Does Using the Extended Audit Report Decrease Information Asymmetry in Family Firms?

Abstract

The purpose of this study is to examine impact of using the extended audit report (EAR) on the information asymmetry that exists among the shareholders of family firms as compared to non-family firms during the period surrounding the announcement of an audit report. The results show that the adoption of the EAR alleviates the problem of information asymmetry related to family firms. Furthermore, the results show that the inclusion of key audit matters in audit reports also decreases the information asymmetry related to family firms.

Keywords: Extended Audit Report, Information Asymmetry, Family Firm

Introduction

Prior studies have documented the adverse effects that information asymmetry between informed and uninformed investors has on the functioning of markets (Akerlof, 1978; Amihud and Mendelson, 1986; Kim and Verrecchia, 1994; Leuz and Verrecchia, 2000), Leuz and Verrecchia (2000) and Kalay (2015) argue that the likelihood of such an imbalance among investors is decreased by a commitment to increased levels of disclosure. Because auditors play an important role as information intermediaries in capital markets, audit reports provide the assurance of information to users of financial statements. In the wake of the financial scandal, regulators and standard setters have focused on how to improve the communication of financial information to its users through the use of extended audit reports (hereafter referred to as EARs). The Accounting Research and Development Foundation in Taiwan promulgated related auditing standards in 2015 and 2016 in accordance with the International Standards of Auditing (ISA) 700 (Revised). Since then, auditors of Taiwanese companies listed on the Taiwan stock exchange have been required to provide more information regarding the auditing process and the professional judgements of both managers and the auditors in their audit reports.

Family firms are prevalent and play an important role in the global economy. In Taiwan, most listed companies are family owned or their controlling shareholders are members of the same family[1]. In such cases, the firm's goals are closely aligned with family interests as they are controlled by a small group of family members (Zahra, Hayton and Salvato, 2004). As controlling shareholders of the firm, the members of the family

[1] A recent survey indicates that firms that are managed or controlled by families constitute about 68% of the Taiwanese listed firms in 2021. http://twiod.org/index.php/tw/view-research/study-page/survey-page

are able directly to monitor the managers (Demsetz and Lehn, 1985), they generally have better knowledge of the firm's activities (Sue, Chin and Chan, 2013), and they face little demand to make company information public (Fan and Wong, 2002). In such a context, family firms tend to disclose less information than other companies, which increases the information asymmetry between controlling and non-controlling shareholders. As a vehicle for making information public, the EAR is used to provide more relevant information regarding the reliability of a firm's financial reporting. Thus, investigating the association between the use of the EAR and the information asymmetry that exists between the controlling shareholders and non-controlling shareholders of family firms is important because it brings to light the possible role that the EAR plays in helping outside shareholders, who are at a disadvantage in terms of their access to company information, to impound the information about the audit process into prices.

Past literatures mainly investigate the effect of EARs in several perspectives, such as investor reactions (Gutierrez, Minutti-Meza, Tatum and Vulcheva 2018; Lennox, Schmidt and Thompson, 2023), audit fees (Gutierrez et al. 2018), and audit quality (Gutierrez et al. 2018; Li et al. 2019; Reid, Carcello, Li, Neal and Francis. 2019). However, how changes in an auditor reporting regime affects information asymmetry is rarely investigated in past studies. Reid (2015) finds that the use of EARs significantly decreases information asymmetry, and the reduction is greater for firms with weaker information environments, suggesting that the use of EARs is particularly beneficial to the investors of such firms. A typical example of a company with a weak information environment is the family firm in which the members of the family that controls the firm benefit from an information advantage in that they are actively involved in the management of the company, allowing them better access to internal information rather than being dependent on public information as non-controlling shareholders are. Furthermore, the content of an EAR deals with matters that require significant attention during the process of auditing a financial statement, and those matters may already be known to controlling shareholders but news to non-controlling shareholders. In this paper I propose that changes in an auditor reporting regime may affect information asymmetry when in a low information environment, such as family firms in Taiwan.

To test my research questions, I use data from Taiwanese companies listed on the Taiwan stock exchange during the period of 2013-2019, which begins three years before and ends four years after the adoption of the EAR standards. My analysis focuses on how releasing additional information in the audit report impacts the announcement effect with a short event window. Using a short event window reduces the impact of potential confounding events. Following the event window used by Amiram, Owens and

Rozenbaum (2016), my data are collected on the basis of a 20-day event window, in which daily observations were made before, during and after the date of each announcement of an audit report.

Consistent with our predictions, the results show that family firms exhibit a higher degree of information asymmetry than non-family firms prior to the implementation of the EAR requirements. Following the adoption of the EAR standards, the information asymmetry in family firms is reduced. My study also finds that the more numerous the key audit matters (KAMs) mentioned in an audit report are, the lower the degree of information asymmetry in family firms. Moreover, this effect is stronger for firms with a high proportion of family ownership. Overall, the results of this study provide evidence that use of the EAR reduces the information asymmetry that exists in family firms.

