THE INFLUENCE OF FAMILY BOARD INVOLVEMENT ON EARNINGS MANAGEMENT

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Abstract

This study explores the influence of family ownership and family board involvement on earnings management in German-listed firms. We extend existing research by applying a more precise measurement of family involvement that offers new insights into a family's effect on earnings management behaviour. Our models suggest that the degree of management involvement of families is a significant driver of earnings management, a factor disregarded so far in the literature. Furthermore, the distinction between founding family and family ownership should be carefully considered. Employing a sample of 278 firms from 2000-2013, we find that greater family management presence on the executive board is associated with more earnings-decreasing accrual-based earnings management practices and more real earnings management activities via discretionary expenses. This is viewed as less value-destroying REM activity to meet earning targets. Overall, German family firms seem to use their powerful positions as shareholders and executive board members to expropriate shareholders and manage earnings to meet targets while maintaining family wealth.

Keywords: Earnings Management, Accounting, Family Firms, Family Ownership, Family Management, Corporate Governance

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1. INTRODUCTION

Top executives often use their managerial discretion to influence the reported earnings of their companies. The motives underlying earnings management decisions are quite varied and mostly rooted in agency conflicts that arise from the separation of ownership and control in widely held firms. The most common reasons cited in the extant literature are to obtain private benefits, reduce earnings variability (i.e., income smoothing), avoid covenant violations, or simply influence contractual provisions that depend on reported earnings (see, e.g., Healy and Wahlen, 1999)[1].

A concentrated ownership structure and the presence of large blockholders who have the incentive and the ability to monitor top executives are usually the most effective ways to reduce these

[1] See, for example, Healy (1985), Dechow and Sloan (1991), Holthausen, Larcker, and Sloan (1995), and Guidry, Leone, and Rock (1999) on seeking private benefits; Trueman and Titman (1988), Hand (1989), and Myers, Myers, and Skinner (2007) on reducing earnings variability, i.e., income smoothing; and Dechow, Sloan, and Sweeney (1996), DeFond and Jiambalvo (1994), Sweeney (1994), and Jaggi and Lee (2002) on avoiding covenant violations.

types of agency problems between managers and owners (Shleifer & Vishny, 1986; Jensen & Meckling, 1976). However, major equity holdings by single investors can also create incentives to expropriate wealth from minority shareholders (Fama & Jensen, 1983; Morck, Shleifer, & Vishny, 1988; Shleifer & Vishny, 1997; Burkart, Panunzi, & Shleifer, 2003). Ample evidence for the expropriation of outside investors comes from continental Europe, where dispersed ownership structures are less common, and firms tend to be controlled and managed by at least one dominant family[2]. Fan and Wong (2002), Leuz, Nanda, and Wysocki (2003), and Ali, Chen, and Radhakrishnan (2007), among others, document that family owners may try to influence financial reporting in order to mislead minority shareholders about earnings.

Given the dominance of family firms in continental Europe, it is not surprising that various studies have sought to disentangle the relation between family ownership and the earnings decision process (Prencipe & Bar-Yosef, 2011; Bhaumik & Gregoriou, 2010; Gomez-Mejia, Cruz, & Imperatore, 2014). Prior literature on earnings management and family ownership revealed significant differences between family and non-family firms in terms of earnings quality (Wang, 2006; Ali et al., 2007). However, the contradictory empirical results regarding a family's ability to influence reported earnings call for a deeper understanding of the mechanisms behind earnings management in family firms (Cascino, Pugliese, Mussolini, & Sansone, 2010; Prencipe, Bar-Yosef, & Dekker, 2014).

Any potential influence individual stakeholders have on managerial decisions to protect their interests also requires considering the pertinent corporate governance system. Germany, for example, mandates a two-tiered board system for publicly listed firms. It consists of an executive board of inside directors, led by the CEO and responsible for the company's day-to-day operations, and a supervisory board with outside directors (i.e., shareholder, debtholder, and employee representatives) who are responsible for overseeing the executive board (Gorton & Schmid, 2000; Rieckers & Spindler, 2004). This institutional setting provides managers with significant leeway in running their businesses because they report solely to the supervisory boards. Nevertheless, both boards are involved in the determination of corporate actions (Rieckers & Spindler, 2004), so board members are generally able to affect firms' earnings decisions.

In contrast, and unlike in the U.S., shareholders cannot exercise direct control over top executives in Germany. Instead, according to the co-determination concept, they elect half the members of the supervisory board, which limits shareholder influence at annual meetings. Families have a "natural" interest in monitoring and influencing management and its decisions (Demsetz & Lehn, 1985). Thus, the German corporate governance system provides them with ample opportunities to either 1) directly influence reported earnings by actively participating in executive boards, or 2) exercising influence and control indirectly via voting rights or supervisory board membership[3].

We argue that focusing on the impact of ownership on company policies and management decisions in Germany will provide ambiguous results. Against the backdrop of German corporate governance, we propose instead to control explicitly for the different forms of family influence via ownership, management, and supervision when studying earnings management in family firms. Therefore, to increase the understanding of the impact of family influence on earnings management in German-listed family firms, we address the following research question:

How do the level of family ownership and involvement in the executive and supervisory board, i.e., the overall family influence, affect earnings management?

To the best of our knowledge, no prior study on earnings management in family firms has focused specifically on the various elements of the German corporate governance system and how they are interrelated. Therefore, we find it worthwhile to analyse the precise measures of family influence in Germany, as well as the effects of 1) concentrated ownership structures with heterogeneous blockholders, and 2) the stake of (founding) families in management and supervisory boards on corporate earnings decisions.

For this study, we construct a hand-collected panel dataset to explore the economic effects of how the ownership, management, and supervisory board involvement of families influence earnings decisions. We use a unique and comprehensive sample of 278 firms for the 2000-2013 period (2,936 firm-year observations), from which we can track all unique blockholders and their membership on the executive or supervisory boards among large German public firms. The results confirm our expectations.

First, family firms engage in earnings management, and family management presence is a key determinant of this phenomenon. Family management is associated with more earnings-decreasing accrual-based earnings management (ABEM) practices, and also leads to more real earnings management (REM) of discretionary expenses. Second, we find that families use their powerful positions as shareholders and executive board members to manage earnings by discretionary accruals and expenses. This is potentially done to reduce dividend pressure and avoid negative market reactions for not meeting earning targets. It also protects future family wealth.

We contribute to the literature by extending prior results along several dimensions. First, as we note earlier, this paper is the first to study the potential instruments through which families pursue their interests within the context of the German corporate governance system. It is these distinct features that set our results apart from those of Anglo-American countries.

Second, we follow the suggestions of earlier studies that called for greater understanding of the influence of blockholders (García-Meca & Sánchez-Ballesta, 2009) and family members on

[2] Faccio and Lang (2002) and Becht and Boehmer (2003), among others, document that concentrated ownership structures with one or a few dominant, controlling shareholders are prevalent in many continental European countries.

[3] Family investment portfolios are often poorly diversified, with an overly large equity portion invested in their own firm (Anderson & Reeb, 2003). Thus, families have a strong interest in influencing corporate decisions and managing for their own interests.

the executive board (Hutton, 2007; Jaggi, Leung, & Gul, 2009; Salvato & Moores, 2010). Prior work on earnings management and family firms approached family influence by 1) applying dummy variables to control for family CEOs (Wang, 2006; Ali et al., 2007; Prencipe & Bar-Yosef, 2011; Achleitner, Günther, Kaserer, & Siciliano, 2014), 2) labelling boards as overly family-controlled (Jaggi et al., 2009), or 3) counting the number of family members in C-suite roles (Ferramosca & Allegrini, 2018). We address the concerns raised in the literature by providing a thorough analysis of the specific effects of different levels of family control by explicitly considering the proportion of family members on the 1) management and 2) supervisory boards, and their attributed 3) voting rights (ownership stake)[4].

We confirm findings in existing research that management involvement of major blockholders in general, and families in particular, has consequences for the agency relations between managers and shareholders and controlling for, e.g., family and minority shareholders (Francis, Schipper, & Vincent, 2005; Ali et al., 2007; Cronqvist & Fahlenbrach, 2009; Acero & Alcalde, 2016). In turn, ownership concentration and the level of separation of ownership and control (e.g., the level of family board involvement) have a significant effect on the informativeness of reported earnings (Fan & Wong, 2002).

The remainder of this paper is organised as follows. Section 2 discusses the related literature, while Section 3 introduces the data and describes the methodology of our empirical analysis. In Section 4 we present our results, Section 5 discusses them and Section 6 concludes.

2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

2.1. Large shareholders, corporate governance, and earnings management

Agency conflicts in publicly listed companies can arise between both managers and shareholders (Type I) and controlling and non-controlling shareholders (Type II) (Demsetz & Lehn, 1985). The first may occur because of the separation of ownership from control and managers' incentives not to act in the interest of shareholders (Jensen & Meckling, 1976). The latter may arise when controlling shareholders seek benefits at the cost of non-controlling shareholders (Shleifer & Vishny, 1997). For example, they may attempt to influence financial reporting in order to mislead minority shareholders about earnings realities (Fan & Wong, 2002; Leuz et al., 2003; Ali et al., 2007).

Earnings and accounting information can be used to distort information asymmetries (Warfield, Wild, & Wild, 1995; LaFond & Roychowdhury, 2008), or to overcome agency problems and align the interests of managers, shareholders, and creditors (Wang, 2006; Chen, Chen, & Cheng, 2014). On the one hand, large, actively engaged blockholders may lead to more reliable accounting earnings, because any potential opportunistic behaviour is controlled by their monitoring ability (Dechow et al., 1996; Gárcia-Meca & Sánchez-Ballesta, 2009). On the other hand, greater ownership and voting rights concentration could give controlling shareholders incentives to expropriate and entrench minority shareholders (Fan & Wong, 2002; Leuz et al., 2003)[5]. Hence, ownership structure affects the supply and demand for quality financial reporting (Warfield et al., 1995; Leuz et al., 2003; Wang, 2006).

