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Is Cain more able? A behavioral perspective on the relationship between family CEO birth order and family firms' CSR

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Abstract

Research Summary: We investigate family CEO birth order as an antecedent of family firms' CSR behavior. Despite psychology literature recognizing it as a key predictor of individual behavior, birth order has been largely neglected in management research. Drawing on behavioral economics and evolutionary psychology—specifically, the Family Niche Model—we identify economic and social preferences as two competing channels through which birth order effects propagate to CSR behavior. An unbalanced panel dataset of 550 firm-year observations from 84 family firms between 2010 and 2022 reveals a negative relationship between family CEO birth order and CSR behavior, pointing to the dominance of the economic channel, whereby the higher risk tolerance among later borns manifests. This relationship is positively and negatively moderated by family CEO sibship size and age, respectively.

Managerial Summary: We examine the role of family CEO birth order in shaping family firms' CSR behavior considering that individuals' economic and social preferences are strongly influenced by their birth order. The results show that family CEO birth order negatively relates to CSR behavior. We argue that this relationship is driven by higher risk tolerance among later-born family CEOs, who are consequentially less inclined to adopt CSR behavior as a risk-mitigating strategy. The relationship is attenuated by family CEO sibship size and amplified by CEO age. Our study cautions family firms concerned with CSR to carefully consider the implications of birth order when selecting family members for the CEO position. Concurrently, family CEOs should be aware that their early family experiences may affect their CSR decisions.

KEYWORDS
behavioral economics, birth order, CSR, family business, family CEO

1 | INTRODUCTION

On April 24, 2013, the Rana Plaza building, a garment factory in Dhaka owned by the Rana family, collapsed, resulting in the deaths of 1134 individuals and leaving thousands more injured. This tragedy devastated the lives of thousands of workers and their families. Many businesses operating within Rana Plaza were owned by local families, which were faced with immense pressure to meet the demands of international fast-fashion brands, often prioritizing cost-cutting and production speed over worker safety. Had the factory owners and the involved family firms invested in better infrastructure and worker safety—key elements of CSR—this disaster could have been averted, protecting both the businesses and their stakeholders. From an economic standpoint, while ensuring safer working conditions would have increased operational costs in the short term, it would also have shielded the firms from the significant reputational damage, legal liabilities, and long-term financial losses that followed. Considering the human tragedy and the economic consequences for the businesses involved, the Rana Plaza collapse thus illustrates how short-term-oriented profit maximization can conflict with a firm's social obligations on the one hand, but also with its long-term economic stability on the other.

This dual motivation for CSR investments, grounded in social/moral as well as economic/financial deliberations, has also been discussed in the literature (see, e.g., Graafland et al., 2012; Siltaloppi et al., 2021; Velte, 2022). These studies argue that while investing in CSR may incur short-term costs, it may mitigate long-term volatility, highlighting the tension of reconciling short-term profit-driven motives with socially responsible practices. For instance, firms may feel the pressure to show immediate financial results that conflict with the long-term nature of many CSR initiatives. For this reason, firms seeking to integrate social and environmental goals into their operations and business strategies may run into internal disputes due to the contradictions between the social and economic demands associated with CSR (Margolis & Walsh, 2003). These competitive dynamics are particularly salient in family firms, which face unique challenges and tensions due to the intertwined dynamics of the family and business systems (Micelotta et al., 2023). In this context, the coexistence of economic and noneconomic goals—that is, profit maximization and

long-term stability, but also the preservation of socioemotional wealth (Kotlar & De Massis, 2013)—as well as the presence of the family as an additional stakeholder exacerbate the complexity given by CSR competing demands (Déniz & Suárez, 2005).

To understand how family firms navigate these tensions and identify relevant drivers of their CSR behavior, we focus on the role of the family CEO, who is ultimately responsible for the firm's strategic decisions and behaviors (Hambrick & Mason, 1984; Querbach et al., 2020) and is the individual who experiences the tensions created by the inherent conflict between economic and social goals most acutely. More specifically, we focus on CEO birth order for a number of reasons. First, among other individual characteristics, birth order has been recognized as a significant predictor of individuals' behavior in the psychology literature (e.g., Liang & Greene, 2016; Otterbring et al., 2023; Steelman, 1985). Second, investigating family CEO birth order is particularly relevant given that the primogeniture rule, which was considered the predominant form of family business succession for long (Calabrò et al., 2018), is increasingly being abandoned. As Ayres (1990) points out, reliance on primogeniture can indeed lead to suboptimal choices, including the tendency for incumbents to overlook the potential relevance of birth order when assessing succession candidates (Chrisman et al., 1998); however, once primogeniture is questioned as an automatic rule for succession, birth order emerges as a pivotal characteristic to consider, as it inherently varies among eligible contenders. Third, prior research highlights that early family experiences, which are to a considerable amount shaped by birth order, may impact the individual's predisposition to display behaviors in the childhood that persist throughout life and, eventually, translate into executive decision-making (Campbell et al., 2019). In particular, previous literature illustrate the influence of CEO birth order on aspects such as strategic risk taking (Campbell et al., 2019), R&D investments (Li et al., 2021), innovation (Zheng et al., 2021), and firm performance (Schenkel et al., 2016).

To understand the relationship between CEO birth order and family firms' CSR behavior, we rely on the *Family Niche Model* (Sulloway, 1995), which puts forward the evolutionary argument that siblings are in competition for (parental) resources and need to identify suitable strategies for their survival, which are strongly influenced by the children's birth order. Building on the premise that birth order has long-lasting effects on personality and in continuation of the introductory elaborations on the motivations for CSR investments, we identify two primary channels through which these effects likely propagate to strategic decision-making in the context of CSR: an economic channel and a social channel. Based on these channels, we arrive at a differential prediction regarding the effect of family CEO birth order on CSR behavior. Specifically, later-born family CEOs are expected to exhibit greater risk tolerance, which leads to *less* concern for CSR (economic channel); conversely, their expectedly higher altruism makes them *more* inclined to invest in CSR (social channel).

Making a step further, we also examine the moderating effects of the CEO sibship size and age in shaping birth order effects on family CEOs' CSR-related decision-making. On the one hand, sibship size has already proved to be a relevant aspect when investigating birth order (e.g., Ernst & Angst, 1983; Paulhus et al., 1999) and, affecting both individuals' risk aversion (Lampi & Nordblom, 2013) and prosocial orientation (Kidwell, 1981; Lampi & Nordblom, 2013; Van Lange et al., 1997), might play a moderating role in the investigated relationship. On the other hand, with the increase in their age, it is possible to observe both an increase in individuals' risk aversion (Dohmen et al., 2017) and altruistic behaviors (Fabrizi et al., 2014), which might as well interact with birth order effects in affecting family CEOs' CSR-related decision-making.

We test our hypotheses based on an unbalanced panel dataset of 550 firm-year observations from 84 family firms worldwide between 2010 and 2022, which we constructed based on secondary sources of information. Our results reveal a significantly negative relationship between family CEO birth order and family firms' CSR behavior, implying that the economic channel (risk preferences) dominates over the social channel (altruistic preferences). Put differently, earlier-born family CEOs, because of their higher risk aversion, adopt more CSR practices than later-born family CEOs. We also find that the moderating effect of sibship size *attenuates* the relationship between family CEO birth order and family firms' CSR behavior, while age *amplifies* it.

Our study contributes to the family business literature in multiple ways. First, we introduce family CEO birth order as a key individual characteristic that shapes firm strategies, highlighting how an individual's family

environment influences her/his economic and social preferences, thereby affecting decision-making. Second, we develop a comprehensive theory to explore the link between family CEO birth order and CSR behaviors. By adopting a behavioral economics and evolutionary psychology perspective, we argue that economic risk factors primarily drive birth order's impact on CSR decisions. Third, we advance the literature by showing how sibship size and age interact with birth order to influence decision-making in family firms, revealing the specific nuances of family environments. Fourth, we offer new insights into how familial dynamics shape business strategies, particularly in reconciling tensions between economic and social goals in family firms, advancing the understanding of CSR behaviors by linking individual preferences to organizational outcomes. Finally, we enrich the family business debate on intergenerational succession by applying insights from family science and highlighting the role of the family environment in shaping individuals' characteristics and affecting family firm outcomes.

2 | THEORETICAL BACKGROUND

2.1 | The tensions embedded in CSR behavior

A key concern in management is whether organizational decision-makers should also focus intrinsically on matters beyond profitability (Mohr et al., 2001). As a result, debates on whether firms have social responsibilities beyond their role in generating wealth (Henderson, 2001) and discussions about integrating CSR into a firm's competitive strategy have recently gained momentum among both practitioners and policymakers (as manifested, for instance, in the EU taxonomy for sustainable activities, European Commission, 2021[1]). Along with media attention to CSR and with the growing internal and external pressures on organizations to achieve broader social goals (Freeman et al., 2000; Logsdon & Wood, 2002), an expanding body of research aims to define what it means for a firm to be socially responsible (Aguilera et al., 2007; Bansal & Roth, 2000). Accordingly, firms view CSR as strategically important to their operations, as it enhances their moral capital (Gamerschlag et al., 2011) and strengthens their reputation within their community of reference (Andersson et al., 2002). However, investing in CSR as a for-profit organization can also result in multiple tensions. This is because firms aiming at incorporating CSR into their business strategy and operations may encounter internal conflicts due to the inconsistencies between social and economic demands related to CSR.

These two, sometimes conflicting, types of demands are represented by two separate streams of research: the ethical or moral orientation stream (Driver, 2006; Godfrey & Hatch, 2007) and the economic orientation one (Miller et al., 2020). On the one hand, CSR may be intended as an act of reciprocity toward the firm's stakeholders rather than a market transaction used to achieve underlying corporate goals (Kleinrichert, 2008; Pfeffer, 1994). On the other hand, instead of acting primarily on moral or ethical logic, organizations may decide to engage in CSR based on self-interested economic reasoning (Siltaloppi et al., 2021). This economic approach relies on the idea that organizations are subject to pressure from both internal and external parties to take CSR initiatives to keep up with constantly evolving expectations about the business and its social obligations (Clark & Hebb, 2004; González & Martinez, 2004).