Therefore, this study contributes to the literature in two perspectives. First, this study examines the association between the informativeness of an EAR and information asymmetry in low information environment, such as family firms, which would help investors and regulators learn the usefulness of making mandatory the disclosure of information in audit reports. Second, the EAR would help auditors communicate the specific information. Hence, EARs play a vital role in helping uninformed shareholders, who are at a disadvantage regarding their access to company information, to improve decision making process.

The rest of this paper is organized as follows: The relevant literature is reviewed and the research hypotheses are developed in Section 2; the sample selection process and the research design are described in Section 3; the results are presented in Section 4; and concluding remarks are made in Section 5.

Literature Review and Hypothesis Development

1. Family Firms and Information Asymmetry

Claessens, Djankov and Lang (2000) find that a majority of the firms that they observed in nine East Asian countries were under family control and management. A case in point is Taiwan, where the typical listed company has been shown to be a family-controlled firm (Claessens *et al*., 2002; Fan and Wong, 2002). Such an environment is ripe for the emergence of the agency problem. This problem arises in most large firms as a result of a conflict of interest between outside and controlling shareholders (Shleifer and Vishny, 1997). As the owners of a family firm are in a position to directly monitor the managers (Demsetz and Lehn, 1985) and they generally have better knowledge of the firm's business activities (Sue *et al*. 2013), the outside shareholders of such a firm have limited resources and are presented with few opportunities to access information that would allow them to monitor the firm (Warfield, Wild and Wild,1995; Bhaumik and

Gregoriou, 2010). In fact, the agency theory suggests that firms whose ownership is concentrated in the hands of a few dominant shareholders disclose less information because these shareholders normally have privileged access to corporate information (Jensen & Meckling, 1976; Cormier, Magnan and Velthoven, 2005). Furthermore, when the ownership is controlled by the members of a single family, corporate practices are less likely to be transparent (Anderson, Duru and Reeb, 2009) as controlling shareholders are less willing to report true financial information in order to avoid being monitored by outside shareholders for access private interests (Fan and Wong, 2002; Wang, 2006; and Bhaumik and Gregoriou, 2010). Finally, Wang (2006) argues that such information asymmetry increases the entrenchment effect between members of the founding family of a firm and its other shareholders as a result of a lack of information transparency and an unreliable flow of information.

Based on the studies mentioned above, this study suggests that family firms are prone to higher levels of information asymmetry than non-family firms. Accordingly, I propose the following hypothesis:

H1: *Ceteris paribus,* compared to non-family firms, family firms tend to exhibit higher levels of information asymmetry during the period of time surrounding the announcement of an audit report.

2. Extended Audit Report and Information Asymmetry in Family Firms

Anderson *et al*. (2009) find that information transparency plays an important role in mitigating conflicts of interest between dominant shareholders and minority investors. It is obvious, therefore, that making corporate information publicly available is beneficial. For example, Diamond (1985) argues that the public release of information homogenizes the beliefs among traders and reduces the size of the speculative positions which informed traders take, thereby reducing information asymmetry. Furthermore, Kim and Verrecchia (1994) and Amiram et al. (2016) show that the announcement effect of public information release on information asymmetry depends on the processing ability of different investors and the existence of a gap in the information that is available to them, which determines the direction that any change in information asymmetry may take.

Compared to traditional audit report, the EAR provides a high level of transparency in terms of the information it contains on the judgments made by managers and auditors in the process of preparing and auditing a firm's financial statements. Thus, the ultimate aim of the EAR is reducing information asymmetry, and a number of recent studies attest to its success in achieving this objective. For example, Smith (2019) finds that this new auditor reporting regime has improved the reporting of information in that auditors now communicate in an accessible manner more meaningful information to the users of

financial statements. Furthermore, Kaplan, Taylor and Williams (2020) indicate that disclosures made on audit reports provide information which is useful to the market since audit firms have access to proprietary client information. Reid (2015) finds that the use of the EAR significantly decreases the information asymmetry observed in the case of firms with weak information environments, suggesting that the newly available disclosures are of particular benefit to the shareholders of such firms. Sirois, Bédard and Bera (2018) and Moroney, Phang and Xiao (2021) also argue that KAMs can draw the attention of investors to the new and expanded messages contained in EARs, and it has been suggested that nonprofessional investors tend to change their investment decisions after reading about KAMs (Christensen, Glover and Wolfe, 2014).

In addition, the new regime requirements have significantly changed the structure of audit reports, with the opinion paragraph being moved from its original position as the last paragraph of the report to the first paragraph, and they ensure that paragraph headings are expressed more clearly, which may allow investors to impound the information contained in the announcement more quickly. At the same time, the EAR reveals to non-controlling shareholders some information that is new to them but which is already known to controlling shareholders, thus decreasing the information asymmetry between these two types of investors at the announcement of the audit report.