Due to the comparatively lower level of shareholder protection in civil law regimes, firms in many Continental European countries are marked by rather concentrated ownership structures with large blockholders (La Porta et al., 1999; Djankov, La Porta, Lopez-de-Silanes, & Shleifer, 2008). Most are controlled and/or managed by at least one dominant family (Faccio & Lang, 2002; Becht & Boehmer, 2003). Given this family firm prevalence and the increased level of earnings management caused by high ownership concentration (Leuz et al., 2003), various studies have tried to unwind the relation between family ownership and the earnings decisions process (Prencipe & Bar-Yosef, 2011; Bhaumik & Gregoriou, 2010; Gomez-Mejia et al., 2014). A somewhat contradictory picture has emerged.

For example, consider the literature on earnings management in the U.S. Recent studies find better earnings quality and less earnings manipulation in family firms. These findings are attributable to, e.g., reduced agency problems of family firms (Wang, 2006; Ali et al., 2007; Tong, 2008; Jiraporn & Dadalt, 2009; Chen et al., 2014). However, given the weaker minority shareholder protection in the U.S. (La Porta, Lopez-de-Silanes, Shleifer, & Vishny, 1998; Leuz et al., 2003), these results are not generally transferrable to continental Europe or Germany.

In contrast, family ownership in Spain has been found to be associated with better earnings quality and a lower level of earnings management (Bona-Sánchez, Pérez-Alemán, & Santana-Martin, 2007). Thus, the positive aspects of family control appear to persist in the Spanish context of high ownership and voting rights concentration (Shleifer & Vishny, 1997). Similar results are obtained for Italy, a country more comparable overall to the German setting (Faccio & Lang, 2002). Cascino et al. (2010) show for Italy that earnings of family firms are of higher quality than those of non-family firms. And Prencipe and Bar-Yosef (2011) confirm that earnings management in Italy tends to be lower in family-controlled than non-family firms. The level of accrual-based earnings management in Italian family firms also appears to be related to the number of family members in C-suite positions (Ferramosca & Allegrini, 2018).

Following Achleitner et al. (2014), we distinguish here between earnings manipulation in German family firms and specific earnings management techniques. This is important, because, relative to non-family firms, family firms avoid cash flow-effective real earnings management that might endanger their future success. Instead, they tend to engage in accrual-based earnings management –

[4] Our data collection approach follows the latest call for the identification and consideration of the family ties of individual board members (see, for example, García-Sánchez, Martínez-Ferrero, and García-Meca, 2020).

[5] For example, La Porta, Lopez-de-Silanes, and Shleifer (1999) and Francis et al. (2005) show that concentrated ownership promotes share structures that allow for the separation of cash flow from voting rights (e.g., dual class shares).

for example, as a way to avoid shareholder dividend pressure. According to Achleitner et al. (2014), this behaviour is an expression of the long-term outlook of family firms to preserve future wealth and the family's control over the company.

Research on continental European firms suggests that understanding the potential influence of individual stakeholders on managerial decisions (in order to protect their interests), requires consideration of a country's specific corporate governance system (Leuz et al., 2003; Bhaumik & Gregoriou, 2010). For example, unlike the U.S., the U.K., Switzerland, or Spain, the German corporate governance system mandates a two-tiered board system for publicly listed firms. A CEO-led executive board *("Vorstand")* manages the day-to-day activities, while a supervisory board of outside directors (*"Aufsichtsrat"*), composed of shareholders, employee representatives, and debtholders, oversees the executive board (Gorton & Schmid, 2000; Rieckers & Spindler, 2004). Appointing the members of the supervisory board takes place at the shareholders' meeting.

Because the managers of the executive board report solely to the supervisory board, this specific setting allows for significant leeway in running the corporation. Nevertheless, both boards are involved in corporate actions (Rieckers & Spindler, 2004), and both sets of board members may affect the firm's earnings decision processes.

Some research finds that families have a greater ability to mitigate agency problems between shareholders and managers through better monitoring (Demsetz & Lehn, 1985; Ali et al., 2007). If family firms are recognised by shareholders or creditors as long-term success-oriented and poorly diversified (Anderson & Reeb, 2003), overly reputation-sensitive (Anderson, Mansi, & Reeb, 2003; Tong, 2008), or beneficial for corporate governance (Wang, 2006), the alignment effect may cause a reduced demand for better earnings quality. When the interests of minority shareholders are better aligned with those of the controlling family, the contracting terms for family firms may be less sensitive to the quality of financial information than those for non-family firms. Moreover, family firms may have fewer incentives to provide high-quality financial information (Wang, 2006).

On the other hand, Bhaumik and Gregoriou (2010) find that the presence of family firms can facilitate the shift from Type I to Type II agency problems that are already caused by weak minority shareholder rights (Leuz et al., 2003). Thus, in the German environment, we expect the entrenchment effect of family ownership to prevail for the following reasons (Becht & Boehmer, 2003).

First, the level of ownership concentration and earnings management is high (Leuz et al., 2003), and the agency conflict between controlling shareholders (including families) and minority shareholders is real (Gugler & Yurtoglu, 2003). Second, there is little inside competition for control, as most listed firms only have a small number of shareholders. Third, control thresholds drive the distribution of voting blocks[6]. Fourth, families/individuals hold the largest number of voting blocks that are larger than 5%.

The entrenchment effect is likely to affect earnings management in two key ways. First, family shareholders may use their large power to expropriate minority shareholders and manage earnings up- or downward according to their interests[7]. In the case of Germany, this may happen, for example, to avoid dividend pressure[8] (Gugler & Yurtoglu, 2003; García Lara, García Osma, & Mora 2005). Second, the Type II agency conflict with minority shareholders may create a strong demand for high earnings quality (Wang, 2006). At that point, the family as the controlling shareholder may be required to improve its reporting (less earnings management). This may happen, for example, to avoid potential negative consequences, such as sold shares of minority shareholders. Either way, we propose Hypothesis 1 as follows:

H1: Earnings management is related to family ownership.

2.2. Family board involvement

According to German corporate governance rules, corporate shareholders can exercise very little direct control over top executives. Because shareholders elect only half the members of the supervisory board (the German concept of co-determination), their influence is limited mainly to the annual shareholder meeting. In general, they have no further rights[9].

In contrast, due to their concentration of family wealth within the family firm (Anderson & Reeb, 2003) and their long investment horizon (Lumpkin & Brigham, 2011; Gomez-Mejia et al., 2014), families as shareholders have a natural interest and motivation in monitoring and influencing management and its decisions (Demsetz & Lehn, 1985). Therefore, through the German two-tiered board system, shareholding family members may influence earnings decisions and reporting by actively participating in executive boards or exercising influence and control indirectly via supervisory board and voting rights.

Research has found that German family firms exhibit a significant level of involvement, even in publicly listed firms (Andres, 2008; Ampenberger, 2010). Their involvement may also determine the level of alignment or – in the case of Germany – imminent entrenchment[10] between the family and minority shareholders. While increasing firms' monitoring ability, extensive family management and supervisory board presence enable and further motivate the potential entrenchment of minority shareholders.

So, on the one hand, family involvement may lead to greater earnings management of the family's interests. On the other hand, it may lead to less

[6] The German Securities Trade Act (WpHG) stipulates shareholding disclosure levels of 3/5/10/15/20/25/30/50 or 75%. Company law prescribes corporate control thresholds of 25%, 50%, or 75% of the voting capital outstanding.

[7] We are aware that, if Type I agency conflicts dominate Type II, earnings management may be lower due to better monitoring. However, alternatively, it may be higher, since better alignment of shareholder interests reduces the demand of minority shareholders for high quality earnings. In the German setting, we assume the entrenchment effect on both supply and demand of earnings quality is dominant.

[8] In different contexts, dividends may also serve as mechanisms to mitigate agency problems between controlling and minority shareholders (Faccio, Lang, & Young, 2001; Setia-Atmaja, Tanewski, & Skully, 2009).

[9] Para. 119 (2) of the German Stock Corporation Law (*"Aktiengesetz"*) gives the executive board the opportunity, but not the obligation, to refer management issues and decisions to the shareholders' meeting.

[10] For example, investors and the market have been found to value non-family management at a higher level than family management (Smith & Amoako-Adu, 1999). One reason is that family managers could be seen as less qualified, due to, e.g., nepotism (Lubatkin, Schulze, Ling, & Dino, 2005). Thus, transparency and firm performance are even more critical in family firms.

earnings management due to better monitoring of managers, or a higher demand for higher earnings quality by minority shareholders. Accordingly, family management involvement moderates both Types I and II agency problems and therefore affects earnings management. This leads to our Hypotheses 2a and 2b:

H2a: Earnings management in family firms is related to the level of family involvement in the executive board.

H2b: Earnings management in family firms is related to the level of family involvement in the supervisory board.

3. SAMPLE SELECTION AND RESEARCH DESIGN

3.1. Sample

Our sample is comprised of 278 firms listed on the German Stock Exchange (CDAX), which contains all stocks listed on the General and Prime Standard of the Frankfurt Stock Exchange. We use 2000-2013 as our time frame. This ensures that the regulatory and institutional framework is stable, and not biased by significant changes in corporate governance regulations of prior years (in 1998, Germany issued two regulatory reforms affecting corporate governance and financial reporting practices, KonTraG and KapAEG). The sample excludes banks and insurance companies since these firms tend to follow their own operational logic and are governed by various financial regulations. Furthermore, our analysis only covers holdings of common shares, as we exclude preferred shares without voting rights.

The aim of our sample construction is to capture the influence of family ownership and management involvement on earnings management in Germany as precisely as possible. Our data incorporates information about shareholder structure, as well as the identity and origin of every executive and supervisory board member of every firm and year. To achieve this, we hand-collect the information using annual reports, company websites, and Bureau van Dijk's Dafne database. Financial and accounting data come from the Thomson Worldscope database.