The economic angle of CSR is, however, non-trivial. On the one hand, CSR investments are often viewed as costly in the short term because they require firms to allocate resources toward initiatives that do not generate immediate financial returns. On the other hand, CSR investments reduce long-term volatility by fostering stakeholder trust and ensuring business continuity. By addressing social and environmental risks early, firms can avoid sudden crises that lead to unpredictable financial and operational disruptions. The conceptualization of CSR as a form of "insurance" is crucial for understanding its long-term value (Minor & Morgan, 2011; Shiu & Yang, 2017). As seen in the case of Rana Plaza, the decision not to invest in CSR can result in catastrophic consequences, such as massive legal liabilities, severe reputational damage, and the loss of business partnerships, all of which entail far greater long-term costs than the initial investment in CSR would have. Yet, while allocating resources to CSR has an *immediate* and

certain negative effect on short-term profits, the adverse events CSR investments aim to prevent *are not guaranteed to occur*. This illustrates the abovementioned insurance character of CSR expenses and thus paves the way for *risk* and related considerations as an essential factor. The dual nature of CSR, costly in the short term but protective in the long term, generates an additional layer of complexity in the debate on the integration of CSR within the firm's competitive strategy.

2.2 | Conflicting goals in family firms and CSR

Despite mainly investigating economic and social demands related to CSR in two standalone research streams, the literature has also highlighted how firms often struggle to accommodate such demands (Margolis & Walsh, 2003), being exposed to internal CSR tensions that require systematic managerial attention (Hahn et al., 2018; Ozanne et al., 2016). This strain is particularly evident for family firms, where the family and business systems coexist (Micelotta et al., 2023) and where the family group is at least as influential as any other stakeholder (Déniz & Suárez, 2005; Van Gils et al., 2014). Differently from their nonfamily counterparts and irrespective of CSR, family firms typically experience both noneconomic and economic goals guiding their decisions and behaviors (e.g., Gomez-Mejia et al., 2007), which concur to the complexity brought in by CSR.

Looking at family firms' approach to CSR and their obligations toward stakeholders, two alternative viewpoints might be examined. From an economic orientation perspective, family firms' engagement in CSR might be perceived as costly in the short term, even if it reduces risk and possibly also pays financially off in the long run. Research highlights how committing to CSR concurs with building long-term relationships with stakeholders, investors, and society, sustaining the firm across generations (Sharma et al., 2011), and increasing their socioemotional wealth through the continuous engagement with key stakeholders (Cennamo et al., 2012). In terms of social orientation, family firms are, by definition, influenced in their decision-making processes by a wide range of emotions linked with the presence of familiar dynamics within the business (Huse, 1998). On the one hand, the presence of a family within a firm may translate into altruistic behaviors between the business and its stakeholders (Déniz & Suárez, 2005), who are considered part of the extended family (Déniz-Déniz & Saá-Pérez, 2003), therefore leading to higher engagement in CSR. On the other hand, dealing with the resulting stock of emotions may hinder family firms' ability to fulfill moral and discretionary obligations, due to nepotism and lack of professionalism (Lubatkin et al., 2005). To understand this complexity, we argue for the need to look at the competing preferences of the individual leading the firm, namely the CEO.

2.3 | Family CEOs and their birth order

To solve the complex dynamics underlying CSR behavior in the context of family firms due to the need to accommodate both economic and social demands, we concentrate on the role of family CEOs. CEOs are indeed ultimately responsible for family firms' strategic decisions and behaviors (Hambrick & Mason, 1984; Querbach et al., 2020), and family ones impersonate and experience to the greatest extent the tensions between economic and social goals that characterize the family firm they lead, as compared to nonfamily CEOs (Lu et al., 2021; Skorodziyevskiy et al., 2023). Over the years, many characteristics of family CEOs have been investigated (for a recent review, see Skorodziyevskiy et al., 2023). Among these, the literature has highlighted gender (e.g., Huang, 2013), education (e.g., Sun et al., 2021), confidence (e.g., McCarthy et al., 2017), narcissism (e.g., Petrenko et al., 2015), and values (e.g., Chin et al., 2013) as the most recurring factors influencing CSR behavior. In this study, we focus on a relatively disregarded yet potentially relevant individual characteristic: family CEO birth order.

Defined as "the sequential position of a person among his or her siblings with respect to the order of birth" (Warren, 1966, p. 38), birth order is recognized as a significant predictor of behavior in psychology (e.g., Liang & Greene, 2016; Otterbring et al., 2023; Steelman, 1985) and might, as such, influence family CEOs' decision to make

their family firm engage in CSR. Studies building on applied psychology claim that birth order highlights the natural difference among siblings that, affected by their early family interactions, may influence both individual and organizational behaviors (Jaskiewicz et al., 2017; Sulloway, 1996). Along this line of thought, researchers have drawn upon evolutionary theory to explain birth order differences in personality (Sulloway, 1996). Early family experiences, which are influenced by birth order, may have an impact on an individual's propensity to produce behaviors in childhood that persist throughout life and, eventually, translate into strategic decision-making (Campbell et al., 2019). Specifically, during their upbringing, siblings engage in a strategic competition for parental resources. In this competition, firstborns tend to become more responsible and more focused on satisfying the parents, functioning as role models for the later-born children (Grable & Joo, 2004), while later-born children are typically more laid-back and gregarious, with a desire to be more creative in filling a family niche (Hertwig et al., 2002).

Organizational literature on this topic has already established the influence of birth order on key organizational outcomes, such as strategic risk-taking (Campbell et al., 2019), R&D investments (Li et al., 2021), innovation (Zheng et al., 2021), and firm performance (Schenkel et al., 2016). These studies are aligned with the abovementioned idea that first-born CEOs, being more responsible, risk-averse, and inclined toward maintaining stability, are expected to prioritize organizational initiatives oriented toward the long-term; conversely, later-born CEOs, characterized by their propensity for innovation and risk-taking, might prioritize short-term gains over stable commitments (Sulloway, 1995). The literature bridging CEO birth order with CSR behavior, however, accounts for both studies that agree and disagree with the abovementioned assumption, showing that early-life experiences may influence organizational behaviors differently across diverse business contexts. For instance, Zheng et al. (2022) rely on the literature on sibling rivalry to argue that earlier-born CEOs might implement more social responsibility behaviors due to their prosocial orientation. Differently, and challenging this perspective, other studies indicate that first-born CEOs may sometimes hesitate to invest in CSR due to perceived financial burdens, especially under significant short-term financial pressures (Chrisman & Patel, 2012); in contrast, later-born CEOs might view CSR as a means to enhance moral standing or to differentiate their firm in competitive markets (Block & Wagner, 2014). To solve this theoretical puzzle, our research considers both CEOs' economic and social preferences to develop a hypothesis that considers the diverse birth order effects that could influence family CEOs' decision-making regarding CSR.

3 | HYPOTHESES DEVELOPMENT

3.1 | Family CEOs' birth order, individual preferences, and CSR

To investigate the relationship between family CEO birth order and family firms' CSR behavior, we extend the decision problem of the firm to the level of the individual decision-maker. As outlined above, family firms face the challenge of accommodating economic and social goals in a sustainable manner. The analogy of *goals* directing family firms' decisions can be viewed as *preferences* of the individuals at the apex of these firms, which ultimately guide their decisions and, as a result, the firms' behavior. In this setting, a case in point is the preferences of family CEOs who, as mentioned above, particularly impersonate and experience the tension between the economic and social goals proper of the family firm they lead (e.g., Skorodziyevskiy et al., 2023). Behavioral economics has demonstrated that these two preferences—economic and social—are crucial for both individuals' private and professional decision-making. For the aim of the present study, we thus explore how birth order affects an individual's economic and social preferences, and, as a consequence, their tendencies with respect to CSR-related decisions as family CEOs.

3.1.1 | The Family Niche Model

The theory of birth order effects on personality was developed by Alfred Adler in the early 20th century. He argued that even though siblings grow up in the same family, the circumstances of their upbringing vary substantially based

on the order of their succession (Adler, 1964). Children find themselves in very different circumstances as a consequence of their birth order. For instance, firstborns are the only ones who experience a phase of undivided parental attention in their early life, yet then have to struggle with the change when a second baby joins the family, trying to regain their parents' notice and reclaim the "throne." Lastborns, on the other hand, feel a pressure to keep up with and surpass their older siblings, where failure to do so often leads to engagement in fields that are remote from the activities of the rest of the family. It is interesting to note that these dynamics are also likely to contribute to the establishment of traditional ways of intergenerational succession (primogeniture).

Adler's work triggered decades of research on birth order, as reviewed by Sulloway (1995). Building on the findings of earlier evolutionary psychologists (e.g., Buss, 1995; Trivers, 1974; Williams, 1966), who utilize a Darwinian logic to explain human psychological development, Sulloway identifies the *"sibling-sibling conflict"* as an important intra-familial struggle predicted by Darwinian theory, adding to and also driving the *"parent-offspring conflict"* coined by Trivers (1974): sharing only half of the genes with their parents, children will sometimes challenge the resource distribution decisions of their parents within the family. As an important contributor to this conflict, Sulloway (1995) points out the higher reproductive values of older siblings to their parents. Having already survived the dangerous years of infancy, older siblings are more likely to ensure the survival of their parents' genes than newborns, thus warranting higher parental reproductive valuation (Daly & Wilson, 1988). The resulting conflict for resources makes birth order a prime target for the analysis of robust patterns in inter-sibling differences and gave rise to the *Family Niche Model*.

Against the above background, siblings need to develop different survival strategies and occupy different niches, which is expected to manifest in variations in personality development. Based on 196 studies, Sulloway (1996) concludes that birth order plays a significant role as predicted by the Darwinian theory in the latter four of the Big Five Personality Dimensions (extraversion, agreeableness, neuroticism, openness, and conscientiousness). Given that the resulting differences among siblings originate from familial upbringing, we hypothesize that these differences are prone to manifest in the way siblings would continue the legacy of the family firm as CEOs. In the following, we first utilize the insights of behavioral economics to identify the personality traits that are primarily relevant to an individual's attitudes toward CSR. In a second step, we discuss the implications of the Family Niche Model for the corresponding traits to then derive predictions for the effect of birth order on siblings' later decision-making on CSR as family firm CEOs.

