

ENTREPRENEURIAL FIRMS' CSR: A BEHAVIORAL PERSPECTIVE ON THE ROLE OF CEO BIRTH ORDER

ABSTRACT: Despite psychology literature indicates CEO birth order as a key predictor of individual behavior, this individual characteristic has been largely neglected in management research. In this paper, we investigate the relation between CEO birth order and entrepreneurial firm's CSR behavior. In so doing, we draw on behavioral economics and evolutionary psychology, and we identify economic and social preferences as two possible channels through which birth order effects propagate to the firms' CSR behavior. Depending on the relative strength of these channels, we develop competing hypotheses. Analyses of an unbalanced panel dataset of 424 firm-year observations of family firms reveal a negative relation between CEO birth order and CSR behavior, implying the dominance of the economic channel. This relation is positively and negatively moderated by CEO sibship size and age, respectively.

Keywords: CSR, CEO, birth order, behavioral economics.

INTRODUCTION

In the last decade, Corporate Social Responsibility (CSR) – i.e., the firm's “considerations of, and response to, issues beyond the narrow economic, technical, and legal requirements of the firm to accomplish social [and environmental] benefits along with the traditional economic gains which the firm seeks” (Davis, 1973, p. 312) – increasingly became a key strategic direction for entrepreneurial firms. The adoption of CSR practices – hereafter: *CSR behavior* – helps entrepreneurial firms mitigate risk (e.g., Kim et al., 2014; Lee & Faff, 2009), gain a competitive edge, enhance performance, and overcome economic and financial downturns (e.g., Hooghiemstra,

2000). Moreover, by spending time and money into advertising their social and environmental projects, entrepreneurial firms can build their moral capital (Gamerschlag et al., 2011), and a good reputation within the community of reference, which help them create a network of connections with key stakeholders, and ultimately prosper over time (Andersson et al., 2002).

Given its relevance for entrepreneurial firms, it becomes crucial to investigate what might affect CSR behavior. Distinguishing between instrumental, normative, and firm-specific reasons to engage in CSR behaviors (Aguilera et al., 2007), we focus on the latter and address the role of CEOs, who, according to upper echelon theory are considered the ultimate responsible for firms' strategic decisions and behaviors (Hambrick & Mason, 1984) – such as CSR behavior. The stream of literature investigating the role of CEO individual characteristics as antecedents of firm's CSR behavior already pointed out the influential role of characteristics such as CEO gender (e.g., Huang, 2013), CEO education (e.g., Sun et al., 2021), CEO confidence (e.g., McCarthy et al., 2017), CEO narcissism (e.g., Petrenko et al., 2015), and CEO values (e.g., Chin et al., 2013), amongst others.

We aim to extend this literature by focusing on an individual characteristic that has been so far disregarded in the management literature but, on the other hand, has been highlighted as a significant predictor of individuals' behavior in the psychology literature (Steelman, 1985), thus having the potential of influencing entrepreneurial firms' CSR behavior: *CEO birth order*¹. Birth order is defined as “the sequential position of a person among his or her siblings with respect to order of birth” (Warren, 1966, p. 38). As such, birth order is conceived as the natural difference among individuals that would influence their early family interactions, which in turn may affect

¹ To our best knowledge, the only study offering a first attempt to investigate the relation between CEO birth order and CSR is the one by Zheng et al. (2022). While interesting, this study offers only a very preliminary and limited view on the matter. First, it considers Chinese listed firms only. Second, the authors do not adopt a theoretical lens to explain the relation they investigate.

both individual and organizational behaviors (Jaskiewicz et al., 2017; Sulloway, 1996). Prior research indeed highlights that early family experiences, which are captured 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 this vein, some evidence already exists about the influence that CEO birth order has 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). It is thus reasonable to expect that it might play a role also in shaping entrepreneurial firms' CSR behavior.

To investigate the relation between CEO birth order and entrepreneurial firms' CSR behavior, we build on behavioral economics and evolutionary psychology. Based on the premise that birth order has long-lasting effects on personality, we identify two channels – an economic and a social one – along which these effects will likely propagate to strategic decision-making. In particular, we derive the implications of birth order effects on individuals' economic and social preferences, which behavioral economics identifies as crucial drivers of human behavior. In the context of entrepreneurial firms, we expect the preferences of CEOs to also affect their managerial decisions. Interestingly, our theoretical derivations predict a differential effect of CEO birth order on CSR behavior for the economic and the social channel: laterborn CEOs are expected to be more risk tolerant and hence *less* concerned about CSR, while their expectedly higher altruism makes them *more* eager to invest in CSR. Drawing on management theory and evolutionary psychology, we also examine the moderating effects of sibship size and age in shaping birth order effects on CEOs' preferences and thus on their CSR related decision-making. These individual characteristics might indeed influence the preference towards the economic or social channel and thus affect the relation between CEO birth order and CSR behavior.

To fulfill our aim, we focus on the most ubiquitous type of entrepreneurial firm worldwide, which is family firms (e.g., Casillas & Acedo, 2007; Shanker & Astrachan, 1996). Providing additional value, and relevance, to the study, family firms are an ideal context for investigating both CSR behavior and CEO preferences related to birth order. First, this type of entrepreneurial firm is characterized by the coexistence of economic and noneconomic goals – i.e., profit maximization and the preservation of socioemotional wealth (Kotlar & De Massis, 2013). In this context, the CEO has thus greater possibilities to eventually express her/his social preferences more fully. Second, (male) primogeniture has been considered the predominant form of succession for long (Calabrò et al., 2018); however, it is also suggested that this may lead to suboptimal choices (Ayres, 1990), or that incumbents consider birth order as only marginally relevant when evaluating potential successors (Chrisman et al., 1998). Potential birth order effects are thus of particular interest in the context of family firms. Third, family firms and CSR have two pillars in common: a long-term perspective and the willingness to invest in a better world for future generations (Brigham et al., 2014). This is consistent with a long-held assumption behind CSR behavior, that is the increase in business longevity accomplished by working towards the long-term benefits of the organizational stakeholders (Porter & Kramer, 2006). Thus, we argue that family firms are an ideal context to address our study's aim.