Table 1 gives information on the total sample size and distribution of family firms for our sample period. We denote a firm as a family firm if the accumulated family ownership stake (voting rights) exceeds 25%. As column (4) shows, the annual share of family firms declined from 63.90% in 2003 to 55.21% in 2013. On average, they account for 1,672, or 57.28%, of our 2,936 firm-year observations. Hence, the proportion of family versus non-family firms remains fairly stable and balanced.

Column (5) shows that the average level of family ownership expanded from 53.47% in 2000 to 57.68% in 2013. For the pooled over time sample, families held 56.25% of shares on average. Thus, the number of family firms decreased over 2003-2013, but their average voting rights stake increased slightly.

Table 1. Distribution of family firms

Year	*No. of firms*	*No. of family firms*	*Percentage of family firms*	*Family ownership*
2000	93	52	55.91%	58.21%
2001	116	67	57.75%	56.69%
2002	148	89	60.13%	57.09%
2003	169	108	63.90%	53.47%
2004	187	113	60.42%	54.43%
2005	211	127	60.18%	54.13%
2006	242	134	55.37%	54.14%
2007	258	143	55.42%	55.93%
2008	263	149	56.65%	56.15%
2009	262	146	55.72%	56.99%
2010	261	142	54.40%	57.56%
2011	251	139	55.37%	57.50%
2012	245	136	55.51%	57.53%
2013	230	127	55.21%	57.68%
Total	2936	1672	57.28%	56.25%

Notes: This table shows the time distribution of family firms and ownership shares. Family firms are identified using a measure that equals 1 if the family ownership percentage stake exceeds 25%, and 0 otherwise. Family ownership is measured as the mean of common stock held by families in the sample for each year.

3.2. Detecting earnings management

Firms manage earnings in two ways: the (legal) manipulation of accruals to affect earnings, referred to as accrual-based earnings management, or ABEM (Schipper, 1989), and real earnings manipulation, or REM (Hand, 1989; Fudenberg & Tirole, 1995; Dechow & Skinner, 2000; Roychowdhury, 2006). The first has no impact on real cash flows (e.g., changing the write-off policy of a firm); the latter directly affects cash flows (e.g., decreasing non-operational expenses, such as R&D costs). The detection of ABEM is the most commonly used method to investigate earnings management in research (Healy & Wahlen, 1999; Roychowdhury, 2006)[11]. REM has not been considered in investigating family firms previously. But family firms in Germany have been found to use both methods as substitutes rather than complementary (Achleitner et al., 2014).

3.2.1. Accrual-based earnings management

In the financial reporting process, management is required to conduct accruals so that the firm's economic performance is clearly reflected in its financials (Dechow & Dichev, 2002). There is some discretion, for example, when deciding about

[11] In general, firms use both methods as substitutes in different countries outside continental Europe (see, e.g., Cohen, Dey, and Lys, 2008; Zang, 2012; and Chen, Huang, and Fan, 2012).

the recognition and drawdown of provisions/reserves or asset write-offs (Dechow & Skinner, 2000, p. 239). These types of accruals are generally noted as discretionary or abnormal. The ability to choose how to handle these accruals gives management an opportunity to shift reported earnings in a specific direction, for example, for signalling or opportunism (Dechow, 1994). Thus, this is what we refer to as accrual-based earnings management.

To detect ABEM, we follow Wang (2006) and Achleitner et al. (2014) and use the model of Dechow and Dichev (2002), modified by Ball and Shivakumar (2005). One advantage of this approach is the increased explanatory power gained by the integration of the asymmetrical timely recognition of economic losses (Basu, 1997; Ball & Shivakumar, 2005). As a result, we can estimate the normal level of accruals for each industry-year by using the following model (equation (1): Metric of ABEM):

$$\frac{ACC_t}{A_t} = \propto_0 + \propto_1 \frac{CFO_{t-1}}{A_{t-1}} + \propto_2 \frac{CFO_t}{A_t} + \propto_3 \frac{CFO_{t+1}}{A_{t+1}} + \propto_4 DCFO_t + \propto_5 DCFO_t \frac{CFO_t}{A_t} + \varepsilon_t \quad (1)$$

where ACC_t is total accruals at time *t*, defined as income before extraordinary items less cash flow from operations at time *t*. Cash flow from operations is defined as net cash flows from operating activities less extraordinary items; $CFO_{t-1, t, t+1}$ is cash flow from operations at time *t-1, t, t+1*; $A_{t-1, t, t+1}$ is total assets at time *t-1, t, t+1*; $DCFO_t$ is an indicator that equals 1 if operating cash flow at time *t* is negative (CFO_t – – $CFO_{t-1} < 0$), and 0 otherwise; and $DCFO_t * CFO_t$ is a proxy for economic losses.

The residuals of equation (1) are our estimates for abnormal levels of (discretionary) accruals. We interpret more negative values, which implies that the actual observed accruals scaled by total assets are lower than the estimated industry-year specific normal level of discretionary accruals. This is evidence of more earnings-decreasing ABEM. We expect firms to have reported larger non-cash expenses within their discretion to lower net income (such as depreciation, estimates for bad debt reserves, or warranty expenses). Cash flow from operations is not affected.

3.2.2. Real earnings management

Note that ABEM only shifts the timing of earnings recognition by changing the accounting method or estimate for a specific transaction (Zang, 2012). In contrast, REM begins by adjusting real transactions (Liu, Shi, Wilson, & Wu, 2017), defined as "management actions that deviate from normal business practices, undertaken with the primary objective of meeting certain earnings thresholds" (Roychowdhury, 2006, p. 336).

Similarly to the empirical model of Achleitner et al. (2014) and the preliminary work by Roychowdhury (2006), we employ three measures to account for REM: abnormal level of cash flow from operations, abnormal level of production costs, and level of discretionary expenses. The validity of these measures has been proven in prior studies (e.g., Cohen et al., 2008; Cohen & Zarowin, 2010; Zang, 2012; Liu et al., 2017). Next, we specify these three methods of REM and their measurement in our models.

- *Level of cash flow from operations*

Boosting sales before year-end closing is usually seen as a trigger for abnormal levels of cash flow from operations (Achleitner et al., 2014). Firms may offer price discounts or provide more lenient credit terms to temporarily increase sales, leading to higher current period earnings if margins are positive. However, in the current fiscal period, this will lead to a decrease in cash flows per dollar of sales. This intervention in real transactions is likely to negatively impact profitability in the next fiscal period, as sales typically drop as soon as the promotions end and the former prices and credit terms revert (Roychowdhury, 2006; Cohen & Zarowin, 2010; Achleitner et al., 2014).

Following Roychowdhury (2006), the "normal" level of cash flow of operations (*CFO*) for each industry-year is measured by the following proxy:

$$\frac{CFO_t}{A_{t-1}} = \alpha_0 + \alpha_1 \frac{1}{A_{t-1}} + \beta_1 \frac{S_t}{A_{t-1}} + \beta_2 \frac{\Delta S_t}{A_{t-1}} + \varepsilon_t \quad (2)$$

where CFO_t is cash flow from operations at time *t*, defined as net cash flow from operating activities less extraordinary items; A_{t-1} is lagged total assets at time *t-1*; S_t is net sales at time *t*; and ΔS_t is change in net sales from time *t-1* to time *t* ($\Delta S_t = S_t - S_{t-1}$).

Note that we can assume earnings-increasing REM when the actual (observable) cash flow from operations is unusually low in the current period. The residual, i.e., the proxy for that abnormal level, turns negative. And this may signal that managers have accelerated sales to report higher earnings at year-end closing.

- *Level of production cost*

Overproducing to lower the cost of goods sold (COGS) is another intervention used to accelerate earnings in the current period. Overproduction leads to a decline in fixed costs per unit, and thus reported COGS. As long as there are no increases in variable costs per unit, operating margins increase. The negative side effect, however, is an increase in inventory costs. This, in turn, leads to higher annual production costs relative to sales, while cash flow from operations given sales levels decrease. Because the increase in total production costs is not levelled out by a proportional increase in sales, positive abnormal levels of production costs are interpreted as evidence of earnings-increasing REM.

Consistent with prior literature, we estimate "normal" levels of production costs for each industry-year, as given in equation (3). Production costs consist of the sum of COGS and the change in inventory during the year.

$$\frac{PROD_t}{A_{t-1}} = \alpha_0 + \alpha_1 \frac{1}{A_{t-1}} + \beta_1 \frac{S_t}{A_{t-1}} + \beta_2 \frac{\Delta S_t}{A_{t-1}} + \beta_3 \frac{\Delta S_{t-1}}{A_{t-1}} + \varepsilon_t \quad (3)$$

where $PROD_t$ is production costs at time *t*, defined as the sum of $COGS_t$ and $\Delta INV_t = INV_t - INV_{t-1}$; A_{t-1} is lagged total assets at time *t-1*; S_t is net sales at time *t*; and ΔS_t is change in net sales from time *t-1* to time *t* ($\Delta S_t = S_t - S_{t-1}$).

The residuals of equation (3) are our estimates for abnormal levels of production costs. These represent the "normal" level of production costs estimated based on the year- and industry-specific coefficients, minus the actual (observed) production costs based on the firm-years' (lagged) sales and lagged assets. The more positive the values, the more earnings-increasing REM we can assume.

- *Level of discretionary expenses*

A further regulating tool is discretionary or non-operating expenses, such as research and development (Baber, Fairfield, & Haggard, 1991; Dechow & Sloan, 1991), advertising, and selling, general, and administrative (SG&A) expenses. By cutting these expenses in the current period, cash flows increase (to the extent the discretionary expenses are paid for in cash), although future cash flows may decline (Achleitner et al., 2014; Cohen & Zarowin, 2010; Roychowdhury, 2006). We follow Roychowdhury (2006) in estimating normal levels of discretionary expenses, as a function of lagged sales scaled by lagged total assets. A function of current sales would be to bear the risk of capturing unusually low residuals in one year for a firm that has not necessarily cut discretionary expenses, but has managed to increase sales in the current fiscal period.

