

The impact of ownership structure on earnings quality: the case of South Korea

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Abstract This paper investigates the impact of business group ownership structure on the quality of earnings reporting using data from South Korea. In addition, we investigate the impact of ownership disparity and family ownership on earnings quality reporting. Using a self-constructed earnings quality index as a measure of earnings quality, we found that business group ownership structure is significantly associated with higher earnings quality. The result suggests that strong monitoring mechanisms introduced by the government, which are necessary for credibility in external financial markets and beneficial to business group reputation, led to increased transparency in earnings reports. We also found that disparity in ownership between control and cash flow rights in firms, as well as family ownership in group firms, was both associated with lower earnings quality.

Keywords Business group · Ownership structure · Earnings quality · South Korea

JEL Classification M41 · M42 · M48

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Introduction

This paper investigates the impact of business group ownership structure on the quality of earnings reports using data from South Korea. Business groups are dominant players, not only in emerging markets but also in Europe and Japan.¹ The same is also true in North Korea, where the assets of the 30 largest business groups were 26.1% larger than the Korean GDP and comprised 95.2% of the Korean GDP in 2011. One of the typical characteristics of group firms is that members within a firm mutually share the ties of both ownership and business operations, which gives rise to an agency conflict between controlling and minority shareholders (Yang et al. 2013; Claessens et al. 2006). Hence, the ownership structure of business groups could affect the quality of financial reports.

Theoretical studies provide two competing predictions about the impact of the ownership structure on the quality of financial reporting. On the one hand, the entrenchment effect hypothesis predicts that ownership concentration creates incentives for controlling shareholders to expropriate private benefits from the firm at the cost of minority shareholders. As a result, controlling shareholders report lower earnings quality reports because they have greater incentives to influence earnings for their private benefit (e.g., Wang 2006; Fama and Jensen 1983; Morck et al. 1988; Shleifer and Vishny 1997). Several empirical studies provide evidence supporting the entrenchment effect hypothesis (e.g., Li and Zaiats 2017; Gopalan and Jayaraman 2012; Fan and Wong 2002; Yang et al. 2013). Based

¹ Khanna and Rivkin (2001) define the business group as “a collection of firms which, though legally independent, are bound together by a constellation of formal and informal ties and are accustomed to taking coordinated actions.”



on the entrenchment effect hypothesis, group-controlling owners (family, in most cases) allow managers in business groups report lower earnings quality than those in non-groups because the complex organizational structure and self-dealing internal market in group firms may create private benefit incentives for controlling owners to do so. Conversely, some studies predict that group-controlling owners will abstain from extracting private benefit from the firm at the cost of minority shareholders to build a long-term reputation, maximize firm value and impose fewer contractual constraints on the firm (Jensen and Meckling 1976). This suggests that group firms' owners are expected to have a strong incentive to protect their investment and reputation by actively monitoring managers' opportunistic attempts to influence earnings. Empirical studies by Warfield et al. (1995), Wang (2006), and Jung and Kwon (2002) document evidence supporting this prediction. Overall, two competing theories of the impact of business group ownership structure on earnings quality reporting raise an empirical question. Using a large sample of firms listed in the South Korean stock exchange over a period from 1993 to 2007, we investigated the impact of the business group ownership structure on earnings quality reporting. We further investigated the impact of group firm characteristics (disparity in ownership between cash flow rights and control rights in group firms and family ownership in group firms) on earnings quality reporting.

Using a self-constructed earnings quality index as a measure of earnings quality, and Korean business groups, so-called chaebols, for business group affiliations, we found that business group ownership structure is significantly associated with higher earnings quality. The result suggests that group-affiliated firms report greater earnings quality than non-group firms because the demand for higher earnings quality report by financial statement users increased after the Korean reforms. Moreover, our result indicates that chaebols improved their transparency due to strong monitoring mechanisms introduced by the government.² Thus, group firms' owners have actively engaged in monitoring managers' opportunistic behaviors to manage earnings to protect their investment and reputation.

We also found that the disparity in ownership between control and cash flow rights in group firms and family ownership in group firms are associated with lower earnings quality. The results suggest that high ownership disparity in group firms may lead to expropriation from such firms, and family owners in group firms may have greater incentives to be engaged in earnings manipulation for their

private benefit. The results are robust to alternative measures of earnings quality, group ranking and endogeneity.

This study makes the following contributions to the topic of the impact of ownership on earnings quality. First, it adds to a growing body of literature on the matter (e.g., Wang 2006; Warfield et al. 1995). This study also provides insight into the impact of complex and unique business group ownership structures on earnings quality reporting. Finally, this study provides new empirical evidence on the impact of ownership structure on earnings quality after the Korean reforms.

The remainder of this paper is organized as follows: "Review of prior studies and hypotheses development" section reviews prior studies and develops hypotheses. "Research design and data" section presents research design and data. The results are reported in "Results" section and "Summary and conclusions" section concludes the paper.