Based on these premises, we tested hypotheses relying on an unbalanced panel dataset of 424 firm-year observations including CEOs leading top family businesses worldwide, as ranked based on 2020 revenues by Family Capital with the support of PWC (Family Capital, 2020). We retrieved data through secondary sources of information, such as NRG Metrics dataset, Refinitiv, firms' website and annual reports, and CEOs' biography.

Results reveal a negative and significant relation between CEO birth order and entrepreneurial firm's CSR behavior, implying that the economic channel (risk preferences) dominates over the social one (other regarding preferences). Put differently, an early born CEO, because of her/his higher risk aversion, adopts more comprehensive CSR practices than a later born CEO does as per her/his stronger altruism, all other things equal. As for the moderating effects, results confirm a positive and significant moderation of CEO sibship size and a negative and significant moderation of CEO age. In line with the propagation mechanism of the direct effect, these findings corroborate the dominance of the economic channel. These findings contribute to the literature in three main directions. First, we contribute to the debate on entrepreneurship and CSR by using behavioral economics to uncover a new antecedent of entrepreneurial firms' CSR. Second, we add to literature on upper echelons and their individual characteristics by highlighting the importance of birth order with respect to CSR behavior and, by relating evolutionary psychology to management literature, the influence of sibship size and age. Last, given the sample we consider, we contribute to family business literature by highlighting the importance of birth order when it comes to the role of the CEO.

THEORETICAL BACKGROUND AND HYPOTHESIS DEVELOPMENT

Individual Level Antecedents of Corporate Social Responsibility

A key concern in management is whether organizational decision-makers should be focused on matters besides profitability (Mohr et al., 2001). As a result, debates on whether firms have social responsibilities beyond their function in generating wealth (Henderson, 2001) and discussions about the integration of CSR within the firm's competitive strategy have recently started gaining momentum among practitioners. Along with media attention to the concept of 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 since it improves their moral capital (Gamerschlag et al., 2011), and helps them build their reputation within the community of reference (Andersson et al., 2002).

Following two dominant strategic perspectives, it is possible to divide the literature on CSR into two streams: the ethical or moral orientation stream (Driver, 2006; Godfrey & Hatch, 2007), and the economic orientation one (Miller et al., 2020). Stakeholder theory (Godfrey & Hatch, 2007; Kleinrichert, 2008), which contends that stakeholders are strongly tied to the organization, is one example of the ethically oriented approach. According to this theory, CSR is an act of reciprocity based on the firm's responsibility to its stakeholders rather than a market transaction used to achieve underlying corporate goals (Kleinrichert, 2008; Pfeffer, 1994). On the other side, the economic approach relies on the idea that organizations are under pressure from both internal and external parties to take CSR initiatives in order to keep up with constantly evolving expectations about the business and its social obligations (Clark & Hebb, 2004; González & Martínez, 2004). For this reason, some firms engage in CSR on the surface as window dressing, while others integrate CSR into their fundamental business strategies (Weaver et al., 1999). However, research has largely concluded that engaging in CSR behavior is in the firm's best interest as this will eventually lead to obtain a competitive advantage (Godfrey, 2005; McWilliams & Siegel, 2001). The economic perspective therefore offers a strategic foundation for CSR that can be logically connected into and constitute part of a firm's business strategy.

Given that CSR behavior is important for entrepreneurial firms, it is critical to look at the driving factors behind such behavior. Research on CSR has revealed a wide range of antecedents, which can be categorized into (i) firm's instrumental motivation, such as perceived contributions of CSR to firm's legitimacy and competitiveness (Bansal & Roth, 2000), (ii) normative reasons, such as a sense of duty and responsibility, high-order calling for morality, and stewardship (Aguilera et al., 2007; Bansal & Roth, 2000), and (iii) firm-specific factors, such as long-term institutional ownership and stock held by top management (Johnson & Greening, 1999; Neubaum & Zahra, 2006). Among others, the stream of literature on firm-specific factors investigates executives' individual characteristics. Mostly relying on upper echelons theory (Hambrick & Mason, 1984), scholars pointed out that characteristics such as demographics, educational backgrounds, and work experiences are crucial aspects that may have an impact on CSR behavior. Particularly focusing on the CEO – who is the ultimate responsible for firms' strategic decisions and behaviors (Hambrick & Mason, 1984) such as CSR behavior –, the key role of CEO gender (e.g., Huang, 2013), CEO education (e.g., Sun et al., 2021), CEO confidence (e.g., McCarthy et al., 2017), CEO narcissism (e.g., Petrenko et al., 2015), and CEO values (e.g., Chin et al., 2013) have been highlighted among the most recurring factors influencing such behavior.

In our study, we investigate CEO birth order, which has not been addressed with respect to CSR behavior yet is recognized as a significant predictor of behavior in psychology (Steelman, 1985). Birth order highlights the natural difference among siblings that, affecting their early family interactions, may influence both individual and organizational behaviors (Jaskiewicz et al., 2017; Sulloway, 1996). The rationale behind it is based on siblings' strategic competition for parental resources. Later born children are indeed seen to be more laid-back and gregarious, with a desire to be more creative in filling a family niche (Hertwig et al., 2002). The firstborn is thought to be

more responsible and more focused on satisfying the parents, functioning as a role model for the later born children (Grable & Joo, 2004). The relevant psychological literature draws upon evolutionary theory to explain birth order differences in personality (Sulloway, 1996). The rationale is that 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).

