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# The Mixed Gamble of Competitive Dynamics in Family-Controlled Firms

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ABSTRACT We extend the mixed gamble perspective to explain how family-controlled firms frame and evaluate the difficult trade-off between potential gains and losses in financial wealth (FW) and socioemotional wealth (SEW) when pursuing portfolio-level strategic initiatives, as captured by competitive aggressiveness and complexity. Analyzing 570 public-listed Korean firms from 1998 to 2017, we find that family-controlled firms tend to avoid competitive aggressiveness and complexity in their strategic action portfolios. However, our broader perspective leads us to identify critical boundary conditions: this reluctance weakens when firms fall below historical and social performance aspiration levels, as the risks to FW and SEW become more apparent. Conversely, their reluctance strengthens when they retain many family business group affiliations that provide safeguards for FW and SEW.

**Keywords:** competitive dynamics, family-controlled firms, mixed gamble perspective, socioemotional wealth, vulnerability

## INTRODUCTION

Much family business research notes that the strategic decisions of family-controlled firms[1] are behaviorally motivated by both financial wealth (FW) and socioemotional wealth (SEW), and gains in one wealth dimension often lead to losses in another wealth dimension (Berrone et al., 2012; Gómez-Mejía et al., 2007). For example, internationalization (e.g., Alessandri et al., 2018), innovation (e.g., Chrisman and Patel, 2012), tax

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evasion (e.g., Eddleston and Mulki, 2021), acquisitions (e.g., Gomez-Mejia et al., 2018), the pricing of IPOs (e.g., Kotlar et al., 2018), and wrongdoing (Smulowitz et al., 2023) bring FW gains but SEW losses. Likewise, intellectual property investments (e.g., Chirico et al., 2020), favourable family agency contracts (e.g., Cruz et al., 2010), and strategic nepotism (e.g., Jeong et al., 2022) offer SEW gains but cause FW losses. These studies suggest that family firms' strategic decisions involve a difficult trade-off or mixed gamble between gains and losses in FW and SEW (Gomez-Mejia et al., 2010, 2018). However, while prior studies have illuminated various facets of mixed gambles by focusing on different types of strategic behaviours of family firms, we lack a *portfolio-level* perspective. Indeed, Fang et al. (2021) note that focusing on single or discrete types of initiative overlooks critical nuances in family firms' mixed gamble decisions and emphasize the need for exploring portfolio-level initiatives and their associated characteristics. Although some studies have started addressing this issue – examining, for example, composite measures of risk taking (e.g., Gomez-Mejia et al., 2019) – the question of how family firms frame and evaluate such gambles when engaging in their competitive action repertoires – the portfolio of competitive actions – remains largely unexplored in the vast family business literature. Specifically, little is known about how they assess the attributes of these competitive actions, which potentially bring financial gains but also entail substantial risks and costs. Advancing a portfolio-level view of competitive actions that holistically captures the essence of the competitive strategy of family firms as a set of temporary advantages across multiple initiatives offers an important opportunity to extend the mixed gamble concept to explain how family firms behaviorally choose the competitive pattern and position themselves in the marketplace to attain superior performance (Chen and Miller, 2012, 2015), thereby illuminating new behavioural patterns and boundary conditions.

In this paper, we explore the behavioural motives of family-controlled firms to engage in two central attributes of competitive action repertoires, named *competitive aggressiveness* and *competitive complexity*. These are key attributes of competitive action portfolios of firms and are defined, respectively, as the intensity and the variety of competitive actions pursued by firms in the marketplace (e.g., Andrevski et al., 2014; Carnes et al., 2019; Chen and Miller, 2012). We propose that family firms differ from their non-family competitors due to encountering two non-fungible utilities *in parallel*, FW and SEW, which may cause different preferences for pursuing competitive aggressiveness and complexity. SEW reflects the family's stock of affective, emotional, and social endowments in the firm (Gómez-Mejía et al., 2007), making it distinctive from FW; these two are non-fungible utility dimensions, where changing one utility dimension often causes a contrary change in the other (Berrone et al., 2010; Gomez-Mejia et al., 2011, 2018). When engaging in competitive dynamics, family firm owners thus face a difficult trade-off that entails some likelihood of *both* losses and gains in FW and SEW – what we conceptualize as the mixed gamble. Specifically, while FW considerations emphasize the desire for new and diverse action repertoires under concentrated ownership (Boyd and Solarino, 2016; Zahra, 2003), deeming competitive aggressiveness and complexity attractive for generating new revenue streams and neutralizing hazards, SEW considerations emphasize the substantial costs, risks, and managerial challenges associated with competitive aggressiveness and complexity that potentially weaken family control. Thus, we argue that family owners face a dilemma in balancing the

trade-off between FW and SEW, where the way they weigh the expected losses and gains concerning both prospective FW and current SEW is crucial for explaining the distinctive, yet heterogeneous, competitive postures of family firms.

Extending the mixed gamble perspective of the behavioural agency model (BAM) to this portfolio-level decision context, we theorize that family principals are generally reluctant to pursue competitive aggressiveness and complexity, as the risk to their current SEW derived from loss aversion likely outweighs the uncertain FW gains from such initiatives. We also suggest that in facing such a mixed gamble dilemma, family principals take into account the corporate vulnerability associated with historical and social performance below aspiration levels. Such below aspiration levels jeopardize firm survival – the source of FW and SEW (Gomez-Mejia et al., 2010; Gómez-Mejía et al., 2007) – weakening their overall reluctance to pursue competitive aggressiveness and complexity, as both FW and SEW are at risk if the firm does not survive. We further theorize another important contingency affecting how family owners can balancecompeting FW and SEW outcomes by focusing on the safeguarding effect of family business group affiliations. These affiliations can better protect family owners' SEW as they can be subsidized via internal transactions and equity investments, leading to more family-controlled affiliates (Chang and Hong, 2000; Joh, 2003). In such situations, family owners' FW and SEW goals may collide, with loss aversion delaying their convergence (e.g., Choi et al., 2015), and affiliate subsidies compensating for prospective FW tied to competitive aggressiveness and complexity, making family owners more risk-averse and discouraging uncertain initiatives.

We receive empirical support from a 20-year panel dataset (1998–2017) of all manufacturing firms listed in the Korean Composite Stock Price Indexes (KOSPI), thereby making three important contributions. First, we extend the mixed gamble perspective of the BAM to unveil the behavioural motives of family firm owners to engage in competitive dynamics. Specifically, we build on and develop the mixed gamble framework to provide an explanation of how family owners frame and evaluate the difficult trade-off between gains and losses in FW and SEW in the context of family firms' portfolio-level of strategic decisions, captured by competitive aggressiveness and complexity. In so doing, we uncover and shed light on the hidden behavioural motives of family owners shaping key attributes of family firms' competitive action repertoires, which are central to the strategic management of firms, yet still disjointed in the literature (Chen and Miller, 2012, 2015). Relatedly, we also add to the literature on mixed gamble decision-making that focused on single (e.g., Chirico et al., 2020; Eddleston and Mulki, 2021) or discrete (e.g., Fang et al., 2021; Gomez-Mejia et al., 2010, 2019) competitive actions at a time by demonstrating the significance of widening the scope to encompass the attributes of competitive action repertoires as the fundamental element of a coordinated, continuous strategy that balances FW and SEW across multiple initiatives, shedding light on holistic BAM predictions regarding the SEW–FW trade-offs across interdependent initiatives that go beyond balancing isolated trade-offs within the portfolio of competitive actions. This portfolio-level exploration thus responds to the call for looking at the mixed gamble facets of family firms from portfolio-level initiatives and their associated attributes (Fang et al., 2021), enhancing our understanding of the interplay between FW and SEW considerations in the broader strategic decision-making of family firms.

Second, we extend the applications of the BAM framework as a valuable theoretical base for understanding the mechanisms driving the interconnected attributes of

the family firm's competitive action portfolio by theorizing and demonstrating how vulnerable performance conditions and family business group affiliations can alter the risk-bearing considerations – that is, the extent to which family principals are willing to accept the risk of potential SEW losses (Wiseman and Gomez-Mejia, 1998) – embedded in the mixed gamble calculus of family firms. In so doing, we further extend the literature on the behavioural agency decision-making model, reconciling the fragmented focus on selective behavioural dimensions in prior studies (e.g., Gómez-Mejía et al., 2007; Gu et al., 2024) into a more comprehensive theory of family firms' competitive dynamics. This theoretical advancement illustrates how mixed gamble decisions are a complex, evolving process within interdependent initiatives in competitive action portfolios under vulnerable conditions, providing a more complete theoretical framework and stronger empirical evidence of the variability in how family firms pursue competitive aggressiveness and complexity. More importantly, by introducing family business group affiliations as a *new* boundary condition with a decisive impact on the mixed gamble calculus of family owners, we add to emergent family business research by shifting the focus beyond the family-business ownership interface to the boundaries between the entrepreneurial family, its multiple assets, and family firms within the family-related organizational ecosystem (De Massis et al., 2021).

Lastly, we broadly contribute to family business research on institutional embeddedness by highlighting the nuanced interplay of unique context-specific informal institutions – namely, family business group affiliations – in helping family firms balanceompeting FW and SEW goals in Korea, where formal institutional frameworks are often weak. In so doing, we support prior studies that view informal institutions as substitutes for formal systems in contexts with limited formal institutions (Gomez-Mejia et al., 2024b; Khanna and Palepu, 2000) and recognize them as important factors shaping family-centric goals and strategy (Berrone et al., 2022).

## THEORETICAL BACKGROUND AND HYPOTHESES

### Research on Antecedents of Competitive Aggressiveness and Complexity

Scholarship on competitive dynamics embraces the competitive action repertoires of firms as the main object of research (Chen and Miller, 2012). In particular, the literature considers competitive aggressiveness and complexity – the intensity and the variety with which firms carry out competitive actions in the marketplace – as the central attributes of competitive action repertoires (e.g., Andrevski et al., 2014, 2016; Carnes et al., 2019) and focuses on eight key market-oriented actions in the competitive action repertoire; acquisitions, alliances, market expansions, new product development, pricing changes, capacity-related actions, legal actions, and marketing actions (Chen and Miller, 2012; Connelly et al., 2017; Derfus et al., 2008). Competitive aggressiveness and complexity most closely reflect the notion of strategy as a set of temporary competitive advantages (D'Aveni, 1994; Smith et al., 2001), and 'the essence of the firm's competitive strategy in a dynamic market process' (Andrevski and Ferrier, 2019, p. 623). These central

attributes of competitive action repertoires are also considered as key indicators of firm performance and survival in the competitive environment (Chen and Miller, 2012; Smith et al., 2001). At the same time, the literature notes that such initiatives bring substantial challenges and risks to firms, such as intra- and inter-firm coordination costs, errors and mistakes, as well as diminishing returns on invested resources (Andrevski and Ferrier, 2019; Connelly et al., 2017).

Prior research has identified several firm- and industry-specific antecedents of competitive aggressiveness and complexity (e.g., Andrevski et al., 2014, 2016; Carnes et al., 2019; Chen et al., 2010; Connelly et al., 2010; Ferrier, 2001; Nadkarni et al., 2016). For instance, Ferrier (2001) finds that competition-buffered industrial environments suppress the motivation of firms to compete aggressively and diversely in the marketplace. Andrevski et al. (2014) find that managerial racial diversity helps firms undertake new and diverse competitive actions, as more diverse groups better sense, interpret, and respond to competitive challenges, environmental cues, and market trends. These studies generally base their arguments on the notion that competitive aggressiveness and complexity are linked to greater financial gains (Chen and Miller, 2012), and hence decision-makers opt for a level of competitive aggressiveness and complexity that optimizes the risk–return profile of being aggressive and diverse in a given competitive environment (e.g., Chen and Miller, 2015; Nadkarni et al., 2016). However, competitive aggressiveness and complexity also bring substantial costs, risks, and managerial challenges (Andrevski and Ferrier, 2019; Connelly et al., 2017) that may cause losses in other dimensions of wealth that are relevant to managers and shareholders, such as their control and identity.

These competing considerations are likely to be particularly salient in family businesses. In these firms, defined by a family's control and significant influence through the active involvement of its members in the firm (Burkart et al., 2003; Faccio and Lang, 2002; Jeong et al., 2022), family owners might be attracted by the potential FW benefits and the risk reduction achievable by developing and undertaking new and diverse competitive actions in their repertoires (Boyd and Solarino, 2016; Zahra, 2003), but might also be concerned that aggressive and diverse competitive initiatives could lead to losses of SEW by diluting family control and identity. Although the joint consideration of FW and SEW suggests that family firms face more complex dilemmas and trade-offs when pursuing an aggressive and diverse series of competitive actions, the competitive dynamics literature so far has not explored differences between family and nonfamily firms' competitive repertoires systematically (Chen and Miller, 2012, 2015). This omission in the literature is especially crucial given that the influence of family firm owners on firm strategies spans multiple domains of competitive strategy (Chen and Miller, 2015) and that they control the majority of firms in most world economies (e.g., La Porta et al., 1999).

## Mixed Gamble Perspective of Behavioural Agency Model

The BAM departs from the standard agency theoretical view in several important ways. Predominant among these is that BAM views actors (i.e., decision-makers) not as constantly avoiding risks but as avoiding losses (Wiseman and Gomez-Mejia, 1998). Actors

are risk-takers in the loss domain to recover from an unsatisfactory condition. However, in the gain domain, actors are likely to be risk-averse to preserve their current wealth (Martin et al., 2013). Moreover, the latest BAM developments mitigate the assumption that actors take account of only financial aspects. Some scholars, for example, note that managers are often involved in interlocks to gain status and impact in industries rather than for only financial purposes (e.g., Zona et al., 2018).

SEW refers to the pool of non-financial aspects that capture family owners' stock of affective, emotional, and social endowments vested in the firm (Gómez-Mejía et al., 2007). SEW includes such aspects as 'family control and influence, identification of family members with the firm, binding social ties, emotional attachment of family members, and renewal of family bonds to the firm through dynastic succession' (Berrone et al., 2012, p. 259). SEW is distinguished from the non-financial goals of executives in nonfamily enterprises, such as narcissistic needs and power (Gomez-Mejia et al., 2011). Although executives of nonfamily enterprises might enjoy non-financial rewards (Gomez-Mejia et al., 2019), they are less bound to a particular firm given that their contracts are subject to rescission. Conversely, family principals' socioemotional goals tend to be entirely rooted in the family business. Family principals also have a long-term horizon, often spanning generations (Gomez-Mejia et al., 2010; Miller et al., 2011; Zahra, 2003), and their focus is grounded in the family firm (Berrone et al., 2012), whereas nonfamily executives tend to seek to build their empires and reputations. Therefore, family decision-makers' non-financial goals can be distinguished from those of nonfamily decision-makers as an outcome of the utility dimensions, the focal group, long-term horizon, and firm-specific relations.

Several studies offer convincing evidence of family firms' non-financial concerns (i.e., SEW). Some scholars, for example, note that family firms pay focused attention to SEW goals (e.g., Berrone et al., 2012), weigh the gains and losses of SEW in strategic decision-making (e.g., Gu et al., 2019), or preserve their SEW endowment (e.g., Gómez-Mejía et al., 2007). These earlier works contrast with agency theory-based research arguing that family principals are concerned with financial goals alone (e.g., Chang, 2003). In view of this tension concerning the relevant goals, other scholars suggest the interplay of SEW and FW (Chrisman and Patel, 2012; Patel and Chrisman, 2014), noting that family firms are more concerned with SEW than FW under strong financial performance, while prioritizing FW over SEW under poor financial conditions. While some authors have acknowledged that FW and SEW can relate in different ways, and sometimes benefit one another (e.g., Chirico et al., 2020; Chua et al., 2015), studies have shown compelling evidence that in the context of strategic decisions family firms tend to privilege either FW or SEW. Still, however, there is a lack of studies on the reconciliation of these scattered perspectives of family principals' goals that holistically explain strategic decision-making in this type of firm (Fang et al., 2021). In particular, the lack of clarity is apparent in the case of two fundamental attributes of competitive action repertoires – competitive aggressiveness and complexity – that potentially bring financial gains and/or substantial risks and challenges to family firms (Chen and Miller, 2012, 2015).

In moving toward an integrated view, we theorize that family-controlled firms encounter the dilemma of the trade-off entailing potential losses and gains in SEW and FW

in parallel when pursuing competitive aggressiveness and complexity. Specifically, we argue that family principals weigh the expected losses and gains of competitive aggressiveness and complexity with respect to the potential effects on FW and SEW in tandem. Weighing the downside and upside of strategic decisions in these two utilities in tandem is challenging for family owners, as FW and SEW are non-fungible, and the gains in one utility often cause losses in the other.

Such difficult decision-making with potential losses and gains hints at the notion of a mixed gamble. Some scholars, for example, note that mixed gambles manifest in many strategic decisions that executives face (Bromiley, 2010; Martin et al., 2013), such as acquisitions (Fuad et al., 2021; Gomez-Mejia et al., 2018; Hussinger and Issah, 2019; Pinelli et al., 2023), innovation (Chrisman and Patel, 2012; Duran et al., 2016; Gomez-Mejia et al., 2014; Patel and Chrisman, 2014), internationalization (Alessandri et al., 2018; Gomez-Mejia et al., 2010), the pricing of IPOs (Kotlar et al., 2018; Leitterstorf and Rau, 2014), wrongdoing (Smulowitz et al., 2023), tax evasion (Eddleston and Mulki, 2021), favourable family agency contracts (Cruz et al., 2010), strategic nepotism (Jeong et al., 2022), and intellectual property protection (Chirico et al., 2020), given the expected losses and gains related to these decisions. Even if actors in both family and nonfamily firms similarly struggle with the mixed gambles, family firms face even more complex situations in that they must grapple with the difficult trade-off or mixed gamble involving losses and gains in two non-fungible utility dimensions (e.g., Eddleston and Mulki, 2021). Although mixed gambles admit that executives hardly face strategic decisions with lose-lose or win-win outcomes, the mixed gamble between FW and SEW considerations often causes lose-win outcomes, or vice versa, when evaluated in nonfinancial and financial terms.

We argue that, in the context of a broader repertoire of strategic decisions, as captured by the concepts of competitive aggressiveness and complexity, family firms will address the mixed gamble dilemma in different ways based on two critical contingencies: the vulnerability derived from historical/social performance below the aspiration level and family business group affiliates that offer opportunities to protect family owners' SEW through internal transactions and equity investments. Thus, we expand the BAM to encompass two central attributes of competitive action repertoires and incorporate previously overlooked boundary conditions that, we argue, play a critical role in shaping the mixed gamble calculus of family firms, particularly their willingness to accept the risk of potential SEW losses (i.e., risk bearing; Wiseman and Gomez-Mejia, 1998).

Under conditions of prosperity, FW and SEW goals are more likely to be at odds when it comes to defining the firm's competitive aggressiveness and complexity. Without financial pressure and/or having many business group affiliations that are family-controlled, family owners might focus on protecting current SEW while avoiding risks and discounting potential FW gains tied to competitive aggressiveness and complexity. In contrast, under vulnerable conditions, given that fulfilling corporate financial obligations is an essential condition for family owners to secure FW and SEW simultaneously, and that few family business group affiliations may not better protect family owners' FW and SEW than many affiliations (e.g., Choi et al., 2015), FW and SEW concerns are aligned as indicators of change in the firm's willingness to pursue competitive aggressiveness and complexity. Financial pressures and few business

group affiliations, therefore, stress the need to change the framing in pursuing competitive aggressiveness and complexity by way of both higher prospective FW and the conservation of SEW, despite the risk of transient SEW losses. Thus, we assume that as a change in strategic decisions indicates the trade-off between FW and SEW outcomes in most situations (Gomez-Mejia et al., 2014, 2018), the concerns for FW and SEW are typically at odds as drivers of competitive aggressiveness and complexity.

However, when firm performance is below the historical and social aspiration levels, concerns over FW and SEW are aligned as drivers of competitive aggressiveness and complexity, since both could be wiped out entirely if the firm does not survive. Furthermore, FW and SEW concerns are also likely to be aligned when family firms have few business group affiliations. This is because few affiliation subsidies may not properly compensate for prospective FW tied to competitive initiatives (e.g., Choi et al., 2015). This, in turn, makes family owners more risk-oriented, emphasizing both higher prospective FW and the conservation of current SEW, thereby encouraging the pursuit of aggressive and diverse competitive actions despite the risk of transient SEW losses. In sum, SEW acts as a fundamental driver of change in the willingness to pursue competitive aggressiveness and complexity under vulnerability ensuing from performing below historical/social aspiration and few family business group affiliations, while also acting as a hindrance under normal conditions.

## Mixed Gamble of Competitive Aggressiveness and Complexity

Competitive aggressiveness and complexity provide firms with benefits, such as keeping rivals off balance, delaying rival responses, and creating temporary monopolistic positions, ultimately generating temporary competitive advantages that result in superior financial gains (Carnes et al., 2019; Ferrier, 2001; Ferrier et al., 1999; Smith et al., 2001). However, in many real-world cases, the financial gains of competitive aggressiveness and complexity are uncertain (e.g., Andrevski and Ferrier, 2019; Connelly et al., 2017). An aggressive and diverse series of competitive actions often generates substantial risks and challenges, such as intra- and inter-firm coordination costs, errors and mistakes, and diminishing returns on invested resources (Andrevski et al., 2014; Andrevski and Ferrier, 2019; Connelly et al., 2017).

For family-controlled firms, the negative implications of competitive aggressiveness and complexity are likely to be particularly salient with respect to their SEW. First, competitive aggressiveness and complexity often necessitate firms to secure external financing, including taking on debt and issuing shares, to effectively outperform their competitors (Chen and Miller, 2012). However, this external financing can incur the cost of potential dilution of family control and independence (Michiels and Molly, 2017), a critical SEW element (Gomez-Mejia et al., 2010, 2011; Zellweger et al., 2012). Second, pursuing aggressive and diverse competitive actions requires the inputs and talents of outsiders, particularly when initiatives break away from the existing business (Andrevski et al., 2014), as these actions demand experience, skills, and knowledge that often fall beyond the reach of family firm owners. Such initiatives may thus threaten family control of the firm. Third, threats to the firm and family's reputation could ensue from changes in the integrated resource and product

portfolios (Sieger et al., 2011). Growth by competitive aggressiveness and complexity often extends across existing markets, brands, and products in a short time (Andrevski et al., 2016; Connelly et al., 2017), diluting the consistent corporate image and its projection of the family's principals onto that image (e.g., Gomez-Mejia et al., 2018). Fourth, a scenario of failed competitive initiatives that may threaten the family's SEW constitutes the main apprehension of family principals who likely see the firm as an extension of their family. Given the long-term relationship with the firm, the family would refrain from aggressive and diverse competitive actions that imply acknowledging an error later.

For these reasons, family principals are likely to face a mixed gamble dilemma in pursuing competitive aggressiveness and complexity, as they entail uncertain expectations of FW gains and significant risks to their SEW. Although competitive aggressiveness and complexity may offer potential SEW gains if successful, these gains are speculative, whereas SEW losses arising from the dilution of family control, weakening the family firm identity, and ensuing managerial challenges are deemed more certain. As potential FW and SEW gains from pursuing competitive aggressiveness and complexity may not justify losing current SEW, family businesses are unlikely to accept the trade-offs. Especially in the realm of competitive dynamics, such strategies can provoke particularly intense rival responses, escalate competition, and increase market uncertainty (Chen and Miller, 2012, 2015), requiring significant resources and coordination that strain the firm's capabilities, with these risks being more pronounced in family businesses due to their focus on preserving current SEW (Gomez-Mejia et al., 2018; Gómez-Mejía et al., 2007). Thus, following the mixed gamble of BAM predictions that emphasize a desire for protecting accrued wealth when facing uncertainty (Martin et al., 2013), we expect family principals to be reluctant to pursue competitive aggressiveness and complexity due to the uncertain FW gains and risk to their SEW from such initiatives. Therefore, we posit:

> *Hypothesis 1:* Family control is negatively related to (a) competitive aggressiveness and (b) competitive complexity.

We also propose that in facing the decision dilemma of pursuing competitive aggressiveness and complexity, family principals may behave differently depending on the corporate vulnerability arising from performing below historical and social aspirations. That is, when a firm's current performance falls short of its past achievements (i.e., historical aspirations) and industry benchmarks (i.e., social aspirations), family principals may weigh the losses and gains of FW and SEW as financial hazards that will eventually threaten firm survival – the source of FW and SEW (Gómez-Mejía et al., 2007, 2018). Under these vulnerable situations, family owners face pressure to improve financial conditions and reduce failure risks. This situation may trigger problemistic search (Cyert and March, 1963; Iyer and Miller, 2008; Posen et al., 2018), making family owners feel threatened as both FW and SEW are jeopardized. Thus, when firm performance falls below historical and social aspiration levels, FW and SEW concerns drive family owners to pursue competitive aggressiveness and complexity to reverse poor conditions, shifting their focus to achieve higher prospective FW and preserve SEW, even at the risk of transient SEW losses.