The estimation for "normal" levels of discretionary expenses for each industry-year is in equation (4).

$$\frac{DISEXP_t}{A_{t-1}} = \alpha_0 + \alpha_1 \frac{1}{A_{t-1}} + \beta \frac{S_{t-1}}{A_{t-1}} + \varepsilon_t \quad (4)$$

where $DISEXP_t$ is discretionary expenses at year *t*, defined as the sum of R&D and selling, general, and administrative (SG&A) expenses (as long as SG&A expenses are available; R&D expenses are set to 0 if these items are missing, see Achleitner et al., 2014); A_{t-1} is lagged total assets at time *t-1*; and S_{t-1} is net sales at time *t-1*.

Abnormal level of discretionary expenses is obtained following the prior proxies for REM. Negative discretionary expenses in the current period are considered evidence of earnings-increasing REM actions. In this case, the actual (observed) level of discretionary expenses is lower than the "normal" level based on the estimated industry-year specific coefficients.

For interpretation purposes, we reverse the signs for abnormal levels of cash flows and abnormal levels of discretionary expenses. Thus, following Achleitner et al. (2014), larger (smaller) values of REM_CFO, REM_{PROD}, and REM_DISC indicate more (less) REM.

3.3. Accessing family influence

Family ownership is measured by the number of common shares held by family members. We, therefore, differentiate between founding families (the founder and subsequent generations), and families who did not found the company themselves but now hold a significant stake in the respective firm. For an example of founding family ownership, consider Henkel AG & Co. KGaA, founded in 1876 by Fritz Henkel. The members of the founding family still hold significant shares of the company, and are represented on the supervisory board. In contrast, BMW AG, founded in 1916, is no longer owned by the founding family. Today's largest blockholder in BMW is the Quandt/Klatten family, who began acquiring shares in the 1960s.

With respect to German corporate governance incentives, we capture shareholding families' board involvement within firms. Along with their voting power from common share holdings, families can actively and substantially influence the earnings management behaviour of their firms. To obtain a specific and relative measure of family voting power on the executive board, and with respect to the German concept of co-determination on the supervisory board, we use the number of family members divided by total number of members on both boards.

3.4. Research design

We use two models, one basic model, and one more advanced empirical model to estimate the effect of family influence on both ABEM (discretionary accruals) and REM. The basic model is in line with Achleitner et al. (2014). We add further control variables and use a random rather than a fixed effects model (as suggested by the Hausman test, which was performed over the course of our model analysis).

3.4.1. Basic model on family ownership

To estimate the effect of family influence on discretionary accruals, we calculate:

$$\begin{aligned} ABEM_{it} = {} & \alpha_0 + \alpha_1 FamOwn_{it} + \alpha_2 LOSS_{it} + \alpha_3 SIZE_{it} + \alpha_4 GROWTH_{it} + \alpha_5 PERF_{it} + \alpha_6 HHI_{it} + \\ & + \alpha_7 EmplMgt_{it} + \alpha_8 BIG4_{it} + \alpha_9 INTACCTG_{it} + \alpha_{10} LEVERAGE_{it} + \alpha_{11} DivPayoutShs_{it} + \alpha_{12} LogAge_{it} + \\ & + \alpha_{13} Crisis_{it} + \alpha_{14} PostCrisis_{it} + i.sic4d + \varepsilon_{it} \end{aligned} \quad (5)$$

$$ABEM_{it} = \alpha_0 + \alpha_1 FoundFamOwn_{it} + \alpha_2 LOSS_{it} + \alpha_3 SIZE_{it} + \alpha_4 GROWTH_{it} + \alpha_5 PERF_{it} + \alpha_6 HHI_{it} + \\ + \alpha_7 EmplMgt_{it} + \alpha_8 BIG4_{it} + \alpha_9 INTACCTG_{it} + \alpha_{10} LEVERAGE_{it} + \alpha_{11} DivPayoutShs_{it} + \alpha_{12} LogAge_{it} + \\ + \alpha_{13} Crisis_{it} + \alpha_{14} PostCrisis_{it} + i.sic4d + \varepsilon_{it} \quad (6)$$

where *ABEM* is our metric for discretionary accruals; $FamOwn_{it}$ and $FoundFamOwn_{it}$ proxy for (founding) family involvement based on common shares held; $LOSS_{it}$ is a dummy variable that equals 1 if net income is less than 0; $SIZE_{it}$ is the natural logarithm of the market value of firm *i* at the end of fiscal year *t*; $GROWTH_{it}$ is change in sales for firm *i* from *t-1* to *t*; $PERF_{it}$ is net income at *t* divided by average total assets for firm *i* at *t*; HHI_{it} is the sum of all squared blockholdings for firm *i* at *t*; $EmplMgt_{it}$ is firm *i*'s cumulative percentage of common shares held by management or employees that are not family members; $BIG4_{it}$ is a dummy variable that equals 1 if the firm is audited by one of the Big 4 auditing companies (PricewaterhouseCoopers (PWC), KPMG, Deloitte, or Ernst & Young), and 0 otherwise; $INTACCTG_{it}$ is a dummy variable that equals 1 if firm *i* uses U.S. generally accepted accounting principles (GAAP) or international financial reporting standards (IFRS); $LEVERAGE_{it}$ is the leverage for firm *i* at time *t* (calculated as total liabilities scaled by total assets); $DivPayoutShs_{it}$ is the dividend payout ratio of firm *i* at *t*; $LogAge_{it}$ is the natural logarithm of firm *i*'s age at *t*, calculated as year *t* minus founding year; $Crisis_{it}$ controls for the years of the 2008-2009 financial crisis; $PostCrisis_{it}$ controls for the years after the financial crisis; and $i.sic4d$ is the industry-dummy based on the four-digit SIC code.

We also analyse the relation between real earnings management activities and whether a firm is a family or non-family firm. This model is similar to the regression model employed for ABEM, except we do not include the control variable $BIG4_{it}$ because *adjusted R-squared* declined in the REM estimation models, as follows:

$$REM_{VAR_{it}} = \alpha_0 + \alpha_1 FamOwn_{it} + \alpha_2 LOSS_{it} + \alpha_3 SIZE_{it} + \alpha_4 GROWTH_{it} + \alpha_5 PERF_{it} + \alpha_6 HHI_{it} + \\ + \alpha_7 EmplMgt_{it} + \alpha_8 INTACCTG_{it} + \alpha_9 LEVERAGE_{it} + \alpha_{10} DivPayoutShs_{it} + \alpha_{11} LogAge_{it} + \\ + \alpha_{12} Crisis_{it} + \alpha_{13} PostCrisis_{it} + i.sic4d + \varepsilon_{it} \quad (7)$$

$$REM_{VAR_{it}} = \alpha_0 + \alpha_1 FoundFamOwn_{it} + \alpha_2 LOSS_{it} + \alpha_3 SIZE_{it} + \alpha_4 GROWTH_{it} + \alpha_5 PERF_{it} + \alpha_6 HHI_{it} + \\ + \alpha_7 EmplMgt_{it} + \alpha_8 INTACCTG_{it} + \alpha_9 LEVERAGE_{it} + \alpha_{10} DivPayoutShs_{it} + \alpha_{11} LogAge_{it} + \alpha_{12} Crisis_{it} + \\ + \alpha_{13} PostCrisis_{it} + i.sic4d + \varepsilon_{it} \quad (8)$$

where $REM_{VAR_{it}}$ equals the three REM metrics: $REM_{CFO_{it}}$, $REM_{DISC_{it}}$, and $\text{REM}_{\text{PROD}_{\text{it}}}$.

In our random effects model, with robust standard errors, dummies for industry classifications (four-digit SIC code), and crisis and post-crisis years (following Höwer, 2016), we control for the following factors related to ABEM and REM: we incorporate *LOSS* and *LEVERAGE* as control variables to account for the firm-specific risk of bankruptcy. Following Albersmann and Hohenfels (2017), a negative net income (*LOSS*) could lead to more negative ("big bath" accounting) or more positive discretionary accruals (to, e.g., hide poor performance). Dyreng, Hanlon, and Maydew (2012) further report a positive association between REM activities and negative net income. The results on *LEVERAGE* are mixed. More highly leveraged firms could have an incentive to engage in earnings management activities due to debt covenant constraints (DeFond & Jiambalvo, 1994; Sweeney, 1994; Roychowdhury, 2006). However, they could also face stricter monitoring by creditors and banks during financial distress, limiting their earnings management activities (Harris & Raviv, 1991).

We also include size (*SIZE*), growth (*GROWTH*), and profitability (*PERF*) in our models. Size could be positively (Lee, Li, & Yue, 2006; Martin, Campbell, & Gomez-Mejia, 2016) or negatively related to earnings management activities (Dechow & Dichev, 2002; Albersmann & Hohenfels, 2017). For growth, both Menon and Williams (2004) and Achleitner et al. (2014) find that growth firms engage in more ABEM. Roychowdhury (2006) also notes this for REM, because firms in a growth phase are especially pressured to meet earnings thresholds. In terms of firm performance, calculated as net income scaled by average total assets, Achleitner et al. (2014) find both effects, a positive association for ABEM and a negative association for REM.

To account for the effect of concentrated ownership, we incorporate the Herfindahl index (*HHI*). We also control for common stocks held by employees or management who do not belong to the family (*EmplMgt*). Here, we incorporate international accounting standards (*INTACCTG*), because tighter standards could increase the marginal benefit of REM compared to ABEM (Ewert & Wagenhofer, 2005). Note again that the dummy variable *BIG4* is only included in the *ABEM* model. Although Becker, DeFond, Jiambalvo, and Subramanyam (1998) and Ghosh, Marra, and Moon (2010) find a negative association with earnings management, European studies such as Maijoor and Vanstraelen (2006) and Albersmann and Hohenfels (2017) do not find any effects. Finally, we control for the dividend payout ratio (*DivPayoutShs*) and maturity of the firm (*LogAge*).

However, the focus of our *H1* test is on the coefficient estimate of *FamOwn* and *FoundFamOwn*, which captures the relation between family firms and *ABEM* versus *REM*.