A Behavioral Economics Perspective on Birth Order

To investigate the relation between CEO birth order and entrepreneurial firms' CSR behavior, we employ a behavioral economics perspective that allows to examine this relation in light of two fundamental types of preferences – economic and social – that shape both individuals' private and professional decision-making. The relevant theories and empirical evidence suggest that birth order affects economic and social preferences in different ways. Thus, it is unclear *ex ante*, whether birth order overall has a positive or negative relation with the propensity of CEOs to adopt CSR practices in the entrepreneurial firms they lead. Therefore, we develop competing hypotheses about the relation between CEO birth order and entrepreneurial firms' CSR behavior. To obtain a more comprehensive picture of this relation, we then investigate the moderating effects of CEO sibship size and age.

Two behavioral channels: Social and economic preferences

Economic experiments have shown that decision-makers exhibit interest in the material others' well-being (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 own payoff to ensure more equitable outcomes. Most conspicuously, 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 of Engel (2011) reveals that dictators, on average, give away a fraction of 28% of their initial endowment to the receiver.

Formally, this observation 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-makers’ payoff *and* the payoff of the other(s). Fehr and Schmidt (2006) refer to this class of preferences as “social preferences.” Applying the above framework to managerial decision-making implies that CEOs seek to balance their own payoff and the risk associated with it (reflecting the *economic preferences*) as well as the payoff they generate for others by taking socially responsible actions (reflecting their *social preferences*). In the following sections, we discuss how birth order shapes economic and social preferences.

Social preferences

In a seminal meta-study of the evolutionary psychology literature, Sulloway (1995) concludes that birth order has a significant effect on several behavioral domains. His study was informed by the argument that “birth order is the single most obvious factor that makes the shared family environment different for each sibling” (Sulloway, 1995, p. 76), making it a primary candidate to explain sibling variation. Classifying behavior along the Big Five Personality Dimensions (i.e., extraversion, agreeableness, neuroticism, openness, and conscientiousness), he finds evidence for birth order effects for the latter four dimensions. Among these, agreeableness is of primary importance for social preferences (Goldberg (1990) identifies altruism as positive trait-

descriptive and greed as a negative trait-descriptive in the Norman (1967) Taxonomy of trait terms). Sulloway (1995) 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. We thus expect a positive effect of birth order on social preferences.

Some authors have challenged the existence of such relations (for instance, Freese et al., 1999; Rohrer et al., 2015), while 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, results from the empirical literature exhibit 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. Assuming that CEO social preferences affect their managerial decisions, we thus expect later born CEOs feel *more* inclined to make the entrepreneurial firm they lead engage in CSR behavior, as per their higher altruism.

Economic preferences

For the domain of economic preferences – and risk preferences, in particular – the Norman (1967) Taxonomy suggests a primary relevance of neuroticism, listing timidity and insecurity as positive-trait descriptors and poise and self-reliance as negative-trait descriptors.² Sulloway (1995) finds a higher proclivity towards neuroticism among firstborns, which he explains by their seeking to maintain the status-quo of their privileged status. This is also corroborated by Eckstein et al. (2010), who report higher fearfulness in new situations among firstborns. Laterborns, on the other hand, exhibit higher risk tolerance across a variety of decision domains (see, for instance, Jobe et

² In the relevant literature, neuroticism is sometimes also referred to as emotional *instability*. As Norman (1967) describes emotional *stability*, the signs in his taxonomy are reversed.

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). Sulloway and Zweigenhaft (2010) argue that laterborns engage in riskier activities to obtain parental favor by exploring novel alternative paths and to improve their (initially lower) within-group status.

As outlined above, the adoption of CSR behavior acts as a risk-mitigating strategy. Assuming that CEOs' economic preferences affect their managerial decisions, we thus expect later born CEOs to feel *less* inclined to make the entrepreneurial firm they lead engage in CSR behavior, as per their lower risk aversion.

Main hypotheses

Combining the above theoretical derivations, we end up with three competing hypotheses for the relation between CEO birth order and the CSR behavior of the entrepreneurial firm s/he leads, which follow from the differential effect of birth order on economic and social preferences.

Hypothesis H_{1A}. *The economic channel of the birth order effect dominates the social channel. In this case, CEO birth order negatively relates to the entrepreneurial firm's CSR behavior.*

Hypothesis H_{1B}. *The social channel of the birth order effect dominates the economic channel. In this case, CEO birth order positively relates to the entrepreneurial firm's CSR behavior.*

Hypothesis H_{1C}. *The economic and social channel offset each other, or there are no birth order effects on CEO preferences, or there are birth order effects on CEO preferences, but they do not manifest in their CSR-related decision making. In this case, CEO birth order does not relate to the entrepreneurial firm's CSR behavior.*

The Moderating Effect of CEO Sibship Size and Age

When investigating the effects of family-related characteristics on behavioral outcomes, it is vital to account for variables that might bias the resulting estimates, including potential moderating effects. For instance, Zajonc et al. (1979) find that birth order effects in cognitive abilities vary when children grow older, while Ernst and Angst (1983) point out the importance of sibship size. Paulhus et al. (1999) explicitly control for sibship size when evaluating the effects of birth order on personality traits as predicted by Sulloway (1995). They largely confirm the predicted signs, but the results also reveal some variation in the magnitude of the effects across sibship size, hinting at a potential interaction effect of birth order and sibship size. Note that the competing hypotheses formulated above add an extra layer of complexity for the theoretical derivation of interaction effects. We thus first develop hypotheses for the direct effects of CEO sibship size and CEO age, then we derive their theoretical moderating effects on the relation between CEO birth order and the entrepreneurial firm's CSR behavior. As an upside, the additional tests of the direct effects can also be viewed as robustness checks for the presence of the behavioral channels we laid out in the main hypotheses.