Although there is no consensus as to whether the concentrated ownership of a family firm is a case of a convergence of interests or whether it increases the likelihood of producing an entrenchment effect, it is clear that the non-controlling shareholders of such a company are at a disadvantage regarding their access to information. Therefore, I expect that the additional disclosures and format changes mandated by the new auditing regime are useful to non-controlling shareholders and serve to reduce the information asymmetry among investors. Accordingly, I propose the following hypothesis:

H2: ***Ceteris paribus,*** **compared to non-family firms, the adoption of the extended audit report is more likely to reduce the information asymmetry among the shareholders of family firms during the period of time surrounding the announcement of an audit report.**

Empirical Methodology

1. Sample Data and Sample Description

I test my hypotheses using Taiwanese firms, sample data is obtained from the Taiwan Economic Journal (TEJ) database during 2013-2019. The sample is limited to all nonfinancial firms which provided such data as the daily stock prices without missing values, the daily bid and ask prices, and other relevant financial data. As this study focuses on examining the impact of the use of the EAR on information asymmetry in the case of

family firms, the sample period is divided into two periods based on the change in auditor reporting regimes: the pre-EAR adoption period is 2013-2015, and the post-EAR adoption period is 2016-2019. The short-window event study method is used to conduct the regression analysis, with data collected for a 20-day event window surrounding the date of the announcement of an audit report.

To mitigate the impact of outliers on the linear regression, the "bid-ask spread" (*SPREAD*) variable is winsorized by setting all data below the 2nd percentile to the 2nd percentile and all data above the 99th percentile to the 99th percentile. This sampling methodology produces a final useable sample of 103,359 firm-year observations. Table 1 show the data distributions for firms in various industries. The results show that firms which are not family-run accounted for a larger proportion of the observations than family firms for the following industries: biotechnology and medical care industry and electronic industry. There is considerable cross-industry variation in the sample, I include industry controls in my regression model.

2. Empirical models

The purpose of this study is to investigate whether the adoption of the EAR reduces the information asymmetry in the case of family firms. To this end, changes in the bid-ask spread during the period surrounding the announcement of an audit report are examined, with the bid-ask spread used as a proxy for information asymmetry, which has widely been done in previous studies (e.g., Copeland and Galai, 1983; Glosten and Milgrom, 1985; Leuz and Verrecchia, 2000). The reason for examining the bid-ask spread is that traders who are privy to private information tend to dominate situations in which there is information asymmetry, which impacts trading activity and, in turn, security prices (Hasbrouck, 1991; Wang, 1993).

Furthermore, this study also examines the effects of the announcement period, as was done in a study by Amiram *et al*. (2016), in an aim to assess how the bid-ask spread changes across several days surrounding audit report announcement. An event study design makes it possible to observe changes in the bid-ask spread around this date and thereby mitigate the possibility of some other unidentified variable causing the cross-sectional change in information asymmetry. The short event window is used to reduce the effects of potentially confounding events. The 20-day event window covers the period from the tenth day before the announcement to the ninth day after it.

To assess whether EARs influence information asymmetry in family firm, I estimate the models for testing H1 and H2 are presented in Eq. (1) and (2).

$$SPREAD_{i,t+1,d} = \alpha_0 + \alpha_1 FAMILY_{i,t} + \alpha_2 SIZE_{i,t} + \alpha_3 PRICE_{i,t+1,d} + \alpha_4 VOLUME_{i,t+1,d} + \alpha_5 TURN_{i,t+1,d} + \alpha_6 VOLATE_{i,t+1,d} + \alpha_7 AGE_{i,t} + \alpha_8 RD_{i,t} + \alpha_9 DEBT_{i,t} + IND_i + \varepsilon_{i,d} \quad (1)$$

$$SPREAD_{i,t+1,d} = \beta_0 + \beta_1 FAMILY_{i,t} + \beta_2 POST_{i,t,d} + \beta_3 FAMILY_{i,t} \times POST_{i,t,d} + \beta_4 SIZE_{i,t} + \beta_5 PRICE_{i,t+1,d} \beta_6 VOLUME_{i,t+1,d} + \beta_7 TURN_{i,t+1,d} + \beta_8 VOLATE_{i,t+1,d} + \beta_9 AGE_{i,t} + \beta_{10} RD_{i,t} + \beta_{11} DEBT_{i,t} + IND_i + e_{i,d} \quad (2)$$

where the subscripts *i*, *t*, and *d* refer to firm, year, and day, respectively. The dependent variable ($SPREAD_{i,t+1,d}$) is calculated as the mean daily bid minus the mean daily ask, scaled by the midpoint of the bid and ask prices on trading day *d* in year *t*+1, where twenty daily observations are made surrounding announcement date. The variable of interest, *FAMILY*, is given the value of one if the observation is on a family firm and zero otherwise. To identify family and non-firms, I adopt the criteria of TEJ database that a company is controlled by a single family with one of the following characteristics to be classified as a family firm:: (1) the positions of chairman and general manager are held by a single family member, (2) the percentage of seats on the board of directors held by family members is higher than 50%, (3) the percentage of seats on the board of directors held by family members is higher than 33% and at least three family members of the ultimate controller serve as directors, supervisors or managers, or (4) the percentage of the controlling shareholding is greater than that of the necessary controlling shareholding.