Review of prior studies and hypotheses development

Review of prior studies

Literature on the conventional agency problem, which is based on widely held equity ownership, has shown that a separation of ownership from control gives rise to agency conflict between managers and outside shareholders (e.g., Jensen and Meckling 1976; Warfield et al. 1995). For example, Beatty and Harris (1999) indicate that agency problems arise when information asymmetry between owners and managers exists and managers have an incentive to maximize their own self-interest at the cost of shareholders and creditors. Such an agency problem may induce firms to report less informative accounting earnings. However, after La Porta et al. (1999) documented that concentrated ownership is more common throughout the world, and La Porta et al. (2002) emphasized the importance of monitory investor protection, a new setting for agency problem emerged. In this new setting, a controlling owner is hired by a CEO and management team who are both loyal to the controlling owner. Thus, the conventional agency problem between shareholder and management disappears, and the non-conventional agency problem between controlling shareholder and minority shareholder becomes more prevalent (Shleifer and Vishny 1997). Although extensive prior studies examine the effect of concentrated ownership structure on the quality of financial reporting, the theoretical studies provide the following two competing hypotheses. On the one hand, the entrenchment effect hypothesis predicts that ownership concentration creates incentives for controlling shareholders to

² We discussed chaebol reforms and the reforms introduced by the government in more detail in "Group firms and earnings quality" section.



expropriate private benefits from the firm at the cost of minority shareholders. As a result, controlling shareholders report lower earnings quality because they have greater incentive to manage influence earnings for their private benefit (e.g., Wang 2006; Fama and Jensen 1983; Morck et al. 1988; Shleifer and Vishny 1997). Several empirical studies provide evidence supporting the entrenchment effect prediction. For example, Li and Zaiats (2017) examine the effect of dual-class ownership structure firms on the availability of information and earnings management. Based on a sample of firms from 19 countries from 1994 to 2010, they document that a dual-class ownership structure status was associated with a lower availability of information and higher earnings management. Their results suggest that a dual-class ownership structure allows managers to expropriate private benefits through earnings manipulation. Similarly, Gopalan and Jayaraman (2012) examined the earnings management practices of insider-controlled versus non-insider-controlled firms across 22 countries. Consistent with the entrenchment effect prediction, they found that insider-controlled firms were associated with higher earnings management than non-insider-controlled firms. Fan and Wong (2002) also documented a lower earnings response coefficient for firms with greater ownership concentration, implying that higher ownership concentration is associated with lower earnings quality. Similarly, Yang et al. (2013) investigated the effect of business group affiliation on earnings quality for a sample of firms listed on the Taiwan Economic Journal database for the period from 2000 to 2010. Following the entrenchment effect view, they predicted and found that the earnings quality of business group affiliations was significantly lower than that of non-business group affiliations.

Other studies, however, predict that high control shareholders will avoid expropriating private benefits from the firm at the cost of minority shareholders to build a long-term reputation and to maximize firm value and impose fewer contractual constraints on the firm (Jensen and Meckling 1976). As a result, controlling shareholders will be less motivated to manage earnings, resulting in higher earnings quality. Similarly, groups may be motivated to improve earnings quality to achieve better contracting terms, such as a lower cost of capital (Ball and Shivakumar 2005; Wang 2006).³ An empirical study by Warfield et al. (1995) examined the effect of the level of managerial ownership on earnings quality using a sample of the US firms drawn from 1988 to 1990. Consistent with their prediction, they found a positive association between

managerial ownership and earnings quality and an inverse relationship with the magnitude of accounting accrual adjustments. Similarly, Wang (2006) examined the effect of family ownership on earnings quality using data from the S&P 500 companies. They found that family ownership was associated with higher earnings quality. Jung and Kwon (2002) examined the association between the corporate ownership structure and earnings informativeness. Using a sample of firms listed on the Korean Security Exchange (KSE) from 1993 to 1998, they documented that earnings are more informative as the holdings of the owner increase.

Group firms and earnings quality

Prior studies have offered competing theories and mixed empirical evidence on the costs–benefits of group-affiliated firms. On the one hand, group affiliation can create value from efficient internal markets and the synergy effect of the group network. For example, Khanna and Palepu (2000) show that Indian group firms add value to affiliated firms by creating internal markets to overcome external market failures. Shin and Park (1999) also document that group firms in Korea have easier access to investment capital than stand-alone firms. Similarly, scholars from the network perspective argue that a business group structure provides synergies to group firms because the business group structure, as a network, can provide internal channels to share valuable resources, such as social connections, technology, know-how and timely information (Nahapiet and Ghoshal 1998). Along with resource sharing, business group headquarters provide similar values, common corporate languages and various interactions among group firms to facilitate intra-group communication. As a result, the extent of agency problems between controlling shareholders and minority shareholders may be greater in group-affiliated firms when compared to stand-alone firms because of increased information asymmetries and self-dealing internal markets (Yang et al. 2014; Claessens et al. 2006; Kim and Yi 2006). Accordingly, self-dealing internal markets and complex ownership and control structures in a group may exacerbate agency problems, giving group firms greater room to manage earnings. Moreover, because owners of group firms usually participate in the management of the firm directly or indirectly, they influence most management decisions (Jung and Kwon 2002; Murillo and Sung 2013)⁴ and can easily expropriate minority

³ Prior studies indicated that market forces (e.g., capital market development) play a role in shaping financial reporting. Firms report higher earnings quality due to higher market demand for higher-quality earnings (Coelho et al. 2017).

⁴ For example, Chairman Lee Kun-Hee (Lee) of the Samsung Group, one of the largest chaebols in Korea, controls Samsung Electronics. Although Lee is neither chairman of the board nor CEO of any of the group's main affiliates, he controls these companies indirectly because of Samsung Group's vast cross-shareholdings (Murillo and Sung 2013; Jung and Kwon 2002).



shareholders by investing the firm's resources to maximize their own personal wealth and the overall value of the entire group (Yung and Kwon 2002). Consequently, group firm owners are perceived to report accounting information for self-interested purposes, causing the reported earnings to lose credibility to outside investors.