More specifically, when a firm's performance falls below historical benchmarks, family owners recognize the urgent need to address declining financial conditions, which threaten both FW and SEW (e.g., Gómez-Mejía et al., 2007, 2018). To conserve FW and SEW, they may pursue competitive aggressiveness and complexity, aiming to restore past performance levels and improve the competitive position in the marketplace. Despite the inherent risks and challenges of competitive aggressiveness and complexity, the urgency to realign current performance with historical standards motivates these initiatives to secure both FW and SEW. Similarly, when the firm's performance lags behind industry benchmarks (i.e., the firm's social reference point), it signals a threat to its competitive standing and reputation (Iyer and Miller, 2008). Family principals who are aware of the potential erosion of market confidence and stakeholder trust feel the need to enhance financial conditions to protect both FW and SEW. By pursuing competitive aggressiveness and complexity, they could close the gap with competitors, boost market presence, and restore the firm's reputation. Such strategies, though risky, are seen as essential to meeting industry standards and ensuring long-term viability (Carnes et al., 2019; Ferrier, 2001).

Taken together, we argue that the vulnerability from performing below historical and social aspirations acts as a warning bell to family principals in terms of solving the decision dilemma in pursuing competitive aggressiveness and complexity, inducing the need to change the deteriorating financial conditions to conserve FW and SEW in tandem. Thus, although these strategies may result in transient SEW losses and substantial risks and challenges, family firm owners are more willing to undertake an aggressive and diverse series of competitive actions when firm performance is below historical and social aspirations. Therefore:

> *Hypothesis 2:* Performance below the historical aspiration level moderates the relationship between family control and (a) competitive aggressiveness and (b) competitive complexity in such a way that the relationship becomes positive.

> *Hypothesis 3:* Performance below the social aspiration level moderates the relationship between family control and (a) competitive aggressiveness and (b) competitive complexity in such a way that the relationship becomes positive.

Although family business scholars have emphasized the dynamic nature of FW –SEW trade-offs, including the role of performance aspiration gaps, they have paid limited attention to other factors that shape their risk-bearing considerations – that is, the extent to which family owners are willing to accept the risk of potential SEW losses (Wiseman and Gomez-Mejia, 1998) – embedded within the mixed gamble dilemma (Martin et al., 2013). Within the contours of our mixed gamble model, however, the significance of this risk-bearing consideration becomes pronounced, serving as a pivotal role in unveiling the manifestations of risk aversion inherent to family firms' conduct within competitive endeavours. We propose that another important boundary condition in this regard revolves around the presence and size of family business group affiliations. Specifically, we suggest that family business group affiliations may play a decisive role in how family owners solve the decision dilemma in

pursuing competitive aggressiveness and complexity, and the effect of family control may differ in situations where family owners' SEW is better protected, such as in the case of family business group affiliations.

Family business group affiliations – defined as legally independent affiliates controlled by the same family owner (e.g., Chang, 2003) – can better protect SEW because they can be subsidized via internal transactions and equity investments (Chang et al., 2006; Chang and Hong, 2000; Joh, 2003), ultimately resulting in more affiliates under family control. In particular, controlling family principals in Korea often exert substantial control over affiliates through higher cross-holding shares and strong ties among affiliated firms (Chang, 2003; Choi et al., 2015). They also view business group affiliations as critical informal institutions, actively participating in resource allocation and investment decisions across affiliates (Joh, 2003; Kim et al., 2004, 2010). As a result, these affiliates function similarly to divisions within diversified corporations but with a unique overlay of SEW-driven priorities inherent to family control that dominate decision-making (Jeong et al., 2022) across a broad repertoire of competitive actions.

In such situations, family owners' FW and SEW goals may collide, with loss aversion delaying their convergence (e.g., Choi et al., 2015), and affiliate subsidies compensating for prospective FW tied to competitive initiatives, making family owners more risk-averse and discouraging competitive aggressiveness and complexity that entail uncertain FW gains and certain risks to their SEW. Although some argue that group-affiliated firms would be more aggressive in competitive interactions based on cross-subsidization (e.g., Khanna and Tice, 2001), we suggest that in the Korean context, where formal institutional frameworks are often limited, the financial cushion provided by subsidies is more likely to lead to a preference for family stability and long-term control. This preference is driven by the family's inherent risk aversion and desire to protect SEW rather than pursuing uncertain initiatives, as family firms often use subsidies to ensure financial stability and safeguard SEW in a weak formal institutional context (e.g., Chang and Hong, 2000; Choi et al., 2015).

Furthermore, as family principals form or acquire more affiliated firms, they are inclined to view these arrangements as advantageous to their SEW goals. With many family business group affiliations, family control is often enhanced via cross-shareholding and pyramidal ownership structures, allowing family owners to exercise control over their business group affiliates (Carney et al., 2011; Gedajlovic et al., 2012). To family owners, business group affiliations also signal stability and wealth security, offer the opportunity to pursue SEW, and help buffer against economic jolts (e.g., Chang, 2003; Chang and Hong, 2002; Kim et al., 2004). These affiliations thus enhance the sense of satisfaction with their business and spare family principals a sense of urgency (Gu et al., 2019). In such comfortable situations, family owners are more likely to be risk-averse and focus on current SEW while avoiding risks and discounting potential FW gains linked to competitive aggressiveness and complexity. Hence:

> *Hypothesis 4:* The number of family business group affiliations moderates the relationship between family control and (a) competitive aggressiveness and (b) competitive complexity in such a way that the relationship becomes more negative.

## METHOD

Our sample is composed of all manufacturing firms listed on the KOSPI stock market between 1998 and 2017. Korea is a suitable context to test our hypotheses because family control through involvement in ownership and management/governance is prevalent and core in influencing strategic decision-making, along with family business group affiliations that dominate the economic landscape and significantly influence national industrial development within formal institutional constraints (e.g., Bae et al., 2002; Chang, 2003; Kim et al., 2004, 2008). To collect the sampled firms' data, we used five archive sources. Specifically, we gathered competitive action data from the LexisNexis database (e.g., Cho, 2024; Ndofor et al., 2011, 2015), which collects published news articles and press releases. Information on ownership, business group affiliations, board structure and CEOs, and financial and non-financial data were obtained from the TS2000 and DART databases (e.g., Cho et al., 2018; Jeong et al., 2022; Jeong and Kim, 2019). We collected information on family trees from the Maeil Business Newspaper (Jeong et al., 2022), and industry features from the Korean Statistical Information Service.

As controlling family principals in Korean firms often exercise tight control over the firm through a higher concentration of family ownership – via direct shares and/or indirect shares acquired through cross-shareholdings within family business affiliations (e.g., Bae et al., 2002; Chang, 2003) – and active involvement in management/governance (e.g., Jeong et al., 2022), we define family-controlled firms as those where family members and/or affiliates within the same family business group hold a minimum of 20 per cent ownership and at least one family member serves on the top management team or board of directors of the focal family firm. This definition is in line with previous non-U.S. studies where family control through direct shares and indirect cross-shareholdings within the same family business group is prevalent (e.g., Claessens et al., 2000; Khanna and Palepu, 2000; La Porta et al., 1999). The initial sample consisted of 635 listed firms between 1998 and 2017. Of these, 65 had incomplete non-financial and financial information and were thus excluded. Therefore, the final sample of 570 firms represents 8108 firm-year observations between 1998 and 2017 (of which 6907 of family-controlled firms, and the remainder non-family controlled). The panel is unbalanced for several reasons, including new entrants and delisted firms. To ensure the correct direction of causality, we use a one-year time lag for the explanatory and control variables.

### Measures

*Independent variables*

Family control. Given that Korean firms are often characterized by substantial family ownership through direct and indirect shares acquired through cross-shareholdings of family business group affiliations (Bae et al., 2002; Chang, 2003), we defined and distinguished family-controlled firms using a continuous measure based on the proportion of the sum of ownership shares held by family members and affiliates within the same family business group when holding a minimum of 20 per cent and at

least one family member is in the top management team or board of directors of the focal family firm. Otherwise, the variable is set to zero, thus left-censored. Specifically, if firms met the inclusion criteria within the time window, then the proportion of ownership shares held by family members and/or affiliates in the same family business group was coded as a continuous variable. As a useful and conservative proxy and component of SEW, this family control measure enables capturing what allows family owners to replace FW with SEW criteria or vice versa (e.g., Berrone et al., 2012; Zellweger et al., 2012), particularly in the context where firms are often owned and managed by the business group's family (e.g., Claessens et al., 2000; Khanna and Palepu, 2000). As a robustness check, we also divided and tested two types of family control: (1) direct control, measured as the proportion of ownership shares held by family members (excluding cross-shareholdings of affiliates) with at least one family member in management or governance, and (2) indirect control, measured as the proportion of cross-shareholdings held by affiliates within the same family business group with at least one family member in management or governance. We further tested alternative measures of family control using a continuous measure based on the proportion of the sum of ownership shares held by family members and family group affiliations when (3) the family heir is involved in management or governance, (4) the founder is involved in management or governance, and (5) holding a minimum of 5 per cent, 10 per cent, or 50 per cent of family ownership with at least one family member involved in management or governance. We found consistent findings, as detailed in the supplementary analysis section.

Performance below aspiration levels. Following Iyer and Miller (2008), we used return on assets (ROA) to assess the aspiration and performance gap. Based on historical and social comparisons, we constructed two variables for performance below aspirations. We computed the level of historical performance below aspirations as the firm's ROA in year t-1 minus ROA in year t-2, and the level of social performance below aspirations as the firm's ROA in year t-1 minus their competitors' ROA in year t-1 (Greve, 1998, 2003). For competitors' ROA, we calculated the median ROA of firms in the relevant two-digit Korean Standard Industry Classification (KSIC) category in year t-1. We took the absolute value if the difference in ROA based on historical and social comparisons was negative; otherwise, the variable was coded zero.

Family business group affiliations. Following prior studies (e.g., Choi et al., 2015; Jeong et al., 2022), we measured this variable using the number of affiliates belonging to the same family business group for each firm each year, obtained from their annual reports. We used the logarithm of the number of family group affiliations to reduce skewness.

*Dependent variable*

Competitive aggressiveness and competitive complexity. In line with the competitive dynamics literature, we conducted a structured content analysis of news articles to capture the firms' competitive actions (e.g., Ferrier, 2001; Ferrier et al., 1999;

Nadkarni et al., 2016). All news headlines were coded manually in a series of steps. First, two experienced academics selected the headlines for each sampled firm in the 1998–2017 period appearing in the LexisNexis database containing more than 10,000 publications, and employed by other studies to identify firms' competitive actions (e.g., Nadkarni et al., 2016; Ndofor et al., 2011, 2015). Specifically, they used the NVivo structured content analysis software 'to categorize each news article [from a focal year] into one of several pre-established competitive action categories' (Ndofor et al., 2015, p. 1664). The pre-established types of competitive actions, consistent with the literature (e.g., Cho, 2024; Connelly et al., 2017, 2019; Derfus et al., 2008), are the following: new services and products, alliances, acquisitions, advertising actions, price reductions, market expansions, legal actions, and capacity-related actions. Next, they assessed each headline to exclude duplicate news of the same actions in a focal year, decided whether a headline contained a sampled firm's competitive action, and categorized it according to action type. Their Perreault and Leigh (1989) interrater coding reliability was 0.81.

Following prior studies (e.g., Andrevski et al., 2016; Andrevski and Ferrier, 2019), we measured *competitive aggressiveness* as the total number of competitive actions taken by a firm in a focal year. We calculated *competitive complexity* by using the Herfindahl index: $1-\sum_i P_i^2$, where $P_i$ represents the proportion of competitive action in category $i$ ($i=1$–$8$) (e.g., Ferrier, 2001; Ndofor et al., 2011). As firms in different industries vary in their pursuit of different types and numbers of competitive actions, we controlled for competitive complexity when predicting competitive aggressiveness, and vice versa when predicting competitive complexity[2] (Andrevski et al., 2014).

*Control variables*. We included several control variables in the analysis. First, we controlled for *performance above aspiration level* based on historical and social comparisons to isolate the effect of performance below aspiration levels (e.g., Gomez-Mejia et al., 2018). If the absolute values of the historical and social aspiration gaps were positive, we took the absolute value of the difference in ROA. Otherwise, the variable was coded as zero. Second, past market-based and accounting-based performance reflecting a family firm's market valuation and operational efficiency may influence the family firm's strategic decisions (e.g., Chrisman and Patel, 2012). Thus, we included *past Tobin's Q* (i.e., the proportion of the firm's market value to total assets) and *past return on assets* as controls in the analysis. Third, given that *firm age* and *firm size* are important drivers in shaping how firms respond differently to competitive threats in the marketplace (Chen and Miller, 2012; Ndofor et al., 2011), we controlled for firm age as the logarithm of the number of years since founding and firm size as the logarithm of assets. Fourth, to account for the influence of a firm's financial structure on its propensity to initiate competitive actions (e.g., Carnes et al., 2019), we controlled for *financial slack* (i.e., the proportion of quick assets to liabilities), *leverage* (i.e., the proportion of liabilities to assets), and *case holding ratio* (i.e., the proportion of cash and cash equivalents to assets). Fifth, we included *advertising intensity* (i.e., the proportion of advertising expenditure to sales) and *R&D intensity* (i.e., the proportion of R&D expenditure to sales) to account for the firm's commitment to market visibility and innovation in pursuing competitive dynamics. Sixth, we controlled for the *proportion of common shares owned by 5* per cent *of nonfamily blockholders*,

as these may influence family control and family firms' strategic decisions (e.g., Villalonga and Amit, 2006). Seventh, given the potential effects of corporate governance constraints stemming from board size on competitive dynamics (Connelly et al., 2017), we controlled for *board size* (i.e., the logarithm of the total number of directors). Eighth, given the prevalence of political ties in Korea, which often play a significant role in shaping a firm's strategies and access to resources (e.g., Siegel, 2007), we controlled for *political ties* (i.e., the proportion of directors with experience in serving as government officials to total number of directors). Ninth, to account for the unequal media coverage across firms, we controlled for *media coverage*, measured as the proportion of the total number of news articles for each focal firm within a given two-digit KSIC code industry in a given year divided by the total number of news articles for rival firms in the same industry and year. Tenth, to account for potential industry characteristics that may affect the firms' competitive initiatives, we included *industry munificence* using the change in the proportion of industry sales from the past year to those in a focal year, *industry concentration* using the Herfindahl measure of a firm's market share for each year, and *industry dynamism* by regressing the value of industry shipments over the study period (Boyd, 1995) within each two-digit KSIC category. Lastly, we incorporated *year dummies* to control for year-specific influences.

## Analysis

We utilized the maximum likelihood estimation of generalized estimating equations (GEEs) to test the proposed hypotheses. GEEs are useful to account for any within-subject correlations that avoid spurious results arising from first-order autoregressive correlations (Liang and Zeger, 1986), offering 'robust variance estimates that account for heteroscedasticity and unobserved differences among firms' (Choi et al., 2015, p. 1056). GEEs can also handle different types of outcome variables (e.g., count and continuous) with appropriate link functions and are more robust methodologies than other panel data models, such as fixed- and random-effects models, by providing multiple correlation matrix structures to best match the data (Ndofor et al., 2011, 2015). Thus, for our study, GEEs produce more efficient parameter estimators and accurate standard errors than other regression methods.

We specified a negative-binomial model when predicting competitive aggressiveness since it is an action count with zeros and nonnegative integers, exhibiting a Poisson distribution. We chose a negative binomial rather than the Poisson regression model as the equidispersion property was violated (Baltagi, 2008). On the other hand, we used a gaussian distribution with an identity link function when predicting competitive complexity because it is a continuous variable.

*Mitigating endogeneity*. To account for unobservable factors that may affect competitive aggressiveness and complexity, we employed the Heckman two-stage estimation procedure, including the inverse Mill's ratio in the GEE models as an additional control variable (Mazzelli et al., 2018). Specifically, we performed a Probit analysis for each period wherein a family-controlled firm is the endogenous variable (e.g., Gomez-Mejia et al., 2018; Gómez-Mejía et al., 2007). The possibility of competitive aggressiveness and complexity was then estimated by including the inverse Mill's ratio calculated from the Probit analysis as the additional control variable. In the first stage (see Appendix Table AV), we used a family-controlled firm dummy (coded 1 if a family

and/or business group affiliation hold a minimum 20 per cent shares and at least one family member serves is in the top management team or board of directors, and 0 otherwise) as the dependent variable, using controls and two additional instrumental variables as independent variables, namely general/administrative expense ratio (i.e., the ratio of general/administrative expenses to sales) and dividend ratio (i.e., the ratio of dividends to net incomes), representing firm efficiency and dividend policy. The rationale for the inclusion of these instruments is theoretically driven given that family firms have fewer agency costs, and prior studies note that firm efficiency and dividend policy are indicators of family firm agency costs (e.g., Gomez-Mejia et al., 2014). These instruments are highly correlated with the likelihood of family control (general/administrative expense ratio: $r = -0.128$, $p = 0.000$, dividend ratio: $r = 0.117$, $p = 0.000$), but not correlated with competitive aggressiveness (general/administrative expense ratio: $r = 0.001$, $p = 0.959$, dividend ratio: $r = -0.016$, $p = 0.155$) and competitive complexity (general/administrative expense ratio: $r = 0.005$, $p = 0.638$, dividend ratio: $r = -0.004$, $p = 0.739$). We further conduct additional tests to verify the relevance and exogeneity conditions of our instruments in both competitive aggressiveness and complexity models. The Sanderson-Windmeijer first-stage Chi-squared tests indicate that the endogenous variable is not underidentified ($\chi^2(2) = 85.24$, $p = 0.00$). The Cragg-Donald Wald F-statistics for weak identification (42.61) exceed the Stock and Yogo threshold of 19.93, confirming that our instruments are strong predictors. The Kleibergen-Paap rk LM statistics (84.28, $p = 0.00$) further reject the null hypothesis of model underidentification. In addition, the Hansen-J statistics for overidentification (aggressiveness: $\chi^2(1) = 1.48$, $p = 0.22$; complexity: $\chi^2(1) = 1.78$, $p = 0.18$) indicate that the instruments are valid and exogenous in both models. These collectively confirm that our instruments are strong predictors of family control and not correlated with the error term in the second-stage equation.

## RESULTS

Table I presents the descriptive statistics and correlations. The variables used for the interaction terms are mean-centered to lower multicollinearity. All variance inflation factors are well below the threshold of five, indicating that multicollinearity is not a concern.

Tables II and III report the GEE results predicting competitive aggressiveness and competitive complexity, respectively. Hypothesis 1 proposes that family control is negatively related to (a) competitive aggressiveness and (b) competitive complexity. In Models 2 and 5, the coefficient for family control is negative and statistically significant in predicting competitive aggressiveness (historical aspiration: $= -0.835$, $p = 0.000$; social aspiration: $= -0.846$, $p = 0.000$) and competitive complexity (historical aspiration: $= -0.003$, $p = 0.000$; social aspiration: $= -0.003$, $p = 0.000$), implying that a 1 per cent increase in family control leads to a decrease in competitive aggressiveness and complexity by about 0.8 and 0.003. Thus, Hypothesis 1 receives empirical support. To check whether the estimated coefficients for family control in predicting competitive aggressiveness versus complexity are statistically different from each other, we

Table I. Descriptive statistics and correlations

| | *1* | *2* | *3* | *4* | *5* | *6* | *7* | *8* | *9* | *10* | *11* | *12* | *13* | *14* | *15* | *16* | *17* | *18* | *19* | *20* | *21* | *22* | *23* | *24* | *25* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Competitive aggressiveness | 1.00 | | | | | | | | | | | | | | | | | | | | | | | | |
| 2. Competitive complexity | 0.71 | 1.00 | | | | | | | | | | | | | | | | | | | | | | | |
| 3. Past Tobin's Q | 0.07 | 0.15 | 1.00 | | | | | | | | | | | | | | | | | | | | | | |
| 4. Past return on assets | 0.03 | 0.05 | −0.15 | 1.00 | | | | | | | | | | | | | | | | | | | | | |
| 5. Age (log) | −0.05 | −0.12 | −0.14 | 0.00 | 1.00 | | | | | | | | | | | | | | | | | | | | |
| 6. Size (log) | 0.43 | 0.61 | 0.04 | 0.11 | 0.01 | 1.00 | | | | | | | | | | | | | | | | | | | |
| 7. Financial slack | −0.03 | −0.04 | 0.00 | 0.09 | 0.01 | −0.11 | 1.00 | | | | | | | | | | | | | | | | | | |
| 8. Leverage ratio | −0.03 | −0.01 | 0.34 | −0.40 | −0.05 | −0.02 | −0.36 | 1.00 | | | | | | | | | | | | | | | | | |
| 9. Cash holding ratio | 0.01 | 0.03 | 0.09 | 0.06 | 0.01 | 0.01 | 0.20 | −0.14 | 1.00 | | | | | | | | | | | | | | | | |
| 10. Advertising intensity | 0.03 | 0.09 | 0.16 | 0.02 | −0.01 | 0.04 | 0.04 | −0.06 | 0.03 | 1.00 | | | | | | | | | | | | | | | |
| 11. R&D intensity | 0.11 | 0.15 | 0.26 | −0.07 | −0.08 | 0.07 | 0.03 | −0.05 | 0.07 | 0.14 | 1.00 | | | | | | | | | | | | | | |
| 12. % of nonfamily blockholders | 0.23 | 0.29 | 0.13 | 0.11 | −0.06 | 0.41 | 0.11 | −0.08 | 0.14 | 0.07 | 0.05 | 1.00 | | | | | | | | | | | | | |
| 13. Board size (log) | 0.13 | 0.20 | −0.01 | 0.07 | 0.07 | 0.36 | 0.01 | −0.13 | 0.04 | 0.06 | 0.03 | 0.25 | 1.00 | | | | | | | | | | | | |
| 14. Political ties | 0.12 | 0.20 | 0.11 | 0.00 | −0.08 | 0.30 | −0.06 | 0.03 | 0.00 | −0.01 | 0.10 | 0.11 | 0.08 | 1.00 | | | | | | | | | | | |
| 15. Media coverage | 0.35 | 0.38 | 0.08 | 0.01 | −0.02 | 0.27 | −0.04 | 0.01 | 0.04 | 0.06 | 0.08 | 0.12 | 0.11 | 0.08 | 1.00 | | | | | | | | | | |
| 16. Industry munificence | 0.00 | 0.00 | 0.08 | −0.01 | −0.01 | −0.02 | −0.02 | 0.07 | −0.02 | −0.01 | −0.01 | −0.01 | 0.02 | −0.01 | 0.00 | 1.00 | | | | | | | | | |
| 17. Industry concentration | 0.18 | 0.22 | 0.07 | 0.04 | −0.01 | 0.30 | −0.02 | −0.02 | 0.01 | 0.08 | 0.01 | 0.21 | 0.16 | 0.08 | 0.10 | 0.00 | 1.00 | | | | | | | | |
| 18. Industry dynamism | 0.06 | 0.13 | 0.10 | 0.04 | −0.06 | 0.07 | 0.01 | 0.00 | 0.05 | 0.02 | 0.08 | 0.06 | −0.01 | 0.05 | 0.06 | 0.02 | −0.08 | 1.00 | | | | | | | |

Table I. (Continued)

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 19. Historical performance below aspiration level | −0.02 | −0.03 | 0.14 | −0.54 | −0.01 | −0.09 | −0.05 | 0.30 | 0.00 | −0.01 | 0.08 | −0.03 | −0.06 | 0.00 | −0.01 | 0.01 | −0.02 | −0.02 | 1.00 | | | | | | |
| 20. Historical performance above aspiration level | −0.03 | −0.04 | 0.11 | 0.21 | −0.02 | −0.11 | −0.05 | 0.18 | 0.02 | −0.02 | 0.00 | 0.03 | −0.08 | 0.01 | −0.01 | 0.07 | −0.02 | −0.02 | −0.09 | 1.00 | | | | | |
| 21. Social performance below aspiration level | −0.03 | −0.05 | 0.26 | −0.82 | −0.01 | −0.14 | −0.08 | 0.49 | −0.03 | 0.00 | 0.11 | −0.07 | −0.08 | 0.00 | −0.02 | 0.04 | −0.04 | −0.02 | 0.65 | −0.01 | 1.00 | | | | |
| 22. Social performance above aspiration level | 0.05 | 0.06 | 0.14 | 0.42 | −0.05 | 0.03 | 0.13 | −0.14 | 0.17 | 0.04 | 0.02 | 0.19 | 0.02 | 0.00 | 0.03 | 0.05 | 0.01 | 0.02 | −0.09 | 0.40 | −0.16 | 1.00 | | | |
| 23. Business group affiliations (log) | 0.28 | 0.40 | 0.10 | 0.06 | −0.15 | 0.54 | −0.11 | −0.03 | 0.01 | −0.03 | 0.11 | 0.11 | 0.13 | 0.25 | 0.16 | 0.00 | 0.12 | 0.14 | −0.06 | −0.06 | −0.09 | 0.01 | 1.00 | | |
| 24. Family control | −0.10 | −0.11 | −0.16 | 0.15 | −0.04 | 0.02 | 0.05 | −0.24 | −0.04 | −0.02 | −0.09 | −0.24 | 0.00 | −0.05 | −0.07 | −0.02 | −0.10 | 0.00 | −0.15 | −0.12 | −0.22 | 0.00 | 0.11 | 1.00 | |
| 25. Inverse Mill's ratio | 0.01 | −0.01 | 0.37 | −0.36 | 0.04 | −0.12 | −0.07 | 0.59 | 0.06 | 0.03 | 0.12 | 0.41 | −0.06 | 0.08 | 0.08 | 0.10 | 0.15 | −0.06 | 0.33 | 0.36 | 0.52 | 0.05 | −0.16 | −0.42 | 1.00 |
| Mean | 9.91 | 0.72 | 1.04 | 0.01 | 1.51 | 8.41 | 1.01 | 0.49 | 0.12 | 0.01 | 0.01 | 0.17 | 0.79 | 0.11 | 0.01 | 0.07 | 0.02 | 0.40 | 0.04 | 0.03 | 0.05 | 0.02 | 0.60 | 0.38 | 0.27 |
| Std. Dev. | 56.32 | 0.05 | 0.63 | 0.21 | 0.28 | 0.63 | 1.36 | 0.35 | 0.12 | 0.02 | 0.02 | 0.20 | 0.16 | 0.15 | 0.08 | 0.65 | 0.08 | 0.09 | 0.17 | 0.08 | 0.16 | 0.04 | 0.71 | 0.20 | 0.30 |

*Note*: $N = 8108$; all correlations greater than $|0.02|$ are significant at $p < 0.05$.