3.4.2. Advanced model on family board involvement

To test for *H2*, we use further variables that we will describe in this section. Following Cronqvist and Fahlenbrach (2009), we control for the ownership percentage stake of financial institutions (*FinOwn*) and other companies (*OtherCompany*), since they may also motivate management behaviour on earnings management. We also control for board size (*ExBoSize, SupBoSize*), since it may affect

earnings quality (García-Ramos & García-Olalla, 2011; Prencipe & Bar-Yosef, 2011). Finally, we include the relative involvement of family members on the executive (*ExBoFamRel*) or supervisory boards (*SupBoFamRel*). We assume that increased family involvement in a firm, as captured by board membership, will significantly impact its earnings management behaviour.

4. RESULTS

4.1. Descriptive statistics

Table 2 presents descriptive information about the governance and firm-specific characteristics of our sample. Beginning with ownership, the descriptive statistics indicate a highly concentrated structure in family firms. Families hold on average 56.2% of common shares, compared to 4.1% in non-family firms. Interestingly, founding families tend to hold significant ownership stakes, 35.0% on average within the pooled sample, compared to 1.8% in non-family firms.

This observation is in line with the descriptive statistics in Achleitner et al. (2014). In contrast, however, we find a higher ownership concentration (*HHI*) in family firms than their counterparts in both median and mean values. Results indicate further that families in family firms are actively involved on the executive board, and to a lesser extent on the supervisory board. Thus, they have voting power due to large ownership stakes (common shares), as well as management influence due to executive or supervisory board positions.

Consistent with prior research, we find, with respect to the controlling variables, that family firms tend to be less leveraged and more profitable (Villalonga & Amit, 2006). They also exhibit higher growth (Achleitner et al., 2014). Moreover, they are significantly smaller in size, younger in firm age (Ampenberger, 2010; Achleitner et al., 2014), and are less likely to be audited by a Big 4 auditing company (Achleitner et al., 2014). Table 2 also indicates that family firms are more likely to pay higher dividend shares and less likely to face a loss situation.

Table 2. Summary statistics

Variables	*Mean*		*Median*		*Stand. dev.*		*Observ.*		*Sig. of diff.*	
	NF	*FF*	*NF*	*FF*	*NF*	*FF*	*NF*	*FF*	*Mean*	*Med*
Family ownership										
FamOwn	0.041	0.562	0.000	0.538	0.072	0.191	1273	1686	***	***
FoundFamOwn	0.018	0.350	0.000	0.389	0.059	0.278	1273	1686	***	***
Family involvement										
ExBoFamRel	0.066	0.258	0.000	0.200	0.185	0.320	1200	1598	***	***
SupBoFamRel	0.042	0.128	0.000	0.000	0.120	0.182	1186	1584	***	***
Control variables										
LOSS	0.192	0.134	0.000	0.000	0.394	0.341	1273	1686	***	-
SIZE	12.44	11.83	12.10	11.49	2.413	2.107	1189	1624	***	***
GROWTH	0.089	0.106	0.051	0.052	0.467	0.574	1189	1613	n.s.	n.s.
BIG4	0.677	0.533	1.000	1.000	0.467	0.499	1273	1686	***	-
PERF	0.016	0.022	0.029	0.032	0.131	0.143	1193	1625	n.s.	**
HHI	0.776	0.840	0.893	0.999	0.240	0.208	1149	1686	***	***
EmplMgmt	0.010	0.006	0.000	0.000	0.043	0.028	1273	1686	***	n.s.
INTACCTG	0.835	0.836	1.000	1.000	0.370	0.369	1273	1686	n.s.	-
LEVERAGE	0.563	0.524	0.595	0.527	0.223	0.212	1193	1625	***	***
log_age	3.575	3.467	3.496	3.367	1.110	1.029	1270	1685	***	**
DivPayoutShs	21.72	24.69	10.54	21.74	25.65	26.53	1098	1516	***	***
ExBoSize	3.565	3.142	3	3	1.987	1.454	1200	1598	***	***
SupBoSize	8.395	6.017	6	5	6.363	4.228	1191	1595	***	***
FinOwn	0.125	0.034	0.000	0.000	0.210	0.083	1273	1686	***	***
OtherCompany	0.228	0.018	0.000	0.000	0.341	0.072	1273	1686	***	***

*Notes: This table reports the summary statistics for the variables employed; for definitions, see Appendix. FF (NF) denotes family (non-family) firms using FamOwn25 as a measure of family firms. The significance of differences is assessed based on the t-test (mean) two tails and the Wilcoxon/Mann-Whitney test (median). N.s. denotes non-significance. The significance of differences in dummy variables is assessed using a chi-squared test. *** p < 0.01, ** p < 0.05, * p < 0.1.*

** For interpretation purposes, the metrics REM_CFO and REM_DISC were put into the same order (as described in Subsection 3.2), so that for all REM metrics, larger (smaller) values imply more (less) REM.*

4.2. Multivariate results

Table 3 presents the regression results for our basic model estimating the influence of family ownership on earnings management. For our two ABEM models (Models 1 and 2), we find a negative coefficient estimate for family ownership (*FamOwn*), which is significant at the 0.05 level, as well as for founding family ownership (*FoundFamOwn*), which is significant at the 0.10 level. Both indicate more negative ABEM practices.

Our REM estimation models show mixed results. Family ownership and founding family ownership have a significantly negative effect on the abnormal level of cash flow from operations. Increasing family (and founding family) ownership is therefore associated with lower levels of *REM_CFO*. Models 5-8 on the abnormal levels of discretionary expenses and production costs find no significant influence of family ownership.

Table 3. Regression results of the basic model on family ownership

Variables	*(1)*	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*
	ABEM		*REM_CFO*		*REM_DISC*		*REM_PROD*	
Crisis	0.009**	0.008*	-0.080***	-0.082***	-0.008	-0.007	-0.008	-0.009
	(1.972)	(1.897)	(-6.738)	(-6.875)	(-0.846)	(-0.802)	(-0.823)	(-0.886)
PostCrisis	0.002	0.001	-0.090***	-0.092***	-0.000	-0.000	-0.003	-0.003
	(0.448)	(0.264)	(-9.813)	(-9.885)	(-0.028)	(-0.009)	(-0.176)	(-0.239)
LOSS	0.008	0.008	0.004	0.005	-0.031	-0.032	-0.011	-0.011
	(0.982)	(1.035)	(0.352)	(0.451)	(-1.553)	(-1.589)	(-0.508)	(-0.491)
SIZE	-0.011***	-0.011***	-0.001	-0.001	0.001	0.000	0.002	0.002
	(-4.009)	(-3.899)	(-0.226)	(-0.186)	(0.066)	(0.049)	(0.527)	(0.517)
GROWTH	0.008	0.009	-0.152***	-0.152***	-0.072***	-0.072***	-0.046	-0.046
	(0.640)	(0.652)	(-2.914)	(-2.921)	(-4.965)	(-4.938)	(-1.541)	(-1.543)
PERF	0.670***	0.670***	-0.186***	-0.186***	-0.112*	-0.113*	-0.279***	-0.280***
	(19.73)	(19.71)	(-4.570)	(-4.639)	(-1.851)	(-1.864)	(-4.640)	(-4.649)
HHI	0.008	0.008	0.008	0.011	0.020	0.022	0.067***	0.070***
	(0.641)	(0.665)	(0.361)	(0.508)	(0.531)	(0.581)	(2.582)	(2.623)
EmplMgt	0.157**	0.150**	0.113	0.096	0.145	0.149	0.087	0.079
	(2.060)	(2.000)	(0.652)	(0.560)	(0.658)	(0.680)	(0.527)	(0.470)
BIG4	-0.014	-0.014						
	(-1.143)	(-1.116)						
INTACCTG	-0.032***	-0.031***	0.049*	0.048*	-0.061**	-0.060**	-0.020	-0.020
	(-3.771)	(-3.793)	(1.930)	(1.899)	(-2.034)	(-1.979)	(-0.878)	(-0.889)
LEVERAGE	-0.048*	-0.047*	-0.058	-0.057	-0.063	-0.064	0.001	0.001
	(-1.753)	(-1.706)	(-1.483)	(-1.476)	(-1.399)	(-1.427)	(0.029)	(0.019)
DivPayoutShs	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
	(-1.501)	(-1.471)	(-1.549)	(-1.503)	(-0.439)	(-0.423)	(-1.01)	(-0.964)
LogAge	-0.021***	-0.022***	0.025*	0.024*	-0.009	-0.008	-0.003	-0.003
	(-3.057)	(-3.098)	(1.758)	(1.717)	(-0.419)	(-0.393)	(-0.312)	(-0.318)
FamOwn	-0.023**		-0.054*		0.043		-0.008	
	(-1.980)		(-1.673)		(1.213)		(-0.335)	
FoundFamOwn		-0.026*		-0.078**		0.022		-0.024
		(-1.834)		(-2.382)		(0.497)		(-0.879)
Constant	0.273***	0.272***	-0.007	0.001	-0.327**	-0.314**	-0.071	-0.064
	(6.489)	(6.297)	(-0.085)	(0.014)	(-2.097)	(-2.109)	(-1.142)	(-1.074)
Observations	1,901	1,901	2,375	2,375	2,198	2,198	2,334	2,334
No. of firms	248	248	272	272	263	263	272	272
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
RE-Mod.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-sq. overall	0.600	0.598	0.340	0.338	0.455	0.455	0.122	0.122

*Notes: Robust z-statistics in parentheses. *** p < 0.01, ** p < 0.05, * p < 0.1.*

Note that the control variables included in our estimation models reveal different results depending on the proxy for earnings management. Larger (*SIZE*), older (*LogAge*), and more leveraged (*LEVERAGE*) firms, as well as firms that have adopted international accounting standards (*INTACCTG*), tend to exhibit more negative discretionary accruals. We find the opposite result for firms with higher performance (*PERF*) and higher employee ownership (*EmplMgt*). During the financial crisis (2008 and 2009), firms were more inclined to report lower non-cash expenses within their discretion in order to improve reported net income (as indicated by the positive association of ABEM and the dummy variable *Crisis*). Coincidentally, we find that firms tended to engage less in REM activities as measured by the abnormal level of cash flow from operations, which continued during the post-crisis years.