3.1.2 | Two behavioral channels: Economic and social preferences

Assessed through a neoclassical economics lens, the individual decision problem of family CEOs regarding the intensity of the family firm's engagement in CSR behaviors can be translated into an expected utility maximization problem. The optimal solution will then depend on the total income (compensation scheme as CEO and dividends as owner) in the various states of the world that can manifest as a consequence of their decisions, the respective probabilities for these outcomes, and the CEOs' individual risk preferences. Since, from an economic standpoint, investing in CSR can be viewed as a risk-mitigating strategy, we expect a negative relationship between family CEO risk tolerance and family firm's CSR engagement, as more risk-tolerant CEOs are less likely to sacrifice current earnings for the benefit of lower variation in income in the future. As pointed out above, however, engagement in CSR activities also strongly touches on the social orientation of family firms. Thus, restricting the decision problem of the CEO to a mere economic optimization problem would be a too narrow consideration. Indeed, in recent decades behavioral economics research has established that the material aspect is only one part of the equation when it comes to individual decision-making.

Economic experiments have shown that decision-makers exhibit interest not only in their own but also in the material well-being of others, even if there is no obligation to do so (Andreoni & Miller, 2002; Bolton & Ockenfels, 2000; Fehr & Schmidt, 2006). Contrary to the assumptions of neoclassical theory, a large body of

experimental literature has demonstrated that people are willing to give up some of their payoffs to ensure more equitable outcomes, pointing toward a social orientation of individuals also in economic decisions. Most noticeably, this becomes apparent in studies of the so-called dictator game. Here, participants are matched in pairs of two, with one subject taking on the role of "dictator," while the other player acts as a "receiver." The dictator is then endowed with an amount *X* and can freely (i.e., without having to fear potential retaliation from the receiver or the experimenter) choose how to split the corresponding amount between her/himself and the receiver. A meta-study by Engel (2011) reveals that dictators, on average, give away 28% of their initial endowment to the receiver. In a large-scale and global study, Falk et al. (2018) confirmed the external validity of these results by showing that experimentally elicited altruism positively correlates with a variety of giving behaviors in the real world.

Formally, this line of arguments can be integrated into a standard utility theory framework by redefining the univariate utility function as a bivariate (or multivariate) function that depends on both the decision-maker's payoff *and* the payoff of the other(s). Fehr and Schmidt (2006) refer to this class of preferences as "social preferences." Applying this framework to managerial decision-making implies that family CEOs seek to balance their own payoff and the risk associated with it (reflecting their *economic preferences*) as well as the payoff they generate for others by taking socially responsible actions (reflecting their *social preferences*). To understand how birth order affects family firm CEOs' decisions concerning CSR, we thus need to investigate how birth order shapes their economic and social preferences.

3.1.3 | Economic preferences

Within the Big Five personality traits shaped by birth order, risk attitudes are reflected in neuroticism, which is characterized by attributes such as anxiety and timidity (see Goldberg (1990) classification of the Norman (1967) taxonomy of trait terms for the different personality traits), but, as pointed out by Sulloway and Zweigenhaft (2010), also in openness to experience (willingness to explore and engage in nontraditional behavior). In his meta-analytic review, Sulloway (1995) finds that laterborns' scores are significantly less fearful and anxious, while scoring significantly higher in openness to experience, which both point toward higher risk tolerance compared to their earlier-born siblings. Similarly, Eckstein et al. (2010) report higher fearfulness in new situations among firstborns. These results are very much aligned with the predictions of the Family Niche Model. Firstborns, who generally inherit a more secure and privileged position, tend to favor the status quo and are thus more risk-averse, as maintaining their dominant family role requires less exploration of new or uncertain opportunities. In contrast, later borns, starting from a lower position within the family hierarchy, often seek to enhance their status by venturing into new, unclaimed territories—both metaphorically and literally—thus developing a higher tolerance for risk. This differentiation process is essential for later borns in securing parental attention and creating their niche.

The positive effect of birth order on risk tolerance has been further corroborated empirically for a variety of decision domains (see, for instance, Jobe et al. (1983) in a military context, Sulloway and Zweigenhaft (2010) in sports, Argys et al. (2006) in substance use and sexual activity, Wang et al. (2009) in challenging outdoor activities, or Gilliam and Chatterjee (2011) in stock market participation). Recent literature also shows that these results extend to professional and managerial decision-making: Campbell et al. (2019) find significantly higher strategic risk-taking among later-born CEOs, Agarwal et al. (2022) report that later-born fund managers engage in higher financial risks, and Zheng et al. (2021) demonstrate that founder CEO birth order positively affects product innovation generation in entrepreneurial firms as a result of the higher proclivity to take risks among later borns.

Linking these birth order effects on risk preferences of family CEOs to their decisions concerning CSR, we recall that investing in CSR can be viewed as a means to reduce firm risk. Assuming that family firm CEOs' economic preferences also affect their managerial decisions, we thus expect later-born family CEOs to feel *less* inclined to make the family firm they lead engage in CSR behavior, as per their higher risk tolerance.

3.1.4 | Social preferences

According to Goldberg (1990) classification, altruism is identified as a positive trait-descriptive and greed as a negative trait-descriptive in the Norman (1967) Taxonomy of trait terms for agreeableness. The Family Niche Model argues that firstborns have a higher reproductive value to their parents and will defend this position, which makes them more antagonistic (and thus less agreeable). Laterborns, conversely, adopt more cooperative strategies (Sulloway, 1995). While some authors have challenged the existence of birth order effects on personality traits (for instance, Freese et al., 1999; Rohrer et al., 2015), others find confirmation (in a meta-study of 200 articles, Eckstein et al., 2010, link agreeableness and empathy to lastborns). More specifically, related to social preferences, empirical literature shows results that are in line with the patterns outlined above. Salmon et al. (2016) find a significantly higher prosociality among laterborns, while Jefferson Jr et al. (1998) report a positive birth order effect on altruism and tender-mindedness. Contextually related to CSR, on the consumer side, Otterbring et al. (2023) show that laterborns are more eager to purchase and consume sustainably than firstborns.

As outlined above, the role of the CEO brings with it the power to significantly shape the firm's behavior toward its environment. If birth order leaves a mark on an individual's social preferences, guiding their decisions as CEOs, we expect to see the corresponding effects ultimately also reflected in the firm's CSR. In confirmation of the existence of a social channel through which birth order propagates to managerial decision-making, Berisha et al. (2022) document that later-born managers show a higher proclivity toward participatory leadership approaches. We thus arrive at the hypothesis that later-born family CEOs feel *more* inclined to make the family firm they lead engage in CSR behavior, as per their higher altruism.

3.1.5 | Main hypotheses

We have established that birth order affects both the economic and social preferences of children. We theorize that these intra-family variations among siblings are likely to also affect the way they would lead the firm as family CEOs. Importantly, our theory suggests that the corresponding implications for economic and social preferences, respectively, predict a differential effect on their managerial decisions when it comes to the adoption of CSR behavior. Specifically, as explained above, the effect of birth order on economic (risk) preferences predicts a negative relationship between family CEO birth order and the family firm's CSR behavior, while the effect of birth order on social preferences predicts a positive relationship. Thus, it is unclear, *ex ante*, whether birth order is positively or negatively related to the propensity of family CEOs to make their family firm engage in CSR behavior. Therefore, the overall effect depends on the strength of the respective channels (economic vs. social preferences), leading to competing hypotheses about the relationship between family CEOs birth order and the CSR behavior of the family firm they lead.

> **Hypothesis H1A.** *Family CEO birth order negatively relates to the family firm's CSR behavior* (*economic preference*).

> **Hypothesis H1B.** *Family CEO birth order positively relates to the family firm's CSR behavior* (*social preference*).

3.2 | The moderating effect of family CEO sibship size and family CEO age

3.2.1 | Family CEO sibship size

In the framework of the Family Niche Model, the number of siblings stands out as a relevant moderator. Its importance in the context of birth order effects was first pointed out by Ernst and Angst (1983). In the same vein, Paulhus

et al. (1999) explicitly controlled for sibship size when evaluating the effects of birth order on personality traits. Their analyses revealed some variation in the magnitude of the effects across sibship size, hinting at a potential interaction effect between birth order and sibship size.

In relation to the economic preferences, larger sibships create more intense competition for parental resources, pushing siblings to differentiate themselves further to secure their own "niche" within the family (Hoskisson et al., 2017; Pittino et al., 2020). Along this line of thought, Booth and Kee (2009) explain the struggle for resources in larger families by showing that educational attainment—as a result of parental investment—decreases with birth order and that this negative relationship between birth order and educational attainment is stronger in families with three or four children as compared to those with only two children. A similar study by De Haan (2010) produced comparable results, while also corroborating that earlier-born children are more likely to receive financial support from their parents and that they receive higher amounts. The salience of the rivalry between siblings may thus amplify birth order effects (Campbell et al., 2019) such that firstborns will guard their position even more vigorously, while laterborns will be forced into even more risk-taking and exploratory approaches. This differentiation becomes more pronounced as the number of siblings increases, as each sibling must find a way to stand out within the family dynamic. Accordingly, we argue that the increase in sibship size will make later-born family CEOs feel *even less* inclined to make their family firm engage in CSR, thus negatively moderating (i.e., amplifying) the negative relationship between family CEO birth order and the family firm's CSR behavior.

In relation to the social preferences, Dixon et al. (2008) hypothesize that the dynamics of the family and the influence of birth order on personality changes as family size grows. While they do not test for the interaction effect explicitly, they find a pronounced positive effect of birth order on extraversion in large families. They argue that with the increased activity within larger families, firstborns might restrain their behavior to avert arousal, while laterborns become more socially active for enhanced stimulation and attention. The increase in sibship size may thus enhance the gap between later-born and earlier-born family CEOs, making later-born family CEOs even more altruistic, agreeable, and prosocial than earlier-born counterparts. Consequently, we expect that a larger sibship size will make later-born family CEOs feel *even more* inclined to make their family firm engage in CSR. This increase in sibship size would therefore positively moderate (i.e., amplify) the positive relationship between family CEO birth order and the family firm's CSR behavior. Formally stated:

> **Hypothesis H2.** *Family CEO sibship size amplifies the relationship between family CEO birth order and the family firm's CSR behavior, such that family CEO birth order (a) negatively (economic preference) or (b) positively (social preference) moderates this relationship.*

3.2.2 | Family CEO age

Another relevant variable for the analysis of birth order effects is age, which has been identified as an important factor in executives' decision-making. On the one hand, there is ample empirical evidence that individuals become more risk-averse with age (e.g., Dohmen et al., 2017; Sahm, 2012); on the other hand, managerial literature suggests that, with career concerns becoming less pressing with age (Holmström, 1999), older CEOs do not need to focus on short-term performance but lean more toward "giving back" to their communities (Fabrizi et al., 2014; McCuddy & Cavin, 2009).[2] While age is thus likely to be relevant for CEO behavior concerning CSR-related decisions, we argue for its possible interaction with family CEO birth order effects on the family firm's CSR behavior, again drawing on the implications of the Family Niche Model.