Table II. Results of GEE analysis predicting competitive aggressiveness

| *Dependent variable: competitive aggressiveness* | *Historical aspiration* | | | | *Social aspiration* | | | |
|---|---|---|---|---|---|---|---|---|
| | *Model 1* | *Model 2* | *Model 3* | *Model 4* | *Model 5* | *Model 6* | *Model 7* | *Model 8* |
| Performance above aspiration level | 1.724*** | 1.715*** | 1.750*** | 1.721*** | 0.335 | 0.486 | 0.570 | 0.550 |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.379) | (0.212) | (0.147) | (0.162) |
| Past Tobin's Q | 0.225*** | 0.229*** | 0.228*** | 0.227*** | 0.194*** | 0.198*** | 0.196*** | 0.196*** |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| Past return on assets | −0.705*** | −0.688*** | −0.663*** | −0.649*** | 0.047 | 0.014 | 0.000 | 0.003 |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.740) | (0.920) | (0.998) | (0.985) |
| Age (log) | 0.214** | 0.132 | 0.117 | 0.091 | 0.113 | 0.027 | 0.009 | −0.016 |
| | (0.024) | (0.164) | (0.221) | (0.340) | (0.231) | (0.773) | (0.926) | (0.868) |
| Size (log) | 1.487*** | 1.508*** | 1.513*** | 1.492*** | 1.542*** | 1.562*** | 1.574*** | 1.553*** |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| Financial slack | −0.089*** | −0.103*** | −0.108*** | −0.116*** | −0.108*** | −0.120*** | −0.126*** | −0.134*** |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| Leverage ratio | −0.228* | −0.315** | −0.358*** | −0.357*** | −0.435*** | −0.517*** | −0.597*** | −0.591*** |
| | (0.060) | (0.012) | (0.004) | (0.004) | (0.000) | (0.000) | (0.000) | (0.000) |
| Cash holding ratio | 0.162 | 0.128 | 0.130 | 0.174 | 0.108 | 0.068 | 0.069 | 0.114 |
| | (0.168) | (0.291) | (0.282) | (0.149) | (0.363) | (0.577) | (0.574) | (0.348) |
| Advertising intensity | 4.256*** | 4.177*** | 3.919*** | 4.064*** | 4.617*** | 4.567*** | 4.346*** | 4.485*** |
| | (0.000) | (0.000) | (0.001) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| R&D intensity | 6.202*** | 6.060*** | 6.065*** | 5.978*** | 5.559*** | 5.451*** | 5.429*** | 5.355*** |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| % of nonfamily blockholders | 0.961*** | 0.789*** | 0.775*** | 0.748*** | 0.533*** | 0.363** | 0.324** | 0.303** |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.012) | (0.025) | (0.036) |

(Continues)

Table II. (Continued)

| *Dependent variable: competitive aggressiveness* | *Historical aspiration* | | | | *Social aspiration* | | | |
|---|---|---|---|---|---|---|---|---|
| | *Model 1* | *Model 2* | *Model 3* | *Model 4* | *Model 5* | *Model 6* | *Model 7* | *Model 8* |
| Board size (log) | −0.285*** | −0.309*** | −0.309*** | −0.304*** | −0.231** | −0.260** | −0.257** | −0.255** |
| | (0.004) | (0.003) | (0.003) | (0.003) | (0.021) | (0.012) | (0.013) | (0.013) |
| Political ties | −0.178* | −0.199** | −0.200** | −0.188* | −0.296*** | −0.313*** | −0.326*** | −0.313*** |
| | (0.065) | (0.045) | (0.044) | (0.058) | (0.002) | (0.002) | (0.001) | (0.002) |
| Media coverage | 1.203*** | 1.232*** | 1.221*** | 1.241*** | 1.065*** | 1.102*** | 1.071*** | 1.098*** |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| Industry munificence | 0.055*** | 0.053*** | 0.056*** | 0.055*** | 0.038** | 0.035* | 0.039** | 0.038** |
| | (0.003) | (0.007) | (0.004) | (0.004) | (0.040) | (0.064) | (0.038) | (0.042) |
| Industry concentration | 0.750*** | 0.822*** | 0.809*** | 0.742** | 0.535* | 0.612** | 0.580** | 0.513* |
| | (0.010) | (0.005) | (0.006) | (0.011) | (0.064) | (0.036) | (0.046) | (0.078) |
| Industry dynamism | 1.482*** | 1.430*** | 1.430*** | 1.429*** | 1.554*** | 1.502*** | 1.502*** | 1.499*** |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| Competitive complexity | 14.315*** | 14.885*** | 14.906*** | 14.994*** | 14.327*** | 14.908*** | 14.950*** | 15.041*** |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| Performance below aspiration level | 0.267*** | 0.239*** | 0.137 | 0.148 | 0.757*** | 0.690*** | 0.506*** | 0.505*** |
| | (0.001) | (0.005) | (0.161) | (0.128) | (0.000) | (0.000) | (0.009) | (0.009) |
| Business group (log) | 0.403*** | 0.431*** | 0.428*** | 0.429*** | 0.406*** | 0.434*** | 0.430*** | 0.431*** |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| Family control | | −0.835*** | −0.901*** | −0.888*** | | −0.846*** | −0.937*** | −0.922*** |
| | | (0.000) | (0.000) | (0.000) | | (0.000) | (0.000) | (0.000) |
| Family control × Performance below aspiration level | | | 1.279*** | 1.210** | | | 1.361*** | 1.279** |
| | | | (0.007) | (0.011) | | | (0.007) | (0.011) |

Table II. (Continued)

| *Dependent variable: competitive aggressiveness* | *Historical aspiration* | | | | *Social aspiration* | | | |
|---|---|---|---|---|---|---|---|---|
| | *Model 1* | *Model 2* | *Model 3* | *Model 4* | *Model 5* | *Model 6* | *Model 7* | *Model 8* |
| Family control × Business group affiliations (log) | | | | −0.350*** | | | | −0.346*** |
| | | | | (0.005) | | | | (0.006) |
| Inverse Mill's ratio | −0.845*** | −0.898*** | −0.877*** | −0.845*** | −0.329** | −0.387*** | −0.330** | −0.307** |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.013) | (0.004) | (0.016) | (0.025) |
| Constant | −13.678*** | −13.463*** | −13.605*** | −13.403*** | −13.099*** | −12.936*** | −13.247*** | −13.067*** |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| Year dummies | Incl. | Incl. | Incl. | Incl. | Incl. | Incl. | Incl. | Incl. |
| Wald chi-square | 6752.68*** | 6770.87*** | 6775.51*** | 6779.85*** | 6674.68*** | 6680.27*** | 6690.57*** | 6693.30*** |
| Observations | 8108 | 8108 | 8108 | 8108 | 8108 | 8108 | 8108 | 8108 |

*Note*: *p*-values are reported in parentheses below the regression coefficients.

Table III. Results of GEE analysis predicting competitive complexity

| *Dependent variable: competitive complexity* | *Historical aspiration* | | | | *Social aspiration* | | | |
|---|---|---|---|---|---|---|---|---|
| | *Model 1* | *Model 2* | *Model 3* | *Model 4* | *Model 5* | *Model 6* | *Model 7* | *Model 8* |
| Performance above aspiration level | −0.001 | −0.001 | −0.001 | −0.002 | −0.001 | −0.002 | −0.005 | −0.005 |
| | (0.745) | (0.673) | (0.652) | (0.586) | (0.824) | (0.750) | (0.471) | (0.441) |
| Past Tobin's Q | −0.001** | −0.001** | −0.001** | −0.001** | −0.001** | −0.001*** | −0.001*** | −0.001** |
| | (0.015) | (0.011) | (0.010) | (0.023) | (0.011) | (0.008) | (0.009) | (0.020) |
| Past return on assets | −0.002 | −0.002 | −0.002 | −0.002 | −0.003 | −0.003 | 0.000 | 0.000 |
| | (0.387) | (0.498) | (0.510) | (0.563) | (0.363) | (0.461) | (0.910) | (0.935) |
| Age (log) | 0.003 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 |
| | (0.199) | (0.238) | (0.246) | (0.285) | (0.256) | (0.299) | (0.322) | (0.362) |
| Size (log) | 0.013*** | 0.013*** | 0.013*** | 0.012*** | 0.013*** | 0.013*** | 0.013*** | 0.013*** |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| Financial slack | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| | (0.475) | (0.525) | (0.534) | (0.745) | (0.553) | (0.601) | (0.644) | (0.854) |
| Leverage ratio | −0.006*** | −0.006*** | −0.006*** | −0.006*** | −0.006*** | −0.007*** | −0.007*** | −0.007*** |
| | (0.002) | (0.002) | (0.002) | (0.001) | (0.001) | (0.001) | (0.000) | (0.000) |
| Cash holding ratio | −0.004* | −0.004** | −0.004** | −0.004** | −0.004** | −0.004** | −0.004** | −0.004** |
| | (0.056) | (0.042) | (0.041) | (0.048) | (0.047) | (0.036) | (0.034) | (0.042) |
| Advertising intensity | −0.014 | −0.014 | −0.014 | −0.008 | −0.012 | −0.013 | −0.013 | −0.007 |
| | (0.515) | (0.504) | (0.504) | (0.699) | (0.566) | (0.553) | (0.561) | (0.758) |
| R&D intensity | 0.027* | 0.026* | 0.027* | 0.024* | 0.027* | 0.026* | 0.026* | 0.024* |
| | (0.055) | (0.065) | (0.062) | (0.092) | (0.057) | (0.066) | (0.068) | (0.096) |
| % of nonfamily blockholders | −0.005** | −0.006** | −0.006** | −0.006*** | −0.006*** | −0.007*** | −0.007*** | −0.007*** |
| | (0.036) | (0.015) | (0.014) | (0.008) | (0.007) | (0.003) | (0.001) | (0.001) |

(Continues)

Table III. (Continued)

| *Dependent variable: competitive complexity* | *Historical aspiration* | | | | *Social aspiration* | | | |
|---|---|---|---|---|---|---|---|---|
| | *Model 1* | *Model 2* | *Model 3* | *Model 4* | *Model 5* | *Model 6* | *Model 7* | *Model 8* |
| Board size (log) | −0.002 | −0.002 | −0.002 | −0.002 | −0.002 | −0.002 | −0.002 | −0.001 |
| | (0.288) | (0.293) | (0.296) | (0.327) | (0.353) | (0.359) | (0.345) | (0.378) |
| Political ties | −0.003* | −0.003** | −0.004** | −0.004** | −0.004** | −0.004** | −0.004** | −0.004** |
| | (0.053) | (0.040) | (0.038) | (0.028) | (0.036) | (0.027) | (0.023) | (0.017) |
| Media coverage | −0.001 | −0.001 | −0.001 | −0.001 | −0.002 | −0.002 | −0.002 | −0.002 |
| | (0.561) | (0.569) | (0.566) | (0.579) | (0.440) | (0.451) | (0.441) | (0.460) |
| Industry munificence | −0.000 | −0.000 | −0.000 | −0.000 | −0.000 | −0.000 | −0.000 | −0.000 |
| | (0.510) | (0.498) | (0.512) | (0.474) | (0.510) | (0.501) | (0.540) | (0.506) |
| Industry concentration | −0.001 | −0.001 | −0.001 | −0.001 | −0.002 | −0.001 | −0.002 | −0.002 |
| | (0.852) | (0.860) | (0.855) | (0.847) | (0.809) | (0.822) | (0.801) | (0.800) |
| Industry dynamism | 0.016 | 0.016 | 0.016 | 0.016 | 0.016 | 0.016 | 0.016 | 0.016 |
| | (0.122) | (0.120) | (0.118) | (0.115) | (0.112) | (0.110) | (0.110) | (0.107) |
| Competitive aggressiveness | 0.047*** | 0.047*** | 0.047*** | 0.047*** | 0.047*** | 0.047*** | 0.047*** | 0.047*** |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| Performance below aspiration level | −0.005* | −0.005* | −0.007* | −0.006* | −0.004* | −0.004* | −0.004* | −0.004* |
| | (0.087) | (0.084) | (0.056) | (0.085) | (0.067) | (0.069) | (0.053) | (0.060) |
| Business group (log) | 0.006*** | 0.006*** | 0.006*** | 0.006*** | 0.006*** | 0.006*** | 0.006*** | 0.006*** |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| Family control | | −0.003* | −0.003* | −0.003* | | −0.003* | −0.004** | −0.004** |
| | | (0.076) | (0.052) | (0.083) | | (0.073) | (0.016) | (0.029) |
| Family control × Performance below aspiration level | | | 0.011* | 0.010* | | | 0.017** | 0.016* |
| | | | (0.067) | (0.097) | | | (0.031) | (0.055) |

Table III. (Continued)

| *Dependent variable: competitive complexity* | *Historical aspiration* | | | | *Social aspiration* | | | |
|---|---|---|---|---|---|---|---|---|
| | *Model 1* | *Model 2* | *Model 3* | *Model 4* | *Model 5* | *Model 6* | *Model 7* | *Model 8* |
| Family control × Business group affiliations (log) | | | | −0.011*** | | | | −0.011*** |
| | | | | (0.000) | | | | (0.000) |
| Inverse Mill's ratio | 0.009*** | 0.009*** | 0.009*** | 0.010*** | 0.010*** | 0.010*** | 0.011*** | 0.011*** |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| Constant | 0.588*** | 0.589*** | 0.589*** | 0.592*** | 0.580*** | 0.581*** | 0.581*** | 0.584*** |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| Year dummies | Incl. | Incl. | Incl. | Incl. | Incl. | Incl. | Incl. | Incl. |
| Wald chi-square | 6754.55*** | 6764.62*** | 6766.25*** | 6823.58*** | 6757.40*** | 6767.76*** | 6775.46*** | 6831.61*** |
| Observations | 8108 | 8108 | 8108 | 8108 | 8108 | 8108 | 8108 | 8108 |

*Note*: *p*-values are reported in parentheses below the regression coefficients.

perform a $z$-test (see Appendix Table AI for details). We find a significant difference ($z$-score in historical and social aspiration models: −3.28, $p < 0.01$), indicating that high family control makes firms more likely to refrain from competitive aggressiveness than from competitive complexity.

In Hypothesis 2 and 3, we suggest that performance below the historical and social aspiration level moderates the relationship between family control and (a) competitive aggressiveness and (b) competitive complexity in such a way that the relationship becomes positive, respectively. In Models 3 and 6 of Tables II and III, the coefficients for the interaction term between family control and performance below aspiration level predicting competitive aggressiveness (historical aspiration: =1.279, $p = 0.007$; social aspiration: =1.361, $p = 0.007$) and competitive complexity (historical aspiration: =0.011, $p = 0.067$; social aspiration: =0.017, $p = 0.031$) are positive and significant, implying that when performance is below historical (social) aspiration, a 1 per cent increase in family control leads to an increase in competitive aggressiveness by 1.279 (1.361) and in competitive complexity by 0.010 (0.017), respectively. Therefore, Hypotheses 2 and 3 are empirically supported. As an additional analysis, we also perform the $z$-test to compare the coefficients for the interaction of family control with historical and social performance below aspiration levels (see Appendix Table AI for details). The results show no significant differences between historical and social aspirations (competitive aggressiveness: $z$-score = −0.12, $p = 0.90$; competitive complexity: $z$-score = −0.61, $p = 0.54$). However, significant differences were found between predicting competitive aggressiveness and competitive complexity (historical aspiration: $z$-score = 2.68, $p = 0.01$; social aspiration: $z$-score = 2.67, $p = 0.01$). These results imply that firms with higher family control are more likely to pursue competitive aggressiveness over complexity when performance falls below historical and social aspiration levels.

In Hypothesis 4, we suggest that the number of family business group affiliates moderates the relationship between family control and (a) competitive aggressiveness and (b) competitive complexity in such a way that the relationship becomes more negative. In Models 4 and 8, the coefficients for the interaction term between family control and business group affiliations predicting competitive aggressiveness (historical aspiration: = −0.350, $p = 0.005$; social aspiration: = −0.346, $p = 0.006$) and competitive complexity (historical aspiration: = −0.011, $p = 0.000$; social aspiration: = −0.011, $p = 0.000$) are negative and significant, indicating that when the number of family business group affiliates increases, a 1 per cent increase in family control leads to a decrease in competitive aggressiveness by about 0.350 and in competitive complexity by 0.011, respectively. Thus, Hypothesis 4 is also supported. We further perform the $z$-test to compare the coefficients for the interaction of family control with the number of family business group affiliations in predicting competitive aggressiveness versus complexity (see Appendix Table AI for details). We find a significant difference (historical aspiration: $z$-score = −2.71, $p = 0.01$; social aspiration: $z$-score = −2.66, $p = 0.01$), indicating that firms with high levels of family control are less likely to pursue competitive aggressiveness than competitive complexity when they have a large number of family business group affiliates.

## Supplementary Analysis

We conducted several supplementary analyses to secure the robustness of our results. First, while we controlled log-transformed assets as a proxy for firm size, our findings could still be affected by size-related biases. This is because large and small firms may inherently differ in responding to their competitive threats in the marketplace (Chen and Miller, 2012, 2015), which may cause the results to reflect differences between large and small firms rather than differences between family and non-family firms. To address this, we tested asset-weighted competitive aggressiveness and complexity[3] and found that the same hypotheses were still supported (see Model 1 and 2 of Appendices Tables AII and AIII), implying that size-related biases are not a serious concern.

Second, we assessed whether the results remain consistent when testing both below and above performance aspiration levels based on historical and social aspirations as moderators. As shown in Models 3 and 4 of Appendices Tables AII and AIII, the results remain consistent. Specifically, the interaction term between family control and performance aspiration levels shows increased competitive aggressiveness when performance is below aspiration levels (historical: $\beta = 1.084$, $p = 0.027$; social: $\beta = 1.537$, $p = 0.003$) and decreased aggressiveness when performance is above them (historical: $\beta = -0.854$, $p = 0.022$; social: $\beta = -4.067$, $p = 0.004$). Competitive complexity follows a similar pattern, with increases below (historical: $\beta = 0.010$, $p = 0.016$; social: $\beta = 0.016$, $p = 0.047$) and decreases above (historical: $\beta = -0.007$, $p = 0.071$; social: $\beta = -0.011$, $p = 0.061$) aspiration levels. We further conducted the $z$-test and found no significant difference in coefficients between historical and social aspiration levels when performance is below aspirations (aggressiveness: $z = -0.61$, $p = 0.54$; complexity: $z = -0.61$, $p = 0.54$). However, there were significant differences between below and above historical aspiration levels (aggressiveness: $z = 3.14$, $p = 0.00$; complexity: $z = 2.45$, $p = 0.01$), below and above social aspiration levels (aggressiveness: $z = 3.67$, $p = 0.00$; complexity: $z = 2.72$, $p = 0.01$), and above historical and social aspiration levels (aggressiveness: $z = 2.19$, $p = 0.029$; complexity: $z = 0.57$, $p = 0.567$). Differences in coefficients predicting competitive aggressiveness versus complexity were also found (see Panel C of Appendix Table AIV for details). These results indicate that family-controlled firms are more likely to engage in competitive aggressiveness over complexity when performance falls below aspiration levels rather than above, particularly when social aspirations are below historical levels.

Third, family business groups in Korea are highly diversified across industries, and prior research on mutual forbearance in multimarket competition suggests that diversified firms may avoid direct competition (e.g., Tieying et al., 2009). Thus, our findings could reflect characteristics of diversified conglomerates rather than family SEW-driven behaviour. To address this, we additionally included a business group fixed effect (i.e., a business group dummy coded as 1 if the focal family firm is a member of one of the family business group affiliations, and 0 otherwise: Mean = 0.53/SD = 0.50) in the GEE models. This allowed us to control for unobserved, group-specific characteristics, such as mutual forbearance, and isolate our hypothesized effects. The results show that the same hypotheses remain significantly supported (see Models 5 and 6 of Appendices Tables AII and AIII),[4] suggesting that the findings are likely driven by family SEW motivations rather than being a result of the conglomerate characteristics.

Fourth, our Hypothesis 4 focuses on a business group level analysis, diverging from the firm-level analysis of other hypotheses. To further verify the logic of Hypothesis 4, we tested whether the negative effects of family control remain consistent only in firms with business group affiliations. As shown in Models 7 and 8 of Appendices Tables AII and AIII, we found consistent findings. Furthermore, we explored the potential three-way interaction where business group affiliations affect responses to performance aspiration levels in family-controlled firms. As expected, the results from Models 9 and 10 of Appendices Tables AIII and AIV indicate that the positive effect of performance below aspiration levels on competitive aggressiveness (below historical: $\beta = 2.762$, $p = 0.001$; below social: $\beta = 2.013$, $p = 0.021$) and complexity (below historical: $\beta = 0.008$, $p = 0.060$; below social: $\beta = 0.024$, $p = 0.011$) is stronger for family-controlled firms having many business group affiliations. Conversely, the negative effect of performance above aspiration levels on discouraging competitive aggressiveness (above historical: $\beta = -0.337$, $p = 0.064$; above social: $\beta = -4.965$, $p = 0.007$) and complexity (above historical: $\beta = -0.013$, $p = 0.010$; above social: $\beta = -0.033$, $p = 0.031$) is more attenuated. We also found in the $z$-test (see Appendix Table AIV for details) that family-controlled firms with many business group affiliations are more likely to pursue competitive aggressiveness than complexity when performance is below aspiration levels, especially when social aspirations, rather than historical levels, are below.