In addition, more growth firms (coefficient significantly negative for *REM_CFO* and *REM_DISC*) and more profitable firms (coefficient significantly negative for all REM proxies) indicate lower *REM* activities. Older firms, as measured by the abnormal levels of cash flow from operations, and firms with higher ownership concentration (*HHI*), as measured by abnormal levels of production costs, are associated with higher REM involvement. Firms that adopted international accountings standards (*INTACCTG*) show lower abnormal levels of discretionary expenses, but higher abnormal levels of cash flow from operations. We find no significant effect on earnings management for our dummy variables *LOSS* and *BIG4* auditing or for the dividend payout ratio.

In Table 4, we present the regression results on family board influence, while controlling for the complete ownership structure of firms. Model 1 shows that our basic family ownership model holds after controlling for financial shareholders and other companies as shareholders. Model 2 reveals a negative coefficient estimate for the relative influence of the shareholding family on the executive board (*ExBoFamRel*). This is significant at the 0.05 level, suggesting that a higher percentage of shareholding family members on the executive board is associated with more negative discretionary accruals.

The regression results in Model 5 show that the negative influence of founding family ownership (*FoundFamOwn*) on discretionary accruals does not hold after controlling for the management influence of family on the boards. Family executive board influence remains negative at the 0.05 significance level. Model 6 further indicates that the level of family influence on the supervisory board does not pose a significant impact, but the size of the supervisory board is associated with more positive discretionary accruals.

Table 4. Regression results of the advanced model on family board involvement (Part 1)

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	ABEM						REM_CFO					
Crisis	0.009**	0.009*	0.009**	0.008*	0.009*	0.009**	-0.081***	-0.083***	-0.084***	-0.082***	-0.085***	-0.085***
	(1.992)	(1.951)	(2.002)	(1.905)	(1.907)	(1.962)	(-6.879)	(-6.871)	(-6.839)	(-7.032)	(-6.948)	(-6.923)
PostCrisis	0.002	0.001	0.002	0.001	0.000	0.001	-0.089***	-0.091***	-0.093***	-0.092***	-0.093***	-0.095***
	(0.461)	(0.222)	(0.414)	(0.265)	(0.077)	(0.280)	(-9.790)	(-9.742)	(-9.410)	(-9.826)	(-9.734)	(-9.396)
LOSS	0.008	0.005	0.005	0.008	0.005	0.005	0.005	0.007	0.008	0.006	0.008	0.009
	(0.976)	(0.632)	(0.593)	(1.031)	(0.663)	(0.621)	(0.386)	(0.580)	(0.635)	(0.468)	(0.653)	(0.708)
SIZE	-0.011***	-0.011***	-0.012***	-0.011***	-0.011***	-0.012***	-0.001	-0.002	0.001	-0.001	-0.002	0.001
	(-3.970)	(-3.795)	(-4.000)	(-3.878)	(-3.712)	(-3.937)	(-0.246)	(-0.322)	(0.0950)	(-0.201)	(-0.265)	(0.116)
GROWTH	0.008	0.011	0.011	0.009	0.011	0.011	-0.152***	-0.157***	-0.157***	-0.152***	-0.157***	-0.158***
	(0.626)	(0.808)	(0.825)	(0.658)	(0.839)	(0.856)	(-2.931)	(-2.913)	(-2.927)	(-2.934)	(-2.917)	(-2.931)
PERF	0.671***	0.656***	0.658***	0.671***	0.656***	0.659***	-0.186***	-0.177***	-0.181***	-0.187***	-0.177***	-0.181***
	(19.80)	(18.51)	(18.39)	(19.79)	(18.51)	(18.39)	(-4.591)	(-3.949)	(-4.034)	(-4.648)	(-3.999)	(-4.078)
HHI	0.007	0.005	0.006	0.008	0.006	0.007	0.023	0.023	0.020	0.028	0.028	0.025
	(0.538)	(0.345)	(0.431)	(0.643)	(0.426)	(0.515)	(1.020)	(0.984)	(0.854)	(1.197)	(1.164)	(1.056)
EmplMgt	0.154**	0.158**	0.147*	0.151**	0.158**	0.146*	0.157	0.128	0.125	0.147	0.125	0.119
	(1.969)	(2.101)	(1.854)	(1.978)	(2.144)	(1.872)	(0.818)	(0.677)	(0.668)	(0.775)	(0.667)	(0.645)
BIG4	-0.014	-0.013	-0.013	-0.014	-0.012	-0.013						
	(-1.139)	(-1.022)	(-1.102)	(-1.118)	(-0.991)	(-1.073)						
INTACCTG	-0.032***	-0.033***	-0.033***	-0.031***	-0.032***	-0.032***	0.048*	0.047*	0.047*	0.047*	0.046*	0.046*
	(-3.813)	(-3.839)	(-3.780)	(-3.799)	(-3.811)	(-3.755)	(1.903)	(1.816)	(1.779)	(1.884)	(1.819)	(1.792)
LEVERAGE	-0.048*	-0.064**	-0.066***	-0.047*	-0.062**	-0.064**	-0.060	-0.077*	-0.073*	-0.058	-0.075*	-0.071*
	(-1.756)	(-2.573)	(-2.651)	(-1.700)	(-2.488)	(-2.571)	(-1.520)	(-1.800)	(-1.683)	(-1.517)	(-1.794)	(-1.672)
LogAge	-0.021***	-0.019***	-0.020***	-0.022***	-0.020***	-0.020***	0.025*	0.029**	0.032**	0.024*	0.028**	0.031**
	(-3.081)	(-2.816)	(-2.879)	(-3.101)	(-2.847)	(-2.903)	(1.789)	(2.090)	(2.233)	(1.757)	(2.051)	(2.201)
DivPayoutShs	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
	(-1.537)	(-1.415)	(-1.383)	(-1.446)	(-1.343)	(-1.313)	(-1.382)	(-1.434)	(-1.496)	(-1.312)	(-1.364)	(-1.418)
FinOwn	-0.007	-0.003	-0.003	-0.000	0.003	0.004	0.084	0.064	0.062	0.091*	0.076	0.075
	(-0.302)	(-0.141)	(-0.119)	(-0.002)	(0.143)	(0.156)	(1.594)	(1.205)	(1.159)	(1.798)	(1.523)	(1.497)
OtherCompany	-0.004	-0.003	-0.001	0.005	0.006	0.007	-0.020	-0.031	-0.037	-0.010	-0.018	-0.023
	(-0.223)	(-0.135)	(-0.034)	(0.320)	(0.297)	(0.391)	(-0.641)	(-0.925)	(-1.066)	(-0.441)	(-0.743)	(-0.920)
FamOwn	-0.026**	-0.023*	-0.023*				-0.049	-0.057	-0.061*			
	(-2.026)	(-1.737)	(-1.669)				(-1.328)	(-1.576)	(-1.679)			
FoundFamOwn				-0.025*	-0.020	-0.019				-0.070**	-0.075**	-0.080***
				(-1.737)	(-1.334)	(-1.321)				(-2.134)	(-2.535)	(-2.743)
ExBoFamRel		-0.028**	-0.027*		-0.029**	-0.027*		0.015	0.013		0.016	0.014
		(-1.966)	(-1.848)		(-1.988)	(-1.857)		(0.366)	(0.303)		(0.398)	(0.343)
SupBoFamRel		-0.022	-0.015		-0.023	-0.016		-0.044	-0.055		-0.044	-0.055
		(-1.092)	(-0.684)		(-1.185)	(-0.751)		(-0.856)	(-1.039)		(-0.856)	(-1.024)
ExBoSize			0.000			0.000			0.002			0.002
			(0.136)			(0.219)			(0.294)			(0.434)
SupBoSize			0.002*			0.002**			-0.004***			-0.004**
			(1.957)			(1.965)			(-2.652)			(-2.485)
Constant	0.278***	0.288***	0.294***	0.271***	0.280***	0.286***	-0.0256	-0.010	-0.031	-0.022	-0.010	-0.032
	(6.114)	(5.725)	(5.797)	(6.013)	(5.619)	(5.694)	(-0.322)	(-0.0935)	(-0.298)	(-0.291)	(-0.104)	(-0.332)
Observations	1,901	1,830	1,830	1,901	1,830	1,830	2,375	2,271	2,271	2,375	2,271	2,271
No. of firms	248	239	239	248	239	239	272	261	261	272	261	261
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
RE-Mod.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-sq. overall	0.600	0.601	0.604	0.598	0.599	0.602	0.344	0.346	0.347	0.343	0.345	0.346

Models 7 and 8 show that the significantly negative effect of family ownership on abnormal levels of cash flow from operations, as depicted in our basic model in Table 1, does not necessarily hold when we control for other shareholders and the influence of the family on the executive board[12]. Neither family ownership nor family management involvement significantly influences this REM measure. Founding family ownership (*FoundFamOwn*), in contrast, significantly lowers the magnitude of abnormal cash flow from operations (Models 10-12), as do larger supervisory boards (*SupBoSize*) (Model 12).

Family management influence, however, becomes visible for abnormal levels of discretionary expenses. Despite the influence of family ownership (*FamOwn*) (Models 13-15), the results reveal that a higher level of family involvement on the executive board (*ExBoFamRel*) is associated with a higher magnitude of abnormal discretionary expenses (Models 14-15). Founding family ownership is not significant (Models 16-18), while the coefficient estimate *ExBoFamRel* remains significant on a 0.05 level. For REM activities related to abnormal levels of production costs, we find no significant family influence – neither by ownership nor by family management.

[12] Except for Model 9 (p-value 0,084), family ownership is insignificant in all three *REM_CFO* models.