Because agency problems of business groups were blamed as the main cause of the Asian financial crisis (1997–1998), the Korean government forbade cross-debt guarantees and forced improvements in capital structure and accountability. For example, Kang (2000) stated that prior to the crisis, the deregulation of financial and capital markets created a moral hazard permitting excessive lending for the expansion of chaebols. Similarly, Lee (2008) noted that the ownership structure of chaebols and mismanagement is blamed as the cause of the crisis. The International Monetary Fund (IMF) also identified both low transparency and poor corporate governance of Korean firms as the major cause of the Asian crisis (Chang et al. 2007). Consequently, chaebols have undergone many major reforms since the crisis. For example, strong monitoring activities and new competition policies were introduced under the Kim Dae-Jung government (Lee 2008). The Roh Moo-hyun government also intensified chaebol reforms, investigating their illegal political funding and accounting irregularities, and pressuring them to improve their corporate governance. As a result, chaebols improved their financial conditions and their corporate governance became more transparent (Choe and Pattnaik 2007). After the Asian financial crisis, the Korean economy also experienced fundamental changes. Capital markets have been opened to foreign investors, and accounting and other systems have changed to meet global standards. The volume of capital financing from external markets has increased, and corporate transparency of Korean firms, in general, has improved (Chang et al. 2007). Lee et al. (2009) also found that internal capital market efficiency disappeared among South Korean business groups, a direct result of the market reforms following the Asian financial crisis. Additionally, the size of the public debt market has increased and is now considered a substitute for the internal capital market.

In sum, the complex ownership structure, information asymmetries and self-dealing internal markets that exist in group-affiliated firms may exacerbate agency problems. Group-affiliated firms may report earnings with lower quality because they have greater incentives to manage earnings for their private benefit. On the other hand, group-affiliated firms in Korea may report earnings of higher quality due to the strong monitoring activities and new competition policies introduced by the government and the increasing pressure for greater transparency by minority shareholders, Korean non-government organizations, the

IMF and other financial statement users, as well as their needs for external financial markets.⁵ Group firms' owners have also strong incentive to actively monitor managers' opportunistic behaviors to manage earnings to protect their investment and reputation.

Because these theories provide competing and alternative predictions about the effect of business group affiliation on earnings quality, our hypothesis is non-directional, as follows:

H1 Business group affiliation is systematically associated with earnings quality.

The impact of ownership disparity on earnings quality

For group firms, a high ownership disparity means that controlling owners control the firm more than the real cash flow ownership of the firm. For example, in 2011, the Lee family, the controlling family of Samsung group, controls Samsung Electronics with 29.36% control rights, while the family owns only a 4.72% equity holding. The remaining 24.64% is controlled by either other Samsung group firms (12.77%) or the equity owned by Samsung Electronic itself (11.65%). Thus, with an ownership disparity of 24.64%, the Lee family controls Samsung Electronics. Further, in 2011, the Samsung Group had 19 publicly listed firms, 9 of which had no family ownership at all but were controlled by the Lee family using ownership disparity.⁶ This is possible because of pyramidal and circular ownership structures. Ownership disparity has been identified as the main cause of agency problems between group-controlling owners and minority outside investors because group-controlling owners may have an incentive to increase their wealth by relocating resources from group firms with lower cash flow ownership to group firms with higher cash flow ownership (Johnson et al. 2000). High ownership disparity facilitates this expropriation. If incentives are strong, then group-controlling owners may make group firms with high ownership disparity less transparent to mask their expropriation. As a result, we expect a negative relationship between ownership disparity between control rights and cash flow rights and earnings quality. Hence, we formulate the following hypothesis:

H2 Ownership disparity is negatively associated with earnings quality.

⁵ Coelho et al. (2017) note that to have access to external sources of funds firms have to credibly commit to maintain a reasonable flow of information in order to facilitate monitoring by boards, auditors and regulators.

⁶ Data source: groupopni.ftc.go.kr.



Impact of family-controlled on earnings quality

From a founding family perspective, Wang (2006) argued that founding families are less likely to expropriate wealth from other shareholders by managing earnings because the wealth of the founding family is closely tied to firm value, so families have strong incentives to monitor employees. As a result, founding families are more likely to forgo short-term benefits from managing earnings because it could damage the family's reputation, wealth and long-term performance (Wang 2006). Consequently, founding family firms are expected to report higher earnings quality than non-family firms. Consistent with this view, Anderson and Reeb (2003) report that founding family firms are better performers than non-family firms. Jung and Kwon (2002) also examined the association between the corporate ownership structure and earnings informativeness. Using a sample of firms listed on the Korean Security Exchange (KSE) from 1993 to 1998, they found that earnings were more informative as the holdings of the owner increased. Similarly, using data from the Standard & Poor's 500 companies, Wang (2006) reported that founding family ownership was associated with lower abnormal accruals and greater earnings informativeness. Prencipe and Bar-Yosef (2011) also found a positive association between founding family ownership and earnings quality. However, founding family ownership may also be associated with the supply of lower earnings quality because family firms may have inferior corporate governance and potentially greater information asymmetry between founding families and other shareholders (Wang 2006). Moreover, family owners can exert much power to pursue their own interests without fear of punishment (Fama and Jensen 1983). Leuz et al. (2003) also argue that earnings management is higher in countries where family ownership concentration is higher because of weak investor protection. Using a sample of 379 listed firms in Taiwan, Chi et al. (2015) examined the relationship between earnings management and family firms and found that family firms are positively related to earnings management.