CEO sibship size

A potential driver of personality differences due to family size is presented by Kidwell (1981), who argues that larger groups are characterized by a stronger proclivity for structure and authority. Her hypothesis is supported by a positive effect of sibship size on parent punitiveness, and a negative effect on parent supportiveness. Growing up in a more authoritarian and structured environment is likely to favor risk aversion, as it reduces uncertainty and thus the need to adapt to it. This is also in line with the findings of Wang et al. (2009) and Lampi and Nordblom (2013), who report a positive relationship between sibship size and risk aversion. On the other hand, having

more siblings increases the likelihood of facing situations that require sharing, which stimulates higher prosocial orientation (Van Lange et al., 1997). Translated to the present context, the economic and social channel point to the same direction, leading to the following hypothesis for the direct relation between CEO sibship size and entrepreneurial firm's CSR behavior.

Hypothesis H_{2,1A}. *CEO sibship size propagates via the economic and/or the social channel on the adoption of CSR practices. In this case, CEO sibship size positively relates to the entrepreneurial firm's CSR behavior.*

Hypothesis H_{2,1B}. *CEO sibship size propagates neither via the economic nor the social channel on the adoption of CSR practices. In this case, CEO sibship size does not relate to the entrepreneurial firm's CSR behavior.*

A possible moderating effect of CEO sibship size on the relation between CEO birth order and the entrepreneurial firm's CSR behavior can be deduced from Paulhus et al. (1999). While the authors do not explicitly test for it, their results suggest that the effect of birth order on agreeableness reduces for large families. One plausible explanation is that strategies to avoid conflict (that is, being more agreeable) might be less fruitful for laterborns with more siblings. This implies that sibship size negatively moderates the birth order effect on social preferences.

As for risk preferences, the empirical literature does not provide a clear guidance on how the number of siblings might interact with the effect of birth order. Extrapolating the conjecture we laid out above, however, we hypothesize that ever increasing risk-taking would become a less effective – and eventually even dangerous – strategy for laterborns in large families. While laterborns might still take on additional risks to distinguish themselves from their older siblings, we theorize that the birth order effect decreases with sibship size. Importantly, as we derived a *negative* relation between birth order and CSR behavior for the economic channel (via lower risk

aversion), the presumed mitigating effect of sibship size implies that it will act as a *positive* moderator.

Hypothesis H_{2,2A}. *The economic channel is dominant. In this case, CEO sibship size positively moderates the relation between CEO birth order and the entrepreneurial firm's CSR behavior.*

Hypothesis H_{2,2B}. *The social channel is dominant. In this case, CEO sibship size negatively moderates the relation between CEO birth order and the entrepreneurial firm's CSR behavior.*

Hypothesis H_{2,2C}. *The economic and social channels offset each other, or the number of siblings has no effect on the relation between CEO birth order on CSR behavior. In this case, CEO sibship size does not moderate the relation between CEO birth order and the entrepreneurial firm's CSR behavior.*

CEO age

Age has been identified as an important factor in executives' decision-making. Deriving the direct effect of CEO age on the entrepreneurial firm's CSR behavior seems rather straightforward but requires a side remark. As for social preferences, the 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 towards "giving back" to their communities (Fabrizi et al., 2014; McCuddy & Cavin, 2009). Regarding the side remark, one potential confound in this context could be the high preoccupation of younger generations with environmental questions: Gurchiek (2023) find that CSR is particularly important for millennials. However, since most CEOs are born before 1995, we do not expect a generation-driven preference reversal with respect to age (in our sample, the average CEO age is 60 years, with the youngest

CEO being 30 years old). As for economic preferences, the expected effect is equally clear. There is ample empirical evidence that people become more risk averse with age (e.g., Dohmen et al., 2017; Sahm, 2012). Similar to CEO sibship size, the economic and social preferences related to CEO age point to the same direction, leading to the following hypotheses for the direct relation between CEO age and the entrepreneurial firm's CSR behavior.

Hypothesis H_{3,1A}. *CEO age propagates via the economic and/or the social channel on CSR adoption. In this case, CEO age positively relates to the entrepreneurial firm's CSR behavior.*

Hypothesis H_{3,1B}. *CEO age propagates neither via the economic nor via the social channel on CSR adoption. In this case, CEO age does not relate to entrepreneurial firm's CSR behavior.*

Given the high relevance of age for CEO decision-making, it stands to reason that age also plays a role in how (birth-order dependent) personality traits manifest. To our best knowledge, there are no longitudinal studies on how the effect of birth order on prosociality and risk aversion possibly varies with age. However, recent evidence suggests that birth order effects on personality are longer lasting. For instance, Okada et al. (2021) not only find higher prosocial behavior among laterborns in adolescence, but also significantly larger volumes of the amygdala (which is linked to social life skills) than firstborns. In the context of sustainable consumption, Otterbring et al. (2023) find a positive effect of birth order that remains unchanged when controlling for age. These results are also in line with the evolutionary narrative that laterborns develop differently in various traits to find and occupy niches apart from the territory of the firstborns. We thus assume that birth order effects on prosociality and risk aversion at least do not diminish over time.

As suggested by the literature above, older CEOs take more liberties in their decisions as they become less concerned about career and performance considerations, which presumably allows them act more in accordance with their own preferences and beliefs. This means that the impact of idiosyncratic factors amplifies for older CEOs, i.e., altruistic executives would act out their prosocial inclination in a more pronounced manner, and risk averse CEOs would be more willing to let their executive decisions be guided by their caution.

Taken together, this implies that age amplifies birth order effects on personality. Again, due to the projected difference in sign for the economic and the social channel, we obtain three competing hypotheses for the moderating effect of age.

Hypothesis H_{3,2A}. *The economic channel is dominant. In this case, CEO age positively moderates the relation between CEO birth order and the entrepreneurial firm's CSR behavior.*

Hypothesis H_{3,2B}. *The social channel is dominant. In this case, CEO age negatively moderates the relation between CEO birth order and the entrepreneurial firm's CSR behavior.*

Hypothesis H_{3,2C}. *The economic and social channel offset each other, or age has no effect on the relation between CEO birth order on CSR behavior. In this case, CEO age does not moderate the relation between CEO birth order and the entrepreneurial firm's CSR behavior.*

Figure 1 provides a synthesis of the hypotheses.