To test H1, I estimate Eq. (1) and test the effect of an audit report announcement on information asymmetry for both types of firms. If a family firm is found to be less likely to practice transparent reporting of company information, then a high degree of information asymmetry is expected between its controlling and non-controlling shareholders and the coefficient for *FAMILY* (α_1) is expected to be positive and significant. Using Eq. (2) to test H2, the primary variable of interest is *POST*, which is a dummy variable given a value of one when the observations are taken after the adoption of the EAR (i.e., in the years 2016 to 2019) and the value of zero for the period before its adoption (i.e., in the years 2013 to 2015). If the coefficient for *FAMILY* (α_1) is positive and the coefficient for the interaction term (*FAMILY*×*POST*) (β_3) is negative, the adoption of the EAR results in the decrease of the information asymmetry between the shareholders of family firms over the event window.

Several controls with a high likelihood of impacting information asymmetry are included in the model developed in this study, which is consistent with prior research. For

example, Flannery, Kwan and Nimalendran (2004) argue that the size of a firm has an effect on the amount and quality of the information that is available about this firm, which in turn affects the adverse selection component of the bid-ask spread of the firm's stock. In addition, larger firms have a greater incentive to disclose more information than smaller firms because they are more likely to be scrutinized by other outside stakeholders, which results in a lower degree of information asymmetry (Diamond and Verreccia 1991). Therefore, the firm size (*SIZE*) variable is used as the natural logarithm of the firm's assets in this study.

Past studies suggests that the observed bid-ask spread, taken here to reflect information asymmetry, is closely related to order processing costs and inventory holding costs. In this study, I include the company's share price *(PRICE*) that do the same as Amiram *et al*. (2016). Use the daily closing price to control the processing cost of the market maker. An increase in price impact is generally understood to reflect an increase in information asymmetry. Easley *et al*. (1996) find that the probability of carrying out information-based trading decreases as their number increases; that is, when the number of such transaction increases, the degree of information asymmetry decreases. Copel and Galai (1983) argue that a high stock turnover rate means that the stock is flowing quickly and the trading volume is high, which easily catches the attention of investors. These conditions increase the likelihood that the price of the stock reflects the information about the firm that is publicly available, thereby reducing information asymmetry. Therefore, I also control the daily trading volume of shares (*VOLUME*), which is calculated by dividing the daily trading volume of the firm by the total daily trading volume of the market, and the daily turnover ratio (*TURN*), which is calculated by dividing the daily trading volume by the number of outstanding shares. Wang (1993) suggests that a high return volatility increases the risk of holding the inventory and therefore pushes the bid-ask spreads higher. To control for the firm's risk or uncertainty, I included the stock price volatility (*VOLATE*) variable, which was calculated by dividing the difference between the highest and lowest daily prices by the average highest and lowest daily prices.

In addition, I include the variables firm age (*AGE*), R&D intensity (*RD*) and firm leverage (*DEBT*) to control for the effect of these firm characteristics on information asymmetry. The *AGE* variable is used to capture the effect of the firm's maturity on information asymmetry. Ritter (1991) argues that the longer the stock of a firm has been publicly traded, the more channels are available through which investors can obtain information about the firm, thereby reducing information asymmetry. Regarding the *RD* variable, the effect of R&D intensity is independently controlled for by dividing a firm's R&D expenditures by its total assets. Aboody and Lev (2000) find that insider gains are substantially smaller in firms which do not conduct R&D than they are in R&D intensive

firms, which are therefore prone to high levels of information asymmetry. Finally, Eng and Mak (2003) find that firms with a large debt tend to make few corporate disclosures. Therefore, I use the *DEBT* variable, calculated by dividing a firm's total debts by its total assets, to control for the firm's financial position.

Empirical results

1. Descriptive statistics

Descriptive statistics appear in Table 2. The results indicate that family firms exhibited higher bid-ask spreads than non-family firms. Table 3 shows that the differences in mean and median values of all variables before and after the adoption of the EAR, calculated using the t-test and the Wilcoxon rank sum test. The results shows that the differences in the mean and median values of the bid-ask spreads are significantly larger in the period following the implementation of the new regime for both types of firms. Finally, Table 4 presents the Pearson correlation coefficients for all variables, all of which are smaller than 0.5, suggesting that multi-collinearity is not an important concern in my sample. In a subsequently performed untabulated regression analysis, the variance inflation factors (VIF) for the independent variables in the specified regressions are smaller than 1.79, which suggests that there is no severe multi-collinearity in this model.