As for the economic preferences, the competition for scarce resources within the family that drives birth order effects fades when the children age and gradually leave their family environment. When they age, firstborns may no longer feel the same pressure to maintain their dominance or adhere strictly to conservative behaviors (becoming less risk averse, or more risk tolerant), while laterborns might not need to rely on increased risk-taking and social

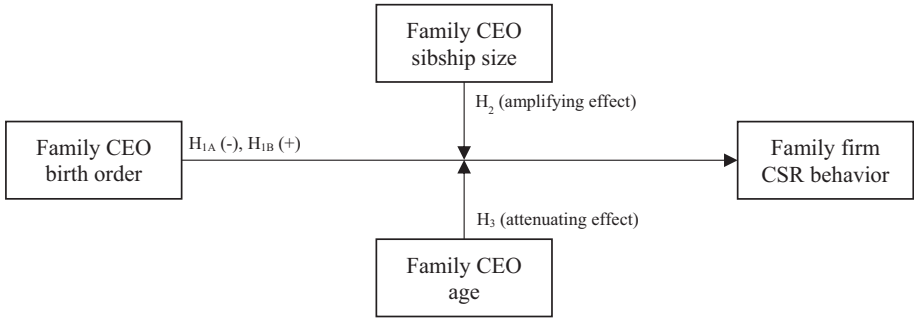

FIGURE 1 Synthesis of the hypotheses.

outreach to assert their niche (becoming more risk averse, or less risk tolerant). This idea aligns with the recent studies by Lejarraga et al. (2024) and Lin (2023), which demonstrate that birth order's positive effect on risk-taking diminished with age. Accordingly, we argue that the increase in family CEOs' age will lead to a convergence of laterborns and earlierborns concerning their family firms' CSR behavior, attenuating the alleged relatively lower inclination of later-born family CEOs to make their family firm engage in CSR. Therefore, we contend that family CEO age positively moderates (i.e., attenuates) the negative relationship between family CEO birth order and the family firm's CSR behavior.

Regarding social preferences, the literature supports the notion that traits such as altruism and prosociality vary throughout life, increasing with age (Pollerhoff et al., 2024; Sparrow et al., 2021). The increase in age may thus affect firstborns, attenuating their typical antagonistic behavior (Sulloway, 1995) to give space to a more altruistic and prosocial one. Further, older firstborns tend to internalize higher expectations for care and responsibility due to their early experiences of leadership and caregiving within the family. These experiences reinforce altruistic behaviors later in life (Zelazo, 2013). While the direct link to birth order remains an evolving topic, we argue that as family CEOs age, the CSR behaviors of later-born and earlier-born CEOs will converge, attenuating the alleged relatively higher inclination of later-born family CEOs to engage their family firms in CSR activities. Therefore, we contend that family CEO age negatively moderates (i.e., attenuates) the positive relationship between family CEO birth order and the family firm's CSR behavior.

We thus formulate the following hypothesis:

> **Hypothesis H3.** *Family CEO age attenuates the relationship between family CEO birth order and the family firm's CSR behavior, such that family CEO age (a) positively (economic preference) or (b) negatively (social preference) moderates this relationship.*

Figure 1 provides a synthesis of the hypotheses.

4 | METHODS

4.1 | Data and sample

To test our predictions about the relationship between family CEO birth order and the family firm's engagement in CSR behavior, as well as the moderating effect of family CEO sibship size and age, we built a panel dataset of family firms. To define our sample, we started from the list of 750 top family businesses worldwide in terms of 2020 revenues provided by Family Capital with the support of PWC (Family Capital, 2020). To qualify for this list, at least 50%

of the voting rights, in the case of private firms, or 30% of the voting rights, in the case of public firms, must be owned by the members of a single family or group of families, and the firm must be at least 21 years[3] old (Family Capital, 2020). Starting from this list, we collected data at the firm, CEO and country levels. Concerning the firm level, we obtained information from two secondary sources: Thomson Reuters Refinitiv, including the database of ASSET4, and NRG Metrics dataset; among others, the former mainly provided data on firms' CSR behavior, while the latter was mostly exploited to get information on board composition. When possible, we supplemented missing data from online sources such as firm websites and annual reports. At the CEO level, we complemented the information provided by the NRG Metrics dataset with data that we manually coded from the CEOs' biographies[4] and family firms' history retrieved from online sources and the firms' websites, considering the individuals who led the 750 top family businesses in the period 2010–2022. On the one hand, the NRG Metrics dataset provided information on whether CEOs were members of the owning family (or group of families) or not (Rovelli et al., 2023), which we crosschecked with the CEOs' biographies and family firms' history; this information allowed restricting the sample to family firms led by a family CEO. On the other hand, the manual coding of the CEOs' biographies allowed to record CEOs' names and birth dates, as well as names and birth dates of their siblings, if any. Finally, at the country level, we collected information from the World Bank Databank.[5] Due to missing data and considering our focus on family CEOs, the sample we used to test hypotheses comprises 84 firms with 550 firm-year observations. As not all information was available during the entire timespan of the dataset, our panel is unbalanced; the average number of firm-year observations per firm is 6.5.

4.2 | Variables description

Concerning our dependent variable and mimicking prior studies, we used the *ESG score* as a proxy to capture family firms' CSR behavior (e.g., Bingham et al., 2011; Boulhaga et al., 2023; Yu et al., 2015). As defined in Thomson Reuters ASSET4, the *ESG score* measures the firm's overall performance in CSR. Specifically, it is a composite measure of the environmental (i.e., energy use, CO_2 emissions, water and waste recycled); social (i.e., employee turnover, training hours, female employees); and corporate governance (i.e., shareholders, management, overall CSR strategy) performance of a firm (Ioannou & Serafeim, 2012), thus capturing its noneconomic, and social, performance (Clément et al., 2023). The *ESG score* is calculated from over 400 publicly reported firm level ESG measures, which are then selected and categorized by Thomson Reuters into 10 categories corresponding to one of the three individual pillars of the final ESG score. The score is calculated using a percentile rank based on the number of firms performing worse than the current one, the number of firms with the same value, and the number of firms having a value at all (Thomson Reuters EIKON, 2017).

Our main independent variable is *CEO birth order*. Consistent with prior research (Booth & Kee, 2009; Campbell et al., 2019; De Haan, 2010), we constructed this variable based on the order the family CEOs were born; therefore, a first-born family CEO was coded one, a second-born two, and so on. We derived this information from the CEOs' biographies published online.

As moderating variables, we have *CEO number of siblings* and *CEO age*. We measured CEO sibship size as the *CEO number of siblings* (Belmont & Marolla, 1973; Booth & Kee, 2009; Campbell et al., 2019), which we derived from the information in the CEOs' biographies published online. We computed *CEO age* as the difference between the focal year and the CEO's birth year (Campbell et al., 2019).

Finally, we included in our models several control variables accounting for potential confounding factors, at the individual, firm, and country levels. At the individual level, we considered the dummy variables *Female CEO* and *CEO change*. The former is equal to one in the case of a female individual being the CEO, and zero in the case of a male individual; we included this control variable based on the assumption that women are more prosocial-oriented (Chen et al., 2020). *CEO change* is instead equal to one if in the previous year the family firm was led by a different CEO than the current one. At the firm level, we added *Family name in firm name*, *Firm generation*, *Number of board*

members, *Firm size*, *Firm age*, and *ROA*. *Family name in firm name* is a dummy variable equal to one when the family name is included in the firm name, and zero otherwise (Deephouse & Jaskiewicz, 2013). *Firm generation* indicates the generation that is managing the firm, as provided by the NRG Metrics dataset or family firms' website. Other control variables are the *Number of board members*, to account for potential governance mechanisms (Campbell et al., 2019), the *Firm size*, measured as (the logarithmic transformation of) the number of employees, the *Firm age*, computed as (the logarithmic transformation of) the difference between the focal year and the year in which the family firm was founded, and the *ROA* (Return on Assets), as a proxy of firm performance. At the country level, we included annual *GDP* (Gross Domestic Product) *growth* to control for country effects; we collected information on this variable from the World Bank Databank. Finally, all models include year-fixed effects (*Year dummies*) to account for potential unobserved heterogeneity across different time periods (Campbell et al., 2019).

5 | RESULTS

Table 1 reports the descriptive statistics and correlations of the variables used to test our hypotheses. The average family CEO birth order is 2.1, the average number of siblings is 2.3, and the average age is 59.4 years. Looking at our main variables, a positive but not significant correlation emerges between *CEO birth order* and *ESG score* (rho = 0.050, $p = 0.240$). *ESG score* is instead positively and significantly correlated with *CEO number of siblings* (rho = 0.193, $p = 0.000$) and negatively and significantly correlated with *CEO age* (rho = −0.075, $p = 0.078$). To exclude multicollinearity, we performed a variance inflation factor test; the resulting VIF values (max VIF = 5.19, mean VIF = 2.30) were lower than the thresholds generally associated with multicollinearity issues (Belsley et al., 1980). Nevertheless, before testing hypotheses, we mean-centered our three main independent variables (i.e., *CEO birth order*, *CEO number of siblings*, and *CEO age*) to safeguard our analyses from multicollinearity problems (Haans et al., 2016).

Following a Hausman test (chi-squared = 44.710, $p = 0.004$), we conducted a fixed effects regression analysis (Greene, 2011) to test our hypotheses (Stata command: *xtreg*). The results of the estimates are presented in Table 2. Model 1 is the baseline model with only control variables. In Model 2, we include the independent variable *CEO birth order* as well as the direct effect of the two moderating variables, *CEO number of siblings* and *CEO age*. We find that *CEO birth order* is negatively and significantly associated with the *ESG score* of the firm ($\beta = -17.019$, $p = 0.000$), providing support for Hypothesis H1A (birth order effects propagate via the economic channel of risk aversion). Model 2 also shows a positive and significant relationship between the *ESG score* and both the *CEO number of siblings* ($\beta = 10.448$, $p = 0.000$) and *CEO age* ($\beta = 0.842$, $p = 0.000$).

