.123 and -1.796, and the coefficients for effective marginal tax rates are positive at 0.004 and -0.543, respectively.

In sum, from the analyses in this section, we conclude that family firms in Japan choose AEM over REM (supporting Hypothesis 2 and Hypothesis 2.A) when more shares are owned by the founding family with a family CEO. Moreover, family firms, particularly when the CEO is not from the founding family (Type 2), tend to engage in a higher level of earnings management (rejecting Hypothesis 1) than non-family firms.

7. Summary and Conclusion

We investigated the degree of accrual-based earnings management and real activities-based earnings management using data for all family and non-family firms listed on the Tokyo Stock Exchange from the year 2004 to the year 2011.

TABLE 8. FURTHER RESULTS FROM REGRESSION ANALYSIS

	Intercept	FFO	DCEO	FFO×DCEO	ROA	LEV	SLSG	LP	Adj. R^2
Audit4	1.431	-0.003	-0.153	0.008	0.029	0.001	0.001	0.001	0.063
t-value	15.823 ***	-0.845	-2.261 **	2.100 **	7.633 ***	0.361	0.071	1.266	
NEst	5.354	-0.037	-0.201	-0.004	0.098	0.034	-0.035	0.011	0.110
t-value	21.151 ***	-3.198 ***	-1.123	-0.316	6.803 ***	6.369 ***	-2.658 ***	7.324 ***	
Cycle	49.230	0.137	1.701	-0.017	-0.571	0.129	0.023	-0.023	0.135
t-value	34.500 ***	1.804 *	1.429	-0.198	-6.848 ***	3.331 ***	0.207	-2.455 **	
MShare	3.741	-0.123	-1.796	0.084	0.092	0.085	0.055	0.023	0.144
t-value	14.286 ***	-19.584 ***	-10.870 ***	11.386 ***	8.325 ***	14.152 ***	0.834	7.385 ***	
DD	3.574	0.006	0.149	-0.003	0.066	-0.031	-0.011	-0.001	0.332
t-value	70.613 ***	2.748 ***	3.578 ***	-1.070	16.112 ***	-25.683 ***	-2.124 **	-1.668 *	
MTR	28.770	0.004	-0.543	0.080	0.684	-0.187	-0.046	-0.002	0.144
t-value	49.321 ***	0.169	-1.104	2.841 ***	7.992 ***	-13.268 ***	-0.529	-0.589	

Note: Definition of variables are the same as Tables 7 and 8. The seven independent variables are the same with Table 6 and *t*-values are computed with White heteroskedasticity corrections. When Audit4 is used as a dependent variable, we run a logistic regression and Nagelkerke's pseudo R^2 is reported in the table.

*** *p*-value < .01; ** *p*-value < .05; * *p*-value < .10 (two-tailed test.)

By employing univariate analysis, we found that the magnitude of income decrease using accruals-based strategies is greater for family firms compared to non-family firms, and REM measures are lower for family firms compared to non-family firms. From cross- section regressions, we found that the shares owned by the founding family (FFO) and CEO dummy (DCEO) do not affect the incremental level of earnings management. For the level of real activities-based earnings management, we found that family firm-related variables decrease levels of earnings management.

When we introduced various economic measures that are related to costs of earnings management, we found that family firms in Japan utilize more accrual-based earnings management than real activities-based earnings management by comparing cost differences, which is a new finding and reinforces the findings of Achleitner et al. (2014) for German family firms.

Our contribution is that this is the first study using Japanese data to investigate the level of accrual-based earnings management and real activities-based earnings management using the testing methodology by Zang (2012) and, moreover, based on the real authority theory by Aghion and Tirle (1997). In contrast to conventional family firm research, we tested the original hypotheses by applying them to the three types of listed family firms in Japan and non-family firms.

The limitation of this research is that we have not investigated the differences across industries for three types of family firms, which is an avenue for future research.

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APPENDIX1. SECTOR CLASSIFICATION FOR JAPAN

Sector	Industry
Consumption Goods	Fishery and Agriculture
	Foods
	Textiles and Apparels
	Pharmaceutical
	Electric Appliances
	Other Products
Investment Goods	Mining
	Construction
	Pulp and Paper
	Chemicals
	Oil and Coal Products
	Rubber Products
	Glass and Ceramics Products
	Iron and Steel
	Nonferrous Metals
	Metal Products
	Machinery
	Transportation Equipment
	Precision Instruments
Services	Communication
	Wholesale Trade
	Retail Trade
	Services
Financial	Banks
	Securities
	Insurance
	Other Financial Business
Transportation	Land Transportation
	Marine Transportation
	Air Transportation
Utility	Electric Power and Gas
Real Estate	Warehousing
	Real Estate

Note: Based on 33 industry classifications by the Tokyo Stock Exchange, we redefine seven sectors following Kubota and Takehara (2007) for Japanese firms.

APPENDIX 2. DESCRIPTIVE STATISTICS OF ALL THE VARIABLES USED

	Mean	S.D.	25%ile	Median	75%ile
RFO	9.397	15.485	0.000	0.000	13.345
ABNAC	0.007	5.121	-2.322	-0.025	2.213
EBEISD	2.134	2.060	0.926	1.559	2.693
Smoothness	0.642	0.518	0.306	0.516	0.829
ABNCFO	0.000	0.057	-0.028	0.000	0.028
ABNPROD	0.002	0.119	-0.045	0.014	0.068
ABNEXP	-0.002	0.108	-0.057	-0.015	0.029
NEst	2.162	4.104	0.000	0.000	2.000
Cycle	55.482	66.170	17.526	42.285	76.371
MShare	5.154	9.955	0.420	1.355	4.975
DD	3.443	2.094	2.044	3.102	4.426
MTR	31.135	14.989	20.386	40.574	40.785
lnTA	10.828	1.409	9.858	10.672	11.650
ROA	1.546	6.164	0.539	1.801	3.629
LEV	16.897	13.376	6.428	13.806	23.919
SLSG	1.039	1.582	0.941	1.013	1.076
LP	21.469	47.985	10.079	13.334	18.192

Note: Based on 33 industry classifications by the Tokyo Stock Exchange, we redefine seven sectors following Kubota and Takehara (2007) for Japanese firms. **[Family Ownership]** FFO denotes the percentage of shares held by the founding family (in %).
[Earnings management measures] ABNAC: abnormal accruals to total assets estimated by the modified Jones model (in %), Persistence: Persistency measure of earnings which is defined as first order autocorrelation of earnings, EBEISD: Past 5 year S.D. of earnings before extraordinary items (in %), Smoothness: Smoothness measure defined as S.D. of earnings to S.D. of cash-flows from operations, ABNCFO: Abnormal cash-flows from operations to total assets (in %), ABNCOGS: Abnormal cost of goods sold (in %), ABNPROD: Abnormal product to total assets (in %), ABNEXP: Abnormal R&D expenditures to total assets. ABNCFO, ABNPROD and ABNEXP are estimated by Roychowdhury's (2006) model.
[Cost proxies] Audit4: Big 4 Audit firm dummy variable, NEst: Number of Analysts who follow the firm, Cycle: Operation cycle (in days), MShare: Market share of the firm (in %), DD: Distance to default, MTR: Marginal tax rate (in %).
[Control variables] lnTA: Natural logarithm of total asset, ROA: Past 5 year average return on assets (in%), LEV: Firm's financial leverage defined as non-current liabilities to total asset,
SLSG: Past 5 year growth rate of sales (in %), LP: Labor productivity defined as value added per employee (in million Yen).