2. Regression results

Eq. (1) and (2) are developed in order to examine whether family firms are prone to higher information asymmetry than non-family firms and whether this problem is alleviated in family firms in the period surrounding the announcement of an EAR. Table 5 shows the results of the multivariate regression analysis of the effects of adopting the EAR on information asymmetry for family firms. The coefficients for the *FAMILY* variable shown in Columns 1 and 2 are significantly positive, suggesting a significant increase in the bid-ask spread during the period surrounding the announcement of an audit report for family firms compared to non-family firms. This finding supports H1. Research by Fan and Wong (2002) and Leuz *et al*. (2003) suggest that the concentration of the ownership of a firm among the members of a single family encourages these people to limit the information that is made available to outside investors out of self-interest or in order to maintain their control. This leads to the existence of a higher degree of information asymmetry among the shareholders of family firms. Column 2 shows that the coefficient for the *FAMILY×POST* interaction term is negative and statistically significant at the 5 percent level, suggesting that H2 is supported. Furthermore, the results for most control variables are in line with the specifications of the model. The results show that higher bid-ask spreads are associated with higher values of the variables *PRICE*,

VOLUME, *VOLATE*, *AGE* and *DEBT*, whereas they are negatively associated with changes in the values of the variables *SIZE*, *TURN* and *RD*.

3. Additional analyses and robustness checks

I perform three additional tests to assess the robustness of the results. First, to ensure that the results are not affected by different firms being used before and after the adoption of the new auditing regime, I employ a balanced panel with each sample firm being present in both periods. This approach allows the comparison of data on the same firm both prior to and following the EAR coming into use, which reduces the threat of time-invariant, firm-level correlated omitted variables (see Doyle and Magilke, 2013; Carcello and Li, 2013). Doing so also reduces the risk that other events occurring within a short time before the release of an audit report are driving the results. The sampling selection criteria yielded a total of 94,980 firm-year observations. Table 6 shows that the coefficients for the *FAMILY* variable shown in Column 1 are significantly positive. Furthermore, the coefficient for the *FAMILY×POST* interaction term is both negative and statistically significant at the 5 percent level, as shown in Column 2. The results of this study remained unchanged after the use of the balanced panel.

Regarding the second method of robustness testing, prior studies have shown that disclosing KAMs in an audit report reduces the information asymmetry among stakeholders (Gold, Gronewold and Pott, 2012; Gimbar, Hansen and Ozlanski, 2016). Therefore, to examine the impact of including KAMs in the EAR on information asymmetry, this study uses two variables: (1) the total number of KAMs (*NKAM*) and (2) the length of the description of the KAMs (*LKAM*). The latter is the natural logarithm of the words included in this description. I re-run the test, with both the NKAM and LKAM variables interacting with the *FAMILY×POST* interaction term (presented in Eq. (3) and (4), respectively). I then examine whether variations in these two variables affect the information asymmetry among the shareholders of family firms. The regression models are expressed as follows:

$$\begin{aligned} SPREAD_{i,t,d} = {} & \delta_0 + \delta_1 FAMILY_{i,t} + \delta_2 POST_{i,t,d} \\ & + \delta_3 FAMILY_{i,t} \times POST_{i,t,d} \times NKAM_{i,t,d} + \delta_4 SIZE_{i,t} + \delta_5 PRICE_{i,t+1,d} \\ & + \delta_6 VOLUME_{i,t+1,d} + \delta_7 TURN_{i,t+1,d} + \delta_8 VOLATE_{i,t+1,d} + \delta_9 AGE_{i,t} \\ & + \delta_{10} RD_{i,t} + +\delta_{11} DEBT_{i,t} + IND_i + \varphi_{i,d} \end{aligned} \tag{3}$$

$$\begin{aligned} SPREAD_{i,t,d} = {} & \gamma_0 + \gamma_1 FAMILY_{i,t} + \gamma_2 POST_{i,t,d} \\ & + \gamma_3 FAMILY_{i,t} \times POST_{i,t,d} \times LKAM_{i,t,d} + \gamma_4 SIZE_{i,t} + \gamma_5 PRICE_{i,t+1,d} \\ & + \gamma_6 VOLUME_{i,t+1,d} + \gamma_7 TURN_{i,t+1,d} + \gamma_8 VOLATE_{i,t+1,d} + \gamma_9 AGE_{i,t} \\ & + \gamma_{10} RD_{i,t} + \gamma_{11} DEBT_{i,t} + IND_i + \omega_{i,d} \end{aligned}$$

(4)

Table 7 shows that the coefficient for the *FAMILY* variable is significantly positive. On the other hand, the coefficient for *FAMILY*×*POST*×*NKAM* is negative and significant, and the coefficient for *FAMILY*×*POST*×*LKAM* is negative and statistically significant at the 5 percent level. These results are similar to those reported earlier in this study.