Lastly, to ensure the robustness of our results, we used alternative measures for competitive aggressiveness, competitive complexity, firm size, performance below aspiration levels, and family control. Competitive aggressiveness was standardized by calculating and summing $z$-scores for each of the eight action categories (Andrevski et al., 2016; Miller and Chen, 1996). Competitive complexity was measured using the Shannon index (e.g., Connelly et al., 2017), and firm size was measured as the log of total sales. In addition, to assess whether family firms exhibit similar patterns in pursuing competitive dynamics when facing the fear of approaching a survival threshold, we tested an Altman's Z score (Altman, 1968) as a proxy for the probability of bankruptcy instead of using performance below aspiration levels. Additionally, given that our conservative definition of family control – requiring a minimum 20 per cent ownership held by family members and/or affiliates within the same business group, with at least one family member in management or governance – may misclassify some smaller family or non-cross-shareholding-controlled firms as non-family firms, and that FW and SEW motivations for competitive dynamics may differ by direct and indirect family control modes, we lowered the ownership threshold to 5 per cent and separately tested two control modes: (1) direct family control using a continuous measure based on the proportion of common shares held by family members (excluding cross-shareholdings of family group affiliates) when holding a minimum 5 per cent and at least one family member is involved in management or governance of the focal family firm; and (2) indirect family control using a continuous measure based on the proportion of cross-shareholdings held by family group affiliates in the focal family firm when holding a minimum 5 per cent and at least one family member is involved in management or governance of the focal family firm.[5] We further tested alternative specifications of family control: (3) the proportion of the sum of common shares held by family members and affiliates when later-generation family

members are involved in management or governance, (4) the proportion of the sum of common shares held by family members and affiliates when the founder is involved in management or governance, and (5) the proportion of the sum of common shares held by family members and affiliates when holding a minimum of 5 per cent, 10 per cent, or 50 per cent, with at least one family member involved in management or governance.[6] Under all these variations, we found consistent findings (see Models 14 to 27 in Appendices Tables AII and AIII) and observed similar patterns for statistical differences in the estimated coefficients.[7]

## DISCUSSION AND CONCLUSION

This study examined the behavioural motives behind family-controlled firms engaging in competitive aggressiveness and complexity, a crucial issue neglected by the literature. In a study of 570 listed Korean firms from 1998 to 2017, we theorized and found that family firm principals are less likely to pursue competitive aggressiveness and complexity. However, in vulnerable situations deriving from performance below the aspiration level and few family business group affiliations, family principals are more willing to undertake an aggressive and diverse series of competitive actions.

### Theoretical Implications

We make three important contributions by integrating family business scholarship on the behavioural agency decision-making model with the competitive dynamics literature. First, we extend the mixed gamble perspective of BAM to unveil the behavioural motives of family firm principals to engage in competitive aggressiveness and complexity, which broadly reflect the essence of the competitive strategy of family firms as a set of temporary advantages and capture how family firms behaviourally choose the competitive pattern and position themselves in the marketplace to attain superior performance (Chen and Miller, 2012). We thus provide a much-needed and explicit relationship between family owners' behavioural motives and competitive dynamics, both central to the strategic management of firms, yet still disjointed in the literature (Chen and Miller, 2015). Relatedly, we also extend the family firm risk-taking literature on the behavioural agency decision-making model by focusing on competitive aggressiveness and complexity as the key attributes of the family firm's competitive action repertoire, thereby integrating and reconciling fragmented insights concerning singular (e.g., Chirico et al., 2020; Chrisman and Patel, 2012; Eddleston and Mulki, 2021; Patel and Chrisman, 2014) or discrete (e.g., Fang et al., 2021; Gomez-Mejia et al., 2010, 2019) risk-taking initiatives that the literature has primarily explored so far. Unlike previous studies, we view these initiatives as a series of *coordinated*, *continuous* strategies balancing SEW and FW across multiple initiatives in the family firm's competitive action portfolio. Although some theoretical overlap exists with previous research – where SEW priorities and uncertain FW gains may drive family owners to be reluctant to pursue risky initiatives (e.g., Chrisman and Patel, 2012; Gomez-Mejia et al., 2010, 2019) – our portfolio-level perspective refines and extends prior research by revealing how FW-SEW trade-offs unfold across interdependent

initiatives, emphasizing *a complex and evolving calculus that goes beyond balancing isolated trade-offs within the portfolio of competitive actions*. By conceptualizing competitive aggressiveness and complexity as distinctive and interconnected attributes of the family firm's competitive action portfolio, we lay the foundation for a deeper theoretical elaboration of the behavioural drivers shaping family firms' overall strategies. This approach enables us to explore new facets of mixed gambles in family firms by considering diverse portfolio attributes. Thus, it broadens our scholarly understanding of how family owners weigh FW and SEW utility considerations in formulating strategic decisions beyond traditional risk-taking decisions.

Second, our application of the behavioural agency decision-making model at the portfolio level of family firms' strategic decisions extends the family business literature by highlighting new boundary conditions and moderating mechanisms that can alter family firms' overarching risk-bearing considerations – that is, the extent to which family owners are willing to accept the risk of potential SEW losses (Wiseman and Gomez-Mejia, 1998). Unlike previous studies that examine the FW-SEW trade-off calculus in the family firms' strategic decisions through singular and discrete initiatives – either in a fragmented (e.g., Gómez-Mejía et al., 2007) or selective manner (e.g., Gu et al., 2024) – we outline the mechanisms through which family firms manage the dynamic mixed gamble calculus of interconnected attributes within their competitive action portfolio under vulnerable conditions. In doing so, we expand knowledge on the sources of corporate vulnerability arising from performance-aspiration gaps and highlight the safeguarding effect of family business group affiliations.

Under vulnerable conditions, we theorize and show that the FW and SEW concerns are aligned as crucial drivers of change in family firms' willingness to pursue competitive aggressiveness and complexity. This is because fulfilling corporate financial obligations is inevitable for family principals to enjoy any FW and SEW utility dimensions, and retaining few family business groups affiliations may not protect their FW and SEW more than retaining many affiliations (e.g., Choi et al., 2015). Under prosperity, however, we demonstrate that FW and SEW goals are more likely to be at odds as indicators of competitive aggressiveness and complexity. Without financial pressure and/or numerous business group affiliations that are family-controlled, family owners can afford the luxury of remaining undiversified, and thus focus more on protecting current SEW while avoiding risks and discounting potential FW gains linked to competitive aggressiveness and complexity. In addition, our supplementary analyses reveal differences in family firms' control types and competitive dynamics, showing that under vulnerable conditions, family firms prioritize competitive aggressiveness over complexity, with direct family control increasing aggressiveness below aspirations, indirect family control dampening it above aspirations, and business group affiliations reinforcing aggressiveness in response to social aspirations regardless of control type. These findings further extend the literature beyond the notion that singular or discrete strategic decisions of family firms are simply about balancing the trade-off between FW and SEW (e.g., Chrisman and Patel, 2012; Gomez-Mejia et al., 2010; Patel and Chrisman, 2014). Instead, we reveal that family control dynamics and attributes of interdependent initiatives within a firm's competitive action portfolio under vulnerable conditions create a more complex, evolving decision-making process. This, in

turn, provides a more comprehensive theoretical framework and stronger empirical evidence of the variability in how family firms pursue competitive aggressiveness and complexity. More importantly, by introducing family business group affiliations as a new boundary condition that has a significant impact on the mixed gamble calculus of family firm owners, we add to the emergent family business literature by shifting the focus beyond the interface of the family, business, and ownership systems (Tagiuri and Davis, 1996) to the boundaries between the entrepreneurial family, its multiple assets, and family boundary organizations in the family-related organizational ecosystem (De Massis et al., 2021; De Massis and Rondi, 2024).

Lastly, we contribute to the literature on the institutional embeddedness of family businesses (Berrone et al., 2022) by exploring how family firms' competitive dynamics are shaped by their interaction with context-specific informal institutions, namely family business group affiliations – crucial and distinctive informal institutions in Korea where these affiliations have driven industrial development within the limits set by formal institutional frameworks (e.g., Bae et al., 2002; Chang, 2003; Kim et al., 2004). We show the nuanced interplay of informal affiliations in the competitive dynamics of Korean family firms where formal institutions are weak, highlighting the context-specific impact of informal institutions that help family firms balance competing FW and SEW goals. In doing so, we support prior studies that view informal institutions as substitutes for formal systems in contexts with limited formal frameworks (e.g., Gomez-Mejia et al., 2024b; Khanna and Palepu, 2000; La Porta et al., 1999; Peng and Jiang, 2010, Peng et al., 2018) and recognize them as crucial factors influencing family-centric goals and strategy (Berrone et al., 2022).

## Practical Implications

Our study has important practical implications. The mixed-gamble approach explains the significance of clarifying and evaluating the potential for losses and gains in FW and SEW in tandem when pursuing portfolio-level strategic initiatives, as captured by competitive aggressiveness and complexity. Such pursuits ought to be guided by a careful analysis of the latent financial gains that can be derived from successful competitive actions and the latent losses that can ensue from failed competitive actions within the strategic action portfolio of family firms. This approach is particularly crucial in vulnerable or even normal conditions. Thus, our study's findings caution family firm stakeholders and boards of directors to ensure an in-depth analysis of the potential consequences of undertaking an aggressive and complex series of competitive actions within their strategic portfolios.

## Limitations and Future Research Directions

Despite the proposed implications, this study has the limitation of relying on archival proxies. Although we use a straightforward measure of SEW, we were unable to directly capture and examine the SEW sources, for example, emotional attachment, identification with the firm, and binding ties. However, our family control measure is more inclusive than one based solely on family ownership (e.g., Anderson and Reeb, 2003), as it accounts for both family involvement in ownership and management/governance, particularly in contexts like

Korea, where family control through direct shares and indirect cross-shareholdings within the same family business group is prevalent. Although the results of the robustness tests are consistent under the different definitions of family control and family firms, future scholars could examine different forms of each SEW aspect and their distinct implications on firms' competitive aggressiveness and complexity. For example, certain SEW dimensions, like emotional attachment to the company, can result in decisions that prioritize the family legacy and continuity (Berrone et al., 2012; Gómez-Mejía and Herrero, 2022), making family firms less inclined to pursue risky but potentially lucrative initiatives. Likewise, binding social ties can promote cautious strategies that focus on maintaining strong relationships and a good reputation within the community (e.g., Gómez-Mejía and Herrero, 2022), often at the expense of aggressive market expansion. These dimensions may underscore the importance of understanding the varied roles that different SEW elements play, as they could significantly influence the competitive dynamics of family firms, particularly in contexts with weak formal institutional support (Davila et al., 2023; Gómez-Mejía et al., 2024a). Thus, distinguishing among various SEW aspects and their diverse implications may help to more fully elucidate the behavioural motives of family firm owners to engage in competitive aggressiveness and complexity. Furthermore, as our sample is only composed of listed Korean firms in manufacturing industries, the findings may not be generalizable to other contexts. Therefore, future research is needed to examine our theories in different settings. Future comparative research that explores the role of culture and other institutions in affecting the mixed gamble calculus of family firm owners on attributes of competitive action repertoires is also likely to be insightful.

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## NOTES

[1] For simplicity, we use family-controlled firms and family firms as interchangeable terms.

[2] When predicting competitive complexity, we log-transformed the number of competitive actions (i.e., competitive aggressiveness) to reduce skewedness.

[3] We controlled for asset-weighted competitive complexity when predicting asset-weighted competitive aggressiveness and vice versa, using a Gaussian distribution with an identity link function. Both variables were measured as log-transformed values of competitive aggressiveness or complexity divided by total assets and treated as continuous. We also excluded firm size (i.e., log-transformed assets) as a control to avoid a multicollinearity issue when predicting these asset-weighted competitive aggressiveness and complexity.

[4] We conducted a multicollinearity test for Models 5 and 6 of Appendices Tables AII and AIII, and the mean VIF is below the threshold of five, indicating that multicollinearity is not a concern.

[5] We conducted $z$-tests and found some differences in effect sizes between direct and indirect family control. Specifically, when performance falls below historical ($z$-score = −37.02, $p$-value = 0.00) or social ($z$ = −622.14, $p$ = 0.00) aspirations, direct control drives competitive aggressiveness less than indirect control. However, when performance exceeds historical levels ($z$ = −1.67, $p$ = 0.09), indirect control dampens aggressiveness more than direct control. In addition, direct family control has a stronger negative impact on both aggressiveness and complexity when performance exceeds social aspirations (aggressiveness: $z$ = −4.13, $p$ = 0.00; complexity: $z$ = −1.89, $p$ = 0.06) or with more family group affiliates (historical: aggressiveness $z$ = −3.24, $p$ = 0.00; complexity $z$ = −3.42, $p$ = 0.00; social: aggressiveness $z$ = −2.55, $p$ = 0.01; complexity $z$ = −4.00, $p$ = 0.00). We also found at a significance level below $p < 0.10$ based on $z$-scores that family firms with numerous family business group affiliations are more likely to pursue competitive aggressiveness over complexity in response to aspiration level discrepancies (especially relative to social rather than historical benchmarks) regardless of direct and indirect family control. Overall, these results indicate that while affiliates in Korean family business groups resemble divisions in diversified corporations, their competitive initiatives are influenced by the same family SEW priorities that transcend traditional diversification logic. This supports an interpretation centered on family-driven goals rather than general conglomerate behavior.

[6] For the alternative specification test of family control, we used different types of family firm dummies (see Appendix Table AV) as the dependent variable, with the same controls and instrumental variables in the first stage of Heckman two-stage estimation. Competitive aggressiveness and complexity were then estimated by including the inverse Mills ratio from the Probit analysis as an additional control for each test.

[7] The $z$-test results for alternative measure tests are not shown due to space limitations but are available on request.

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## APPENDIX

Table AI. *z*-tests for main analyses

| | |
|---|---|
| *Panel A.* z-*test for differences in predicting competitive aggressiveness (Table II)* | |
| Family control | Historical (Mode 2: $\beta = -0.835$, $p = 0.000$) vs. social aspirations (Model 6: $\beta = -0.846$, $p = 0.000$) ($z$-score = 0.04, $p$-value = 0.97) |
| Moderating effect of performance below aspiration level | Historical (Model 3: $\beta = 1.279$, $p = 0.007$) vs. social aspirations (Model 7: $\beta = 1.361$, $p = 0.007$) ($z$-score = −0.12, $p$-value = 0.90) |
| Moderating effect of business group affiliations | Historical (Model 4: $\beta = -0.350$, $p = 0.005$) vs. social aspirations (Model 8: $\beta = -0.346$, $p = 0.006$) ($z$-score = −0.02, $p$-value = 0.98) |
| *Panel B.* z-*test for differences in predicting competitive complexity (Table III)* | |
| Family control | Historical (Model 2: $\beta = -0.003$, $p = 0.076$) vs. social aspirations (Model 6: $\beta = -0.003$, $p = 0.073$) ($z$-score = 0.00, $p$-value = 1.00) |
| Moderating effect of performance below aspiration level | Historical (Model 3: $\beta = 0.011$, $p = 0.067$) vs. social aspirations (Model 7: $\beta = 0.017$, $p = 0.031$) ($z$-score = −0.61, $p$-value = 0.54) |
| Moderating effect of business group affiliations | Historical (Model 4: $\beta = -0.011$, $p = 0.000$) vs. social aspirations (Model 8: $\beta = -0.011$, $p = 0.000$) ($z$-score = 0.00, $p$-value = 1.00) |

| *Panel C.* z-*test for differences in predicting competitive aggressiveness vs. competitive complexity* | | |
|---|---|---|
| Family control | Historical (Model 2 of Table II: $\beta = -0.835$, $p = 0.000$) vs. historical aspirations (Model 2 of Table III: $\beta = -0.003$, $p = 0.076$) ($z$-score = −3.28, $p$-value = 0.00) | Social (Model 6 of Table II: $\beta = -0.846$, $p = 0.000$) vs. social aspirations (Model 6 of Table III: $\beta = -0.003$, $p = 0.073$) ($z$-score = −3.28, $p$-value = 0.00) |
| Moderating effect of performance below aspiration level | Historical (Model 3 of Table II: $\beta = 1.279$, $p = 0.007$) vs. historical aspirations (Model 3 of Table III: $\beta = 0.011$, $p = 0.067$) ($z$-score = 2.70, $p$-value = 0.01) | Social (Model 7 of Table II: $\beta = 1.361$, $p = 0.007$) vs. social aspirations (Model 7 of Table III: $\beta = 0.017$, $p = 0.031$) ($z$-score = 2.69, $p$-value = 0.01) |
| Moderating effect of business group affiliations | Historical (Model 4 of Table II: $\beta = -0.350$, $p = 0.005$) vs. historical aspirations (Model 4 of Table III: $\beta = -0.011$, $p = 0.00$) ($z$-score = −2.71, $p$-value = 0.01) | Social (Model 8 of Table II: $\beta = -0.346$, $p = 0.006$) vs. social aspirations (Model 8 of Table III: $\beta = -0.011$, $p = 0.00$) ($z$-score = −2.66, $p$-value = 0.01) |

Table AII. Results of GEE analysis predicting competitive aggressiveness (supplementary analyses)

| | *(1) Asset-weighted competitive aggressiveness* | | *(2) Simultaneously test performance above and below aspiration levels* | | *(3) After accounting for business group fixed effects* | | *(4) Subsample analysis: firms having business group affiliations* | | *(5) Three-way interaction effect of family control, business group affiliations, and performance below/above aspiration levels* | | *(6) Alternative measure for competitive aggressiveness and firm size* | | *(7) Altman z-score* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Dependent variable: competitive aggressiveness* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | *Historical aspiration)* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | |
| | *Model 1* | *Model 2* | *Model 3* | *Model 4* | *Model 5* | *Model 6* | *Model 7* | *Model 8* | *Model 9* | *Model 10* | *Model 11* | *Model 12* | *Model 13* |
| Past Tobin's Q | 0.003*** | 0.003*** | 0.218*** | 0.190*** | 0.214*** | 0.187*** | 0.250*** | 0.216*** | 0.220*** | 0.192*** | −0.018 | −0.034 | 0.212*** |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.852) | (0.734) | (0.000) |
| Past return on assets | −0.006*** | −0.002 | −0.618*** | 0.087 | −0.625*** | 0.097 | −0.940*** | 1.040** | −0.652*** | 0.098 | −0.011 | 0.392 | −0.269*** |
| | (0.006) | (0.463) | (0.000) | (0.534) | (0.000) | (0.456) | (0.000) | (0.015) | (0.000) | (0.492) | (0.976) | (0.360) | (0.006) |
| Age (log) | 0.005* | 0.005* | 0.035 | −0.016 | −0.010 | −0.059 | 0.163 | 0.098 | 0.026 | −0.019 | −0.139 | −0.121 | 0.017 |
| | (0.058) | (0.083) | (0.712) | (0.869) | (0.918) | (0.538) | (0.134) | (0.366) | (0.785) | (0.839) | (0.719) | (0.753) | (0.858) |
| Size (log) | | | 1.519*** | 1.556*** | 1.538*** | 1.575*** | 1.573*** | 1.633*** | 1.528*** | 1.559*** | 1.413*** | 1.407*** | 1.541*** |
| | | | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| Financial slack | 0.000 | 0.000 | −0.125*** | −0.137*** | −0.127*** | −0.140*** | −0.117*** | −0.145*** | −0.123*** | −0.137*** | 0.010 | 0.011 | −0.124*** |
| | (0.421) | (0.527) | (0.000) | (0.000) | (0.000) | (0.000) | (0.002) | (0.000) | (0.000) | (0.000) | (0.893) | (0.886) | (0.000) |
| Leverage ratio | 0.007*** | 0.006** | −0.507*** | −0.618*** | −0.449*** | −0.560*** | 0.118 | −0.074 | −0.499*** | −0.612*** | 0.120 | 0.067 | −0.501*** |
| | (0.005) | (0.013) | (0.000) | (0.000) | (0.000) | (0.000) | (0.493) | (0.663) | (0.000) | (0.000) | (0.778) | (0.876) | (0.000) |
| Cash holding ratio | 0.002 | 0.001 | 0.150 | 0.103 | 0.182 | 0.136 | 0.505*** | 0.479*** | 0.163 | 0.119 | 0.285 | 0.275 | 0.186 |
| | (0.507) | (0.711) | (0.216) | (0.399) | (0.135) | (0.266) | (0.001) | (0.002) | (0.181) | (0.328) | (0.518) | (0.533) | (0.125) |
| Advertising intensity | 0.043 | 0.046 | 4.214*** | 4.455*** | 4.424*** | 4.684*** | 5.776*** | 6.019*** | 4.110*** | 4.188*** | 19.100*** | 19.065*** | 4.942*** |
| | (0.149) | (0.119) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| R&D intensity | 0.205*** | 0.202*** | 5.581*** | 5.373*** | 5.745*** | 5.533*** | 7.157*** | 6.849*** | 5.510*** | 5.334*** | 15.247*** | 15.061*** | 5.332*** |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| % of nonfamily blockholders | 0.021*** | 0.018*** | 0.543*** | 0.291** | 0.529*** | 0.277* | 1.204*** | 0.875*** | 0.551*** | 0.310** | 0.372 | 0.300 | 0.269* |
| | (0.000) | (0.000) | (0.000) | (0.043) | (0.001) | (0.055) | (0.000) | (0.000) | (0.000) | (0.032) | (0.506) | (0.565) | (0.058) |

(Continues)

Table AII. (Continued)

| | (1) Asset-weighted competitive aggressiveness | | (2) Simultaneously test performance above and below aspiration levels | | (3) After accounting for business group fixed effects | | (4) Subsample analysis: firms having business group affiliations | | (5) Three-way interaction effect of family control, business group affiliations, and performance below/above aspiration levels | | (6) Alternative measure for competitive aggressiveness and firm size | | (7) Altman z-score |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Dependent variable: competitive aggressiveness* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | *Historical aspiration)* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | |
| | *Model 1* | *Model 2* | *Model 3* | *Model 4* | *Model 5* | *Model 6* | *Model 7* | *Model 8* | *Model 9* | *Model 10* | *Model 11* | *Model 12* | *Model 13* |
| Board size (log) | −0.006*** | −0.006*** | −0.287*** | −0.273*** | −0.254** | −0.239** | −0.086 | −0.032 | −0.277*** | −0.248** | −0.817** | −0.854** | −0.241** |
| | (0.004) | (0.005) | (0.005) | (0.008) | (0.014) | (0.021) | (0.531) | (0.817) | (0.007) | (0.016) | (0.029) | (0.022) | (0.019) |
| Political ties | 0.008*** | 0.008*** | −0.250** | −0.325*** | −0.251** | −0.326*** | −0.249** | −0.336*** | −0.243** | −0.319*** | −0.484 | −0.536 | −0.313*** |
| | (0.000) | (0.001) | (0.012) | (0.001) | (0.012) | (0.001) | (0.044) | (0.006) | (0.016) | (0.001) | (0.211) | (0.165) | (0.002) |
| Media coverage | 0.037*** | 0.037*** | 1.175*** | 1.091*** | 1.215*** | 1.131*** | 1.411*** | 1.295*** | 1.183*** | 1.104*** | 3.040*** | 3.025*** | 1.126*** |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| Industry munificence | 0.001 | 0.000 | 0.048** | 0.040** | 0.048*** | 0.040** | 0.022 | 0.020 | 0.045** | 0.036* | −0.022 | −0.024 | 0.036* |
| | (0.182) | (0.261) | (0.011) | (0.035) | (0.010) | (0.032) | (0.618) | (0.645) | (0.017) | (0.059) | (0.735) | (0.717) | (0.051) |
| Industry concentration | 0.052*** | 0.050*** | 0.651** | 0.583** | 0.753** | 0.672** | 0.959*** | 0.715** | 0.606** | 0.505* | 2.787** | 2.756** | 0.530* |
| | (0.000) | (0.000) | (0.026) | (0.045) | (0.010) | (0.021) | (0.003) | (0.025) | (0.039) | (0.084) | (0.043) | (0.045) | (0.070) |
| Industry dynamism | 0.038*** | 0.039*** | 1.475*** | 1.496*** | 1.571*** | 1.594*** | 1.064* | 1.015 | 1.449*** | 1.491*** | 1.195 | 1.157 | 1.568*** |
| | (0.007) | (0.007) | (0.000) | (0.000) | (0.000) | (0.000) | (0.085) | (0.100) | (0.000) | (0.000) | (0.471) | (0.486) | (0.000) |
| Competitive complexity | 7.785*** | 7.798*** | 15.011*** | 15.051*** | 14.931*** | 14.962*** | 12.344*** | 12.356*** | 15.061*** | 15.125*** | 2.687*** | 2.775*** | 15.063*** |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.001) | (0.001) | (0.000) |
| Performance below aspiration level | 0.002 | 0.003 | 0.090 | 0.550*** | 0.039 | 0.547*** | 0.521** | 2.482*** | −0.375** | 0.293 | −1.183* | −0.769 | |
| | (0.257) | (0.447) | (0.370) | (0.003) | (0.702) | (0.002) | (0.025) | (0.000) | (0.029) | (0.207) | (0.063) | (0.322) | |
| Performance above aspiration level | 0.007*** | 0.014* | 0.532*** | −0.895 | 0.510*** | −0.870 | 1.321*** | −0.650 | 0.520*** | −0.681 | −1.234** | −3.130 | |
| | (0.003) | (0.089) | (0.000) | (0.156) | (0.000) | (0.167) | (0.000) | (0.360) | (0.001) | (0.345) | (0.034) | (0.172) | |
| Business group (log) | 0.015*** | 0.015*** | 0.432*** | 0.431*** | 0.532*** | 0.531*** | 0.433*** | 0.431*** | 0.417*** | 0.444*** | 0.936*** | 0.969*** | 0.449*** |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |

(Continues)

Table AII. (Continued)

| | *(1) Asset-weighted competitive aggressiveness* | | *(2) Simultaneously test performance above and below aspiration levels* | | *(3) After accounting for business group fixed effects* | | *(4) Subsample analysis: firms having business group affiliations* | | *(5) Three-way interaction effect of family control, business group affiliations, and performance below/above aspiration levels* | | *(6) Alternative measure for competitive aggressiveness and firm size* | | *(7) Altman z-score* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Dependent variable: competitive aggressiveness* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | *Historical aspiration)* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | |
| | *Model 1* | *Model 2* | *Model 3* | *Model 4* | *Model 5* | *Model 6* | *Model 7* | *Model 8* | *Model 9* | *Model 10* | *Model 11* | *Model 12* | *Model 13* |
| Family control | −0.008*** | −0.008*** | −0.923*** | −1.032*** | −0.950*** | −1.041*** | −0.892*** | −0.805*** | −0.908*** | −1.043*** | −1.076*** | −1.079*** | −0.810*** |
| | (0.001) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.004) | (0.005) | (0.000) |
| Family control × Performance below aspiration level | 0.004* | 0.012* | 1.084** | 1.537*** | 1.265** | 1.621*** | | | 1.187** | 1.784*** | 3.074* | 4.307** | |
| | (0.086) | (0.060) | (0.027) | (0.003) | (0.010) | (0.001) | | | (0.027) | (0.001) | (0.091) | (0.018) | |
| Family control × Performance above aspiration level | | | −0.854** | −4.067*** | −1.004*** | −3.846*** | | | −0.917** | −4.827*** | −4.670*** | −7.155** | |
| | | | (0.022) | (0.004) | (0.008) | (0.006) | | | (0.020) | (0.001) | (0.001) | (0.014) | |
| Family control × Business group (log) | −0.010*** | −0.010*** | −0.347*** | −0.338*** | −0.246* | −0.238* | | | −0.455*** | −0.312** | −2.485*** | −2.660*** | −0.346*** |
| | (0.001) | (0.001) | (0.006) | (0.007) | (0.052) | (0.060) | | | (0.001) | (0.028) | (0.000) | (0.000) | (0.006) |
| Business group (log) × Performance below aspiration level | | | | | | | | | 0.620** | 0.303 | 2.765*** | 1.488 | |
| | | | | | | | | | (0.013) | (0.249) | (0.006) | (0.143) | |
| Business group (log) × Performance above aspiration level | | | | | | | | | −0.087 | −0.627 | 1.533* | 1.807 | |
| | | | | | | | | | (0.684) | (0.127) | (0.075) | (0.282) | |

(Continues)

Table AII. (Continued)

| | (1) Asset-weighted competitive aggressiveness | | (2) Simultaneously test performance above and below aspiration levels | | (3) After accounting for business group fixed effects | | (4) Subsample analysis: firms having business group affiliations | | (5) Three-way interaction effect of family control, business group affiliations, and performance below/above aspiration levels | | (6) Alternative measure for competitive aggressiveness and firm size | | (7) Altman z-score |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Dependent variable: competitive aggressiveness* | *Historical aspiration* Model 1 | *Social aspiration* Model 2 | *Historical aspiration* Model 3 | *Social aspiration* Model 4 | *Historical aspiration* Model 5 | *Social aspiration* Model 6 | *Historical aspiration)* Model 7 | *Social aspiration* Model 8 | *Historical aspiration* Model 9 | *Social aspiration* Model 10 | *Historical aspiration* Model 11 | *Social aspiration* Model 12 | Model 13 |
| Family control × Performance below aspiration level × Business group (log) | | | | | | | | | 2.762*** | 2.013** | 8.082** | 7.766** | |
| | | | | | | | | | (0.001) | (0.021) | (0.017) | (0.019) | |
| Family control × Performance above aspiration level × Business group (log) | | | | | | | | | −0.337* | −4.965*** | −8.142*** | −17.590** | |
| | | | | | | | | | (0.064) | (0.007) | (0.004) | (0.017) | |
| Altman *z*-score | | | | | | | | | | | | | −0.000 |
| | | | | | | | | | | | | | (0.987) |
| Family control × Altman *z*-score | | | | | | | | | | | | | −0.066** |
| | | | | | | | | | | | | | (0.039) |
| Business group (log) × Altman *z*-score | | | | | | | | | | | | | −0.003 |
| | | | | | | | | | | | | | (0.755) |
| Family control × Altman *z*-score × Business group (log) | | | | | | | | | | | | | −0.164*** |
| | | | | | | | | | | | | | (0.000) |
| Business group dummies | | | | | −0.427*** | −0.431*** | | | | | | | |
| | | | | | (0.000) | (0.000) | | | | | | | |

(Continues)

Table AII. (Continued)

| | (1) Asset-weighted competitive aggressiveness | | (2) Simultaneously test performance above and below aspiration levels | | (3) After accounting for business group fixed effects | | (4) Subsample analysis: firms having business group affiliations | | (5) Three-way interaction effect of family control, business group affiliations, and performance below/above aspiration levels | | (6) Alternative measure for competitive aggressiveness and firm size | | (7) Altman z-score |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Dependent variable: competitive aggressiveness* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | *Historical aspiration)* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | |
| | *Model 1* | *Model 2* | *Model 3* | *Model 4* | *Model 5* | *Model 6* | *Model 7* | *Model 8* | *Model 9* | *Model 10* | *Model 11* | *Model 12* | *Model 13* |
| Inverse Mill's ratio | −0.019*** | −0.016*** | −0.586*** | −0.292** | −0.607*** | −0.314** | −1.307*** | −0.912*** | −0.573*** | −0.293** | −0.079 | 0.036 | −0.272** |
| | (0.000) | (0.000) | (0.000) | (0.033) | (0.000) | (0.023) | (0.000) | (0.000) | (0.000) | (0.033) | (0.873) | (0.936) | (0.038) |
| Constant | −0.018** | −0.016 | −13.576*** | −12.951*** | −13.683*** | −12.985*** | −13.953*** | −10.921*** | −14.433*** | −13.443*** | −14.114*** | −13.309*** | −14.014*** |
| | (0.033) | (0.100) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| Year dummies | Incl. | Incl. | Incl. | Incl. | Incl. | Incl. | Incl. | Incl. | Incl. | Incl. | Incl. | Incl. | Incl. |
| Wald chi-square | 10103.93*** | 10084.44*** | 6718.61*** | 6697.90*** | 6639.09*** | 6605.72*** | 4043.08*** | 4047.27*** | 6781.41*** | 6777.83*** | 405.88*** | 396.91*** | 6723.10*** |
| Observations | 8108 | 8108 | 8108 | 8108 | 8108 | 8108 | 4282 | 4282 | 8108 | 8108 | 8108 | 8108 | 8108 |

| | (8) Direct family control using a continuous measure based on the proportion of common shares held by family members (excluding family group affiliates' cross-shareholdings) when holding a minimum 5% and at least one family member is involved in the top management team or board of directors of the focal family firm | | (9) Indirect family control using a continuous measure based on the proportion of cross-shareholdings held by family group affiliates in the focal family firm when holding a minimum 5% and at least one family member is involved in the top management team or board of directors of the focal family firm | | (10) Family control using a continuous measure based on the proportion of the sum of common shares held by family members and affiliates within the same family business group when the later generation is involved in the top management team or board of directors of the focal family firm | | (11) Family control using a continuous measure based on the proportion of the sum of common shares held by family members and affiliates within the same family business group when the founder is involved in the top management team or board of directors of the focal family firm | | (12) Family control using a continuous measure based on the proportion of the sum of common shares held by family members and affiliates within the same family business group when holding a minimum 5% and at least one family member is involved in management or governance of the focal family firm | | (13) Family control using a continuous measure based on the proportion of the sum of common shares held by family members and affiliates within the same family business group when holding a minimum 10% and at least one family member is involved in management or governance of the focal family firm | | (14) Family control using a continuous measure based on the proportion of the sum of common shares held by family members and affiliates within the same family business group when holding a minimum 50% and at least one family member is involved in management or governance of the focal family firm | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Dependent variable: competitive aggressiveness* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* |
| | *Model 14* | *Model 15* | *Model 16* | *Model 17* | *Model 18* | *Model 19* | *Model 20* | *Model 21* | *Model 22* | *Model 23* | *Model 24* | *Model 25* | *Model 26* | *Model 27* |
| Past Tobin's Q | 0.179*** | 0.149*** | 0.195*** | 0.186*** | 0.193*** | 0.168*** | 0.142*** | 0.122*** | 0.188*** | 0.177*** | 0.197*** | 0.184*** | 0.208*** | 0.183*** |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |

(Continues)

Table AII. (Continued)

| | *(8) Direct family control using a continuous measure based on the proportion of common shares held by family members (excluding family group affiliates' cross-shareholdings) when holding a minimum 5% and at least one family member is involved in the top management team or board of directors of the focal family firm* | | *(9) Indirect family control using a continuous measure based on the proportion of cross-shareholdings held by family group affiliates in the focal family firm when holding a minimum 5% and at least one family member is involved in the top management team or board of directors of the focal family firm* | | *(10) Family control using a continuous measure based on the proportion of the sum of common shares held by family members and affiliates within the same family business group when the later generation is involved in the top management team or board of directors of the focal family firm* | | *(11) Family control using a continuous measure based on the proportion of the sum of common shares held by family members and affiliates within the same family business group when the founder is involved in the top management team or board of directors of the focal family firm* | | *(12) Family control using a continuous measure based on the proportion of the sum of common shares held by family members and affiliates within the same family business group when holding a minimum 5% and at least one family member is involved in management or governance of the focal family firm* | | *(13) Family control using a continuous measure based on the proportion of the sum of common shares held by family members and affiliates within the same family business group when holding a minimum 10% and at least one family member is involved in management or governance of the focal family firm* | | *(14) Family control using a continuous measure based on the proportion of the sum of common shares held by family members and affiliates within the same family business group when holding a minimum 50% and at least one family member is involved in management or governance of the focal family firm* | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Dependent variable: competitive aggressiveness* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* |
| | *Model 14* | *Model 15* | *Model 16* | *Model 17* | *Model 18* | *Model 19* | *Model 20* | *Model 21* | *Model 22* | *Model 23* | *Model 24* | *Model 25* | *Model 26* | *Model 27* |
| Past return on assets | −0.233** | 0.134 | −0.343*** | −0.035 | −0.386*** | −0.026 | −0.208** | −0.139 | −0.439*** | 0.114 | −0.510*** | 0.108 | −0.564*** | 0.089 |
| | (0.022) | (0.334) | (0.000) | (0.820) | (0.000) | (0.969) | (0.047) | (0.220) | (0.000) | (0.421) | (0.000) | (0.448) | (0.000) | (0.528) |
| Age (log) | 0.305*** | 0.314*** | −0.178 | −0.253* | 0.048 | 0.059 | −0.270** | −0.322*** | −0.070 | −0.069 | −0.055 | −0.057 | 0.104 | 0.021 |
| | (0.005) | (0.002) | (0.171) | (0.053) | (0.609) | (0.528) | (0.023) | (0.009) | (0.447) | (0.456) | (0.554) | (0.533) | (0.332) | (0.852) |
| Size (log) | 1.509*** | 1.518*** | 1.848*** | 1.907*** | 1.636*** | 1.628*** | 1.472*** | 1.455*** | 1.566*** | 1.562*** | 1.553*** | 1.555*** | 1.563*** | 1.590*** |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| Financial slack | −0.111*** | −0.114*** | −0.190*** | −0.212*** | −0.139*** | −0.134*** | −0.079*** | −0.077*** | −0.141*** | −0.144*** | −0.138*** | −0.141*** | −0.121*** | −0.132*** |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.002) | (0.003) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| Leverage ratio | −1.036*** | −1.076*** | −1.008*** | −1.113*** | −0.705*** | −0.706*** | −0.793*** | −0.839*** | −0.670*** | −0.685*** | −0.637*** | −0.662*** | −0.478** | −0.673*** |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.012) | (0.001) |
| Cash holding ratio | −0.230* | −0.267** | 0.109 | 0.124 | 0.106 | 0.006 | −0.064 | −0.095 | 0.118 | 0.101 | 0.141 | 0.114 | 0.124 | 0.132 |
| | (0.093) | (0.044) | (0.382) | (0.317) | (0.413) | (0.964) | (0.607) | (0.460) | (0.330) | (0.407) | (0.247) | (0.348) | (0.297) | (0.269) |
| Advertising intensity | 6.102*** | 6.139*** | 2.879** | 2.213 | 4.126*** | 4.497*** | 3.131*** | 2.790** | 4.065*** | 4.074*** | 3.948*** | 4.026*** | 4.236*** | 4.776*** |
| | (0.000) | (0.000) | (0.045) | (0.125) | (0.001) | (0.000) | (0.009) | (0.021) | (0.000) | (0.000) | (0.001) | (0.000) | (0.000) | (0.000) |
| R&D intensity | 3.242*** | 3.206*** | 5.269*** | 5.502*** | 4.774*** | 5.003*** | 4.348*** | 4.458*** | 4.859*** | 5.041*** | 4.882*** | 5.043*** | 6.330*** | 4.803*** |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.001) |

(Continues)

Table AII. (Continued)

| | *(8) Direct family control using a continuous measure based on the proportion of common shares held by family members (excluding family group affiliates' cross-shareholdings) when holding a minimum 5% and at least one family member is involved in the top management team or board of directors of the focal family firm* | | *(9) Indirect family control using a continuous measure based on the proportion of cross-shareholdings held by family group affiliates in the focal family firm when holding a minimum 5% and at least one family member is involved in the top management team or board of directors of the focal family firm* | | *(10) Family control using a continuous measure based on the proportion of the sum of common shares held by family members and affiliates within the same family business group when the later generation is involved in the top management team or board of directors of the focal family firm* | | *(11) Family control using a continuous measure based on the proportion of the sum of common shares held by family members and affiliates within the same family business group when the founder is involved in the top management team or board of directors of the focal family firm* | | *(12) Family control using a continuous measure based on the proportion of the sum of common shares held by family members and affiliates within the same family business group when holding a minimum 5% and at least one family member is involved in management or governance of the focal family firm* | | *(13) Family control using a continuous measure based on the proportion of the sum of common shares held by family members and affiliates within the same family business group when holding a minimum 10% and at least one family member is involved in management or governance of the focal family firm* | | *(14) Family control using a continuous measure based on the proportion of the sum of common shares held by family members and affiliates within the same family business group when holding a minimum 50% and at least one family member is involved in management or governance of the focal family firm* | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Dependent variable: competitive aggressiveness* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* |
| | *Model 14* | *Model 15* | *Model 16* | *Model 17* | *Model 18* | *Model 19* | *Model 20* | *Model 21* | *Model 22* | *Model 23* | *Model 24* | *Model 25* | *Model 26* | *Model 27* |
| % of nonfamily blockholders | −0.574*** | −0.658*** | −0.090 | −0.214 | 0.220 | 0.134 | −0.010 | −0.058 | 0.405*** | 0.329** | 0.481*** | 0.355** | 0.431** | 0.151 |
| | (0.010) | (0.001) | (0.631) | (0.265) | (0.118) | (0.321) | (0.922) | (0.603) | (0.005) | (0.021) | (0.001) | (0.014) | (0.039) | (0.514) |
| Board size (log) | 0.087 | 0.091 | −0.071 | 0.008 | −0.204 | −0.173 | 0.069 | 0.105 | −0.293*** | −0.273*** | −0.320*** | −0.290*** | −0.237** | −0.220** |
| | (0.445) | (0.414) | (0.576) | (0.950) | (0.102) | (0.160) | (0.567) | (0.399) | (0.005) | (0.009) | (0.002) | (0.006) | (0.019) | (0.031) |
| Political ties | −0.554*** | −0.599*** | −0.429*** | −0.484*** | −0.392*** | −0.436*** | −0.544*** | −0.574*** | −0.296*** | −0.327*** | −0.256*** | −0.303*** | −0.283*** | −0.340*** |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.002) | (0.001) | (0.010) | (0.002) | (0.005) | (0.001) |
| Media coverage | 1.076*** | 1.056*** | 0.709*** | 0.579*** | 0.932*** | 0.960*** | 1.008*** | 1.003*** | 1.097*** | 1.084*** | 1.120*** | 1.096*** | 1.193*** | 1.063*** |
| | (0.000) | (0.000) | (0.001) | (0.005) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| Industry munificence | 0.014 | 0.004 | 0.045** | 0.049*** | 0.029 | 0.026 | 0.051*** | 0.056*** | 0.027 | 0.028 | 0.027 | 0.028 | 0.034* | 0.026 |
| | (0.450) | (0.804) | (0.016) | (0.010) | (0.101) | (0.144) | (0.004) | (0.002) | (0.139) | (0.133) | (0.139) | (0.136) | (0.059) | (0.154) |
| Industry concentration | 0.509* | 0.485* | 0.478 | 0.466 | 0.264 | 0.350 | 0.186 | 0.185 | 0.610** | 0.615** | 0.618** | 0.612** | 0.679** | 0.425 |
| | (0.076) | (0.089) | (0.122) | (0.132) | (0.408) | (0.267) | (0.536) | (0.546) | (0.033) | (0.031) | (0.031) | (0.032) | (0.039) | (0.211) |
| Industry dynamism | 1.640*** | 1.587*** | 1.882*** | 1.887*** | 1.505*** | 1.419*** | 1.484*** | 1.471*** | 1.540*** | 1.521*** | 1.512*** | 1.503*** | 1.610*** | 1.579*** |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.001) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| Competitive complexity | 14.923*** | 15.090*** | 14.970*** | 15.065*** | 14.791*** | 14.847*** | 14.844*** | 14.968*** | 15.142*** | 15.147*** | 15.111*** | 15.128*** | 14.834*** | 15.027*** |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |

(Continues)

Table AII. (Continued)

| | *(8) Direct family control using a continuous measure based on the proportion of common shares held by family members (excluding family group affiliates' cross-shareholdings) when holding a minimum 5% and at least one family member is involved in the top management team or board of directors of the focal family firm* | | *(9) Indirect family control using a continuous measure based on the proportion of cross-shareholdings held by family group affiliates in the focal family firm when holding a minimum 5% and at least one family member is involved in the top management team or board of directors of the focal family firm* | | *(10) Family control using a continuous measure based on the proportion of the sum of common shares held by family members and affiliates within the same family business group when the later generation is involved in the top management team or board of directors of the focal family firm* | | *(11) Family control using a continuous measure based on the proportion of the sum of common shares held by family members and affiliates within the same family business group when the founder is involved in the top management team or board of directors of the focal family firm* | | *(12) Family control using a continuous measure based on the proportion of the sum of common shares held by family members and affiliates within the same family business group when holding a minimum 5% and at least one family member is involved in management or governance of the focal family firm* | | *(13) Family control using a continuous measure based on the proportion of the sum of common shares held by family members and affiliates within the same family business group when holding a minimum 10% and at least one family member is involved in management or governance of the focal family firm* | | *(14) Family control using a continuous measure based on the proportion of the sum of common shares held by family members and affiliates within the same family business group when holding a minimum 50% and at least one family member is involved in management or governance of the focal family firm* | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Dependent variable: competitive aggressiveness* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* |
| | *Model 14* | *Model 15* | *Model 16* | *Model 17* | *Model 18* | *Model 19* | *Model 20* | *Model 21* | *Model 22* | *Model 23* | *Model 24* | *Model 25* | *Model 26* | *Model 27* |
| Performance below aspiration level | 0.399*** | 0.787*** | 0.056 | 0.283 | 0.159* | 0.527 | 0.229** | 0.278*** | −0.383** | 0.170 | −0.401** | 0.200 | −0.008 | 0.239 |
| | (0.000) | (0.000) | (0.690) | (0.170) | (0.080) | (0.435) | (0.013) | (0.001) | (0.033) | (0.462) | (0.025) | (0.389) | (0.961) | (0.307) |
| Performance above aspiration level | 0.099 | −0.298 | 0.299** | 0.737 | 0.430*** | 0.139 | 0.295*** | 0.162 | 0.348** | −0.896 | 0.386** | −0.911 | 0.447*** | 0.589 |
| | (0.455) | (0.575) | (0.019) | (0.144) | (0.000) | (0.838) | (0.009) | (0.163) | (0.027) | (0.244) | (0.014) | (0.235) | (0.003) | (0.318) |
| Business group (log) | 0.479*** | 0.488*** | 0.263*** | 0.242*** | 0.382*** | 0.398*** | 0.388*** | 0.381*** | 0.411*** | 0.440*** | 0.412*** | 0.442*** | 0.337*** | 0.363*** |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| Family control | −0.548*** | −0.679*** | −0.660*** | −0.777*** | −0.592*** | −0.666*** | −0.066* | −0.095** | −1.090*** | −1.233*** | −1.066*** | −1.206*** | −0.349*** | −0.438*** |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.095) | (0.035) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| Family control × Performance below aspiration level | 0.136* | 0.010* | 2.895*** | 3.691*** | 0.219* | 0.245* | 0.650** | 1.916** | 1.509*** | 2.024*** | 1.482*** | 1.975*** | 1.341* | 1.435** |
| | (0.068) | (0.091) | (0.000) | (0.000) | (0.075) | (0.072) | (0.042) | (0.017) | (0.006) | (0.000) | (0.006) | (0.000) | (0.055) | (0.018) |
| Family control × Performance above aspiration level | −0.040* | −6.114*** | −0.688* | −2.161** | −0.304* | −3.415*** | −0.549** | −1.572** | −0.915** | −5.211*** | −0.954** | −5.157*** | −0.289* | −1.372** |
| | (0.095) | (0.000) | (0.075) | (0.024) | (0.062) | (0.006) | (0.044) | (0.023) | (0.027) | (0.001) | (0.020) | (0.001) | (0.054) | (0.024) |

(Continues)

Table AII. (Continued)

| | *(8) Direct family control using a continuous measure based on the proportion of common shares held by family members (excluding family group affiliates' cross-shareholdings) when holding a minimum 5% and at least one family member is involved in the top management team or board of directors of the focal family firm* | | *(9) Indirect family control using a continuous measure based on the proportion of cross-shareholdings held by family group affiliates in the focal family firm when holding a minimum 5% and at least one family member is involved in the top management team or board of directors of the focal family firm* | | *(10) Family control using a continuous measure based on the proportion of the sum of common shares held by family members and affiliates within the same family business group when the later generation is involved in the top management team or board of directors of the focal family firm* | | *(11) Family control using a continuous measure based on the proportion of the sum of common shares held by family members and affiliates within the same family business group when the founder is involved in the top management team or board of directors of the focal family firm* | | *(12) Family control using a continuous measure based on the proportion of the sum of common shares held by family members and affiliates within the same family business group when holding a minimum 5% and at least one family member is involved in management or governance of the focal family firm* | | *(13) Family control using a continuous measure based on the proportion of the sum of common shares held by family members and affiliates within the same family business group when holding a minimum 10% and at least one family member is involved in management or governance of the focal family firm* | | *(14) Family control using a continuous measure based on the proportion of the sum of common shares held by family members and affiliates within the same family business group when holding a minimum 50% and at least one family member is involved in management or governance of the focal family firm* | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Dependent variable: competitive aggressiveness* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* |
| | *Model 14* | *Model 15* | *Model 16* | *Model 17* | *Model 18* | *Model 19* | *Model 20* | *Model 21* | *Model 22* | *Model 23* | *Model 24* | *Model 25* | *Model 26* | *Model 27* |
| Family control × Business group (log) | −1.273*** | −1.436*** | −0.573*** | −0.790*** | −1.251*** | −1.408*** | −0.207* | −0.392** | −0.436*** | −0.287* | −0.429*** | −0.278* | −0.362*** | −0.339*** |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.098) | (0.024) | (0.003) | (0.064) | (0.003) | (0.070) | (0.000) | (0.000) |
| Business group (log) × Performance below aspiration level | 0.252 | −0.033 | 0.062 | 0.036 | 0.461*** | 0.108 | 0.371* | 0.189 | 0.565** | 0.297 | 0.575** | 0.294 | 0.535* | 0.665** |
| | (0.186) | (0.870) | (0.804) | (0.878) | (0.009) | (0.556) | (0.051) | (0.351) | (0.023) | (0.257) | (0.021) | (0.263) | (0.082) | (0.042) |
| Business group (log) × Performance above aspiration level | −0.259 | −0.388 | −0.105 | 0.282 | −0.069 | −0.229 | −0.152 | 0.342 | −0.141 | −0.678* | −0.134 | −0.681* | 0.056 | −0.986** |
| | (0.207) | (0.424) | (0.648) | (0.636) | (0.703) | (0.468) | (0.394) | (0.293) | (0.520) | (0.100) | (0.540) | (0.098) | (0.828) | (0.045) |
| Family control × Performance below aspiration level × Business group (log) | 2.491** | 2.555* | 0.394* | 0.756** | 7.339*** | 6.733*** | 0.740** | 0.614** | 2.473*** | 1.795** | 2.593*** | 1.865** | 2.757** | 2.465*** |
| | (0.012) | (0.073) | (0.072) | (0.049) | (0.000) | (0.000) | (0.038) | (0.046) | (0.006) | (0.047) | (0.003) | (0.037) | (0.038) | (0.008) |