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METHODS

Data and Sample

To test our predictions about the relation between CEO birth order and the entrepreneurial firm's CSR behavior, and the moderating effect of CEO sibship size and CEO age, we consider family firms as a testbed. Besides being the most ubiquitous type of entrepreneurial firm worldwide (e.g., Casillas & Acedo, 2007; Shanker & Astrachan, 1996), family firms offer an ideal context to test our hypotheses. First, this kind of entrepreneurial firm experiences the peculiar coexistence of economic and noneconomic goals – i.e., profit maximization and preservation of socioemotional wealth – that distinguishes them from nonfamily counterparts (e.g., Gomez-Mejia et al., 2007). In this setting, CEOs have thus the possibility to eventually express their social preferences at their full. Second, in some way, birth order has been – even between the lines – at the core of academic discussion about family business intergenerational succession; specifically, the majority of the works in this realm pointed towards (male) primogeniture as the predominant form of succession (Calabrò et al., 2018). However, research argues that inflexibly adhering to this principle can lead to suboptimal choices (Ayres, 1990), or that current leaders consider birth order as only marginally relevant when considering potential successors (Chrisman et al., 1998). It becomes thus natural to investigate CEO birth order in this peculiar context. Moreover, family firms appear as an ideal context where to study CSR given the two pillars they have in common: a long-term perspective and the willingness to invest in a better world for future generations (Brigham et al., 2014). CSR behavior is indeed based on the assumption that working towards the longer-term benefit of organizational stakeholders allows to increase the longevity of the business (Porter & Kramer, 2006).

To define our sample of family firms, 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 case of private firms, or 30% of the voting rights, in 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 years³ old (Family Capital, 2020). Starting from this list, we collected data at the CEO and the firm level. Concerning the former, we manually coded data from the CEOs' biographies published online⁴, considering the individuals who led the 750 top family businesses in the period 2015-2022; the information we recorded include CEOs' names and birth dates, as well as names and birth dates of their siblings, if any. At the firm level, we obtained information from two secondary sources of information: 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. Finally, when possible, we supplemented missing data from online sources such as firm websites and annual reports. Based on this protocol, our final sample counts 88 firms with 424 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 4.8.

Variables Description

Concerning our dependent variable and mimicking prior studies, we used *ESG score* as a proxy to capture entrepreneurial 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

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).

firm's overall performance in CSR. Specifically, it is a composite measure of the environmental (i.e., energy use, CO2 emissions, water and waste recycled), social (i.e., employee turnover, training hours, women 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 company 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 companies performing worse than the current one, the number of companies with the same value and the number of companies 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 CEOs were born; therefore, a first-born 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 both the individual and firm level. At the individual level, we considered the dummy variables *Female CEO* and *Family CEO*. *Female CEO* is equal to one in case of a female individual being the CEO, zero in case of a male individual; we included this control

variable based on the assumption that women are more prosocial-oriented (Chen et al., 2020). *Family CEO* is equal to one in case the family firm is led by a member of the family (or group of families) owning the firm (Rovelli et al., 2022).

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 value 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 dataset or firm's 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. Finally, all models include year fixed effects (*Year dummies*) to account for potential unobserved heterogeneity across different time periods (Campbell et al., 2019).

RESULTS

--- Insert Table 1 about here ---

Table 1 reports the descriptive statistics and correlations of the variables used to test our hypotheses. On average, the CEOs in our sample are second born, have two siblings, and are 60 years old. Looking at our main variables, it is possible to notice a positive, although not significant, correlation between *CEO birth order* and *ESG score* ($\rho = 0.039$, $p\text{-value} = 0.427$). *ESG score* is positively and significantly correlated with *CEO number of siblings* ($\rho = 0.171$, $p\text{-value} = 0.000$) and negatively and significantly correlated with *CEO age* ($\rho = -0.126$, $p\text{-value} = 0.010$).

--- Insert Table 2 about here ---

Following a Hausman test (chi-squared = 30.83, $p = 0.030$), we have applied a fixed effects regression analysis (Greene, 2011) to test our hypotheses (Stata command: *xtreg*). Results of the estimates are presented in Table 2. Model 1 is the baseline model with only control variables. In Model 2, we added the independent variable *CEO birth order* as well as 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 ($\beta = -13.178$, $p = 0.000$), providing evidence for our hypothesis H_{1,A} (and rejecting the competing hypotheses H_{1B} and H_{1C}). This result indicates that CEO birth order relates with the entrepreneurial firm's CSR behavior, and it does so primarily via the economic channel – i.e., the higher risk aversion of earlier born CEOs makes them more inclined to adopt CSR practices⁵. Model 2 also shows a positive and significant relation between the *ESG score* and both the *CEO number of siblings* ($\beta = 9.123$, $p = 0.010$) and *CEO age* ($\beta = 0.542$, $p = 0.001$). Hypotheses H_{2,1A} and H_{3,1A} are thus both confirmed by our estimates (while Hypotheses H_{2,1B} and H_{3,1B} are rejected), indicating that both an increase in the number of siblings and an increase in the age of the CEO are associated with an increase in the CSR behavior of the entrepreneurial firm s/he leads.

In Models 3, 4 and 5, we tested the remaining hypotheses about the moderating effect of CEO sibship size and CEO age. First, we included the moderating effects one by one in Model 3 and Model 4, respectively, and then we included both of them in one comprehensive model (Model 5). Model 3 shows a positive and significant moderating effect of *CEO number of siblings* on the relation between *CEO birth order* and *ESG score* ($\beta = 10.437$, $p = 0.000$). This result provides

⁵ Stated in full, the implication of our result reads as follows: the stronger inclination of earlier born CEOs to engage in CSR behavior as a risk-mitigating strategy trumps over the (potential) stronger inclination of later born CEOs to engage in CSR behavior as an expression of their higher altruism.

support for hypothesis H_{2,2A} (and thus evidence against the competing hypothesis H_{2,2B} and H_{2,2C}). Importantly, as with the first set of hypotheses, our data point towards dominance of the economic channel over the social channel.