Because the existing theories provide competing and alternative predictions about the effect of family ownership on earnings quality, our hypothesis is non-directional and states the following:

H3a Family ownership is systematically related to earnings quality.

The group-controlling family can be a more extreme case of either direction. The group-controlling family can pursue more private benefits than non-group family owners because they are under a more complex organizational structure and engage in internal transactions that outsiders cannot easily decipher. In this case, group-controlling

owners prefer an opaque information environment and thus lower earnings quality. However, the group-controlling family may be more attached to group reputation and the long-term performance of the group. If most of the group-controlling family is well known domestically and internationally, they may be more concerned with the quality of their reporting and eager to promote a good image to the public to derive benefits from external financial, human capital and commercial markets.

At the individual group firm level, higher group-controlling family ownership may face a similar situation. Group-controlling family owners may directly engage in entrenchment because they have the direct control to do so, but they may also have more concern about firm reputation, as well as their continued ownership, in the long run. Thus, group-controlling family owners may positively or negatively impact earnings quality.

Because the existing theories provide competing and alternative predictions about the effect of group-controlling family owners on earnings quality, our hypothesis is non-directional and states the following:

H3b Group-controlling family ownership in a group firm is systematically related to earnings quality.

Research design and data

Variable measurement and sample selection

Measure of earnings quality

Within the earnings quality literature, studies employ several proxies for earnings quality. We use a self-constructed measure as our main proxy for the quality of earnings. We select a self-constructed measure as a proxy for earnings quality because there is no agreed-upon metric for an earnings construct. To construct our earnings quality measure, we use four different measures of earnings quality that have been used extensively in the literature (accrual quality, earnings persistence, earnings predictability and earnings smoothness). Next, we describe the procedures used to construct our self-constructed proxy for earnings quality and the four measures of earnings quality.

Earnings quality index Similar to the opacity index developed by Anderson et al. (2009), we construct the earnings quality index for each firm by year to proxy earnings quality. Four variables are used—accrual quality, earnings persistence, earnings predictability and earnings. These four variables are divided into ranked deciles. The highest earnings quality deciles for each variable are



ranked as 10, and the lowest deciles are ranked as 1. The sum of all four rankings is divided by 40 to obtain an index.

Accrual quality Our measure of accrual quality is based on Dechow and Dichev's (2002) model relating current accruals to lagged, current and future cash flows from operation:

$$TCA_{i,t} = \beta_{0,i} + \beta_{1,i}CFO_{i,t-1} + \beta_{2,i}CFO_{i,t} + \beta_{3,i}CFO_{i,t+1} + e_{i,t} \quad (1)$$

where $TCA_{i,t}$ = firm i 's total current accruals in year t , = $(\Delta CA_{i,t} - \Delta CL_{i,t} - \Delta Cash_{i,t} + \Delta STDEBT_{i,t})$; $Assets_{i,t}$ = firm i 's average total assets in year t and $t - 1$; and $CFO_{i,t}$ = cash flow from operations in year t , calculated as the net income before extraordinary items (NIBE) less total accruals (TA), where $TA_{i,t} = \Delta CA_{i,t} - \Delta CL_{i,t} - \Delta Cash_{i,t} - \Delta STDEBT_{i,t} - DEPN_{i,t}$; $\Delta CA_{i,t}$ = firm i 's change in assets between $t - 1$ and year t ; $\Delta CL_{i,t}$ = firm i 's change in current liabilities between year $t - 1$ and year t ; $\Delta Cash_{i,t}$ = firm i 's change in cash between year $t - 1$ and year t ; $\Delta STDEBT_{i,t}$ = firm i 's change in debt in current liabilities between year $t - 1$ and year t ; $DEPN_{i,t}$ = firm Earnings smoothness's depreciation and amortization expense in year t .

Like Francis et al. (2004), for each firm-year, we estimated Eq. (1) using rolling ten-year windows. Our accrual quality measure is the standard deviation of firm i 's estimated residuals, $\sigma(e_{i,t})$ from Eq. (1).

Earnings persistence Following prior studies (e.g., Francis et al. 2004), we use the slope of the coefficient estimated ($\alpha_{0,i}$) from the following equation to measure earnings persistence:

$$X_{i,t} = \alpha_{0,i} + \alpha_{1,i}X_{i,t-1} + e_{i,t}, \quad (2)$$

where $X_{i,t}$ = Firm i 's net income before extraordinary items in year t divided by the weighted average number of outstanding shares during year t and $t - 1$.

Earnings predictability Consistent with prior studies (e.g., Francis et al. 2004), we use the square root of the error variance from Eq. (2) to measure earnings predictability [earnings predictability = $\sqrt{\sigma^2(e_i)}$].

Earnings smoothness Similar to Francis et al. (2004), we use the ratio of firm i 's standard deviation of net income before extraordinary items divided by the beginning total assets to its standard deviation of cash flows from operations divided by the beginning total assets, i.e., $Smoothness_{i,t} = \sigma(NIBE_{i,t})/\sigma(CFO_{i,t})$.