In Models 3–5, we test the additional hypotheses about the moderating effects of family CEO sibship size and family CEO age. First, we include the moderating effects one by one in Models 3 and 4, respectively; then, we consider them together in a comprehensive model (Model 5). Model 3 shows a positive and significant moderating effect of the *CEO number of siblings* on the relationship between *CEO birth order* and *ESG score* ($\beta = 10.233$, $p = 0.000$); this result is confirmed by Model 5 ($\beta = 9.170$, $p = 0.000$). Based on the fully specified Model 5, we plotted the two-way interaction (Figure 2a) and the average marginal effects (AMEs) of *CEO birth order* at the different levels of *CEO number of siblings* (Figure 2b) to interpret the results. Figure 2a shows that the predicted *ESG score* decreases with *CEO birth order* to a lower extent when the *CEO number of siblings* is high rather than low; in other words, as demonstrated by the AME plot, the negative (and significant) relationship between family *CEO birth order* and the *ESG score* of the firm they lead is attenuated as the number of siblings increases.

Model 4 includes the interaction between *CEO birth order* and *CEO age* and shows a negative and significant moderating effect of the latter on the relationship between *CEO birth order* and *ESG score* ($\beta = -0.437$, $p = 0.000$); also this result is confirmed by the fully specified Model 5 ($\beta = -0.385$, $p = 0.000$). Figure 3a depicts the two-way interaction and Figure 3b shows the AME of *CEO birth order* at the different levels of *CEO age* for Model 5. Figure 3a

TABLE 1 Descriptive statistics.

	Mean	SD	Min	Max	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
(1) ESG score	42.669	19.635	0	85.358	1.000												
(2) CEO birth order	2.115	1.450	1	13	0.050	1.000											
					(0.240)												
(3) CEO number of siblings	2.329	1.760	0	12	0.193***	0.670***	1.000										
					(0.000)	(0.000)											
(4) CEO age	59.400	10.899	34	90	−0.075*	−0.031**	0.007	1.000									
					(0.078)	(0.474)	(0.863)										
(5) Female CEO	0.025	0.158	0	1	−0.006	0.019	−0.004	−0.147***	1.000								
					(0.895)	(0.659)	(0.926)	(0.001)									
(6) CEO change $_{(t-1)}$	0.418	0.200	0	1	0.117**	0.064	0.007	−0.196***	0.082*	1.000							
					(0.006)	(0.133)	(0.863)	(0.000)	(0.056)								
(7) Family name in firm name	0.985	0.120	0	1	0.039	−0.001	0.023	−0.007	0.020	−0.050	1.000						
					(0.362)	(0.984)	(0.595)	(0.876)	(0.646)	(0.237)							
(8) Firm generation	1.627	1.275	0	4	−0.166***	−0.117**	0.066	−0.271***	0.056	0.054	−0.047	1.000					
					(0.000)	(0.006)	(0.122)	(0.000)	(0.187)	(0.206)	(0.266)						
(9) Number of board members	10.347	4.215	0	21	0.098**	0.142**	0.010	0.058	−0.128**	0.054	−0.055	−0.068	1.000				
					(0.022)	(0.001)	(0.818)	(0.175)	(0.003)	(0.207)	(0.199)	(0.109)					
(10) Firm size (log)	9.935	1.332	5.338	12.878	0.288***	−0.007	−0.162***	0.141**	0.017	−0.036	0.029	−0.416***	0.163***	1.000			
					(0.000)	(0.871)	(0.000)	(0.001)	(0.687)	(0.399)	(0.500)	(0.000)	(0.000)				
(11) Firm age (log)	4.080	0.578	2.639	5.553	0.116**	−0.138**	−0.115**	−0.002	−0.037	0.117**	−0.078*	0.264***	0.050	0.218***	1.000		
					(0.007)	(0.001)	(0.007)	(0.962)	(0.391)	(0.006)	(0.069)	(0.000)	(0.238)	(0.000)			
(12) ROA	6.592	5.525	−18.760	26.660	−0.139**	0.006	0.080*	−0.032	0.088*	−0.119**	0.134**	0.211***	0.097**	−0.146**	−0.124**	1.000	
					(0.001)	(0.888)	(0.060)	(0.453)	(0.038)	(0.005)	(0.002)	(0.000)	(0.023)	(0.001)	(0.004)		
(13) GDP growth	1.981	3.102	−9.518	8.498	−0.099**	0.035	0.110**	−0.081*	−0.067	0.111**	−0.019	0.115**	−0.070	−0.183***	−0.114**	0.230***	1.000
					(0.020)	(0.408)	(0.010)	(0.057)	(0.115)	(0.009)	(0.649)	(0.007)	(0.103)	(0.000)	(0.007)	(0.000)	

Note: *p*-Values in parentheses.
***$p < 0.01$.**$p < 0.05$.*$p < 0.1$.

TABLE 2 Regression results on hypothesis testing.

	Model 1	Model 2	Model 3	Model 4	Model 5
CEO birth order	-	−17.0188***	−50.6690***	−13.4718***	−44.0458***
		(3.1293)	(6.8659)	(3.1200)	(6.8641)
CEO number of siblings	-	10.4475***	32.0429***	15.6932***	34.4258***
		(2.9380)	(4.8716)	(3.0333)	(4.7908)
CEO birth order × CEO number of siblings	-	-	10.2329***	-	9.1701***
			(1.8733)		(1.8459)
CEO age	-	0.8419***	1.1265***	0.8273***	1.0841***
		(0.1366)	(0.1422)	(0.1328)	(0.1394)
CEO birth order × CEO age	-	-	-	−0.4366***	−0.3850***
				(0.0849)	(0.0833)
Female CEO	−1.5898	19.0713***	42.2891***	12.4136*	34.0062***
	(5.5836)	(6.6712)	(7.7359)	(6.6148)	(7.7729)
CEO change	−1.8928	6.8618***	6.0111**	6.3310**	5.6314**
	(2.3293)	(2.5620)	(2.4871)	(2.4933)	(2.4330)
Family name in firm name	−2.3207	−2.9747	−3.1120	−2.0011	−2.2391
	(6.9043)	(6.5832)	(6.3784)	(6.4041)	(6.2390)
Firm generation	−2.0771**	−2.0436**	−1.9292**	−1.9154**	−1.8281**
	(0.8638)	(0.8282)	(0.8027)	(0.8057)	(0.7851)
Number of board members	0.5926**	0.3638	0.3540	0.3059	0.3040
	(0.3005)	(0.2928)	(0.2837)	(0.2849)	(0.2776)
Firm size	−2.6661	−3.9300	−4.4337	−4.8305	−5.1756
	(3.4699)	(3.3169)	(3.2151)	(3.2301)	(3.1475)
Firm age	5.0572	5.8239*	5.7203*	8.6125***	8.1901***
	(3.1447)	(3.0048)	(2.9114)	(2.9717)	(2.8962)
ROA	−0.1007	−0.0698	−0.0126	−0.0696	−0.0184
	(0.1399)	(0.1335)	(0.1297)	(0.1298)	(0.1268)
GDP growth	−0.3520	−0.7614***	−0.8364***	−0.7493***	−0.8180***
	(0.2815)	(0.2770)	(0.2687)	(0.2694)	(0.2628)
Constant	48.4318	66.3536*	61.5958*	63.7869*	59.8265*
	(36.8679)	(35.2622)	(34.1764)	(34.2918)	(33.4162)
Year dummies	YES	YES	YES	YES	YES
Observations	550	550	550	550	550
Number of rank	84	84	84	84	84
R-squared	0.2212	0.2971	0.3416	0.3369	0.3721

Note: Standard errors in parentheses.
***$p < 0.01$.**$p < 0.05$.*$p < 0.1$.

shows that the predicted *ESG score* decreases (although slightly) with *CEO birth order* to a greater extent when the *CEO age* is high rather than low; accordingly, Figure 3b depicts that the negative relationship between *CEO birth order* and *ESG score* is amplified as *CEO age* increases.

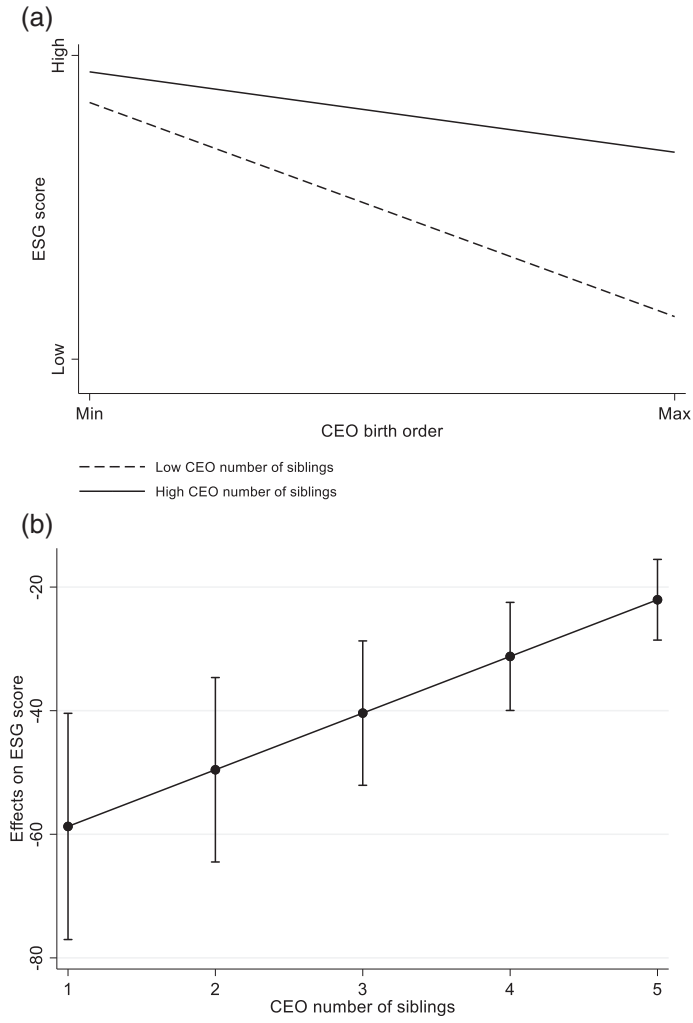

FIGURE 2 (a) Predicted *ESG score* as a function of *CEO birth order* for high and low *CEO number of siblings* (90th and 10th percentiles). (b) Average marginal effects of *CEO birth order* at different levels of *CEO number of siblings* (95% confidence interval).