Table 4. Regression results of the advanced model on family board involvement (Part 2)

Variables	*(13)*	*(14)*	*(15)*	*(16)*	*(17)*	*(18)*	*(19)*	*(20)*	*(21)*	*(22)*	*(23)*	*(24)*
	REM_DISC						*REM_PROD*					
Crisis	-0.010	-0.012	-0.012	-0.009	-0.011	-0.011	-0.009	-0.013	-0.013	-0.010	-0.013	-0.013
	(-1.139)	(-1.277)	(-1.365)	(-0.936)	(-1.172)	(-1.246)	(-0.922)	(-1.222)	(-1.235)	(-0.959)	(-1.267)	(-1.273)
PostCrisis	-0.002	-0.002	-0.004	-0.001	-0.001	-0.003	-0.003	-0.006	-0.006	-0.004	-0.006	-0.007
	(-0.139)	(-0.154)	(-0.301)	(-0.038)	(-0.092)	(-0.230)	(-0.206)	(-0.387)	(-0.414)	(-0.245)	(-0.427)	(-0.448)
LOSS	-0.031	-0.027	-0.027	-0.032	-0.028	-0.028	-0.010	-0.006	-0.006	-0.010	-0.006	-0.006
	(-1.559)	(-1.336)	(-1.320)	(-1.617)	(-1.366)	(-1.349)	(-0.486)	(-0.268)	(-0.270)	(-0.483)	(-0.253)	(-0.257)
SIZE	0.000	0.003	0.005	0.000	0.003	0.005	0.002	0.003	0.003	0.002	0.003	0.003
	(0.011)	(0.380)	(0.589)	(0.012)	(0.381)	(0.596)	(0.624)	(0.595)	(0.526)	(0.550)	(0.593)	(0.523)
GROWTH	-0.071***	-0.069***	-0.069***	-0.071***	-0.069***	-0.069***	-0.047	-0.045	-0.045	-0.047	-0.045	-0.045
	(-5.302)	(-5.568)	(-5.590)	(-5.163)	(-5.437)	(-5.460)	(-1.554)	(-1.492)	(-1.487)	(-1.552)	(-1.493)	(-1.488)
PERF	-0.109*	-0.127**	-0.132**	-0.112*	-0.130**	-0.135**	-0.279***	-0.291***	-0.292***	-0.279***	-0.291***	-0.292***
	(-1.793)	(-2.083)	(-2.143)	(-1.838)	(-2.153)	(-2.213)	(-4.639)	(-4.451)	(-4.451)	(-4.658)	(-4.464)	(-4.460)
HHI	0.044	0.044	0.044	0.041	0.041	0.041	0.078***	0.081***	0.081***	0.080***	0.083***	0.083***
	(1.124)	(1.100)	(1.103)	(1.049)	(1.049)	(1.043)	(3.012)	(2.900)	(2.825)	(3.051)	(2.937)	(2.857)
EmplMgt	0.220	0.187	0.210	0.207	0.172	0.195	0.132	0.102	0.112	0.116	0.092	0.102
	(0.982)	(0.862)	(0.966)	(0.942)	(0.804)	(0.908)	(0.788)	(0.610)	(0.669)	(0.687)	(0.546)	(0.602)
BIG4												
INTACCTG	-0.056*	-0.056*	-0.057*	-0.057*	-0.058*	-0.058*	-0.019	-0.017	-0.017	-0.019	-0.017	-0.017
	(-1.908)	(-1.832)	(-1.838)	(-1.865)	(-1.819)	(-1.819)	(-0.834)	(-0.682)	(-0.675)	(-0.846)	(-0.699)	(-0.693)
LEVERAGE	-0.058	-0.065	-0.061	-0.062	-0.067	-0.064	0.002	-0.003	-0.003	0.001	-0.003	-0.003
	(-1.290)	(-1.390)	(-1.312)	(-1.383)	(-1.457)	(-1.377)	(0.050)	(-0.056)	(-0.066)	(0.016)	(-0.063)	(-0.071)
LogAge	-0.008	-0.006	-0.008	-0.007	-0.005	-0.006	-0.003	-0.002	-0.003	-0.003	-0.002	-0.003
	(-0.376)	(-0.315)	(-0.370)	(-0.342)	(-0.238)	(-0.293)	(-0.330)	(-0.225)	(-0.316)	(-0.297)	(-0.211)	(-0.297)
DivPayoutShs	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
	(-0.103)	(-0.219)	(-0.237)	(-0.183)	(-0.279)	(-0.297)	(-0.862)	(-0.935)	(-0.932)	(-0.825)	(-0.896)	(-0.897)
FinOwn	0.144***	0.155***	0.157***	0.104**	0.125**	0.126**	0.070**	0.076*	0.077*	0.062*	0.072*	0.073*
	(2.762)	(2.840)	(2.857)	(2.254)	(2.528)	(2.532)	(1.968)	(1.863)	(1.860)	(1.858)	(1.894)	(1.890)
OtherCompany	0.106**	0.104**	0.103**	0.060	0.069	0.068	0.019	-0.004	-0.002	0.011	-0.009	-0.007
	(2.358)	(2.004)	(1.989)	(1.644)	(1.526)	(1.501)	(0.531)	(-0.087)	(-0.046)	(0.308)	(-0.200)	(-0.159)
FamOwn	0.104**	0.083*	0.085**				0.009	0.001	0.002			
	(2.210)	(1.908)	(1.971)				(0.301)	(0.031)	(0.071)			
FoundFamOwn				0.049	0.041	0.045				-0.014	-0.018	-0.016
				(1.026)	(0.858)	(0.968)				(-0.463)	(-0.577)	(-0.494)
ExBoFamRel		0.123**	0.119**		0.128**	0.124**		0.026	0.026		0.029	0.028
		(2.408)	(2.328)		(2.426)	(2.337)		(0.953)	(0.925)		(1.028)	(0.990)
SupBoFamRel		0.039	0.032		0.049	0.041		0.027	0.029		0.031	0.032
		(0.448)	(0.340)		(0.557)	(0.444)		(0.525)	(0.535)		(0.603)	(0.597)
ExBoSize			-0.005			-0.005			-0.003			-0.003
			(-0.900)			(-0.897)			(-0.694)			(-0.654)
SupBoSize			-0.001			-0.001			0.001			0.001
			(-0.447)			(-0.428)			(0.566)			(0.493)
Constant	-0.400**	-0.452***	-0.441***	-0.355**	-0.425***	-0.416***	-0.099	-0.111	-0.106	-0.084	-0.103	-0.099
	(-2.466)	(-2.810)	(-2.726)	(-2.374)	(-2.804)	(-2.732)	(-1.580)	(-1.474)	(-1.417)	(-1.423)	(-1.462)	(-1.415)
Observations	2,198	2,109	2,109	2,198	2,109	2,109	2,334	2,226	2,226	2,334	2,226	2,226
No. of firms	263	252	252	263	252	252	272	261	261	272	261	261
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
RE-Mod.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-sq. overall	0.459	0.463	0.464	0.459	0.461	0.464	0.124	0.125	0.125	0.124	0.125	0.125

*Notes: Robust z-statistics in parentheses. *** p < 0.01, ** p < 0.05, * p < 0.1.*

Accounting for other shareholders and the family management influence, the coefficients of our control variables remain stable. The exception is *LEVERAGE*, which turns negative at a 0.1 significance level for REM as measured by abnormal levels of cash flow from operations. Ownership of financial institutions (*FinOwn*) is associated with higher REM activities, as measured by abnormal levels of discretionary expenses and production costs. And the significant effect of ownership by other companies (*OtherCompanies*) on abnormal levels of discretionary expenses disappears when accounting for founding family ownership.

Overall, our results confirm *H1*, that earnings management is significantly related to family ownership. After controlling for other blockholders and family management influence, family ownership is significantly associated with more negative discretionary accruals and a higher magnitude of abnormal discretionary expenses. Furthermore, founding family ownership significantly lowers REM activities based on abnormal levels of cash flow from operations.

Thus, for the first time, we are able to provide a granular measurement model that suggests family management involvement matters. We can confirm *H2a*, that earnings management in family firms is significantly related to the level of involvement on the executive board for ABEM, and, with reservations, for REM. We find that a higher percentage of

shareholding family members on the executive board is associated with more negative discretionary accruals, i.e., more earnings-decreasing ABEM practices. It also accounts for more REM activities related to discretionary expenses.

However, *H2b*, on family involvement on the supervisory board, is rejected. Nevertheless, we find that the size of the supervisory board affects ABEM-related activities (more positive discretionary accruals) and REM practices as measured by abnormal levels of cash flow from operations (negative association).

To summarise, after controlling for other large shareholders and management involvement of family members, our estimation models suggest that 1) family ownership is associated with more earnings-decreasing ABEM practices, which is at least partly linked to the degree of executive board family involvement; 2) lower levels of REM activities, as measured by abnormal level of cash flow from operations, appears to hold more for founding family ownership than for family ownership in general; 3) the magnitude of abnormal discretionary expenses increases with an increasing influence of family members on the executive board; 4) supervisory board family involvement has no significant effect on earnings management; and 5) larger supervisory boards are associated with more positive discretionary accruals and lower REM activities based on abnormal levels of cash flow from operations.

5. DISCUSSION

Within the German setting of high ownership concentration (Faccio & Lang, 2002), high average levels of family voting rights (Becht & Boehmer, 2003), and a predominant agency conflict between large controlling and minority shareholders (Gugler & Yurtoglu, 2003), we expect the entrenchment effect of family ownership to be prevalent. Our regression models indeed show that family ownership is associated with more negative discretionary accruals and more earnings-decreasing ABEM practices, which is in line with the findings of Ali et al. (2007) and Achleitner et al. (2014) (Table 3).

Expanding on that literature, our models in Table 4 reveal that a precise measure of family management influence is crucial to observing and explaining earnings management behaviour in family firms. This factor has thus far been disregarded in the literature. Our models suggest that the management influence of families is a significant driver of earnings management. The results indicate that family ownership, which is associated with more earnings-decreasing ABEM practices, is at least partly linked to the degree of executive board family involvement (Models 1-6 in Table 4). Our findings are in line with Acero and Alcalde (2016), who find a high degree of insider ownership in family firms is associated with an increased risk of expropriation.