Group firms and non-group firms We divide the samples into business group firms and non-group firms. Group firms are the firms affiliated with the 30 largest business groups in Korea. The groups are ranked by the KFTC every year by total group assets, and this information is available on the OPNI website. The 30 largest groups ranking began because, from 1998 to 2001, the KFTC monitored the internal transactions of the 30 largest groups to prevent market collapse due to unfair trade among group firms. Although the KFTC now monitors business groups by the healthiness of the group capital structure and not by size, the concept of the 30 largest groups is still commonly used in the media and by other scholars. Unmatched non-group firms are those not affiliated with the 30 largest groups firms. Matched non-group firms are the control samples of the empirical analysis. The matched non-group firms are selected by one-to-one size matching in each industry every year. All variables used in this study are defined in "Appendix 1."

Data and sample selection

The sample used in this study covers firms in South Korea from 1993 to 2007. Data required to estimate our equation are collected from the OPNI website and CRISP/COMPSTAT. The industry classification used in this study is based on KSIC 2-digit codes, and the matched sample size is 1148 firm observations. The number of group firms, unmatched group firms and matched group firms by year and by industry is reported in Table 1. The number of group firms remained almost the same from 2000 to 2002 and gradually increased after 2003. This may be because, during the regime of President Kim Dae Jung (February 1998–February 2003), business groups were blamed as the main cause of the Asian financial crisis (1997–1998) and experienced severe restructuring.

Model for testing our hypotheses

We use the following regression Eq. (3) to test whether the ownership structure in group-affiliated firms affects earnings quality (i.e., Hypothesis 1):

$$EQA_{i,t} = \beta_0 + \beta_1 Group_{i,t} + \beta_2 Family_{i,t} + \beta_3 DIN_t + \beta_4 FIN_{i,t} + \beta_5 GOV_t + \beta_6 FAG_t + \beta_7 FSIZE_{i,t} + \beta_8 DR_{i,t} + e_{j,t}. \quad (3)$$

All variables are defined in "Appendix 1."

We use the following regression Eq. (4) to test whether ownership disparity in group-affiliated firms affects earnings quality (i.e., Hypothesis 2):



Table 1 The number of group and non-group firms by year and by industry

	All firms	Group firms	Unmatched non-group firms	Matched non-group firms
<i>Panel A: by year</i>				
1993	254	53	201	53
1994	277	60	217	57
1995	289	60	229	60
1996	336	70	266	70
1997	326	72	254	71
1998	307	71	236	69
1999	320	68	252	68
2000	337	72	265	72
2001	342	69	273	69
2002	365	71	294	71
2003	525	91	434	91
2004	537	89	448	89
2005	552	98	454	98
2006	565	99	466	99
2007	584	105	479	105
1993–2007	5916	1148	4768	1142
<i>Panel B: by industry</i>				
Agriculture	49	0	49	0
Metal mining and metal ores	664	105	559	105
Food, beverage, and tobacco	373	77	296	77
Textiles	368	7	361	7
Wood products	276	10	266	10
Chemicals, petroleum and coal	1279	221	1058	221
Primary metal industry	108	24	84	24
Industrial machinery and equipments	254	24	230	24
Electrics and electronics	655	116	539	116
Automobile	412	86	326	86
Communications and utilities	157	51	106	51
Constructions	417	164	253	160
Wholesale and retail services	462	125	337	125
Transportations	206	83	123	81
Other service industries	236	55	181	55
Firm-year observations (<i>N</i>)	5916	1148	4768	1142

$$\begin{aligned}
 EQA_{i,t} = & \beta_0 + \beta_1 \text{Group}_{i,t} + \beta_2 \text{OWNER_DIS}_{i,t} \\
 & + \beta_3 \text{Family}_{i,t} + \beta_4 \text{DIN}_t + \beta_5 \text{FIN}_{i,t} + \beta_6 \text{GOV}_t \\
 & + \beta_7 \text{FAG}_t + \beta_8 \text{FSIZE}_{i,t} + \beta_9 \text{DR}_{i,t} + e_{j,t}.
 \end{aligned}
 \tag{4}$$

All variables are defined in “[Appendix 1.](#)”
 We use the following regression Eq. (5) to test whether family owners affect earnings quality (i.e., Hypotheses 3a and 3b):

$$\begin{aligned}
 EQA_{i,t} = & \beta_0 + \beta_1 \text{Group}_{i,t} + \beta_2 \text{Family}_{i,t} + \beta_3 \text{Group}_{i,t} \\
 & * \text{Family}_{i,t} + \beta_4 \text{DIN}_t + \beta_5 \text{FIN}_{i,t} + \beta_6 \text{GOV}_t \\
 & + \beta_7 \text{FAG}_t + \beta_8 \text{FSIZE}_{i,t} + \beta_9 \text{DR}_{i,t} + e_{j,t}.
 \end{aligned}
 \tag{5}$$

All variables are defined in “[Appendix 1.](#)”
 All regression models include the same control variables mentioned above and are controlled for year- and industry-fixed effects. The statistical significance of the coefficients in all regression models is based on the White heteroscedasticity-consistent standard errors.



Results

Descriptive statistics

The means and medians of the variables used in our analysis for group and non-group firms are reported in Table 2. The mean earnings quality index is 0.590 for group firms, 0.540 for unmatched non-group firms, and 0.579 for matched non-group firms. The positive mean difference between the two groups indicates that group firms report greater earnings quality than non-group firms. The four individual measures for earnings quality (accrual quality, earnings persistence, earnings predictability and earnings smoothness) also show that group firms report greater earnings quality than non-group firms. One noticeable difference among control variables is the difference of family ownership between group firms and non-group firms. Matched non-group firm family ownership has a mean of 0.308, and group firm family ownership has a mean of 0.108. This shows that controlling structures are very different between non-group firms and group firms. However, total family control should be the sum of ownership disparity and family ownership. Thus, if we add ownership disparity and family ownership, the means become 0.321 for group firms and 0.334 for matched non-group firms. The preliminary results indicate that a group firm's ownership structure is associated with greater earnings quality.