Figure 2 illustrates the Average Marginal Effects (AME) of *CEO birth order* at the different levels of *CEO number of siblings*. It clearly shows that the negative (and significant) relation between *CEO birth order* and the CSR behavior of the entrepreneurial firm s/he leads becomes less negative with the number of CEO's siblings increasing. We hypothesized that having more siblings would have a dampening effect on the impact of birth order on sibling differentiation strategies. According to the conjecture that the economic channel is dominant, the negative relationship between CEO birth order and risk aversion (and thus CSR behavior) is positively moderated by CEO sibship size.

--- Insert Figure 2 about here ---

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 relation between *CEO birth order* and *ESG score* ($\beta = -0.801$, $p = 0.000$). This result confirms hypothesis H_{3,2A}, while providing evidence against hypotheses H_{3,2B} and H_{3,2C}. Once more, this suggests that the relation between CEO birth order and the CSR behavior of the entrepreneurial firm's s/he leads is governed by economic preferences, which prevail over social ones. The derivation of hypothesis H_{3,2A} was based on the conjecture that older CEOs are more determined to act in accordance with their own preferences and viewpoints than younger ones, implying that age amplifies potential birth order effects in the context of CSR behavior. As for the other hypotheses, our data suggest that the economic channel, which manifests in a negative relationship between CEO birth order and CSR behavior (laterborn CEOs are more risk tolerant and hence less inclined to adopt risk-mitigating

CSR behavior), is dominant. The evidence for hypothesis H_{3,2A} corroborates our prior results, as age seems to act as a catalyst for the negative effect of birth order on CSR behavior.

Figure 3 reports the AME of *CEO birth order* at the different levels of *CEO age*. The figure shows that the relation between *CEO birth order* and *ESG score* is significant only starting from a value of *CEO age* equal to 47 years; from this value on, the negative relation becomes more negative, the more *CEO age* increases. Finally, Model 5, which includes both the interaction terms, confirms these results.

--- Insert Figure 3 about here ---

Robustness Checks

We performed several additional analyses to test the robustness of our findings (results are reported in the Online Appendix). First, our analyses build on the argument that social and economic preferences develop through the early childhood interactions with parents and siblings. In our sample, we have included both only child CEOs and CEOs with siblings, which is based on the premise that the behavior of only child CEOs is similar to the one of first born CEOs. However, it is possible that only child CEOs are distinct in their behavior compared to CEOs with siblings. We therefore re-run our analyses by excluding only child CEOs from the sample. Results are consistent with our findings (Table A in the Online Appendix).

Second, given that the *ESG score* captures 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 score* – one at a time. Results remain consistent with our overall findings across the three individual dimensions (Table B in the Online Appendix).

Fourth, we tested hypotheses using a random effects model. In this case, we found confirmation for the direct relations of *CEO birth order*, *CEO number of siblings*, and *CEO age* with *ESG score*, as well as for the moderating effect of *CEO age*; however, the moderating effect of *CEO number of siblings* is no longer significant (Table C in the Online Appendix).

DISCUSSION

CSR is considered a key strategic direction for entrepreneurial firms (Aguilera et al., 2007; Bansal & Roth, 2000). Indeed, engaging in CSR behavior helps entrepreneurial firms mitigate risk and gain a competitive edge while building a strong reputation and increasing their moral capital (Gamerschlag et al., 2011). In our study, we attempted to enrich the ongoing conversation surrounding the role of antecedents of CSR behavior (Aguilera et al., 2007) by addressing CEO birth order, an unexplored individual characteristic that is considered a critical determinant of individuals' behavior in the psychology literature (Steelman, 1985).

In so doing, we drew on insights from behavioral economics and evolutionary psychology. This novel theoretical approach enabled us to interpret how early family experiences shaped by birth order have impact on strategic decision making and the management of competing goals that CEOs must face in their everyday lives. We derived competing hypotheses concerning the relation between CEO birth order and entrepreneurial firms' CSR behavior, based on the premise that the CEO's economic and social preferences are significant factors that also shape their managerial decisions. In an extension of our theory, we then investigate the moderating effect of CEO sibship size and age.

Our estimates based on an unbalanced panel dataset of 424 firm-year observations from 88 family firms reveal a negative and significant relation between CEO birth order and the

entrepreneurial firm's CSR behavior. This result supports the hypothesis that later born CEOs are less inclined to adopt CSR behavior as a risk-mitigating device, which we attribute to the lower risk aversion later borns exhibit in comparison to earlier borns. Adding to this, we also find that CEO sibship size and CEO age positively relate to entrepreneurial firm's CSR behavior. Both results are in accordance with our theoretical projections for the economic channel, suggesting that a more authoritarian and structured upbringing in larger families, as well as older age, promote risk-aversion. The two factors also moderate the relation between CEO birth order and the entrepreneurial firm's CSR behavior, positively and negatively respectively. Our results suggest that the negative effect of birth order on the adoption of CSR practices is less pronounced for CEOs who have more siblings, as increasing risk tolerance becomes a less and less effective strategy for later born children in such circumstances. Age, on the other hand, seems to act as a catalyst for this effect, which we attribute to older CEOs being more inclined to act in accordance with their preferences. Taken together, all our results provide consistent support for the hypothesis that the propagation of CEO birth order effects on the entrepreneurial firm's CSR behavior predominantly propagate along the channel of economic (in this context, that is, risk) preferences.