(Continues)

Table AII. (Continued)

| | *(8) Direct family control using a continuous measure based on the proportion of common shares held by family members (excluding family group affiliates' cross-shareholdings) when holding a minimum 5% and at least one family member is involved in the top management team or board of directors of the focal family firm* | | *(9) Indirect family control using a continuous measure based on the proportion of cross-shareholdings held by family group affiliates in the focal family firm when holding a minimum 5% and at least one family member is involved in the top management team or board of directors of the focal family firm* | | *(10) Family control using a continuous measure based on the proportion of the sum of common shares held by family members and affiliates within the same family business group when the later generation is involved in the top management team or board of directors of the focal family firm* | | *(11) Family control using a continuous measure based on the proportion of the sum of common shares held by family members and affiliates within the same family business group when the founder is involved in the top management team or board of directors of the focal family firm* | | *(12) Family control using a continuous measure based on the proportion of the sum of common shares held by family members and affiliates within the same family business group when holding a minimum 5% and at least one family member is involved in management or governance of the focal family firm* | | *(13) Family control using a continuous measure based on the proportion of the sum of common shares held by family members and affiliates within the same family business group when holding a minimum 10% and at least one family member is involved in management or governance of the focal family firm* | | *(14) Family control using a continuous measure based on the proportion of the sum of common shares held by family members and affiliates within the same family business group when holding a minimum 50% and at least one family member is involved in management or governance of the focal family firm* | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Dependent variable: competitive aggressiveness* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* |
| | *Model 14* | *Model 15* | *Model 16* | *Model 17* | *Model 18* | *Model 19* | *Model 20* | *Model 21* | *Model 22* | *Model 23* | *Model 24* | *Model 25* | *Model 26* | *Model 27* |
| Family control × Performance above aspiration level × Business group (log) | −1.845* | −5.468** | −0.033* | −4.927** | −7.628*** | −11.204*** | −0.069* | −12.263** | −0.096* | −5.707*** | −0.269* | −5.477*** | −0.724** | −1.898** |
| | (0.079) | (0.027) | (0.097) | (0.023) | (0.000) | (0.000) | (0.097) | (0.011) | (0.089) | (0.006) | (0.072) | (0.008) | (0.034) | (0.019) |
| Inverse Mill's ratio | 0.662*** | 0.723*** | 0.595* | 0.839** | −0.044 | 0.078 | 0.586*** | 0.676*** | −0.374*** | −0.305*** | −0.449*** | −0.330*** | −0.278 | 0.002 |
| | (0.000) | (0.000) | (0.068) | (0.011) | (0.790) | (0.619) | (0.000) | (0.000) | (0.001) | (0.005) | (0.000) | (0.004) | (0.126) | (0.993) |
| Constant | −13.663*** | −13.040*** | −16.666*** | −16.828*** | −14.547*** | −13.884*** | −13.173*** | −12.909*** | −14.531*** | −13.517*** | −14.468*** | −13.426*** | −14.246*** | −14.143*** |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| Year dummies | Incl. | Incl. | Incl. | Incl. | Incl. | Incl. | Incl. | Incl. | Incl. | Incl. | Incl. | Incl. | Incl. | Incl. |
| Wald chi-square | 6738.62*** | 6770.35*** | 6657.74*** | 6708.79*** | 6723.65*** | 6662.20*** | 6691.14*** | 6661.19*** | 6705.11*** | 6702.51*** | 6701.78*** | 6696.90*** | 6876.21*** | 6822.76*** |
| Observations | 8108 | 8108 | 8108 | 8108 | 8108 | 8108 | 8108 | 8108 | 8108 | 8108 | 8108 | 8108 | 8108 | 8108 |

*Notes*: *p*-values are reported in parentheses below the regression coefficients; In Models 1 and 2, we controlled asset-weighted competitive complexity and applied a gaussian distribution with an identity link function to predict asset-weighted competitive aggressiveness, treating it as a continuous variable. In the subsequent regression models, we used unweighted competitive complexity and negative binomial GEE models when predicting unweighted competitive aggressiveness.

Table AIII. Results of GEE analysis predicting competitive complexity (supplementary analyses)

| | *(1) Asset-weighted competitive complexity* | | *(2) Simultaneously test performance above and below aspiration levels* | | *(3) After accounting for business group fixed effects* | | *(4) Subsample analysis: firms having business group affiliations* | | *(5) Three-way interaction effect of family control, business group affiliations, and performance below/above aspiration levels* | | *(6) Alternative measure for competitive complexity and firm size* | | *(7) Altman z-score* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Dependent variable: competitive complexity* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | |
| | *Model 1* | *Model 2* | *Model 3* | *Model 4* | *Model 5* | *Model 6* | *Model 7* | *Model 8* | *Model 9* | *Model 10* | *Model 11* | *Model 12* | *Model 13* |
| Past Tobin's Q | −0.0000 | −0.0000 | −0.001** | −0.001** | −0.001** | −0.001** | −0.002** | −0.002** | −0.001** | −0.001** | −0.004*** | −0.004*** | −0.001 |
| | (0.425) | (0.110) | (0.019) | (0.021) | (0.018) | (0.020) | (0.028) | (0.028) | (0.017) | (0.017) | (0.000) | (0.000) | (0.128) |
| Past return on assets | −0.0005*** | −0.0014*** | −0.000 | 0.001 | −0.000 | 0.001 | 0.001 | 0.006 | −0.002 | −0.002 | −0.004 | −0.010 | 0.003 |
| | (0.001) | (0.000) | (0.930) | (0.872) | (0.919) | (0.891) | (0.811) | (0.431) | (0.441) | (0.616) | (0.503) | (0.315) | (0.165) |
| Age (log) | −0.0004*** | −0.0004*** | 0.002 | 0.002 | 0.002 | 0.001 | 0.003 | 0.003 | 0.002 | 0.002 | −0.001 | −0.001 | 0.002 |
| | (0.004) | (0.001) | (0.330) | (0.361) | (0.448) | (0.485) | (0.236) | (0.231) | (0.300) | (0.375) | (0.898) | (0.760) | (0.413) |
| Size (log) | | | 0.012*** | 0.013*** | 0.013*** | 0.013*** | 0.019*** | 0.019*** | 0.012*** | 0.013*** | 0.022*** | 0.023*** | 0.012*** |
| | | | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| Financial slack | −0.0001*** | −0.0001*** | 0.000 | 0.000 | 0.000 | 0.000 | 0.001 | 0.001 | 0.000 | 0.000 | −0.001 | −0.001 | 0.001** |
| | (0.006) | (0.003) | (0.862) | (0.862) | (0.870) | (0.872) | (0.217) | (0.202) | (0.829) | (0.861) | (0.171) | (0.166) | (0.044) |
| Leverage ratio | −0.002*** | −0.002*** | −0.006*** | −0.007*** | −0.006*** | −0.007*** | −0.006* | −0.006* | −0.006*** | −0.007*** | −0.025*** | −0.028*** | −0.008*** |
| | (0.000) | (0.000) | (0.001) | (0.000) | (0.001) | (0.000) | (0.064) | (0.079) | (0.001) | (0.000) | (0.000) | (0.000) | (0.000) |
| Cash holding ratio | −0.0003** | −0.0003*** | −0.004** | −0.004** | −0.004** | −0.004** | −0.005 | −0.005 | −0.004** | −0.004** | −0.004 | −0.004 | −0.004* |
| | (0.033) | (0.008) | (0.041) | (0.040) | (0.043) | (0.042) | (0.129) | (0.137) | (0.042) | (0.035) | (0.427) | (0.449) | (0.061) |
| Advertising intensity | −0.003** | −0.002* | −0.008 | −0.007 | −0.008 | −0.006 | 0.005 | 0.003 | −0.009 | −0.006 | −0.100** | −0.092* | −0.008 |
| | (0.043) | (0.091) | (0.707) | (0.764) | (0.707) | (0.765) | (0.896) | (0.937) | (0.663) | (0.765) | (0.044) | (0.066) | (0.703) |
| R&D intensity | −0.001 | −0.001 | 0.023 | 0.024* | 0.023 | 0.024* | 0.078*** | 0.079*** | 0.023 | 0.023* | 0.085** | 0.088*** | 0.028* |
| | (0.503) | (0.488) | (0.109) | (0.096) | (0.110) | (0.097) | (0.005) | (0.004) | (0.103) | (0.100) | (0.012) | (0.009) | (0.053) |

(Continues)

Table AIII. (Continued)

| | (1) Asset-weighted competitive complexity | | (2) Simultaneously test performance above and below aspiration levels | | (3) After accounting for business group fixed effects | | (4) Subsample analysis: firms having business group affiliations | | (5) Three-way interaction effect of family control, business group affiliations, and performance below/above aspiration levels | | (6) Alternative measure for competitive complexity and firm size | | (7) Altman z-score |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Dependent variable: competitive complexity* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | |
| | *Model 1* | *Model 2* | *Model 3* | *Model 4* | *Model 5* | *Model 6* | *Model 7* | *Model 8* | *Model 9* | *Model 10* | *Model 11* | *Model 12* | *Model 13* |
| % of nonfamily blockholders | −0.003*** | −0.003*** | −0.007*** | −0.007*** | −0.007*** | −0.007*** | −0.006 | −0.006 | −0.006*** | −0.007*** | −0.018*** | −0.022*** | −0.006*** |
| | (0.000) | (0.000) | (0.004) | (0.001) | (0.004) | (0.001) | (0.147) | (0.160) | (0.009) | (0.001) | (0.001) | (0.000) | (0.005) |
| Board size (log) | −0.001*** | −0.001*** | −0.002 | −0.001 | −0.001 | −0.001 | −0.002 | −0.002 | −0.002 | −0.002 | −0.012*** | −0.012*** | −0.001 |
| | (0.000) | (0.000) | (0.357) | (0.376) | (0.363) | (0.383) | (0.449) | (0.450) | (0.319) | (0.358) | (0.002) | (0.003) | (0.466) |
| Political ties | −0.001*** | −0.001*** | −0.004** | −0.004** | −0.004** | −0.004** | −0.006** | −0.006** | −0.004** | −0.004** | −0.007* | −0.008** | −0.004** |
| | (0.000) | (0.000) | (0.023) | (0.017) | (0.023) | (0.016) | (0.031) | (0.035) | (0.021) | (0.015) | (0.092) | (0.050) | (0.035) |
| Media coverage | −0.001*** | −0.001*** | −0.002 | −0.002 | −0.002 | −0.002 | −0.002 | −0.001 | −0.001 | −0.002 | −0.003 | −0.005 | −0.001 |
| | (0.000) | (0.000) | (0.522) | (0.460) | (0.536) | (0.470) | (0.682) | (0.737) | (0.604) | (0.476) | (0.631) | (0.444) | (0.742) |
| Industry munificence | −0.000 | −0.000 | −0.000 | −0.000 | −0.000 | −0.000 | 0.000 | 0.000 | −0.000 | −0.000 | −0.002*** | −0.002*** | −0.000 |
| | (0.155) | (0.296) | (0.433) | (0.503) | (0.434) | (0.503) | (0.886) | (0.849) | (0.452) | (0.496) | (0.001) | (0.001) | (0.473) |
| Industry concentration | −0.004*** | −0.004*** | −0.002 | −0.002 | −0.001 | −0.001 | −0.008 | −0.008 | −0.002 | −0.002 | −0.015 | −0.017 | −0.002 |
| | (0.000) | (0.000) | (0.809) | (0.797) | (0.840) | (0.827) | (0.356) | (0.374) | (0.804) | (0.801) | (0.308) | (0.251) | (0.734) |
| Industry dynamism | 0.001 | 0.001 | 0.016 | 0.016 | 0.016* | 0.017* | 0.032 | 0.032 | 0.016 | 0.016 | 0.027 | 0.029 | 0.017* |
| | (0.361) | (0.298) | (0.115) | (0.107) | (0.099) | (0.093) | (0.103) | (0.106) | (0.117) | (0.108) | (0.147) | (0.126) | (0.093) |
| Competitive aggressiveness | 0.016*** | 0.016*** | 0.047*** | 0.047*** | 0.047*** | 0.047*** | 0.055*** | 0.055*** | 0.047*** | 0.047*** | 0.127*** | 0.126*** | 0.047*** |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| Performance below aspiration level | −0.0003*** | −0.001*** | −0.002 | −0.004* | −0.002 | −0.004* | −0.004 | 0.002 | −0.002 | −0.008** | −0.012* | −0.023*** | |
| | (0.003) | (0.000) | (0.131) | (0.058) | (0.130) | (0.056) | (0.352) | (0.692) | (0.487) | (0.014) | (0.073) | (0.002) | |

(Continues)

Table AIII. (Continued)

| Dependent variable: competitive complexity | (1) Asset-weighted competitive complexity | | (2) Simultaneously test performance above and below aspiration levels | | (3) After accounting for business group fixed effects | | (4) Subsample analysis: firms having business group affiliations | | (5) Three-way interaction effect of family control, business group affiliations, and performance below/above aspiration levels | | (6) Alternative measure for competitive complexity and firm size | | (7) Altman z-score |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | |
| | *Model 1* | *Model 2* | *Model 3* | *Model 4* | *Model 5* | *Model 6* | *Model 7* | *Model 8* | *Model 9* | *Model 10* | *Model 11* | *Model 12* | *Model 13* |
| Performance above aspiration level | −0.0001 | 0.002*** | −0.004 | −0.009 | −0.004 | −0.009 | −0.002 | −0.008 | −0.002 | −0.010 | −0.012 | −0.002 | |
| | (0.707) | (0.000) | (0.306) | (0.371) | (0.315) | (0.381) | (0.696) | (0.539) | (0.624) | (0.342) | (0.267) | (0.949) | |
| Business group (log) | −0.0001** | −0.0001** | 0.006*** | 0.006*** | 0.006*** | 0.006*** | 0.003*** | 0.003*** | 0.007*** | 0.006*** | 0.014*** | 0.013*** | 0.006*** |
| | (0.018) | (0.030) | (0.000) | (0.000) | (0.000) | (0.000) | (0.002) | (0.001) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| Family control | −0.0003*** | −0.0004*** | −0.003* | −0.004** | −0.003* | −0.004** | −0.002* | −0.002* | −0.004** | −0.004** | −0.015*** | −0.016*** | −0.003* |
| | (0.002) | (0.000) | (0.067) | (0.026) | (0.065) | (0.025) | (0.061) | (0.060) | (0.032) | (0.026) | (0.000) | (0.000) | (0.062) |
| Family control × Performance below aspiration level | 0.001** | 0.002*** | 0.010* | 0.016** | 0.010* | 0.016** | | | 0.012** | 0.020** | 0.026** | 0.059*** | |
| | (0.043) | (0.000) | (0.084) | (0.047) | (0.084) | (0.048) | | | (0.045) | (0.018) | (0.018) | (0.003) | |
| Family control × Performance above aspiration level | | | −0.007* | −0.011* | −0.007* | −0.011* | | | −0.010* | −0.016* | −0.010** | −0.068* | |
| | | | (0.071) | (0.061) | (0.069) | (0.061) | | | (0.091) | (0.096) | (0.048) | (0.082) | |
| Family control × Business group affiliations (log) | −0.0001* | −0.0001* | −0.011*** | −0.011*** | −0.011*** | −0.011*** | | | −0.014*** | −0.014*** | −0.027*** | −0.024*** | −0.012*** |
| | (0.090) | (0.093) | (0.000) | (0.000) | (0.000) | (0.000) | | | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| Business group affiliations (log) × Performance below aspiration level | | | | | | | | | −0.014*** | −0.001 | 0.006 | 0.013 | |
| | | | | | | | | | (0.001) | (0.894) | (0.584) | (0.246) | |
| Business group affiliations (log) × Performance above aspiration level | | | | | | | | | −0.007* | 0.008 | −0.001 | 0.024 | |
| | | | | | | | | | (0.064) | (0.276) | (0.923) | (0.174) | |

(Continues)

Table AIII. (Continued)

| Dependent variable: competitive complexity | (1) Asset-weighted competitive complexity | | (2) Simultaneously test performance above and below aspiration levels | | (3) After accounting for business group fixed effects | | (4) Subsample analysis: firms having business group affiliations | | (5) Three-way interaction effect of family control, business group affiliations, and performance below/above aspiration levels | | (6) Alternative measure for competitive complexity and firm size | | (7) Altman z-score |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Historical aspiration | Social aspiration | Historical aspiration | Social aspiration | Historical aspiration | Social aspiration | Historical aspiration | Social aspiration | Historical aspiration | Social aspiration | Historical aspiration | Social aspiration | |
| | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 | Model 6 | Model 7 | Model 8 | Model 9 | Model 10 | Model 11 | Model 12 | Model 13 |
| Family control × Performance below aspiration level × Business group affiliations (log) | | | | | | | | | 0.008* | 0.024** | 0.060* | 0.043** | |
| | | | | | | | | | (0.060) | (0.011) | (0.090) | (0.025) | |
| Family control × Performance above aspiration level × Business group affiliations (log) | | | | | | | | | −0.013** | −0.033** | −0.015** | −0.018* | |
| | | | | | | | | | (0.010) | (0.031) | (0.019) | (0.081) | |
| Altman z-score | | | | | | | | | | | | | −0.001*** |
| | | | | | | | | | | | | | (0.001) |
| Family control × Altman z-score | | | | | | | | | | | | | −0.001** |
| | | | | | | | | | | | | | (0.010) |
| Business group (log) × Altman z-score | | | | | | | | | | | | | 0.001*** |
| | | | | | | | | | | | | | (0.000) |
| Family control × Altman z-score × Business group (log) | | | | | | | | | | | | | −0.003*** |
| | | | | | | | | | | | | | (0.000) |
| Business group dummies | | | | | −0.002 | −0.002 | | | | | | | |
| | | | | | (0.320) | (0.323) | | | | | | | |

(Continues)

Table AIII. (Continued)

| | (1) Asset-weighted competitive complexity | | (2) Simultaneously test performance above and below aspiration levels | | (3) After accounting for business group fixed effects | | (4) Subsample analysis: firms having business group affiliations | | (5) Three-way interaction effect of family control, business group affiliations, and performance below/above aspiration levels | | (6) Alternative measure for competitive complexity and firm size | | (7) Altman z-score |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Dependent variable: competitive complexity* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | |
| | *Model 1* | *Model 2* | *Model 3* | *Model 4* | *Model 5* | *Model 6* | *Model 7* | *Model 8* | *Model 9* | *Model 10* | *Model 11* | *Model 12* | *Model 13* |
| Inverse Mill's ratio | 0.003*** | 0.003*** | 0.010*** | 0.011*** | 0.010*** | 0.011*** | 0.015*** | 0.014*** | 0.010*** | 0.011*** | 0.033*** | 0.037*** | 0.009*** |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| Constant | 0.039*** | 0.038*** | 0.588*** | 0.584*** | 0.588*** | 0.584*** | 0.521*** | 0.532*** | 0.590*** | 0.578*** | 0.801*** | 0.775*** | 0.590*** |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| Year dummies | Incl. | Incl. | Incl. | Incl. | Incl. | Incl. | Incl. | Incl. | Incl. | Incl. | Incl. | Incl. | Incl. |
| Wald chi-square | 3609.80*** | 3703.70*** | 6824.04*** | 6832.19*** | 6831.01*** | 6839.19*** | 4075.21*** | 4074.36*** | 6871.14*** | 6845.83*** | 6825.15*** | 6849.57*** | 6887.22*** |
| Observations | 8108 | 8108 | 8108 | 8108 | 8108 | 8108 | 4282 | 4282 | 8108 | 8108 | 8108 | 8108 | 8108 |

| | (8) Direct family control using a continuous measure based on the proportion of common shares held by family members (excluding family group affiliates' cross-shareholdings) when holding a minimum 5% and at least one family member is involved in the top management team or board of directors of the focal family firm | | (9) Indirect family control using a continuous measure based on the proportion of cross-shareholdings held by family group affiliates in the focal family firm when holding a minimum 5% and at least one family member is involved in the top management team or board of directors of the focal family firm | | (10) Family control using a continuous measure based on the proportion of the sum of common shares held by family members and affiliates within the same family business group when the later generation is involved in the top management team or board of directors of the focal family firm | | (11) Family control using a continuous measure based on the proportion of the sum of common shares held by family members and affiliates within the same family business group when the founder is involved in the top management team or board of directors of the focal family firm | | (12) Family control using a continuous measure based on the proportion of the sum of common shares held by family members and affiliates within the same family business group when holding a minimum 5% and at least one family member is involved in management or governance of the focal family firm | | (13) Family control using a continuous measure based on the proportion of the sum of common shares held by family members and affiliates within the same family business group when holding a minimum 10% and at least one family member is involved in management or governance of the focal family firm | | (14) Family control using a continuous measure based on the proportion of the sum of common shares held by family members and affiliates within the same family business group when holding a minimum 50% and at least one family member is involved in management or governance of the focal family firm | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Dependent variable: competitive complexity* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* |
| | *Model 14* | *Model 15* | *Model 16* | *Model 17* | *Model 18* | *Model 19* | *Model 20* | *Model 21* | *Model 22* | *Model 23* | *Model 24* | *Model 25* | *Model 26* | *Model 27* |
| Past Tobin's Q | −0.001*** | −0.002*** | −0.001*** | −0.002*** | −0.002*** | −0.002*** | −0.002*** | −0.002*** | −0.001* | −0.001* | −0.001** | −0.001** | −0.001*** | −0.001*** |
| | (0.007) | (0.001) | (0.003) | (0.000) | (0.001) | (0.001) | (0.000) | (0.000) | (0.054) | (0.080) | (0.038) | (0.049) | (0.007) | (0.002) |

(Continues)