Table 3 reports Pearson correlation coefficients of the variables used in subsequent analyses. Consistent with the descriptive statistics reported in Table 2, the Pearson correlation results indicate that the earnings quality index (EQA) is positively correlated with the ownership structure of group firms. The correlation coefficients of earnings quality measure with firm characteristics show that the earnings quality index is negatively correlated with firm size, firm age and family ownership. The other firm characteristics that used control variables have a positive correlation with the earnings quality index.

Regression results

Impact of group affiliation on earnings quality

The results reported in Table 4 are from the ordinary least square regressions using the earnings quality index as the dependent variable. Column 1 of Table 4 presents the results from estimating Eq. (3). The results show that the coefficient on *Group* is positive and significant at the 5% level ($\beta_1 = 0.023$; $t = 2.37$). The result suggests that the benefits of internal capital markets in group-affiliated firms disappeared in South Korea after the reforms following the Asian financial crisis. As a result, group-affiliated firms report greater earnings quality than non-group firms because the demand for a higher earnings quality report by financial statement users increased after the government

Table 2 Mean and median difference tests for descriptive variables

	Group firms (1)		Unmatched non-group firms (2)		Matched non-group firms (3)	
	Mean	Median	Mean	Median	Mean	Median
<i>Earnings quality index and attributes</i>						
Earnings quality index	0.590	0.600	0.540	0.550	0.579	0.600
Accrual quality	- 0.048	- 0.041	- 0.052	- 0.041	- 0.049	- 0.037
Persistence	0.302	0.319	0.265	0.282	0.300	0.317
Predictability	- 0.003	- 0.001	- 0.004	- 0.002	- 0.004	- 0.002
Smoothness	- 0.001	0.000	- 0.001	- 0.001	- 0.001	0.000
<i>Firm-specific variables</i>						
Family ownership	0.108	0.037	0.345	0.337	0.308	0.300
Ownership disparity	0.213	0.186	0.060	0.000	0.026	0.000
Domestic institution	0.096	0.053	0.060	0.006	0.080	0.028
Foreign institution	0.132	0.082	0.071	0.013	0.113	0.047
Government	0.019	0.000	0.010	0.000	0.012	0.000
Firm age	33.463	33.000	33.435	32.000	36.794	36.000
Firm size	27.929	27.941	25.798	25.685	26.931	26.824
Debt ratio	0.607	0.627	0.507	0.509	0.561	0.580
<i>N</i>	1146		4606		1137	

This table reports the summary statistics for group firms, matched and unmatched non-group firms in South Korea from 1993 to 2007. Matching of group and non-group firms was done by firm size and industry for each year. All firms are listed in Korea Stock Exchange (KSE). The total number of firm-year observations is 5752. The variables are defined in "Appendix 1"



Table 3 Pearson correlation coefficients

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1) Earnings quality index	1.00								
(2) Group	0.03	1.00							
(3) Family ownership	- 0.04	- 0.53	1.00						
(4) Domestic institution	0.00	0.07	- 0.18	1.00					
(5) Foreign institution	0.05	0.06	- 0.09	- 0.12	1.00				
(6) Government	0.05	0.06	0.05	0.04	- 0.07	1.00			
(7) Firm age	- 0.04	- 0.11	0.10	0.01	0.03	- 0.02	1.00		
(8) Firm size	- 0.01	0.38	- 0.25	0.05	0.44	0.11	0.19	1.00	
(9) Debt ratio	0.04	0.12	- 0.19	0.12	- 0.31	0.08	- 0.11	0.06	1.00

This table reports the correlation matrix of earnings quality index, group, and other control variables. The variables are defined in “Appendix 1”

Table 4 Impact of business group affiliation on earnings quality

	(I)	(II)	(III)
Group	0.023** (2.37)	0.034*** (2.97)	0.043*** (3.25)
OWNER_DIS		- 0.056* (- 1.71)	
Family	0.038 (1.34)	0.021 (0.72)	0.079** (2.22)
Group * Family			- 0.115** (- 2.27)
DIN	- 0.041 (- 1.05)	- 0.048 (- 1.23)	- 0.046 (- 1.18)
FIN	0.149*** (4.46)	0.139*** (4.11)	0.151*** (4.51)
GOV	- 0.008 (- 0.15)	- 0.016 (- 0.28)	0.024 (0.44)
FAG	0.001*** (4.16)	0.001*** (4.23)	0.002*** (4.35)
FSIZE	0.005 (1.08)	0.004 (0.86)	0.005 (1.07)
DR	- 0.178*** (- 6.12)	- 0.182*** (- 6.21)	- 0.177*** (- 6.10)
Industry dummies	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes
Intercept	Yes	Yes	Yes
F value for overall group impact			
N	1887	1881	1887
Adjusted R ²	0.247	0.252	0.249

This table presents panel regression results. Columns I, II, and III reports results of regression Eqs. (3), (4), and (5), respectively. The dependent variable for earnings quality measure is an index constructed from four earnings quality attributes, accrual quality, persistence, predictability and smoothness. All independent variables are defined in “Appendix 1”. The sample period is from 1993 to 2007. The *t* statistics are shown in parenthesis. *, **, and *** imply two-tail significance at 10, 5, and 1%, respectively

reforms. Moreover, the result indicates that chaebols improved their transparency due to strong monitoring mechanisms introduced by the government. Thus, the owners of group firms have actively engaged in monitoring managers’ opportunistic behaviors to manage earnings to protect their investment and reputation.