Contributions and Theoretical Implications

Our theorizing and results have a number of implications. First, we contribute to the literature on entrepreneurship and CSR. Specifically, we add to the debate on the antecedents of entrepreneurial firms' CSR by introducing CEO birth order as a new firm-specific factor. In doing so, we extend the strand of literature analyzing 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, by introducing the idea that the family environment where CEOs grow up also shapes their economic and social

preferences that later affect their strategic decisions. As such, our study's findings lead scholars to view the family environment of a firm's leader as an important driver shaping entrepreneurial firms' behaviors. Thus, our study paves the way for a new field of application for behavioral economics, using it as a lens to explain what drives entrepreneurial firms' decisions pertaining CSR behavior in a situation where the CEO, who is the ultimate responsible for these decisions, has to balance a broader set of preferences (among others, economic vs social).

Second, we advance research on upper echelons (specifically, the CEO) and their individual characteristics by providing evidence of the importance of CEO birth order for entrepreneurial firm's CSR behavior. In doing so, we introduce a novel theoretical perspective (drawing from behavioral economics and evolutionary psychology) to investigate birth order and provide evidence of an additional aspect that birth order might influence (i.e., CSR behavior). Moreover, relating evolutionary psychology to management literature, we highlight how other individual characteristics (i.e., sibship size and age) affect the relation between CEO birth order and the preference of the CEO towards one or the other competing preferences. In this way, we develop new theory regarding the moderators of birth order's effects. Although some researchers have hypothesized that birth order effects depend on moderating factors (e.g., Sulloway, 1996), prior research on this topic is still scant. Drawing on behavioral economics and evolutionary psychology, we demonstrate that the relation between CEO birth order and CSR behavior is influenced by CEO sibship size and age. The consistency of our results add further support to our theoretical derivations, and contribute a contingency view on the effect of birthorder on CSR behavior.

Finally, by virtue of our sample, we also contribute to the family business literature. In our study, we focus on a characteristic that has received widespread attention in the family business

literature, particularly in the discussion of intergenerational succession. While (male) primogeniture is traditionally the predominant form of succession (Calabrò et al., 2018), inflexibly adhering to this principle and not considering birth order when evaluating potential successors can lead to suboptimal choices (Ayres, 1990; Chrisman et al., 1998). With our study and not least against this background, we shed light on how early life domain experiences captured by the concept of birth order might in fact affect CEO strategic decisions making and, in turn, firm-level outcomes (Campbell et al., 2019). In doing so, our research adds to the conversation on leveraging “family science” to advance the family business literature (Jaskiewicz et al., 2017) by considering the role that the family environment plays in shaping individual characteristics and family firm outcomes.

Limitations and Future Research Directions

Our study is not devoid of limitations, which present promising future research areas. A first set of limitations pertains the empirical setting we considered. As a start, we relied on family firms as an exemplary and representative case of entrepreneurial firms. Although we consider our choice well grounded in the motivations we provided, results cannot be generalized to nonfamily entrepreneurial firms. It would thus be interesting to investigate whether our findings hold also in the contest of nonfamily firms. Second, collecting data useful to test the our study’s hypotheses was not an easy task, and we were able to retrieve the required information just for a subsample of the firms in the 750 top family businesses worldwide. Our results cannot be generalized to all 750 family firms. 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. Third, our dataset covers a relatively short time-period. Although we have used several robustness tests for confirming the validity of our results,

a longer time period would provide further support to our findings, as well as allow additional analyses. For instance, scholars might investigate whether being close in time to a change in leadership affects the relation between CEO birth order and CSR behavior. Indeed, succession in firm leadership is often the source of changes in strategy (Chen et al., 2016). Even though our sample does comprise some cases of succession, a larger time span would allow to more explicitly control for potential confounding effects in this regard.

Moreover, in this study we took into account two specific individual characteristics – i.e., CEO sibship size and CEO age – influencing the relation between CEO birth order and CSR behavior. However, there might be other CEO individual characteristics affecting the CEO's risk-taking propensity. Scholars might therefore investigate whether other factors – such as CEO professional skills, experience and training, personality traits, and salary composition – influence the relation between CEO birth order and the entrepreneurial 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).

Managerial Implications

We believe our study holds important managerial implications. First, it first offers a new reference point for entrepreneurial firms that are concerned with CSR to consider candidates' early family backgrounds when hiring CEOs. Our findings underscore that family circumstances such as birth order and sibship size should be taken into account when choosing CEOs for entrepreneurial firms that are concerned with CSR in order to ensure effective CSR behavior and maintain the firm's sustainable development. Gaining a better insight into an executive's family

background becomes particularly important for family firms, where the CEO is often a member of the owning family, and her/his personality is further influenced by complex dynamics residing at the intersection of the family, ownership and governance systems within the firm.

Second, CEOs should be aware of how their decision-making is affected by their birth order, also in combination with other individual characteristics (i.e., their sibship size and age). For instance, as our results indicate, later born CEOs prioritize economic preferences over social one, while early born CEOs value more social preferences, which in turn is reflected in their decision-making processes and their entrepreneurial firm's CSR behavior. Thus, our findings caution CEOs, when making strategic decisions about CSR, to be aware of the connection between their birth order and CSR behavior.