The same observation also accounts for larger magnitudes in abnormal discretionary expenses (Models 13-15 in Table 4). Our observations suggest that families use their ownership voting power, management influence, and information advantage to expropriate other shareholders through lower reported earnings. We find they are motivated potentially by decreased dividend pressure (Gugler & Yurtoglu, 2003; García Lara et al., 2005), and to maintain the wealth in their family firms (for example, a long-term orientation).

We recognise that finding more REM activities based on abnormal discretionary expenses (*REM_DISC*) at first seems contradictory. Nevertheless, we see this result as in line with families avoiding future value-destroying REM activities (Achleitner et al., 2014). Managing discretionary expenses is a one-off activity (e.g., reducing SG&A or R&D expenses) that allows a rather simple earnings management practice to meet earning targets.

In contrast to managing cash flows by boosting sales (*REM_CFO*), it may endanger future cash flows to a lesser extent. This is because reducing prices or offering more lenient credit terms may be more difficult to readjust for in future periods. Especially for founding family shareholders (*FoundFamOwn*), this appears to be a major concern. Findings indicate that founding family ownership is associated with less *REM_CFO*, while no effect was found for family ownership.

In addition to founding family ownership, supervisory board size also tends to lower *REM_CFO* (Models 7-12 in Table 4). It is also associated with more positive discretionary accruals. This may be because larger supervisory boards have better monitoring ability for this specific case of earnings manipulation.

For robustness reasons, we recalculated our models on accrual-based earnings management and real earnings management to test for potential survivorship bias. We integrate a proxy for insolvency (dummy variable). The coefficient estimates, shown in Table 3 and Table 4, remain unchanged in their significance levels.

6. CONCLUSION

This study investigates the influence of family control on earnings management in German-listed family firms. Against a framework of low investor protection, high ownership concentration, a high level of family ownership, and a two-tiered corporate board governance system, we expect the entrenchment effect of family ownership to be prevalent. Families in Germany tend to be present in the management of the firms they are invested in, so they possess both the ability and the motivation to expropriate minority shareholders and manage earnings according to their own interests. Since a high percentage of their wealth is usually invested in their firms, they are expected to avoid actions that might endanger future firm value.

To investigate earnings management in family firms, we extend prior literature that usually employs family ownership as well as dummies for CEO and board attributes. To this end, we account for the specific influence of family members on firms' boards. We introduce a unique and hand-collected sample of 278 firms listed in Germany from 2000 through 2013. We document that family ownership and family management involvement are positively associated with more earnings-decreasing accrual-based earnings management (ABEM) practices. The same construct is associated with higher levels of real earnings management (REM) based on abnormal discretionary expenses. Our study emphasises the relevance of a more precise

measurement of family board influence in order to account for the broad heterogeneity of family firms in future earnings-management research (Paiva, Lourenço, & Branco, 2016).

Specifically, we find that families use their powerful positions as shareholders and executive board members to lower earnings through discretionary accruals and to manage earnings through discretionary expenses. Although these two activities appear contradictory, the latter can actually be explained by family firms preferring the one-time character of reducing discretionary expenses (e.g., SG&A and R&D expenses). This practice may be seen as less value-endangering than engaging in REM practices that are more difficult to reverse, such as boosted sales or overproduction. The finding that founding family ownership significantly lowers sales-related earnings management activities amplifies our view.

Because Germany features specific legal and corporate governance settings, our results are limited in their transferability to other countries. In order to further support our argumentation of minority shareholder expropriation, further research could estimate the predictability of future cash flows, earnings persistence, or the quality of corporate governance disclosure. This could negate the argument that family firms report better quality earnings by not increasing earnings (Ali et al., 2007).

On a practical level, we demonstrate that both the level of family ownership and that of family management involvement on the executive board influence earnings management activities. In order to avoid expropriation (such as reduced dividends), minority shareholders in Germany may thus wish to campaign for the permanent establishment of currently voluntary audit committees. These have been shown to mitigate at least accrual-based earnings management (Albersmann & Hohenfels, 2017).

With regard to German co-determination on the supervisory board, minority shareholders would be well advised to cooperate closely with workers' representatives on the board in order to appoint balanced and experienced board members (Ferramosca & Allegrini, 2018). This could effectively reduce the earnings-related outcomes of agency conflicts among shareholders.

This study has some limitations, which could provide opportunities for further research. First, we use data from listed firms from only one country and for a specific sample period, which is why the results may not apply to non-listed firms and are only valid for this period and its specific regulatory environment. Second, our analysis is based on a sample of CDAX firms between 2003 and 2013. We cannot rule out that results from a larger sample with more recent data might provide additional insights.

Third, future investigations should also include other corporate governance characteristics, if valid information is publicly available. In particular, the independence of executive and supervisory board or the CEO-Chairman duality could have a lasting impact on the effectiveness of management or the monitoring role of the supervisory board. In addition, the composition of the supervisory board and the election of its members is of crucial importance as one of the main functions of the supervisory board is to appoint and to dismiss the members of the executive board.

Fourth, although we control for a variety of variables that could be related to earnings management, we cannot completely exclude the possibility that some latent governance or firm-specific measures drive our results. In the same vein, the strategic use of both earnings management strategies in family firms requires a deeper analysis to capture the possible complementary or substitutive relationship between ABEM and REM metrics.

Fifth, Shleifer and Vishny (1997) argue that the entrenchment of family members, e.g., a founder remaining in the company although he might no longer be competent, is probably one of the largest costs a large shareholder can impose. It would be interesting to analyse the CEO tenure of founders in family firms to control for this effect in German listed family firms.

Finally, Gugler and Yurtoglu (2003) report an effect on accrual-based earnings management in family firms when there are larger holdings of the second largest owner. In further research, the impact and effects of other large shareholders should be investigated. Within this analysis, one may also prove for their identity. Mietzner and Schweizer (2014) and Mietzner and Schiereck (2016), for example, document that strategic investors and financial investors in particular can be assumed to have an intention to influence the corporate policy of German companies in the long term.

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APPENDIX. LIST OF VARIABLES

Variable	Description
Variables used for ABEM and REM metrics estimations	
ACC	Total accruals, defined as income before extraordinary items (Worldscope Item: 04001) minus cash flow from operations.
CFO	Cash flow from operations, measured as net cash flow - operating activities (Worldscope Item: 04860) minus extraordinary items (Worldscope Item: 04225) received from the statement of cash flows.
A	Total assets (Worldscope Item: 02999).
DCFO	An indicator that equals 1 if cash flow from operations at time *t* is negative (i.e., $CFO_t - CFO_{t-1} < 0$), and 0 otherwise.
DCFO CFO*	Proxy for economic losses.
S	Net sales or revenues in year *t* (Worldscope Item: 01001).
PROD	Production costs at year *t*, defined as the sum of COGS (Worldscope Item: 01051) and $\Delta INV_t = INV_t - INV_{t-1}$ (Worldscope Item: 02101).
DISEXP	Discretionary expenses, defined as the sum of research and development expenses (Worldscope Item: 01201) and selling, general, and administrative (SG&A) expenses (Worldscope Item: 01101), as long as SG&A expenses are available. If these items are missing from Worldscope, R&D expenses are set to 0.
ABEM metric	
ABEM	Value of abnormal accruals, calculated as industry-year-specific residuals, ε_t, from the Ball and Shivakumar's (2005) model.
REM metrics	
REM_CFO	Discretionary cash flow from operations is the residuals from the Roychowdhury (2006) linear model that expresses actual cash flow from operations as a function of contemporaneous sales and changes in sales. The measure is multiplied by (-1) to allow for easier interpretation.
REM_DISC	Discretionary expenses are the residuals from the Roychowdhury (2006) linear model that expresses actual discretionary expenses as a function of lagged sales. The measure is multiplied by (-1) to allow for easier interpretation.
REM_PROD	Discretionary production costs are the residuals from the Roychowdhury (2006) linear model that expresses actual productions costs as a function of contemporaneous sales and of contemporaneous and lagged changes in sales.
Family firm definitions	
FamOwn25	Proxy for family firms; dummy variable that equals 1 if the cumulative percentage of common shares held by individuals or families exceeds 25%.
Family influence	
FamOwn	Percentage of common shares held by family members.
FoundFamOwn	Percentage of common shares held by founding family members.
ExBoFamRel	Number of family members represented on the executive board scaled by total members of the executive board.
SupBoFamRel	Number of family members represented on the supervisory board scaled by total members of the supervisory board.
Control variables | Basic model	
LOSS	Dummy variable that equals 1 if net income is less than zero.
SIZE	Natural logarithm of market value of firm *i* at the end of fiscal year *t*, winsorised at the 1% and 99% quantiles.
GROWTH	Change in sales from *t-1* to *t*, compared to previous year, winsorised at the 1% and 99% quantiles.
PERF	Net income at *t* divided by average total assets for firm *i* at time *t*, winsorised at the 1% and 99% quantiles.
HHI	Herfindahl index
EmplMgt	Cumulative percentage of voting rights held by management or employees.
BIG4	Dummy variable that equals 1 if the firm is audited by one of the Big 4 auditors: PricewaterhouseCoopers (PWC), KPMG, Deloitte, or Ernst & Young.
INTACCG	Dummy variable that equals 1 if the firm uses U.S. GAAP or IFRS.
LEVERAGE	Leverage at time *t*, calculated as total liabilities scaled by total assets, winsorised at the 1% and 99% quantiles.
DivPayoutShs	Dividend payout ratio of firm *i* at time *t*.
LogAge	Natural logarithm of the year of observation minus the founding year.
Crisis	Dummy variable accounting for the years of financial distress, i.e., 2008 and 2009, following Höwer (2016).
PostCrisis	Dummy variable accounting for the years beginning in 2010, following Höwer (2016).
Control variables | Advanced model	
FinOwn	Cumulative percentage of voting rights held by financial institutions.
OtherCompany	Cumulative percentage of voting rights held by other companies.
ExBoSize	Total number of executive board members.
SupBoSize	Total number of supervisory board members.