Table AIII. (Continued)

| | *(8) Direct family control using a continuous measure based on the proportion of common shares held by family members (excluding family group affiliates' cross-shareholdings) when holding a minimum 5% and at least one family member is involved in the top management team or board of directors of the focal family firm* | | *(9) Indirect family control using a continuous measure based on the proportion of cross-shareholdings held by family group affiliates in the focal family firm when holding a minimum 5% and at least one family member is involved in the top management team or board of directors of the focal family firm* | | *(10) Family control using a continuous measure based on the proportion of the sum of common shares held by family members and affiliates within the same family business group when the later generation is involved in the top management team or board of directors of the focal family firm* | | *(11) Family control using a continuous measure based on the proportion of the sum of common shares held by family members and affiliates within the same family business group when the founder is involved in the top management team or board of directors of the focal family firm* | | *(12) Family control using a continuous measure based on the proportion of the sum of common shares held by family members and affiliates within the same family business group when holding a minimum 5% and at least one family member is involved in management or governance of the focal family firm* | | *(13) Family control using a continuous measure based on the proportion of the sum of common shares held by family members and affiliates within the same family business group when holding a minimum 10% and at least one family member is involved in management or governance of the focal family firm* | | *(14) Family control using a continuous measure based on the proportion of the sum of common shares held by family members and affiliates within the same family business group when holding a minimum 50% and at least one family member is involved in management or governance of the focal family firm* | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Dependent variable: competitive complexity* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* |
| | *Model 14* | *Model 15* | *Model 16* | *Model 17* | *Model 18* | *Model 19* | *Model 20* | *Model 21* | *Model 22* | *Model 23* | *Model 24* | *Model 25* | *Model 26* | *Model 27* |
| Past return on assets | 0.008*** | −0.008* | 0.011*** | 0.014*** | −0.002 | −0.002 | 0.014*** | 0.015*** | −0.006** | −0.002 | −0.005* | −0.002 | 0.004 | 0.000 |
| | (0.005) | (0.053) | (0.000) | (0.000) | (0.400) | (0.634) | (0.000) | (0.000) | (0.015) | (0.577) | (0.057) | (0.592) | (0.165) | (0.996) |
| Age (log) | 0.017*** | 0.012*** | −0.036*** | −0.036*** | 0.007*** | 0.007*** | −0.013*** | −0.015*** | 0.004* | 0.004* | 0.003* | 0.003 | −0.002 | −0.003 |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.072) | (0.078) | (0.091) | (0.103) | (0.462) | (0.162) |
| Size (log) | 0.007*** | 0.009*** | 0.053*** | 0.054*** | 0.011*** | 0.011*** | 0.002* | 0.002 | 0.011*** | 0.011*** | 0.011*** | 0.012*** | 0.012*** | 0.013*** |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.053) | (0.120) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| Financial slack | 0.001*** | 0.001*** | −0.011*** | −0.011*** | 0.000 | 0.000 | 0.003*** | 0.003*** | 0.000 | 0.001 | 0.000 | 0.000 | −0.001 | −0.001** |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.533) | (0.511) | (0.000) | (0.000) | (0.148) | (0.129) | (0.212) | (0.194) | (0.134) | (0.046) |
| Leverage ratio | −0.018*** | −0.015*** | −0.055*** | −0.056*** | −0.011*** | −0.011*** | −0.006*** | −0.007*** | −0.003* | −0.002 | −0.003** | −0.003** | −0.017*** | −0.020*** |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.075) | (0.134) | (0.029) | (0.039) | (0.000) | (0.000) |
| Cash holding ratio | −0.020*** | −0.016*** | 0.008*** | 0.008*** | −0.011*** | −0.010*** | −0.014*** | −0.016*** | −0.003 | −0.003* | −0.004* | −0.004* | −0.002 | −0.003 |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.105) | (0.100) | (0.061) | (0.054) | (0.270) | (0.208) |
| Advertising intensity | 0.068*** | 0.050** | −0.324*** | −0.326*** | 0.044** | 0.043* | −0.093*** | −0.098*** | −0.011 | −0.010 | −0.009 | −0.008 | 0.016 | 0.026 |
| | (0.002) | (0.022) | (0.000) | (0.000) | (0.049) | (0.058) | (0.000) | (0.000) | (0.599) | (0.649) | (0.661) | (0.726) | (0.473) | (0.243) |
| R&D intensity | −0.043*** | −0.021 | 0.116*** | 0.114*** | 0.039*** | 0.041*** | 0.018 | 0.018 | 0.037*** | 0.039*** | 0.037*** | 0.039*** | −0.072*** | −0.094*** |
| | (0.003) | (0.149) | (0.000) | (0.000) | (0.005) | (0.003) | (0.188) | (0.199) | (0.007) | (0.005) | (0.007) | (0.005) | (0.001) | (0.000) |

(Continues)

Table AIII. (Continued)

| | *(8) Direct family control using a continuous measure based on the proportion of common shares held by family members (excluding family group affiliates' cross-shareholdings) when holding a minimum 5% and at least one family member is involved in the top management team or board of directors of the focal family firm* | | *(9) Indirect family control using a continuous measure based on the proportion of cross-shareholdings held by family group affiliates in the focal family firm when holding a minimum 5% and at least one family member is involved in the top management team or board of directors of the focal family firm* | | *(10) Family control using a continuous measure based on the proportion of the sum of common shares held by family members and affiliates within the same family business group when the later generation is involved in the top management team or board of directors of the focal family firm* | | *(11) Family control using a continuous measure based on the proportion of the sum of common shares held by family members and affiliates within the same family business group when the founder is involved in the top management team or board of directors of the focal family firm* | | *(12) Family control using a continuous measure based on the proportion of the sum of common shares held by family members and affiliates within the same family business group when holding a minimum 5% and at least one family member is involved in management or governance of the focal family firm* | | *(13) Family control using a continuous measure based on the proportion of the sum of common shares held by family members and affiliates within the same family business group when holding a minimum 10% and at least one family member is involved in management or governance of the focal family firm* | | *(14) Family control using a continuous measure based on the proportion of the sum of common shares held by family members and affiliates within the same family business group when holding a minimum 50% and at least one family member is involved in management or governance of the focal family firm* | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Dependent variable: competitive complexity* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* |
| | *Model 14* | *Model 15* | *Model 16* | *Model 17* | *Model 18* | *Model 19* | *Model 20* | *Model 21* | *Model 22* | *Model 23* | *Model 24* | *Model 25* | *Model 26* | *Model 27* |
| % of nonfamily blockholders | −0.046*** | −0.033*** | −0.067*** | −0.067*** | −0.011*** | −0.011*** | −0.011*** | −0.013*** | −0.005** | −0.006** | −0.006** | −0.006*** | −0.017*** | −0.021*** |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.032) | (0.014) | (0.019) | (0.006) | (0.000) | (0.000) |
| Board size (log) | 0.010*** | 0.007*** | 0.029*** | 0.029*** | 0.007*** | 0.006*** | 0.013*** | 0.014*** | −0.001 | −0.001 | −0.001 | −0.001 | −0.002 | −0.002 |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.001) | (0.001) | (0.000) | (0.000) | (0.436) | (0.459) | (0.583) | (0.638) | (0.261) | (0.324) |
| Political ties | −0.017*** | −0.013*** | −0.014*** | −0.014*** | −0.009*** | −0.009*** | −0.011*** | −0.012*** | −0.003* | −0.003* | −0.004** | −0.004** | −0.005*** | −0.006*** |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.063) | (0.063) | (0.033) | (0.029) | (0.002) | (0.001) |
| Media coverage | 0.007*** | 0.005** | −0.063*** | −0.063*** | 0.004 | 0.003 | 0.004 | 0.004 | 0.001 | 0.000 | 0.000 | −0.000 | −0.009*** | −0.011*** |
| | (0.005) | (0.043) | (0.000) | (0.000) | (0.144) | (0.184) | (0.140) | (0.119) | (0.819) | (0.870) | (0.969) | (0.954) | (0.003) | (0.000) |
| Industry munificence | −0.001** | −0.000 | 0.003*** | 0.002*** | 0.000 | 0.000 | 0.001*** | 0.001*** | 0.000 | 0.000 | 0.000 | 0.000 | −0.000 | −0.000 |
| | (0.024) | (0.175) | (0.000) | (0.000) | (0.468) | (0.406) | (0.005) | (0.002) | (0.673) | (0.607) | (0.701) | (0.619) | (0.238) | (0.206) |
| Industry concentration | −0.008 | −0.005 | −0.046*** | −0.048*** | −0.016** | −0.014** | −0.020*** | −0.023*** | 0.001 | 0.001 | 0.001 | 0.001 | −0.015** | −0.019*** |
| | (0.222) | (0.477) | (0.000) | (0.000) | (0.024) | (0.036) | (0.002) | (0.000) | (0.843) | (0.831) | (0.869) | (0.862) | (0.035) | (0.008) |
| Industry dynamism | 0.010 | 0.012 | 0.045*** | 0.044*** | 0.003 | 0.004 | −0.003 | −0.005 | 0.015 | 0.015 | 0.015 | 0.015 | 0.012 | 0.013 |
| | (0.312) | (0.222) | (0.000) | (0.000) | (0.733) | (0.700) | (0.744) | (0.609) | (0.135) | (0.137) | (0.132) | (0.131) | (0.211) | (0.206) |
| Competitive aggressiveness | 0.048*** | 0.048*** | 0.053*** | 0.053*** | 0.047*** | 0.047*** | 0.048*** | 0.048*** | 0.047*** | 0.047*** | 0.047*** | 0.047*** | 0.047*** | 0.047*** |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |

(Continues)

Table AIII. (Continued)

| | *(8) Direct family control using a continuous measure based on the proportion of common shares held by family members (excluding family group affiliates' cross-shareholdings) when holding a minimum 5% and at least one family member is involved in the top management team or board of directors of the focal family firm* | | *(9) Indirect family control using a continuous measure based on the proportion of cross-shareholdings held by family group affiliates in the focal family firm when holding a minimum 5% and at least one family member is involved in the top management team or board of directors of the focal family firm* | | *(10) Family control using a continuous measure based on the proportion of the sum of common shares held by family members and affiliates within the same family business group when the later generation is involved in the top management team or board of directors of the focal family firm* | | *(11) Family control using a continuous measure based on the proportion of the sum of common shares held by family members and affiliates within the same family business group when the founder is involved in the top management team or board of directors of the focal family firm* | | *(12) Family control using a continuous measure based on the proportion of the sum of common shares held by family members and affiliates within the same family business group when holding a minimum 5% and at least one family member is involved in management or governance of the focal family firm* | | *(13) Family control using a continuous measure based on the proportion of the sum of common shares held by family members and affiliates within the same family business group when holding a minimum 10% and at least one family member is involved in management or governance of the focal family firm* | | *(14) Family control using a continuous measure based on the proportion of the sum of common shares held by family members and affiliates within the same family business group when holding a minimum 50% and at least one family member is involved in management or governance of the focal family firm* | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Dependent variable: competitive complexity* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* |
| | *Model 14* | *Model 15* | *Model 16* | *Model 17* | *Model 18* | *Model 19* | *Model 20* | *Model 21* | *Model 22* | *Model 23* | *Model 24* | *Model 25* | *Model 26* | *Model 27* |
| Performance below aspiration level | −0.007*** | −0.007*** | 0.000 | 0.005* | −0.000 | −0.002 | 0.002* | 0.000 | −0.002 | −0.005 | −0.002 | −0.006* | −0.002 | −0.010*** |
| | (0.000) | (0.009) | (0.883) | (0.080) | (0.762) | (0.247) | (0.095) | (0.913) | (0.499) | (0.118) | (0.476) | (0.076) | (0.436) | (0.004) |
| Performance above aspiration level | −0.029*** | 0.010 | −0.000 | 0.011 | −0.002 | −0.010 | −0.015*** | −0.024*** | 0.003 | −0.009 | 0.002 | −0.007 | 0.003 | 0.027*** |
| | (0.000) | (0.251) | (0.957) | (0.140) | (0.583) | (0.253) | (0.000) | (0.000) | (0.470) | (0.412) | (0.681) | (0.540) | (0.404) | (0.003) |
| Business group (log) | 0.007*** | 0.007*** | 0.004*** | 0.004*** | 0.006*** | 0.006*** | 0.006*** | 0.004*** | 0.007*** | 0.006*** | 0.007*** | 0.006*** | 0.005*** | 0.005*** |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| Family control | −0.002* | 0.001* | −0.003* | −0.003** | −0.003** | −0.003** | −0.002* | −0.001* | −0.004* | −0.004* | −0.004* | −0.004* | −0.003** | −0.002* |
| | (0.085) | (0.069) | (0.067) | (0.011) | (0.035) | (0.046) | (0.093) | (0.059) | (0.056) | (0.052) | (0.051) | (0.056) | (0.012) | (0.090) |
| Family control × Performance below aspiration level | 0.031** | 0.015** | 0.004* | 0.011* | 0.004* | 0.003* | 0.006* | 0.020** | 0.010* | 0.017* | 0.010* | 0.017* | 0.011* | 0.013* |
| | (0.016) | (0.023) | (0.072) | (0.085) | (0.074) | (0.080) | (0.064) | (0.011) | (0.054) | (0.058) | (0.072) | (0.055) | (0.097) | (0.057) |
| Family control × Performance above aspiration level | −0.014** | −0.030** | −0.010** | −0.002* | −0.005* | −0.002* | −0.004* | −0.034* | −0.009* | −0.015* | −0.009* | −0.011* | −0.007* | −0.031* |
| | (0.016) | (0.042) | (0.019) | (0.093) | (0.056) | (0.092) | (0.098) | (0.075) | (0.079) | (0.082) | (0.064) | (0.096) | (0.092) | (0.076) |

(Continues)

Table AIII. (Continued)

| | *(8) Direct family control using a continuous measure based on the proportion of common shares held by family members (excluding family group affiliates' cross-shareholdings) when holding a minimum 5% and at least one family member is involved in the top management team or board of directors of the focal family firm* | | *(9) Indirect family control using a continuous measure based on the proportion of cross-shareholdings held by family group affiliates in the focal family firm when holding a minimum 5% and at least one family member is involved in the top management team or board of directors of the focal family firm* | | *(10) Family control using a continuous measure based on the proportion of the sum of common shares held by family members and affiliates within the same family business group when the later generation is involved in the top management team or board of directors of the focal family firm* | | *(11) Family control using a continuous measure based on the proportion of the sum of common shares held by family members and affiliates within the same family business group when the founder is involved in the top management team or board of directors of the focal family firm* | | *(12) Family control using a continuous measure based on the proportion of the sum of common shares held by family members and affiliates within the same family business group when holding a minimum 5% and at least one family member is involved in management or governance of the focal family firm* | | *(13) Family control using a continuous measure based on the proportion of the sum of common shares held by family members and affiliates within the same family business group when holding a minimum 10% and at least one family member is involved in management or governance of the focal family firm* | | *(14) Family control using a continuous measure based on the proportion of the sum of common shares held by family members and affiliates within the same family business group when holding a minimum 50% and at least one family member is involved in management or governance of the focal family firm* | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Dependent variable: competitive complexity* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* |
| | *Model 14* | *Model 15* | *Model 16* | *Model 17* | *Model 18* | *Model 19* | *Model 20* | *Model 21* | *Model 22* | *Model 23* | *Model 24* | *Model 25* | *Model 26* | *Model 27* |
| Family control × Business group affiliations (log) | −0.010*** | −0.012*** | −0.003** | −0.003** | −0.015*** | −0.017*** | −0.011* | −0.004** | −0.014*** | −0.014*** | −0.014*** | −0.013*** | −0.009*** | −0.008*** |
| | (0.000) | (0.000) | (0.025) | (0.018) | (0.000) | (0.000) | (0.093) | (0.049) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| Business group affiliations (log) × Performance below aspiration level | −0.015*** | −0.004 | 0.001 | 0.002 | −0.013*** | −0.002 | −0.010*** | 0.003 | −0.014*** | −0.001 | −0.014*** | −0.001 | −0.010* | 0.004 |
| | (0.000) | (0.258) | (0.746) | (0.640) | (0.000) | (0.601) | (0.002) | (0.431) | (0.001) | (0.750) | (0.002) | (0.866) | (0.067) | (0.491) |
| Business group affiliations (log) × Performance above aspiration level | −0.009*** | −0.012 | 0.007*** | 0.024** | −0.008** | 0.004 | −0.007** | 0.026*** | −0.008** | 0.008 | −0.008** | 0.008 | −0.004 | −0.001 |
| | (0.000) | (0.174) | (0.004) | (0.022) | (0.021) | (0.530) | (0.037) | (0.000) | (0.028) | (0.277) | (0.039) | (0.265) | (0.290) | (0.903) |
| Family control × Performance below aspiration level × Business group affiliations (log) | 0.050* | 0.019** | 0.027** | 0.022** | 0.047** | 0.062** | 0.028** | 0.010** | 0.012** | 0.025** | 0.012** | 0.025** | 0.011** | 0.025** |
| | (0.057) | (0.042) | (0.013) | (0.022) | (0.013) | (0.020) | (0.050) | (0.046) | (0.043) | (0.010) | (0.045) | (0.011) | (0.047) | (0.012) |

(Continues)

Table AIII. (Continued)

| | *(8) Direct family control using a continuous measure based on the proportion of common shares held by family members (excluding family group affiliates' cross-shareholdings) when holding a minimum 5% and at least one family member is involved in the top management team or board of directors of the focal family firm* | | *(9) Indirect family control using a continuous measure based on the proportion of cross-shareholdings held by family group affiliates in the focal family firm when holding a minimum 5% and at least one family member is involved in the top management team or board of directors of the focal family firm* | | *(10) Family control using a continuous measure based on the proportion of the sum of common shares held by family members and affiliates within the same family business group when the later generation is involved in the top management team or board of directors of the focal family firm* | | *(11) Family control using a continuous measure based on the proportion of the sum of common shares held by family members and affiliates within the same family business group when the founder is involved in the top management team or board of directors of the focal family firm* | | *(12) Family control using a continuous measure based on the proportion of the sum of common shares held by family members and affiliates within the same family business group when holding a minimum 5% and at least one family member is involved in management or governance of the focal family firm* | | *(13) Family control using a continuous measure based on the proportion of the sum of common shares held by family members and affiliates within the same family business group when holding a minimum 10% and at least one family member is involved in management or governance of the focal family firm* | | *(14) Family control using a continuous measure based on the proportion of the sum of common shares held by family members and affiliates within the same family business group when holding a minimum 50% and at least one family member is involved in management or governance of the focal family firm* | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Dependent variable: competitive complexity* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* | *Historical aspiration* | *Social aspiration* |
| | *Model 14* | *Model 15* | *Model 16* | *Model 17* | *Model 18* | *Model 19* | *Model 20* | *Model 21* | *Model 22* | *Model 23* | *Model 24* | *Model 25* | *Model 26* | *Model 27* |
| Family control × Performance above aspiration level × Business group affiliations (log) | −0.019* | −0.161*** | −0.014* | −0.061* | −0.036** | −0.099* | −0.022** | −0.144** | −0.009** | −0.028** | −0.009** | −0.026** | −0.016** | −0.036** |
| | (0.072) | (0.000) | (0.097) | (0.086) | (0.021) | (0.087) | (0.037) | (0.047) | (0.023) | (0.042) | (0.023) | (0.046) | (0.040) | (0.017) |
| Inverse Mill's ratio | 0.043*** | 0.032*** | 0.124*** | 0.124*** | 0.021*** | 0.020*** | 0.036*** | 0.040*** | 0.007*** | 0.008*** | 0.008*** | 0.008*** | 0.018*** | 0.022*** |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| Constant | 0.597*** | 0.585*** | 0.216*** | 0.221*** | 0.594*** | 0.589*** | 0.677*** | 0.679*** | 0.595*** | 0.590*** | 0.593*** | 0.586*** | 0.584*** | 0.566*** |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| Year dummies | Incl. | Incl. | Incl. | Incl. | Incl. | Incl. | Incl. | Incl. | Incl. | Incl. | Incl. | Incl. | Incl. | Incl. |
| Wald chi-square | 7312.85*** | 7182.99*** | 8434.95*** | 8438.91*** | 6949.97*** | 6922.24*** | 7277.58*** | 7304.12*** | 6850.65*** | 6809.38*** | 6850.08*** | 6813.37*** | 6986.87*** | 6986.25*** |
| Observations | 8108 | 8108 | 8108 | 8108 | 8108 | 8108 | 8108 | 8108 | 8108 | 8108 | 8108 | 8108 | 8108 | 8108 |

*Notes*: *p*-values are reported in parentheses below the regression coefficients. In Models 1 and 2, we controlled for asset-weighted competitive aggressiveness and applied a gaussian distribution with an identity link function to predict asset-weighted competitive complexity, treating it as a continuous variable. In the subsequent regression models, we used log-transformed competitive aggressiveness when predicting unweighted competitive complexity.

Table AIV. *z*-tests for supplementary analyses

| | | |
|---|---|---|
| *Panel A. z-test for differences in predicting competitive aggressiveness (Appendix Table AII)* | | |
| Moderating effect of performance below aspiration level | Historical (Model 1: $\beta = 1.084$, $p = 0.027$) vs. social aspirations (Model 2: $\beta = 1.537$, $p = 0.003$) | |
| | ($z$-score = −0.61, $p = 0.54$) | |
| Moderating effect of performance above aspiration level | Historical (Model 1: $\beta = -0.854$, $p = 0.022$) vs. social aspirations (Model 2: $\beta = -4.067$, $p = 0.004$) | |
| | ($z$-score = 2.18, $p = 0.03$) | |
| Moderating effect of performance below vs. above aspiration level | Below historical (Model 1: $\beta = 1.084$, $p = 0.027$) vs. above historical aspirations (Model 1: $\beta = -0.854$, $p = 0.022$) | Below social (Model 2: $\beta = 1.537$, $p = 0.003$) vs. above social aspirations (Model 2: $\beta = -4.067$, $p = 0.004$) |
| | ($z$-score = 2.99, $p = 0.00$) | ($z$-score = 3.69, $p = 0.00$) |
| Moderating effect of business group affiliations | Historical (Model 1: $\beta = -0.347$, $p = 0.006$) vs. social aspirations (Model 2: $\beta = -0.338$, $p = 0.007$) | |
| | ($z$-score = −0.05, $p = 0.96$) | |
| Three-way interaction of family control, performance aspiration level, and business group affiliations | Below historical (Model 5: $\beta = 2.762$, $p = 0.001$) vs. below social aspirations (Model 6: $\beta = 2.013$, $p = 0.021$) | |
| | ($z$-score = 0.62, $p = 0.54$) | |
| | Above historical (Model 5: $\beta = -0.337$, $p = 0.064$) vs. above social aspirations (Model 6: $\beta = -4.965$, $p = 0.007$) | |
| | ($z$-score = 2.50, $p = 0.01$) | |
| | Below historical (Model 5: $\beta = 2.762$, $p = 0.001$) vs. above historical aspirations (Model 5: $\beta = -0.337$, $p = 0.064$) | Below social (Model 6: $\beta = 2.013$, $p = 0.021$) vs. above social aspirations (Model 6: $\beta = -4.965$, $p = 0.007$) |
| | ($z$-score = 3.61, $p = 0.00$) | ($z$-score = 3.43, $p = 0.00$) |
| *Panel B. z-test for differences in predicting competitive complexity (Appendix Table AIII)* | | |
| Moderating effect of performance below aspiration level | Historical (Model 1: $\beta = 0.010$, $p = 0.084$) vs. social aspirations (Model 2: $\beta = 0.016$, $p = 0.047$) | |
| | ($z$-score = −0.61, $p = 0.54$) | |
| Moderating effect of performance above aspiration level | Historical (Model 1: $\beta = -0.007$, $p = 0.071$) vs. social aspirations (Model 2: $\beta = -0.011$, $p = 0.061$) | |
| | ($z$-score = 0.57, $p = 0.57$) | |
| Moderating effect of performance below vs. above aspiration level | Below historical (Model 1: $\beta = 0.010$, $p = 0.084$) vs. above historical aspirations (Model 1: $\beta = -0.007$, $p = 0.071$) | Below social (Model 2: $\beta = 0.016$, $p = 0.047$) vs. above social aspirations (Model 2: $\beta = -0.011$, $p = 0.061$) |
| | ($z$-score = 2.45, $p = 0.01$) | ($z$-score = 2.72, $p = 0.01$) |

(Continues)

Table AIV. (Continued)

| | | |
|---|---|---|
| *Panel B.* z*-test for differences in predicting competitive complexity (Appendix Table AIII)* | | |
| Moderating effect of business group affiliations | Historical (Model 1: $\beta = -0.011$, $p = 0.000$) vs. social aspirations (Model 2: $\beta = -0.011$, $p = 0.000$) | |
| | ($z$-score = 0.00, $p = 1.00$) | |
| Three-way interaction of family control, performance aspiration level, and business group affiliations | Below historical (Model 5: $\beta = 0.008$, $p = 0.060$) vs. below social aspirations (Model 6: $\beta = 0.024$, $p = 0.011$) | |
| | ($z$-score = −1.55, $p = 0.12$) | |
| | Above historical (Model 5: $\beta = -0.013$, $p = 0.010$) vs. above social aspirations (Model 6: $\beta = -0.033$, $p = 0.031$) | |
| | ($z$-score = 1.24, $p = 0.21$) | |
| | Below historical (Model 5: $\beta = 0.008$, $p = 0.060$) vs. above historical aspirations (Model 6: $\beta = -0.013$, $p = 0.010$) | Below social (Model 5: $\beta = 0.024$, $p = 0.011$) vs. above social aspirations (Model 6: $\beta = -0.033$, $p = 0.031$) |
| | ($z$-score = 3.18, $p = 0.00$) | ($z$-score = 3.18, $p = 0.00$) |
| *Panel C.* z*-test for differences in predicting competitive aggressiveness vs. competitive complexity* | | |
| Moderating effect of performance below aspiration level | Historical (Model 1 of Appendix Table AII: $\beta = 1.084$, $p = 0.027$) vs. historical aspirations (Model 1 of Appendix Table AIII: $\beta = 0.010$, $p = 0.084$) | Social (Model 2 of Appendix Table AII: $\beta = 1.537$, $p = 0.003$) vs. social aspirations (Model 2 of Appendix Table AIII: $\beta = 0.016$, $p = 0.047$) |
| | ($z$-score = 2.19, $p = 0.03$) | ($z$-score = 2.72, $p = 0.01$) |
| Moderating effect of performance above aspiration level | Historical (Model 1 of Appendix Table AII: $\beta = -0.854$, $p = 0.022$) vs. historical aspirations (Model 1 of Appendix Table AIII: $\beta = -0.007$, $p = 0.071$) | Social (Model 2 of Appendix Table AII: $\beta = -4.067$, $p = 0.004$) vs. social aspirations (Model 2 of Appendix Table AIII: $\beta = -0.011$, $p = 0.061$) |
| | ($z$-score = −2.00, $p = 0.05$) | ($z$-score = −2.87, $p = 0.00$) |
| Moderating effect of business group affiliations | Historical (Model 1 of Appendix Table AII: $\beta = -0.347$, $p = 0.006$) vs. historical aspirations (Model 2 of Appendix Table AIII: Model 1: $\beta = -0.011$, $p = 0.000$) | Social (Model 2 of Appendix Table AII: $\beta = -0.338$, $p = 0.007$) vs. social aspirations (Model 2 of Appendix Table AIII: $\beta = -0.011$, $p = 0.000$) |
| | ($z$-score = −2.67, $p = 0.01$) | ($z$-score = −2.62, $p = 0.01$) |