5.1 | Robustness checks

We performed three additional analyses to test the robustness of our findings (results are reported in the Appendix). First, the derivations of the Family Niche Model build on the argument that economic and social preferences develop through early childhood interactions with parents and siblings. The sample in our main analyses includes only-child family CEOs, based on the premise that the behavior of only-child family CEOs is similar to the one of first-born family CEOs. However, it is possible that only-child family CEOs are distinct in their behavior compared to family CEOs with siblings. We therefore reran our analyses by excluding only-child family CEOs from the sample. The corresponding results are consistent with the findings in our main analyses (see Table A in the Appendix).

Second, given that the *ESG score* represents an aggregate of the environmental, social, and corporate governance pillars, we replicated our analyses by considering each dimension separately. In other words, we substituted our dependent variable *ESG score* with its components—*Environmental score*, *Social score*, and *Corporate governance*

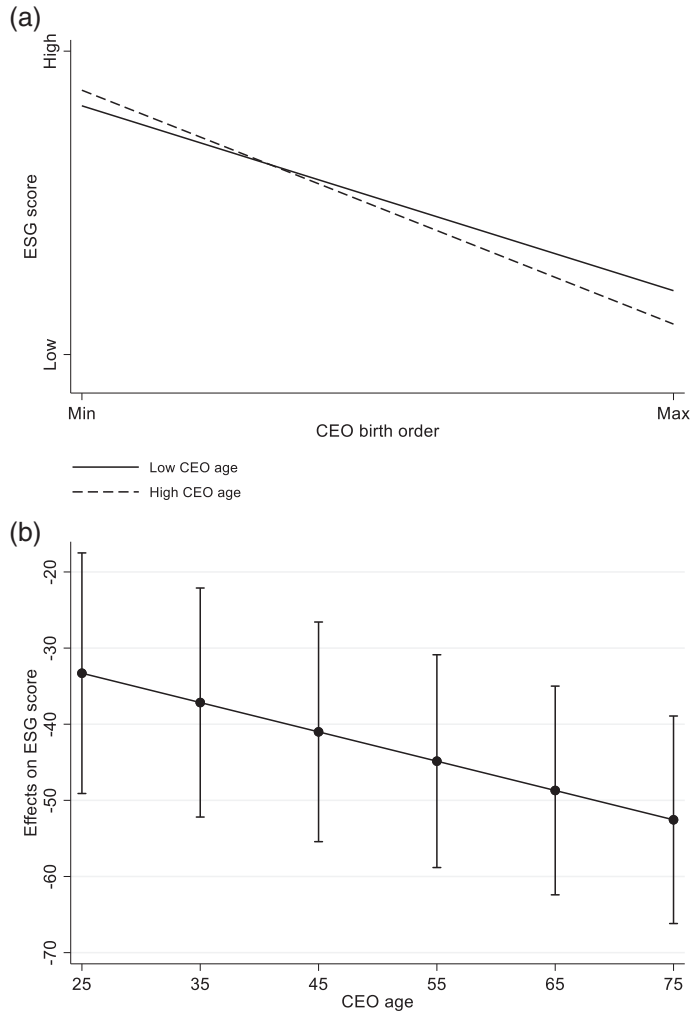

FIGURE 3 (a) Predicted *ESG score* as a function of *CEO birth order* for high and low *CEO age* (90th and 10th percentiles). (b) Average marginal effects of *CEO birth order* at different levels of *CEO age* (95% confidence interval).

score—one at a time. Again, our results remain consistent with our overall findings for each of the three individual dimensions (see Table B in the Appendix).

In a third robustness check, we included *Industry average R&D spending* and *Industry average total assets* to account for variations in the industry in addition to the already used fixed effects (Lu & Beamish, 2004). Despite a drop in observations to 80 firms and 395 firm-year observations due to missing data, the results remain consistent with our overall findings (see Table C in the Appendix).

6 | DISCUSSION

CSR is considered a key strategic direction for any type of organization (Aguilera et al., 2007; Bansal & Roth, 2000), including family firms (e.g., Deephouse & Jaskiewicz, 2013). However, engaging in CSR behavior can translate in organizational tensions that derive from its dual nature, being both costly in the short-run and able to reduce

volatility in the long-term (Minor & Morgan, 2011; Shiu & Yang, 2017). While allocating resources to CSR undeniably impacts short-term profits, as it requires firms to invest in initiatives that do not provide immediate financial return, at the same time, it works as a form of *insurance*, preventing organizations from being compromised by sudden crises that may result in unpredictable financial and operational disruptions. In our study, we aimed to investigate how family firms address this tension and to identify relevant drivers of their CSR behavior, focusing on family CEO birth order—an underexplored individual characteristic that the psychology literature recognizes as a critical determinant of individual behavior.

In so doing, we combined the predictions of the Family Niche Model, grounded in evolutionary psychology, with insights from behavioral economics to determine the relevant channels through which birth order effects are likely to propagate concerning CSR-related decisions of family CEOs. This novel theoretical approach enabled us to examine how early family experiences shaped by birth order affect strategic decision-making and the management of competing goals that family CEOs continually face. In a nutshell, the Family Niche Model states that the competition for parental resources within a family will significantly shape the children's personalities, with birth order being a key determinant of the best survival strategies for each child. Analyzing the impact of birth order on personality traits, we identified risk aversion and altruism as the relevant characteristics. Our theoretical arguments consequentially led to competing hypotheses concerning the relationship between family CEO birth order and the family firm's CSR behavior, as later-born CEOs are expected to lean more both toward altruism (and hence engage more in CSR behaviors) and higher risk tolerance (and hence engage less in CSR behaviors) compared to their earlier-born siblings.

Our estimates based on an unbalanced panel dataset of 550 firm-year observations from 84 family firms reveal a negative and significant relationship between family CEO birth order and the family firm's engagement in CSR behavior. The implication of this result is twofold. First, it confirms that the birth order of family CEOs does relate to the family firms' CSR behavior. Second, it supports the hypothesis that the corresponding effect is propagated predominantly via the economic channel: as later-born children are required to establish their niche outside the predestined path of the firstborns, they are forced to develop a higher openness to new experiences and overcome anxiety and timidity (Eckstein et al., 2010; Sulloway, 1995). Our results suggest that their corresponding higher level of risk tolerance (Agarwal et al., 2022; Campbell et al., 2019), compared to firstborns, also manifests in their decision-making as family CEOs. Navigating the (economic) tension of short-term profits versus long-term stability, they are more comfortable in engaging risks than their earlier-born siblings, which in turn reduces their inclination to adopt risk-mitigating strategies such as CSR investments.

Making a step further, we also investigated the moderating effect of family CEO sibship size and age. In this case, our results challenge our hypotheses that growing up in a larger family would amplify the negative relationship between family CEO birth order and the family firm's engagement in CSR behavior while age would act as an attenuating factor. Instead, the results reveal that this negative relationship is attenuated as the family CEO sibship size increases and amplified as the family CEO age increases. Specifically, the family firm's engagement in CSR behavior decreases with family CEO birth order less when sibship size is high rather than when it is low, and more when age is high than when it is low. These results might be explained by the peculiarities of family firms. Considering sibship size, we argued that competition for parental resources increases in larger families, possibly further reinforcing the positive effect of birth order on risk-taking (Campbell et al., 2019). However, in the context of family firms, the family CEO is not only responsible for the preservation of her/his own economic wealth and that of the family firm but, in a way, also for the wealth of her/his siblings (Bertrand & Schoar, 2006), who typically get a payback from the family firm (in the form of salary, bonuses, or dividends' distribution (Davis et al., 1997), unless they are excluded from the business and its gains for some reason). This additional responsibility likely becomes even more pressing as the number of siblings increases. As a consequence, the birth order effect on family CEOs' risk-taking might be attenuated. This idea resonates with the study by Kellermanns and Eddleston (2004), who emphasize the crucial role of concentration of control in family firms. Following their logic, family CEOs may need to collaborate more with their siblings in the decision-making processes as the number of siblings increases. This likely leads to higher caution because decisions that involve multiple family members are typically subject to negotiation and consensus. Applied to our

context, these mechanisms might explain why we find that the effect of family CEO birth order on the family firm's engagement in CSR behavior is attenuated by sibship size.

With respect to age, we expected an attenuating moderating effect, which was rejected by our results. However, the theoretical reflections in the recent empirical literature investigating birth order effects on risk-taking provide a possible explanation for our findings for family CEOs. While the overall literature is rather conclusive concerning the presence of a positive relationship between birth order and risk-taking in younger years, some studies indicate that these effects decline in adulthood, when children have left the family environment, as competition and the pressure for differentiation increasingly subsides (Lejarraga et al., 2024; Lin, 2023). In our case, the link between family forces and the moderating effect of age might explain our findings for the decision outcomes of family CEOs considering their belonging to the family owning and managing the firm. The environmental change rather than biological age as moderator has been put forward as explanation by Lejarraga et al. (2024), who analyzed a large sample of around 20,000 observations and found that, while later-born children are more likely to report higher risk-taking, this effect declines with age. Since family CEOs tend to become, in fact, *more* entangled in family dynamics as they age (Konopaski et al., 2015), it is reasonable that the forces of sibling rivalry and competition, along with their corresponding effects on risk-taking, intensify rather than diminish with age. Another possible explanation might be the fact that older family CEOs likely take more risks as they approach retirement and succession due to the declining pressure they experience concerning career (Holmström, 1999) and their focus on preserving family legacy and ensuring the family firm's long-term success (Strike et al., 2015). Older family CEOs might take more liberties to act following their preferences and beliefs and their concerns regarding socioemotional wealth might drive them to engage in strategic, higher-risk decisions. These decisions, while potentially risky in the short term, are viewed by older CEOs as necessary for the family firm's future sustainability and family continuity. Consequentially, age would reinforce the effect of family CEO birth order on CSR-related decision-making. Given the exploratory nature of our considerations, we encourage future research to further investigate the driving forces behind the moderating effects of sibship size and age.