Impact of ownership disparity on earnings quality

Column 2 of Table 4 presents the results from estimating Eq. (4), examining whether the impact of group firms on earnings quality varies based on ownership disparity between control rights and cash flow rights in group firms. The results show that the coefficient on *OWNER_DIS* is negative and significant at the 10% level ($\beta_2 = - 0.056$; $t = - 1.71$). The results indicate that firms with higher ownership disparity between control rights and cash flow rights report lower earnings quality. This result is consistent with the notion that group-controlling owners have an increased agency problem in higher ownership disparity firms. It is well documented that group-controlling owners shift recourse from high ownership disparity group firms (firms with low cash flow rights) to lower ownership disparity group firms (high cash flow rights) (Johnson et al. 2000). If this kind of agency problem exists, group firms with high ownership disparity will show a negative impact on earnings quality, as mentioned in hypothesis 2. Thus, hypothesis 2 is supported by our results.

Impact of family control on earnings quality

Column 3 of Table 4 presents the results from estimating Eq. (5), examining the impact of group-controlling family ownership (Group * Family) and family ownership in non-group firms (Family) on earnings quality. The results show that the coefficient on the interaction term (Group * Family) is negative and significant, while the coefficient on



Family is positive and significant. The result indicates that for non-group firms, family ownership is positively related to earnings quality, while group firms with higher group-controlling family ownership report lower earnings quality. This is an interesting finding that non-family owners may have concern about their firms' long-term performance due to lack of diversification in their portfolios. However, group-controlling family owners may have more room to pursue their private benefit within the firm with higher direct control (not indirect control using other group firms' control). This would be an indirect notion that group-controlling family owners are more likely to pursue their private control benefits, but overall, their concern with reputation and intense monitoring from external stakeholder effectively exerts control and increases the group firms' earnings quality in general.

Robustness tests

In this section, we conduct several additional analyses to test the robustness of our findings.

First, we examine whether the impact of the business group ownership structure on earnings quality is sensitive to alternative measures of earnings quality. We test regression Eq. (3) using the following different measures of earnings quality: accrual quality, earnings persistence, earnings predictability and earnings smoothness. The results reported in Table 5 support our main finding.

Second, we test whether larger groups report higher earnings quality. To examine the difference in the level of earnings quality, we divided group firms into the following three subgroups: the 5 largest group firms, the 10 largest group firms, and the 30 largest group firms. The results reported in Table 6 show a positive association between earnings quality and group ranking. The 5 largest group

firms show the highest positive coefficient and the most significant results. The 10 largest group firms show the higher positive coefficient, and the 30 largest group firms show the lowest coefficient. The results support our main findings and suggest that business group firms report higher earnings quality and group firms affiliated with larger groups tend to report greater quality.

Finally, we test for the endogeneity problems that come from a sample selection bias. We use yearly industry and size one-to-one matching to select the control sample. To do this, we sort all firms by year and industry and match one group firm with one non-group firm without replacement. The selected non-group firm is nearest in size to a group firm. This matching process minimizes the size difference between group firms and the matched sample within year and industry. However, it may not be enough to use two-dimensional matching because there would be more ex ante firm characteristics from non-group firms to be considered. Thus, we want to verify whether the results from the industry- and size-matched control samples are still valid after accounting for the possible sample selection bias.

We use a propensity score matching method to handle this issue. The propensity score is the probability of being a business group firm conditional on x ,

$$P(x) = \text{pr}(D = 1|x)$$

where D is a dummy variable that equals 1 for group firms and 0 for non-group firms. The conditional probability is computed using a logistic model. The conditioning variables used to estimate the propensity score are firm size, debt ratio, firm age, and turnover. The logistic regression estimation results are presented in Panel A of Table 7. The results reported in Panel B of Table 7 support our findings.

Table 5 Impact of business group affiliation on individual earnings proxies

	Accrual quality (1)	Persistence (2)	Predictability (3)	Smoothness (4)
Group	0.001 (0.31)	0.023 (1.23)	0.010** (2.27)	0.018*** (3.66)
Control variables	Yes	Yes	Yes	Yes
Industry dummies	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes
Intercept	Yes	Yes	Yes	Yes
N	1887	1887	1887	1887
Adjusted R^2	0.225	0.133	0.109	0.184

This table presents panel regression results of the effect of business group ownership structure on earnings quality (regression Eq. 3). The dependent variable for earnings quality measure is an index constructed from four earnings quality attributes, accrual quality, persistence, predictability and smoothness. All independent variables are defined in "Appendix 1". The sample period is from 1993 to 2007. The t statistics are shown in parenthesis. ** and *** imply two-tail significance at 5 and 1%, respectively



Table 6 Impact of group ranking on earnings quality

	(1)	(2)	(3)
Top 5 group	0.054*** (2.95)		
Top 10 group		0.037** (2.26)	
Group			0.023** (2.37)
Control variables	Yes	Yes	Yes
Industry dummies	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes
Intercept	Yes	Yes	Yes
<i>N</i>	1203	1280	1887
Adjusted <i>R</i> ²	0.211	0.210	0.247

This table presents panel regression results of group ranking on earnings quality. The dependent variable for earnings quality measure is an index constructed from four earnings quality attributes, accrual quality, persistence, predictability and smoothness. All independent variables are defined in “Appendix 1”. The sample period is from 1993 to 2007. The *t* statistics are shown in parenthesis. ** and *** imply two-tail significance at 5 and 1%, respectively

Summary and conclusions

This paper investigates whether business group affiliations’ ownership structure affects the quality of earnings reporting using data from South Korea. Existing theories provide two competing hypotheses about the impact of group ownership structure on the quality of financial reporting. The entrenchment effect hypothesis predicts the complex ownership structure and self-dealing internal market in group firms may create greater incentives to managers in business groups to manage earnings for their private benefits. Conversely, however, group firms may report earnings of higher quality due to the reforms and the increasing pressure by financial statement users for higher earnings quality report.