(Continues)

Table AIV. (Continued)

| | | |
|---|---|---|
| *Panel C. z-test for differences in predicting competitive aggressiveness vs. competitive complexity* | | |
| Three-way interaction of family control, performance aspiration level, and business group affiliations | Below historical (Model 5 of Appendix Table AII: $\beta = 2.762$, $p = 0.001$) vs. below historical aspirations (Model 5 of Appendix Table AIII: $\beta = 0.008$, $p = 0.060$) | Below social (Model 6 of Appendix Table AII: $\beta = 2.013$, $p = 0.021$) vs. below social aspirations (Model 6 of Appendix Table AIII: $\beta = 0.024$, $p = 0.011$) |
| | ($z$-score = 3.28, $p = 0.00$) | ($z$-score = 2.28, $p = 0.02$) |
| | Above historical (Model 5 of Appendix Table AII: $\beta = -0.337$, $p = 0.064$) vs. above historical aspirations (Model 5 of Appendix Table AIII: $\beta = -0.013$, $p = 0.010$) | Above social (Model 6 of Appendix Table AII: $\beta = -4.965$, $p = 0.007$) vs. Above social aspirations (Model 6 of Appendix Table AIII: $\beta = -0.033$, $p = 0.031$) |
| | ($z$-score = −1.78, $p = 0.08$) | ($z$-score = −2.68, $p = 0.01$) |

Table AV. Results of Probit analysis predicting different family firm dummies

| | *Direct family control dummy (coded as 1 if family members hold a minimum 5% of common shares -excluding cross shareholdings of family group affiliates - and at least one family member is involved in the top management team or board of directors of the focal family firm, and 0 otherwise)* | *Indirect family control dummy (coded as 1 if family group affiliates hold a minimum 5% of cross-shareholdings in the focal family firm and at least one family member is involved in the top management team or board of directors of the focal family firm, and 0 otherwise)* | *Later-generation-led-family firm dummy (coded as 1 if the founder is involved in the top management team or board of directors of the focal family firm, and 0 otherwise)* | *Founder-led-family firm dummy (coded as 1 if the later generation is involved in the top management team or board of directors of the focal family firm, and 0 otherwise)* | *5% family firm dummy (coded as 1 if family members hold a minimum 5% of common shares -including cross shareholdings of affiliates within the same family business group - and at least one family member is involved in the top management team or board of directors of the focal family firm, and 0 otherwise)* | *10% family firm dummy (coded as 1 if family members hold a minimum 10% of common shares -including cross shareholdings of affiliates within the same family business group - and at least one family member is involved in the top management team or board of directors of the focal family firm, and 0 otherwise)* | *20% family firm dummy (coded as 1 if family members hold a minimum 20% of common shares -including cross shareholdings of affiliates within the same family business group - and at least one family member is involved in the top management team or board of directors of the focal family firm, and 0 otherwise)* | *50% Family firm dummy (coded as 1 if family members hold a minimum 50% of common shares -including cross shareholdings of affiliates within the same family business group - and at least one family member is involved in the top management team or board of directors of the focal family firm, and 0 otherwise)* |
|---|---|---|---|---|---|---|---|---|
| | *Model 1* | *Model 2* | *Model 3* | *Model 4* | *Model 5* | *Model 6* | *Model 7* | *Model 8* |
| Historical performance above aspiration level | −1.485*** | −0.010 | −0.820*** | −1.181*** | −1.155*** | −1.333*** | −1.430*** | −0.277 |
| | (0.000) | (0.963) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.269) |
| Social performance above aspiration level | 1.595*** | 0.530 | 0.495 | 2.470*** | −0.130 | 0.903 | 0.694 | 1.736*** |
| | (0.001) | (0.237) | (0.279) | (0.000) | (0.852) | (0.166) | (0.195) | (0.000) |

(Continues)

Table AV. (Continued)

| | *Direct family control dummy (coded as 1 if family members hold a minimum 5% of common shares -excluding cross shareholdings of family group affiliates - and at least one family member is involved in the top management team or board of directors of the focal family firm, and 0 otherwise)* | *Indirect family control dummy (coded as 1 if family group affiliates hold a minimum 5% of cross-shareholdings in the focal family firm and at least one family member is involved in the top management team or board of directors of the focal family firm, and 0 otherwise)* | *Later-generation-led-family firm dummy (coded as 1 if the founder is involved in the top management team or board of directors of the focal family firm, and 0 otherwise)* | *Founder-led-family firm dummy (coded as 1 if the later generation is involved in the top management team or board of directors of the focal family firm, and 0 otherwise)* | *5% family firm dummy (coded as 1 if family members hold a minimum 5% of common shares -including cross shareholdings of affiliates within the same family business group - and at least one family member is involved in the top management team or board of directors of the focal family firm, and 0 otherwise)* | *10% family firm dummy (coded as 1 if family members hold a minimum 10% of common shares -including cross shareholdings of affiliates within the same family business group - and at least one family member is involved in the top management team or board of directors of the focal family firm, and 0 otherwise)* | *20% family firm dummy (coded as 1 if family members hold a minimum 20% of common shares -including cross shareholdings of affiliates within the same family business group - and at least one family member is involved in the top management team or board of directors of the focal family firm, and 0 otherwise)* | *50% Family firm dummy (coded as 1 if family members hold a minimum 50% of common shares -including cross shareholdings of affiliates within the same family business group - and at least one family member is involved in the top management team or board of directors of the focal family firm, and 0 otherwise)* |
|---|---|---|---|---|---|---|---|---|
| | *Model 1* | *Model 2* | *Model 3* | *Model 4* | *Model 5* | *Model 6* | *Model 7* | *Model 8* |
| Past Tobin's Q | −0.091*** | −0.004 | −0.154*** | −0.132*** | 0.009 | −0.077** | −0.127*** | −0.102*** |
| | (0.002) | (0.894) | (0.000) | (0.000) | (0.851) | (0.046) | (0.000) | (0.001) |
| Past return on assets | 0.222** | −0.057 | 0.102 | 0.023 | 0.297*** | 0.306*** | 0.406*** | 0.214* |
| | (0.010) | (0.526) | (0.215) | (0.794) | (0.001) | (0.001) | (0.000) | (0.052) |
| Age (log) | 0.576*** | −0.584*** | 0.322*** | −0.743*** | −0.135 | −0.216** | −0.514*** | −0.431*** |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.236) | (0.037) | (0.000) | (0.000) |

(Continues)

Table AV. (Continued)

| | *Direct family control dummy (coded as 1 if family members hold a minimum 5% of common shares -excluding cross shareholdings of family group affiliates - and at least one family member is involved in the top management team or board of directors of the focal family firm, and 0 otherwise)* | *Indirect family control dummy (coded as 1 if family group affiliates hold a minimum 5% of cross-shareholdings in the focal family firm and at least one family member is involved in the top management team or board of directors of the focal family firm, and 0 otherwise)* | *Later-generation-led-family firm dummy (coded as 1 if the founder is involved in the top management team or board of directors of the focal family firm, and 0 otherwise)* | *Founder-led-family firm dummy (coded as 1 if the later generation is involved in the top management team or board of directors of the focal family firm, and 0 otherwise)* | *5% family firm dummy (coded as 1 if family members hold a minimum 5% of common shares -including cross shareholdings of affiliates within the same family business group - and at least one family member is involved in the top management team or board of directors of the focal family firm, and 0 otherwise)* | *10% family firm dummy (coded as 1 if family members hold a minimum 10% of common shares -including cross shareholdings of affiliates within the same family business group - and at least one family member is involved in the top management team or board of directors of the focal family firm, and 0 otherwise)* | *20% family firm dummy (coded as 1 if family members hold a minimum 20% of common shares -including cross shareholdings of affiliates within the same family business group - and at least one family member is involved in the top management team or board of directors of the focal family firm, and 0 otherwise)* | *50% Family firm dummy (coded as 1 if family members hold a minimum 50% of common shares -including cross shareholdings of affiliates within the same family business group - and at least one family member is involved in the top management team or board of directors of the focal family firm, and 0 otherwise)* |
|---|---|---|---|---|---|---|---|---|
| | *Model 1* | *Model 2* | *Model 3* | *Model 4* | *Model 5* | *Model 6* | *Model 7* | *Model 8* |
| Size (log) | −0.200*** | 0.589*** | −0.064* | −0.366*** | 0.350*** | 0.382*** | 0.371*** | 0.105*** |
| | (0.000) | (0.000) | (0.057) | (0.000) | (0.000) | (0.000) | (0.000) | (0.002) |
| Financial slack | 0.071*** | −0.150*** | −0.007 | 0.116*** | 0.061 | 0.010 | −0.084*** | −0.072*** |
| | (0.001) | (0.000) | (0.752) | (0.000) | (0.156) | (0.784) | (0.001) | (0.000) |
| Leverage ratio | −0.652*** | −0.659*** | −0.743*** | −0.225*** | −1.164*** | −1.049*** | −1.096*** | −1.137*** |
| | (0.000) | (0.000) | (0.000) | (0.009) | (0.000) | (0.000) | (0.000) | (0.000) |

(Continues)

Table AV. (Continued)

| | *Direct family control dummy (coded as 1 if family members hold a minimum 5% of common shares -excluding cross shareholdings of family group affiliates - and at least one family member is involved in the top management team or board of directors of the focal family firm, and 0 otherwise)* | *Indirect family control dummy (coded as 1 if family group affiliates hold a minimum 5% of cross-shareholdings in the focal family firm and at least one family member is involved in the top management team or board of directors of the focal family firm, and 0 otherwise)* | *Later-generation-led-family firm dummy (coded as 1 if the founder is involved in the top management team or board of directors of the focal family firm, and 0 otherwise)* | *Founder-led-family firm dummy (coded as 1 if the later generation is involved in the top management team or board of directors of the focal family firm, and 0 otherwise)* | *5% family firm dummy (coded as 1 if family members hold a minimum 5% of common shares -including cross shareholdings of affiliates within the same family business group - and at least one family member is involved in the top management team or board of directors of the focal family firm, and 0 otherwise)* | *10% family firm dummy (coded as 1 if family members hold a minimum 10% of common shares -including cross shareholdings of affiliates within the same family business group - and at least one family member is involved in the top management team or board of directors of the focal family firm, and 0 otherwise)* | *20% family firm dummy (coded as 1 if family members hold a minimum 20% of common shares -including cross shareholdings of affiliates within the same family business group - and at least one family member is involved in the top management team or board of directors of the focal family firm, and 0 otherwise)* | *50% Family firm dummy (coded as 1 if family members hold a minimum 50% of common shares -including cross shareholdings of affiliates within the same family business group - and at least one family member is involved in the top management team or board of directors of the focal family firm, and 0 otherwise)* |
|---|---|---|---|---|---|---|---|---|
| | *Model 1* | *Model 2* | *Model 3* | *Model 4* | *Model 5* | *Model 6* | *Model 7* | *Model 8* |
| Cash holding ratio | −0.800*** | 0.170 | −0.685*** | −0.435*** | −0.320 | −0.515** | −0.281* | 0.058 |
| | (0.000) | (0.204) | (0.000) | (0.002) | (0.185) | (0.015) | (0.089) | (0.671) |
| Advertising intensity | 5.982*** | −2.230** | 8.250*** | −1.201 | 7.637*** | 7.632*** | 4.248*** | 3.788*** |
| | (0.000) | (0.040) | (0.000) | (0.289) | (0.001) | (0.000) | (0.002) | (0.001) |
| R&D intensity | −2.972*** | 1.753** | 0.914 | 0.710 | −0.487 | 0.414 | −1.788* | −6.752*** |
| | (0.001) | (0.037) | (0.270) | (0.404) | (0.720) | (0.740) | (0.065) | (0.000) |

(Continues)

Table AV. (Continued)

| | *Direct family control dummy (coded as 1 if family members hold a minimum 5% of common shares -excluding cross shareholdings of family group affiliates - and at least one family member is involved in the top management team or board of directors of the focal family firm, and 0 otherwise)* | *Indirect family control dummy (coded as 1 if family group affiliates hold a minimum 5% of cross-shareholdings in the focal family firm and at least one family member is involved in the top management team or board of directors of the focal family firm, and 0 otherwise)* | *Later-generation-led-family firm dummy (coded as 1 if the founder is involved in the top management team or board of directors of the focal family firm, and 0 otherwise)* | *Founder-led-family firm dummy (coded as 1 if the later generation is involved in the top management team or board of directors of the focal family firm, and 0 otherwise)* | *5% family firm dummy (coded as 1 if family members hold a minimum 5% of common shares -including cross shareholdings of affiliates within the same family business group - and at least one family member is involved in the top management team or board of directors of the focal family firm, and 0 otherwise)* | *10% family firm dummy (coded as 1 if family members hold a minimum 10% of common shares -including cross shareholdings of affiliates within the same family business group - and at least one family member is involved in the top management team or board of directors of the focal family firm, and 0 otherwise)* | *20% family firm dummy (coded as 1 if family members hold a minimum 20% of common shares -including cross shareholdings of affiliates within the same family business group - and at least one family member is involved in the top management team or board of directors of the focal family firm, and 0 otherwise)* | *50% Family firm dummy (coded as 1 if family members hold a minimum 50% of common shares -including cross shareholdings of affiliates within the same family business group - and at least one family member is involved in the top management team or board of directors of the focal family firm, and 0 otherwise)* |
|---|---|---|---|---|---|---|---|---|
| | *Model 1* | *Model 2* | *Model 3* | *Model 4* | *Model 5* | *Model 6* | *Model 7* | *Model 8* |
| % of nonfamily blockholders | −1.965*** | −0.895*** | −1.180*** | −0.576*** | −3.757*** | −3.309*** | −2.038*** | −1.446*** |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| Board size (log) | 0.545*** | 0.380*** | 0.819*** | 0.563*** | 0.529*** | 0.612*** | 0.110 | 0.014 |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.010) | (0.001) | (0.409) | (0.898) |
| Political ties | −0.630*** | −0.168 | −0.690*** | −0.359*** | −0.951*** | −1.073*** | −0.619*** | −0.277*** |
| | (0.000) | (0.109) | (0.000) | (0.001) | (0.000) | (0.000) | (0.000) | (0.009) |

(Continues)

Table AV. (Continued)

| | *Direct family control dummy (coded as 1 if family members hold a minimum 5% of common shares -excluding cross shareholdings of family group affiliates - and at least one family member is involved in the top management team or board of directors of the focal family firm, and 0 otherwise)* | *Indirect family control dummy (coded as 1 if family group affiliates hold a minimum 5% of cross-shareholdings in the focal family firm and at least one family member is involved in the top management team or board of directors of the focal family firm, and 0 otherwise)* | *Later-generation-led-family firm dummy (coded as 1 if the founder is involved in the top management team or board of directors of the focal family firm, and 0 otherwise)* | *Founder-led-family firm dummy (coded as 1 if the later generation is involved in the top management team or board of directors of the focal family firm, and 0 otherwise)* | *5% family firm dummy (coded as 1 if family members hold a minimum 5% of common shares -including cross shareholdings of affiliates within the same family business group - and at least one family member is involved in the top management team or board of directors of the focal family firm, and 0 otherwise)* | *10% family firm dummy (coded as 1 if family members hold a minimum 10% of common shares -including cross shareholdings of affiliates within the same family business group - and at least one family member is involved in the top management team or board of directors of the focal family firm, and 0 otherwise)* | *20% family firm dummy (coded as 1 if family members hold a minimum 20% of common shares -including cross shareholdings of affiliates within the same family business group - and at least one family member is involved in the top management team or board of directors of the focal family firm, and 0 otherwise)* | *50% Family firm dummy (coded as 1 if family members hold a minimum 50% of common shares -including cross shareholdings of affiliates within the same family business group - and at least one family member is involved in the top management team or board of directors of the focal family firm, and 0 otherwise)* |
|---|---|---|---|---|---|---|---|---|
| | *Model 1* | *Model 2* | *Model 3* | *Model 4* | *Model 5* | *Model 6* | *Model 7* | *Model 8* |
| Media coverage | 0.248 | −0.888*** | 0.216 | 0.138 | −0.978*** | −0.946*** | −0.835*** | −0.724*** |
| | (0.229) | (0.000) | (0.287) | (0.506) | (0.000) | (0.000) | (0.000) | (0.001) |
| Industry munificence | −0.021 | 0.027 | 0.015 | 0.031 | 0.000 | 0.002 | −0.036 | −0.023 |
| | (0.420) | (0.235) | (0.455) | (0.156) | (0.986) | (0.944) | (0.225) | (0.561) |
| Industry concentration | −0.499** | −0.788*** | −1.560*** | −0.975*** | −1.297*** | −1.292*** | −1.362*** | −1.295*** |
| | (0.025) | (0.000) | (0.000) | (0.001) | (0.000) | (0.000) | (0.000) | (0.000) |

(Continues)

Table AV. (Continued)

| | *Direct family control dummy (coded as 1 if family members hold a minimum 5% of common shares -excluding cross shareholdings of family group affiliates - and at least one family member is involved in the top management team or board of directors of the focal family firm, and 0 otherwise)* | *Indirect family control dummy (coded as 1 if family group affiliates hold a minimum 5% of cross-shareholdings in the focal family firm and at least one family member is involved in the top management team or board of directors of the focal family firm, and 0 otherwise)* | *Later-generation-led-family firm dummy (coded as 1 if the founder is involved in the top management team or board of directors of the focal family firm, and 0 otherwise)* | *Founder-led-family firm dummy (coded as 1 if the later generation is involved in the top management team or board of directors of the focal family firm, and 0 otherwise)* | *5% family firm dummy (coded as 1 if family members hold a minimum 5% of common shares -including cross shareholdings of affiliates within the same family business group - and at least one family member is involved in the top management team or board of directors of the focal family firm, and 0 otherwise)* | *10% family firm dummy (coded as 1 if family members hold a minimum 10% of common shares -including cross shareholdings of affiliates within the same family business group - and at least one family member is involved in the top management team or board of directors of the focal family firm, and 0 otherwise)* | *20% family firm dummy (coded as 1 if family members hold a minimum 20% of common shares -including cross shareholdings of affiliates within the same family business group - and at least one family member is involved in the top management team or board of directors of the focal family firm, and 0 otherwise)* | *50% Family firm dummy (coded as 1 if family members hold a minimum 50% of common shares -including cross shareholdings of affiliates within the same family business group - and at least one family member is involved in the top management team or board of directors of the focal family firm, and 0 otherwise)* |
|---|---|---|---|---|---|---|---|---|
| | *Model 1* | *Model 2* | *Model 3* | *Model 4* | *Model 5* | *Model 6* | *Model 7* | *Model 8* |
| Industry dynamism | −0.173 | 0.390** | −1.106*** | −0.762*** | 0.264 | 0.219 | 0.264 | −0.177 |
| | (0.343) | (0.015) | (0.000) | (0.000) | (0.412) | (0.448) | (0.209) | (0.286) |
| Dividend ratio | 0.152*** | 0.106* | 0.419*** | 0.152*** | 0.510*** | 0.584*** | 0.484*** | 0.223*** |
| | (0.006) | (0.090) | (0.000) | (0.002) | (0.000) | (0.000) | (0.000) | (0.000) |

(Continues)

Table AV. (Continued)

| | *Direct family control dummy (coded as 1 if family members hold a minimum 5% of common shares -excluding cross shareholdings of family group affiliates - and at least one family member is involved in the top management team or board of directors of the focal family firm, and 0 otherwise)* | *Indirect family control dummy (coded as 1 if family group affiliates hold a minimum 5% of cross-shareholdings in the focal family firm and at least one family member is involved in the top management team or board of directors of the focal family firm, and 0 otherwise)* | *Later-generation-led-family firm dummy (coded as 1 if the founder is involved in the top management team or board of directors of the focal family firm, and 0 otherwise)* | *Founder-led-family firm dummy (coded as 1 if the later generation is involved in the top management team or board of directors of the focal family firm, and 0 otherwise)* | *5% family firm dummy (coded as 1 if family members hold a minimum 5% of common shares -including cross shareholdings of affiliates within the same family business group - and at least one family member is involved in the top management team or board of directors of the focal family firm, and 0 otherwise)* | *10% family firm dummy (coded as 1 if family members hold a minimum 10% of common shares -including cross shareholdings of affiliates within the same family business group - and at least one family member is involved in the top management team or board of directors of the focal family firm, and 0 otherwise)* | *20% family firm dummy (coded as 1 if family members hold a minimum 20% of common shares -including cross shareholdings of affiliates within the same family business group - and at least one family member is involved in the top management team or board of directors of the focal family firm, and 0 otherwise)* | *50% Family firm dummy (coded as 1 if family members hold a minimum 50% of common shares -including cross shareholdings of affiliates within the same family business group - and at least one family member is involved in the top management team or board of directors of the focal family firm, and 0 otherwise)* |
|---|---|---|---|---|---|---|---|---|
| | *Model 1* | *Model 2* | *Model 3* | *Model 4* | *Model 5* | *Model 6* | *Model 7* | *Model 8* |
| General/administrative expense ratio | −0.207* | −0.560*** | −0.497*** | −0.889*** | −1.036*** | −1.321*** | −1.072*** | −0.583*** |
| | (0.088) | (0.000) | (0.003) | (0.000) | (0.000) | (0.000) | (0.000) | (0.001) |
| Constant | 2.158*** | −3.869*** | 1.470*** | 4.587*** | 0.661 | −0.065 | −0.040 | 0.165 |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.224) | (0.894) | (0.914) | (0.584) |
| Year dummies | Incl. | Incl. | Incl. | Incl. | Incl. | Incl. | Incl. | Incl. |

(Continues)

Table AV. (Continued)

| | *Direct family control dummy (coded as 1 if family members hold a minimum 5% of common shares -excluding cross shareholdings of family group affiliates - and at least one family member is involved in the top management team or board of directors of the focal family firm, and 0 otherwise)* | *Indirect family control dummy (coded as 1 if family group affiliates hold a minimum 5% of cross-shareholdings in the focal family firm and at least one family member is involved in the top management team or board of directors of the focal family firm, and 0 otherwise)* | *Later-generation-led-family firm dummy (coded as 1 if the founder is involved in the top management team or board of directors of the focal family firm, and 0 otherwise)* | *Founder-led-family firm dummy (coded as 1 if the later generation is involved in the top management team or board of directors of the focal family firm, and 0 otherwise)* | *5% family firm dummy (coded as 1 if family members hold a minimum 5% of common shares -including cross shareholdings of affiliates within the same family business group - and at least one family member is involved in the top management team or board of directors of the focal family firm, and 0 otherwise)* | *10% family firm dummy (coded as 1 if family members hold a minimum 10% of common shares -including cross shareholdings of affiliates within the same family business group - and at least one family member is involved in the top management team or board of directors of the focal family firm, and 0 otherwise)* | *20% family firm dummy (coded as 1 if family members hold a minimum 20% of common shares -including cross shareholdings of affiliates within the same family business group - and at least one family member is involved in the top management team or board of directors of the focal family firm, and 0 otherwise)* | *50% Family firm dummy (coded as 1 if family members hold a minimum 50% of common shares -including cross shareholdings of affiliates within the same family business group - and at least one family member is involved in the top management team or board of directors of the focal family firm, and 0 otherwise)* |
|---|---|---|---|---|---|---|---|---|
| | *Model 1* | *Model 2* | *Model 3* | *Model 4* | *Model 5* | *Model 6* | *Model 7* | *Model 8* |
| Log-likelihood | −4175.46 | −5013.28 | −4238.04 | −4917.43 | −1094.13 | −1396.88 | −2663.64 | −4878.24 |
| Observations | 8108 | 8108 | 8108 | 8108 | 8108 | 8108 | 8108 | 8108 |

*Notes*: *p*-values are reported in parentheses below the regression coefficients; main and supplementary results predicting competitive aggressiveness and complexity remain consistent even after using the inverse Mills ratio calculated from the Probit analysis that includes and excludes historical and social above performance aspiration levels.