Finally, the entrenchment hypothesis states that the members of a family with a high proportion of ownership in a firm are more likely to expropriate minority shareholders than in the case of a low degree of family ownership (Shleifer and Vishny, 1997; La Porta, Lopez-de-Silanes and Shleifer, 1999). As mentioned above, information asymmetry increases as a result of family firms tending to disclose information less, leading to a lack of transparency (see Chen *et al*., 2008). Therefore, to assess the effect of family ownership, I re-test my model so that it takes into account the effects of high and low levels of family ownership on information asymmetry by dividing my sample observations accordingly. The high-ownership group reflects a proportion of family ownership in the top quartile of the distribution of the ownership variable, and the low-ownership group represents a level of ownership in the bottom quartile. Table 8 shows that the degree of information asymmetry characterizing firms in the high-ownership group is higher than it is for non-family firms, with positive and significant coefficients for the *FAMILY* variable. This means that a high proportion of family ownership leads to a high degree of information asymmetry among the shareholders of family firms. Furthermore, the coefficient for the *FAMILY*×*POST* interaction term is negative and statistically significant at the 5 percent level, suggesting that the decrease in information asymmetry after the adoption of the EAR is more pronounced for family firms with a high proportion of family ownership. As can be seen in Table 8, the coefficient for the interaction term is not significant in the case of a low proportion of family ownership.

Conclusion

Audit reports provide valuable information to investors and creditors, and they play the important role of information intermediary in capital markets. The new auditor reporting regime that has come into being in recent years requires that the EAR provide more information about the auditing process and the accompanying financial statements. In Taiwan, the Financial Supervisory Commission has been promoting the adoption of the EAR since 2016.

This study highlights the impact on the information asymmetry among the shareholders of family firms in the context of this change in the prevailing auditing regime, with a focus on relatively short event windows surrounding the announcement of an audit report. The degree of information asymmetry occurring in the case of family firms is

compared to that for non-family firms. Furthermore, the impact of using the EAR is also examined, in particular the possible reduction in information asymmetry among investors after its adoption.

Based on the analysis of data on companies listed on the Taiwan stock exchange during the period of 2013-2019, the results suggest that family firms are prone to a higher degree of information asymmetry than non-family firms in Taiwan. The results suggest that there was less information asymmetry among the shareholders of family firms after the adoption of the EAR, implying that the EAR has a beneficial effect on information asymmetry. Further analyses reveal that the presence of KAMs in the EAR caused a reduction in information asymmetry for family firms, and this reduction effect was stronger when the level of family ownership is high. These results confirm the prediction that using the EAR would incrementally convey information to the minority shareholders of a family firm, thereby reducing the information asymmetry between them and the controlling shareholders.

I believe that this study fills a gap in the existing literature in terms of the relationship between the EAR and family firms by providing evidence that the EAR reduces information asymmetry in relation to family firms. I have attempted to ensure that robust results were obtained by using panel data and additional testing in order to avoid possible biases.

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Table 1 Industry distribution of sample firm-years, by firm type

Industry	Non-family		Family firms		Full sample	
	n	%	n	%	n	%
Food industry	419	1.19%	2499	3.67%	2918	2.82%
Plastic industry	298	0.84%	2207	3.25%	2505	2.42%
Textile industry	1370	3.87%	4366	6.42%	5736	5.55%
Electric Machinery	1244	3.52%	3732	5.49%	4976	4.81%
Iron and steel	1284	3.63%	2523	3.71%	3807	3.68%
Automobile industry	939	2.66%	2026	2.98%	2965	2.87%
Building material and construction	1184	3.35%	5195	7.64%	6379	6.17%
Chemical industry	1018	2.88%	2434	3.58%	3452	3.34%
Biotechnology and medical care industry	1218	3.44%	2139	3.15%	3357	3.25%
Electronic industry	22178	62.73%	27326	40.18%	49504	47.90%
Other	4205	11.89%	13555	19.93%	17760	17.18%
Total	35357	100.00%	68002	100.00%	103359	100.00%

Other industries include Cement, Electrical and cable, Glass and ceramic, Paper and pulp, Rubber, Shipping and transportation, Tourism, Trading and consumers' goods, Gas and electricity and other industry.