Using a large sample of firms listed on the Korean stock exchange over a period from 1993 to 2007, we found that business group affiliation is significantly associated with higher earnings quality. The result suggests that group firms report greater earnings quality than non-group firms because the demand for higher earnings quality increased after the Asian crisis. Moreover, the result indicates that chaebols improved their transparency due to strong monitoring mechanisms introduced by the government. Thus, group firms’ owners have actively engaged in monitoring managers’ opportunistic behaviors to manage earnings to protect their investment and reputation. We also found that the ownership disparities between control and cash flow rights and family ownership are negatively associated with

Table 7 Endogeneity test

	Coefficient		Chi-square
<i>Panel A: propensity to be a group firm</i>			
Firm size	1.230***		27.43
Debt ratio	0.854**		2.39
Firm age	− 0.033***		− 8.93
Industry dummies	Yes		
Year dummies	Yes		
Intercept	Yes		
<i>N</i>	5744		
	(1)	(2)	(3)
<i>Panel B: Impact of business group affiliation on earnings quality</i>			
Group	0.025*** (2.68)	0.035*** (3.27)	0.051*** (4.16)
OWNER_DIS		− 0.063** (− 2.00)	
Group * Family			− 0.152*** (− 3.13)
Industry dummies	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes
Intercept	Yes	Yes	Yes
<i>F</i> value for overall group impact			
<i>N</i>	1859	1853	1859
Adjusted <i>R</i> ²	0.262	0.266	0.266

Panel A: This panel reports logistic estimates from a model of a firm’s propensity to be a group firm. The dependent variable is one for group firms and zero for non-group firms. All regressions include industry and year dummies to control for year and industry fixed effects. ** and ***denote two-tail significance at 5 and 1%, respectively

Panel B: This table presents panel regression results of the effect of business group ownership structure on earnings quality (regression Eq. 3). The dependent variable for earnings quality measure is an index constructed from four earnings quality attributes, accrual quality, persistence, predictability and smoothness. All independent variables are defined in “Appendix 1”. The sample period is from 1993 to 2007. The *t* statistics are shown in parenthesis. ** and ***imply two-tail significance at 5 and 1%, respectively

earnings quality. The results suggest that group firms with high ownership disparity are less transparent and mask their expropriation from such firms, and family owners in firms may have greater incentives to be engaged in earnings management for their private benefit. The results are also robust to alternative measures of earnings quality, group rank and endogeneity issue related to group membership.

This study makes the following contributions to the topic of the impact of ownership on earnings quality. First, it adds to a growing body of literature on the matter (e.g.,



Wang 2006; Warfield et al. 1995). This study also provides insight into the impact of complex and unique business group ownership structures on the quality of earnings. Finally, this study provides new empirical evidence on the impact of ownership structure on the quality of earnings after the Korean reforms.

Appendix 1

Variables definition

Variables	Definition
Earnings quality index (EQA)	An index obtained from four earnings quality attributes—accrual quality, persistence, predictability, and smoothness. The higher (lower) value indicates higher (lower) earnings quality. Details for calculating the accrual quality are provided in “Results” section
Accrual quality	Measure of accrual quality using the Dechow and Dichev (2002) measurement. The higher (lower) value indicates more (less) corporate transparency. Details for calculating the accrual quality are provided in “Results” section
Persistence	Measure of earnings persistence following Francis et al. (2004). The higher (lower) value indicates more (less) corporate transparency. Details for calculating the persistence are provided in “Results” section
Predictability	Measure of earnings predictability following Francis et al. (2004). The higher (lower) value indicates more (less) corporate transparency. Details for calculating the persistence are provided in “Results” section
Smoothness	Measure of earnings smoothness following Francis et al. (2004). The higher (lower) value indicates more (less) corporate transparency. Details for calculating the persistence are provided in “Results” section
<i>Group-related variables</i>	
Group	A dummy variable to indicate whether a firm belongs to one of the 30 largest business groups in South Korea. The Korea Fair Trade Commission (KFTC) updates the list of the 30 largest business groups annually. Alternative group definitions will be used as a robustness test later
Ownership disparity (OWNER_DIS)	The disparity between control ownership and cash flow ownership of the controlling shareholder in a group firm

Variables	Definition
<i>Firm-specific variables</i>	
Family	The percentage of common equity ownership held by the largest shareholder family
Domestic institution (DIN)	The percentage of common equity ownership held by domestic financial institutions or institutional investors
Foreign institution (FIN)	The percentage of common equity ownership held by foreign financial institutions or institutional investors
Government (GOV)	The percentage of common equity ownership held by government or government agencies
Firm age (FAG)	The number of years since a firm’s founding date
Firm size (FSIZE)	The natural log of the total assets of a firm in South Korean won
Debt ratio (DR)	The ratio of total debts to total assets of a firm

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