6.1 | Contributions and theoretical implications

Our theorizing and results have a number of implications for the family business literature. Specifically, we contribute to the discourse on CSR behaviors within family businesses and the discussion surrounding individual-level antecedents of CSR in four distinct ways. First, we introduce family CEO birth order as an individual characteristic that influences a firm's strategic behaviors. We emphasize that the family environment in which individuals are raised shapes their economic and social preferences, subsequently impacting their strategic decision-making as CEOs. In so doing, we indirectly contribute to upper echelons research and extend the literature analyzing various CEO characteristics, such as gender (e.g., Huang, 2013), education (e.g., Sun et al., 2021), confidence (e.g., McCarthy et al., 2017), narcissism (e.g., Petrenko et al., 2015), and values (e.g., Chin et al., 2013), among others.

Second, we develop a more thorough and comprehensive theory to understand whether and how the birth order of the family CEO associates with the family firm's engagement in CSR, offering a different perspective based on evolutionary psychology and behavioral economics. In doing so, we contrast our theory and findings with the view of Zheng et al. (2022), who also identify a connection between birth order and CSR behavior but overlook the economic dimension of CSR as a strategy for risk mitigation. In light of the theory and evidence supporting a positive birth order effect on prosocial behavior, we challenge the notion that the negative impact of CEO birth order on CSR behavior arises from laterborns being less prosocial than firstborns. Our comprehensive theoretical framework elucidates the mechanisms connecting birth order to CSR decision-making, leading us to assert that it is, in fact, the economic (risk) dimension that drives the observed effect. Our study thus paves the way for a new application of behavioral economics, using it as a lens to explain the motivations behind family firms' CSR decisions in scenarios

where the family CEO—who is ultimately responsible for these choices—must balance a broader set of preferences, encompassing both economic and social factors.

Third, we advance the literature highlighting how other individual characteristics (i.e., sibship size and age) affect the relationship between family CEOs' birth other and their decisions in the face of competing goals. While our findings provide empirical evidence for the dominance of the economic channel with respect to the birth order effect on CSR decision-making, they also highlight the influence of the family environment. In our discussion, we thus propose a new perspective on the interaction of birth order effects with a CEO sibship size and age in the context of family executive decision-making.

Fourth, by considering birth order effects on individuals' economic and social preferences, we shed new light on the interplay between familial dynamics and business strategies in family business, particularly in navigating the tensions that firms face both in the economic and social domains. By exploring how family firms reconcile their respective ambitions, our study contributes to enriching our understanding of the intricate mechanisms driving CSR behaviors in this peculiar yet very ubiquitous type of firm, offering insights into how individual preferences intersect with business goals to shape organizational behavior.

Finally, we also contribute to the family business discourse on intergenerational succession (Gimenez-Jimenez et al., 2021; Plana-Farran et al., 2023). Although (male) primogeniture has traditionally been the predominant form of succession (Calabrò et al., 2018), rigid adherence to this principle without considering birth order when assessing potential successors can result in suboptimal choices (Ayres, 1990; Chrisman et al., 1998). Our study's findings, set against this backdrop, illuminate how early life experiences associated with birth order may affect family CEOs' strategic decision-making and, in turn, firm-level outcomes (Campbell et al., 2019). By doing so, we enrich the discussion on applying insights from "family science" to advance the family business literature (Jaskiewicz et al., 2017), highlighting the role of the family environment in shaping individual characteristics and impacting family firm outcomes.

6.2 | Managerial implications

We believe our study holds important managerial implications for family firms, family CEOs, and educational institutions. First, it offers a new reference point for family firms concerned about CSR, underscoring the importance of considering successors' early family backgrounds when selecting future CEOs. Our findings emphasize that family circumstances such as birth order and sibship size should be taken into account when choosing the most suitable candidate. By doing so, family firms can enhance their CSR behavior and ensure sustainable development. This approach therefore enables family firms to align their leadership choices with the characteristics that best support the desired CSR orientation of the firm.

Second, our results highlight the importance for family CEOs to recognize how their personal histories and experiences shape their managerial decision-making, particularly regarding which characteristics play a crucial role in this process. For instance, the robust patterns we find between family CEO birth order and family firms' CSR behavior suggest that early life circumstances have a lasting impact on sibling personalities. Specifically, in the case of managerial decisions related to CSR, our results indicate that the effect of birth order on preferences manifests through the economic channel, making earlier-born family CEOs more inclined to invest in CSR activities due to their higher levels of risk aversion.

Finally, the implications of our study can be further extended to the field of executive education. Training programs designed to enhance awareness of social responsibility and foster commitment to economically and ethically sustainable business practices could benefit from incorporating insights related to the family background of executives, particularly emphasizing the role of birth order. By understanding how family dynamics shape individual characteristics, educational institutions can better prepare future leaders to navigate the complexities of CSR and promote sustainable practices within their organizations.

6.3 | Limitations and future research directions

Our study is not without limitations, which offer promising opportunities for future research. First, collecting the necessary data to test our hypotheses was rather challenging, and we were able to retrieve the required information just for a subsample of the firms in the 750 top family businesses worldwide. Scholars might thus replicate our study by, for instance, considering a smaller sample as a starting point (e.g., firms operating in one single country), which might improve the likelihood of retrieving information for the entire sample. In so doing, scholars might also work to overcome another limitation of our study related to the sample we selected. Specifically, to build our panel dataset we considered the largest and listed family firms. However, we cannot take for granted that our findings could be generalized to other types of family firms. We thus invite scholars to replicate our study collecting data on a different sample, for instance considering smaller and/or non-listed family firms, even if it might be a challenge to retrieve CSR data for this type of firms.

Second, we took into account two specific individual characteristics—that is, CEO sibship size and CEO age—influencing the relationship between family CEO birth order and CSR behavior. However, there might be other CEO individual characteristics affecting a CEO's risk-taking propensity. Scholars might therefore investigate whether other factors—such as CEO professional skills, experience and training, or salary composition—may influence the relationship between CEO birth order and the family firm's CSR behavior. Moreover, future research might investigate additional implications of sibship size and type (e.g., genetic vs. step siblings) and its effect at both individual and organizational level. This becomes particularly important in the family business context where the family and business systems are strongly intertwined, creating a hybrid organizational form (Micelotta et al., 2023).

Third, despite our results supporting the theoretical conjecture that the family CEO birth order effect influences a family firm's CSR behavior through economic rather than social preferences, we could only theorize the mechanisms behind the relationship we tested and were unable to measure them directly. This is common in the management field, yet we urge future scholars to make an effort to either collect quantitative data aimed to directly measure such mechanisms or to conduct qualitative research to dig deeper into them.

Finally, we had to reject our hypotheses about the moderating effects of sibship size and age. While we put forward some possible explanations that are related to the family business context of our study, these interpretations should be approached with caution. Indeed, we lack the data to further corroborate them. Therefore, we leave it to future research to validate these interpretations and provide an empirical answer.

7 | CONCLUSION

Over the past few decades, CSR behavior has become a key strategic priority for family firms. Consequently, scholars have increasingly sought to identify its antecedents, paying attention, among others, to the individual characteristics of CEOs. In this study, we focus on family CEOs and on the role that their birth order plays with respect to the family firm's engagement in CSR. Indeed, birth order has long been recognized as a significant predictor of behavior within the psychology literature; however, a comprehensive theoretical framework explaining its impact on managerial decision-making regarding CSR was yet to be established. Drawing on insights from evolutionary psychology and behavioral economics, we utilize the Family Niche Model to predict how family CEO birth order affects a family firm's CSR behavior. Our theoretical framework yields two competing hypotheses, positing that the effect of birth order on CSR decision-making may either propagate through risk preferences—thus aligning with the economic channel—or through prosocial orientation—aligning with the social channel. Our findings reveal a negative association between family CEO birth order and the CSR behavior of the family firm, suggesting that the economic channel predominates. This result is contingent upon two further individual characteristics of the family CEO: sibship size, which attenuates the relationship, and age, which amplifies it. Taken together, our findings extend and enrich research on family business, CSR, and upper echelons by highlighting how individual characteristics influence

strategic decision-making. Furthermore, our theorization broadens the range of applications of behavioral economics and evolutionary psychology, offering a novel lens to understand the implications of family CEO birth order, in interaction with sibship size and age, for the CSR behavior of the family firms they lead.

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ENDNOTES

[1] https://ec.europa.eu/info/business-economy-euro/banking-and-finance/sustainable-finance/eu-taxonomy-sustainable-activities_en.

[2] One potential confound in this context could be the high preoccupation of younger generations with environmental questions: Gurchiek (2023) finds that CSR is particularly important to millennials, the generation born after 1995. However, since CEOs are usually not appointed at such a young age, we do not expect a generation-driven preference reversal with respect to age.

[3] The average level of transition from first-generation control to at least some participation of the next generation of family owners was found to correspond with a 20-year time frame according to Family Capital (2020).

[4] We relied on information published online on news websites (e.g., Handelsblatt; celebfamily.com, Satlok Express).

[5] https://data.worldbank.org/ Last accessed on 21 September, 2024.

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APPENDIX

TABLE A Regression results on hypothesis testing when excluding only-child CEOs from the sample.

	Model 6	Model 7	Model 8	Model 9
CEO birth order	−20.7064***	−66.4372***	−17.3745***	−62.4199***
	(3.1412)	(6.7886)	(3.2653)	(7.3113)
CEO number of siblings	35.5320***	70.4008***	33.2894***	67.4690***
	(4.8522)	(6.5100)	(4.8410)	(6.8009)
CEO birth order × CEO number of siblings	-	13.6642***	-	12.9027***
		(1.8285)		(1.8982)
CEO age	−0.4311*	−0.3635	−0.1070	−0.2244
	(0.2396)	(0.2244)	(0.2566)	(0.2433)
CEO birth order × CEO age	-	-	−0.3252***	−0.1434
			(0.0994)	(0.0978)
Female CEO	17.4414***	48.0452***	12.8482*	44.3149***
	(6.5896)	(7.4013)	(6.6579)	(7.8160)
CEO change	8.3095***	7.3558***	7.9429***	7.2474***
	(2.5514)	(2.3904)	(2.5223)	(2.3880)
Family name in firm name	−4.1218	−4.3216	−3.6345	−4.0957
	(6.5025)	(6.0836)	(6.4238)	(6.0765)
Firm generation	−1.4446	−1.2856	−1.4285	−1.2874
	(0.9548)	(0.8935)	(0.9430)	(0.8922)
Number of board members	0.4096	0.4240	0.3267	0.3866
	(0.2947)	(0.2757)	(0.2922)	(0.2765)
Firm size	−2.7978	−3.1733	−4.0043	−3.6841
	(3.5842)	(3.3537)	(3.5591)	(3.3668)
Firm age	7.3671**	7.4048**	9.2031***	8.2120***
	(3.0950)	(2.8957)	(3.1079)	(2.9433)
ROA	0.0248	0.1091	0.0316	0.1074
	(0.1357)	(0.1275)	(0.1340)	(0.1273)
GDP growth	−0.6055**	−0.6909**	−0.6034**	−0.6852**
	(0.2902)	(0.2718)	(0.2867)	(0.2714)
Constant	40.2523	27.2452	45.5846	30.3206
	(38.2350)	(35.8142)	(37.7975)	(35.8221)
Year dummies	YES	YES	YES	YES
Observations	487	487	487	487
Number of rank	78	78	78	78
R-squared	0.3497	0.4322	0.3673	0.4354

Note: Standard errors in parentheses.
***$p < 0.01$.**$p < 0.05$.*$p < 0.1$.