Table 2 Descriptive statistics

Family firms (n=68,002)								
	Pre-adoption (n= 28,225)				Post-adoption (n= 39,777)			
Variable	Mean	Min	Median	Max	Mean	Min	Median	Max
SPREAD	0.476	0.103	0.321	4.037	0.498	0.103	0.331	4.037
SIZE	6.931	4.838	6.854	9.391	6.965	4.237	6.891	9.532
PRICE	35.622	1.510	18.546	520.272	45.473	1.200	21.100	670.788
VOLUME	0.118	0.000	0.034	11.053	0.116	0.000	0.023	17.007
TURN	0.506	0.000	0.208	15.082	0.577	0.000	0.181	36.380
VOLATE	0.023	0.000	0.018	0.175	0.025	0.000	0.019	0.192
AGE	3.473	0.000	3.584	4.190	3.555	0.000	3.664	4.248
RD	1.798	0.000	0.798	40.308	1.889	0.000	0.743	41.265
DEBT	0.427	0.011	0.434	0.969	0.436	0.007	0.443	0.997
Non-family firms (n= 35,357)								
	Pre-adoption (n= 14,296)				Post-adoption (n= 21,061)			
Variable	Mean	Min	Median	Max	Mean	Min	Median	Max
SPREAD	0.386	0.103	0.277	4.037	0.431	0.103	0.292	4.037
SIZE	6.989	5.700	6.872	9.220	6.975	5.110	6.888	9.355
PRICE	35.292	4.400	23.571	404.264	43.956	2.360	25.498	796.562
VOLUME	0.187	0.000	0.054	14.494	0.160	0.000	0.035	10.878
TURN	0.620	0.000	0.288	22.321	0.717	0.000	0.262	52.643
VOLATE	0.022	0.000	0.019	0.166	0.027	0.000	0.020	0.200
AGE	3.267	1.792	3.296	4.248	3.366	0.000	3.401	4.304
RD	3.408	0.000	1.799	25.376	3.449	0.000	1.908	28.038
DEBT	0.404	0.114	0.408	0.967	0.417	0.009	0.418	0.975

1. *SPREAD* is the firm's information asymmetry calculated as the mean daily bid minus the mean daily ask, scaled by the midpoint of the bid and ask prices, all multiplied by 100. *SIZE* is the natural logarithm of the firm's assets. *PRICE* is the daily closing price. *VOLUME* is the daily trading volume of shares calculated by dividing the daily trading volume of the firm by the total daily trading volume of the market. *TURN* is the daily turnover rate calculated by dividing the daily trading volume by the number of outstanding shares *VOLATE* is stock price volatility calculated by dividing the difference between the highest and lowest daily prices by the average highest and lowest daily prices. *AGE* is the natural logarithm of firm age. *RD* is R&D intensity calculated by dividing a firm's R&D expenditures by its total assets, all multiplied by 100. *DEBT* the firm's leverage calculated by dividing a firm's total debts by its total assets.
2. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Table 3 Tests of difference in means and medians of variables properties

		Pre-adoption(1)		Post-adoption(2)		difference(2)-(1)	
		Mean	Median	Mean	Median	Mean	Median
SPREAD	Family	0.476	0.321	0.498	0.331	0.022***	0.010***
	Non-family	0.386	0.277	0.431	0.292	0.045***	0.015***
SIZE	Family	6.931	6.854	6.965	6.891	0.034***	0.038***
	Non-family	6.989	6.872	6.975	6.888	-0.014*	0.016
PRICE	Family	35.622	18.546	45.473	21.100	9.851***	2.554***
	Non-family	35.292	23.571	43.956	25.498	8.664***	1.927
VOLUME	Family	0.118	0.034	0.116	0.023	-0.001*	-0.012***
	Non-family	0.187	0.054	0.160	0.035	-0.027***	-0.019***
TURN	Family	0.506	0.208	0.577	0.181	0.071***	-0.027***
	Non-family	0.620	0.288	0.717	0.262	0.097***	-0.026***
VOLATE	Family	0.023	0.018	0.025	0.019	0.003***	0.001***
	Non-family	0.022	0.019	0.027	0.020	0.004***	0.002***
AGE	Family	3.473	3.584	3.555	3.664	0.082***	0.800***
	Non-family	3.267	3.296	3.364	3.401	0.097***	0.105***
RD	Family	1.798	0.798	1.889	0.743	0.091***	-0.055*
	Non-family	3.408	1.799	3.449	1.908	0.041	0.109*
DEBT	Family	0.427	0.434	0.436	0.443	0.009***	0.009***
	Non-family	0.404	0.408	0.417	0.418	0.013***	0.010***
n	Family	28,225		39,777			
	Non-family	14,296		21,061			

1. Variables are defined in Table 2 .
2. Significance of means and medians are evaluated based on the t test and Wilcoxon test, respectively (p values for the t-statistic and Z-statistic are two-tailed).
3. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Table 4 Pearson correlation coefficients

Panel A Pearson correlations (*n*=103,359)

	1	2	3	4	5	6	7	8	9	10	11
1. *SPREAD*	1.00										
2. *FAMILY*	0.06***	1.00									
3. *POST*	0.03***	-0.01***	1.00								
4. *SIZE*	-0.34***	-0.02***	0.01***	1.00							
5. *PRICE*	-0.06***	0.00	0.04***	0.12***	1.00						
6. *VOUME*	-0.10***	-0.06***	-0.01***	0.38***	0.00	1.00					
7. *TURN*	-0.12***	-0.05***	0.03***	-0.05***	0.05***	0.33***	1.00				
8. *VOLATE*	0.12***	-0.02***	0.08***	-0.11***	0.04***	0.17***	0.45***	1.00			

9. *AGE*	0.02***	0.22***	0.10***	0.15***	-0.07***	-0.05***	-0.14***	-0.12***	1.00		
10. *RD*	-0.07***	-0.20***	0.01***	-0.11***	0.07***	0.05***	0.13***	0.12***	-0.36***	1.00	
11. *DEBT*	0.06***	0.05***	0.03***	0.33***	-0.07***	0.06***	-0.03***	0.04***	0.08***	-0.15***	1.00

1. Variables are defined in Table 2. *FAMILY* is equal to one for family firms and 0 otherwise. *POST* is an indicator variable that takes a value of 1 if the firm adopt the EAR (i.e., in the years 2016 to 2019), and 0 otherwise.
2. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Table 5 Regression of the impact of EAR on information asymmetry in family firms for announcement effect

	Eq. (1)		Eq. (2)	
Variables	Coeff.	t-stat.	Coeff.	t-stat.
Intercept	2.799	120.85***	0.280	120.05***
FAMILY	0.029	8.48***	0.029	5.51***
POST			0.021	3.86***
FAMILY×POST			-0.011	-2.78**
SIZE	-0.400	-130.85***	-0.401	-130.95***
PRICE	0.001	8.24***	0.001	7.99***
VOLUME	0.141	32.36***	0.145	32.55***
TURN	-0.098	-70.48***	-0.099	-70.53***
VOLATE	4.847	52.17***	4.795	51.44***
AGE	0.040	11.38***	0.038	10.60***
RD	-0.009	-21.04***	-0.009	-21.28***
DEBT	0.543	57.72***	0.541	57.56***
IND	Yes		Yes	
Adj. R^2	0.200		0.201	
F-statistic	2877.99***		2359.30***	
N	103359		103359	

1. Variables are defined in Table 2 and Table 4.
2. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Table 6 Regression results using balanced data

	Eq. (1)		Eq. (2)	
Variables	Coeff.	t-stat.	Coeff.	t-stat.
Intercept	2.248	108.27***	2.255	127.97***
FAMILY	0.025	8.92***	0.028	6.72***
POST			0.021	4.85***
FAMILY×POST			-0.010	2.80**
SIZE	-0.288	-120.58***	-0.288	-112.75***
PRICE	0.006	6.48***	0.006	6.29***
VOLUME	0.093	26.68***	0.093	26.87***
TURN	-0.075	-63.75***	-0.075	-63.79***
VOLATE	3.853	48.92***	3.810	48.24***
AGE	0.015	5.54***	0.012	3.60***
RD	-0.005	-12.30***	-0.005	-12.60***
DEBT	0.003	42.46***	0.003	42.37***
IND	Yes		Yes	
Adj. R^2	0.211		0.212	
F-statistic	1176.13***		1098.11***	
N	94980		94980	

1. Variables are defined in Table 2 and Table 4.
2. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Table 7 Regression analysis considering the effect of key audit matters

	Eq. (3)		Eq. (4)	
Variables	Coeff.	t-stat.	Coeff.	t-stat.
Intercept	2.217	112.79***	2.221	113.00***
FAMILY	0.030	8.52***	0.026	6.63***
POST	0.029	8.27***	0.025	6.16***
FAMILY×POST×NKAM	-0.008	-4.38***		
FAMILY×POST×LKAM			-0.002	-2.16**
SIZE	-0.286	-113.84***	-0.287	-113.97***
PRICE	0.005	5.83***	0.005	5.87***
VOLUME	0.093	26.71***	0.093	26.64***
TURN	-0.072	-64.79***	-0.072	-64.78***
VOLATE	3.641	47.91***	3.645	47.95***
AGE	0.009	3.05***	0.009	3.14***
RD	-0.005	-12.41***	-0.005	-12.44***
DEBT	0.327		42.18***	
IND	Yes		Yes	
Adj. R^2	0.179		0.179	
F-statistic	1004.95***		1004.15***	
N	103359		103359	

1. Variables are defined in Table 2 and Table 4. *NKAM* is the total number of key audit matters. *LKAM* is the natural logarithm of the words of key audit matters.
2. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Table 8 Regression analysis considering the effect of family ownership

	High ownerhsip		Low ownerhip	
Variables	Coeff.	t-stat.	Coeff.	t-stat.
Intercept	2.699	48.55***	1.843	60.40***
FAMILY	0.054	4.32***	0.025	4.21***
POST	0.077	5.62***	0.004	0.81
FAMILY×POST	-0.028	-1.93**	-0.011	-1.39
SIZE	-0.350	-48.83***	-0.242	-62.65***
PRICE	-0.002	-3.74***	0.000	6.95***
VOLUME	0.097	3.06***	0.078	21.69***
TURN	-0.096	-22.27***	-0.064	-43.27***
VOLATE	3.736	20.03***	4.235	35.81***
AGE	0.003	0.37	0.015	2.78***
RD	-0.008	-9.77***	-0.002	-4.87***
DEBT	0.378	19.68***	0.326	26.00***
IND	Yes		Yes	
Adj. R^2	0.174		0.197	
F-statistic	417.16***		437.22***	
N	40357		40357	

1. Variables are defined in Table 2 and Table 4.
2. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.