TABLE B Regression results on hypothesis testing by replacing the overall ESG score with its individual pillars: environmental score, social score, and corporate governance score.

	DV: Environmental score				DV: Social score				DV: Corporate governance score			
	Model 10	Model 11	Model 12	Model 13	Model 14	Model 15	Model 16	Model 17	Model 18	Model 19	Model 20	Model 21
CEO birth order	−22.1463***	−42.5129***	−17.3227***	−32.7345***	−16.8248***	−56.3568***	−13.1576***	−49.6507***	−11.6299***	−37.7896***	−9.0297**	−32.9788***
	(3.8418)	(8.6411)	(3.8023)	(8.5569)	(3.7767)	(8.3010)	(3.7954)	(8.3587)	(4.0977)	(9.1854)	(4.1688)	(9.3387)
CEO number of siblings	7.0176*	20.0881***	14.1724***	23.6144***	7.5135**	32.8836***	12.9371***	35.2963***	12.4500***	29.2383***	16.2956***	30.9692***
	(3.6067)	(6.1311)	(3.6973)	(5.9724)	(3.5458)	(5.8898)	(3.6900)	(5.8339)	(3.8471)	(6.5173)	(4.0530)	(6.5179)
CEO birth order × CEO number of siblings	-	6.1934***	-	4.6225**	-	12.0216***	-	10.9454***	-	7.9551***	-	7.1830***
		(2.3576)		(2.3012)		(2.2649)		(2.2478)		(2.5061)		(2.5114)
CEO age	1.3467***	1.5190***	1.3278***	1.4572***	0.9757***	1.3101***	0.9606***	1.2671***	0.4764***	0.6976***	0.4657***	0.6668***
	(0.1678)	(0.1791)	(0.1620)	(0.1738)	(0.1648)	(0.1719)	(0.1616)	(0.1697)	(0.1788)	(0.1903)	(0.1775)	(0.1896)
CEO birth order × CEO age	-	-	−0.5951***	−0.5690***	-	-	−0.4514***	−0.3899***	-	-	−0.3201***	−0.2797**
			(0.1035)	(0.1040)			(0.1032)	(0.1015)			(0.1134)	(0.1134)
Female CEO	16.8182**	30.8713***	7.7407	18.6266*	12.6386	39.9146***	5.7551	31.5280***	26.4664***	44.5159***	21.5857**	38.4995***
	(8.1900)	(9.7366)	(8.0620)	(9.6910)	(8.0513)	(9.3529)	(8.0467)	(9.4654)	(8.7356)	(10.3493)	(8.8383)	(10.5751)
CEO change	15.2079***	14.6924***	14.5016***	14.1477***	5.9566*	4.9572*	5.4078*	4.5727	−0.3078	−0.9692	−0.6970	−1.2450
	(3.1467)	(3.1319)	(3.0400)	(3.0346)	(3.0920)	(3.0070)	(3.0331)	(2.9628)	(3.3547)	(3.3273)	(3.3314)	(3.3102)
Family name in firm name	4.7325	4.6504	6.0271	5.9091	−0.2480	−0.4093	0.7586	0.4745	−13.7657	−13.8724	−13.0520	−13.2384
	(8.0835)	(8.0296)	(7.8063)	(7.7795)	(7.9450)	(7.7116)	(7.7904)	(7.5975)	(8.6202)	(8.5331)	(8.5568)	(8.4883)
Firm generation	−3.7745***	−3.7053***	−3.6001***	−3.5561***	−3.2887***	−3.1543***	−3.1562***	−3.0519***	0.5925	0.6815	0.6865	0.7549
	(1.0167)	(1.0102)	(0.9819)	(0.9787)	(0.9995)	(0.9705)	(0.9801)	(0.9560)	(1.0844)	(1.0738)	(1.0765)	(1.0681)
Number of board members	−0.2317	−0.2375	−0.3124	−0.3132	0.5623	0.5508	0.5024	0.5001	0.2184	0.2107	0.1759	0.1744
	(0.3606)	(0.3582)	(0.3483)	(0.3471)	(0.3534)	(0.3430)	(0.3466)	(0.3380)	(0.3834)	(0.3795)	(0.3807)	(0.3777)
Firm size	−1.1224	−1.4309	−2.3684	−2.5441	−1.9291	−2.5209	−2.8602	−3.2721	−9.9117**	−10.3033**	−10.5719**	−10.8421**
	(4.0984)	(4.0727)	(3.9621)	(3.9494)	(4.0031)	(3.8871)	(3.9293)	(3.8328)	(4.3433)	(4.3012)	(4.3158)	(4.2822)

TABLE B (Continued)

	DV: Environmental score				DV: Social score				DV: Corporate governance score			
	Model 10	Model 11	Model 12	Model 13	Model 14	Model 15	Model 16	Model 17	Model 18	Model 19	Model 20	Model 21
Firm age	4.1843	4.1220	7.9926**	7.7794**	−0.5921	−0.7139	2.2910	1.7869	16.5726***	16.4920***	18.6169***	18.2861***
	(3.6902)	(3.6656)	(3.6232)	(3.6123)	(3.6264)	(3.5199)	(3.6150)	(3.5268)	(3.9346)	(3.8949)	(3.9706)	(3.9403)
ROA	−0.1610	−0.1264	−0.1601	−0.1343	−0.1165	−0.0493	−0.1164	−0.0552	0.1007	0.1452	0.1009	0.1410
	(0.1641)	(0.1635)	(0.1584)	(0.1584)	(0.1611)	(0.1569)	(0.1579)	(0.1545)	(0.1748)	(0.1736)	(0.1734)	(0.1726)
GDP growth	−0.7210**	−0.7664**	−0.7041**	−0.7387**	−0.6683**	−0.7564**	−0.6558**	−0.7378**	−0.9204**	−0.9787***	−0.9116**	−0.9653***
	(0.3401)	(0.3383)	(0.3283)	(0.3276)	(0.3343)	(0.3249)	(0.3277)	(0.3200)	(0.3627)	(0.3595)	(0.3599)	(0.3575)
Constant	49.0109	46.1301	45.6675	43.6637	73.0772*	67.4877	70.4234*	65.6963	84.9225*	81.2238*	83.0408*	79.9386*
	(43.4579)	(43.1820)	(41.9543)	(41.8213)	(42.5571)	(41.3197)	(41.7151)	(40.6924)	(46.1738)	(45.7218)	(45.8189)	(45.4633)
Year dummies	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	546	546	546	546	550	550	550	550	550	550	550	550
Number of rank	84	84	84	84	84	84	84	84	84	84	84	84
R-squared	0.2853	0.2964	0.3355	0.3416	0.2432	0.2887	0.2747	0.3118	0.2046	0.2224	0.2188	0.2330

Note: Standard errors in parentheses.
***$p < 0.01$.**$p < 0.05$.*$p < 0.1$.

TABLE C Regression results on hypothesis testing when including industry controls.

	Model 22	Model 23	Model 24	Model 25
CEO birth order	−12.8482***	−40.2225***	−7.6789**	−30.2357***
	(3.8281)	(8.3971)	(3.8367)	(8.4590)
CEO number of siblings	7.8069**	25.5147***	16.3617***	29.7564***
	(3.7415)	(6.0874)	(4.0077)	(5.9847)
CEO birth order × CEO number of siblings	-	8.1596***	-	6.5686***
		(2.2394)		(2.2028)
CEO age	0.6266***	0.8527***	0.6324***	0.8138***
	(0.1766)	(0.1838)	(0.1701)	(0.1786)
CEO birth order × CEO age	-	-	−0.6515***	−0.5860***
			(0.1335)	(0.1335)
Female CEO	11.4020	31.4746***	1.4258	18.5880*
	(7.7560)	(9.3858)	(7.7458)	(9.5681)
CEO change	4.9186	4.1721	4.4725	3.9164
	(3.7233)	(3.6537)	(3.5878)	(3.5454)
Family name in firm name	−3.5051	−3.4952	−2.0359	−2.1756
	(7.3939)	(7.2442)	(7.1289)	(7.0350)
Firm generation	−1.5334	−1.4116	−1.4420	−1.3531
	(1.0378)	(1.0173)	(0.9998)	(0.9871)
Number of board members	0.2738	0.2017	0.2652	0.2081
	(0.5430)	(0.5324)	(0.5231)	(0.5165)
Firm size	0.1660	−0.6199	0.2551	−0.3865
	(4.4169)	(4.3329)	(4.2549)	(4.2042)
Firm age	−2.9797	−10.2957	6.8466	−0.0312
	(31.1136)	(30.5498)	(30.0393)	(29.7323)
ROA	0.0699	0.0975	0.0995	0.1187
	(0.1581)	(0.1550)	(0.1524)	(0.1505)
GDP growth	−0.6509*	−0.7440**	−0.5931*	−0.6739**
	(0.3549)	(0.3486)	(0.3420)	(0.3386)
Industry average R&D spending	−0.0000***	−0.0000***	−0.0000***	−0.0000***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Industry average total assets	0.0000*	0.0000	0.0000*	0.0000
	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Constant	55.2174	83.6857	12.4980	39.7123
	(135.5694)	(133.0543)	(130.8869)	(129.4810)
Year dummies	YES	YES	YES	YES
Observations	395	395	395	395
Number of rank	80	80	80	80
R-squared	0.3374	0.3661	0.3872	0.4053

Note: Standard errors in parentheses.
***$p < 0.01$.**$p < 0.05$.*$p < 0.1$.