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FIGURES

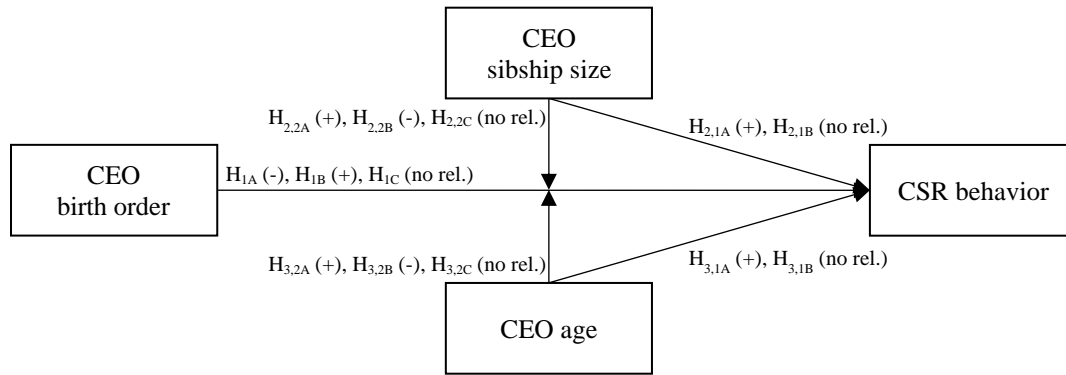


FIGURE 1 Synthesis of the hypotheses

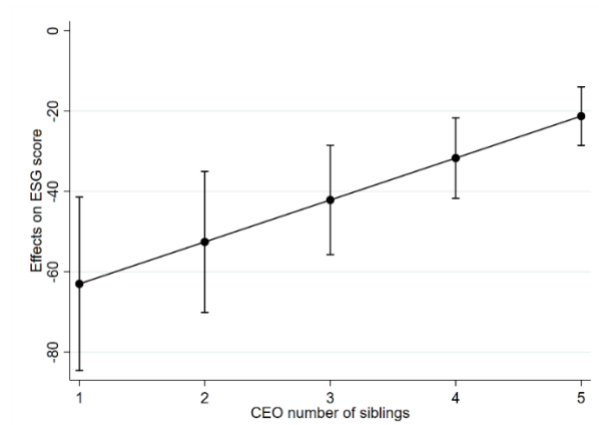


FIGURE 2 Average marginal effects of *CEO birth order* at different levels of *CEO number of siblings* (95% confidence interval)

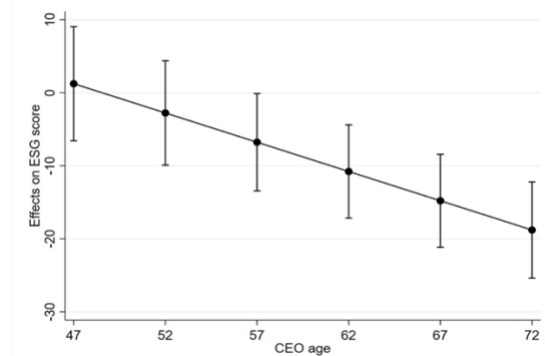


FIGURE 3 Average marginal effects of *CEO birth order* at different levels of *CEO age* (95% confidence interval)

TABLES

TABLE 1 Descriptive statistics

	Mean	SD	Min	Max	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(1) ESG score	47	21	0	95	1											
(2) CEO birth order	2	2	1	13	0.039 (0.427)	1										
(3) CEO number of siblings	2	2	0	12	0.171*** (0.000)	0.673*** (0.000)	1									
(4) CEO age	60	11	34	90	-0.126*** (0.010)	-0.010 (0.831)	0.020 (0.681)	1								
(5) Female CEO	0	0	0	1	0.007 (0.881)	0.024 (0.625)	-0.010 (0.844)	-0.117** (0.016)	1							
(6) Family CEO	1	0	0	1	-0.288*** (0.000)	0.042 (0.385)	-0.039 (0.428)	0.069 (0.155)	-0.023 (0.635)	1						
(7) Family name in firm name	1	0	0	1	-0.274*** (0.000)	0.037 (0.444)	-0.057 (0.245)	0.097** (0.047)	-0.018 (0.716)	0.945*** (0.000)	1					
(8) Firm generation	1	1	0	4	-0.242*** (0.000)	-0.087* (0.074)	0.037 (0.453)	-0.204*** (0.000)	0.062 (0.203)	0.259*** (0.000)	0.263*** (0.000)	1				
(9) Number of board members	11	4	0	21	0.171*** (0.000)	0.127*** (0.009)	0.008 (0.869)	0.042 (0.383)	-0.091* (0.061)	0.086* (0.076)	0.068 (0.164)	-0.095* (0.051)	1			
(10) Firm size (log)	10	1	5	13	0.360*** (0.000)	-0.024 (0.621)	-0.139*** (0.004)	0.120** (0.013)	0.013 (0.792)	-0.227*** (0.000)	-0.212*** (0.000)	-0.434*** (0.000)	0.223*** (0.000)	1		
(11) Firm age (log)	4	1	3	5	0.122** (0.012)	-0.081* (0.097)	-0.048 (0.319)	0.037 (0.443)	-0.035 (0.472)	-0.213*** (0.000)	-0.182*** (0.000)	0.153*** (0.002)	0.148*** (0.002)	0.270*** (0.000)	1	
(12) ROA	7	6	-19	27	0.045 (0.354)	-0.038 (0.436)	0.019 (0.696)	-0.062 (0.202)	0.026 (0.591)	-0.241*** (0.000)	-0.216*** (0.000)	0.102** (0.036)	-0.022 (0.646)	-0.051 (0.292)	-0.013 (0.786)	1

Standard errors 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	-	-13.1783*** (3.4187)	-73.4296*** (13.1389)	38.8834*** (9.0231)	-13.8808 (16.7524)
CEO number of siblings	-	9.1232*** (3.5136)	10.1334*** (3.4074)	18.9293*** (3.6837)	18.4722*** (3.6138)
CEO birth order × CEO number of siblings	-	-	10.4372*** (2.2027)	-	8.0071*** (2.1588)
CEO age	-	0.5421*** (0.1583)	0.8326*** (0.1650)	2.1544*** (0.3008)	2.1747*** (0.2950)
CEO birth order × CEO age	-	-	-	-0.8011*** (0.1296)	-0.7004*** (0.1299)
Female CEO	-5.2238 (6.1621)	15.0006* (7.7716)	39.0801*** (9.0777)	1.5107 (7.6705)	21.6787** (9.2805)
Family CEO	0.2337 (15.1647)	14.1688 (15.2202)	54.6443*** (17.0287)	7.3230 (14.4437)	39.2347** (16.5703)
Family name in firm name	-2.9928 (7.7908)	-3.8081 (7.5586)	-4.1152 (7.3161)	-1.9863 (7.1579)	-2.4508 (7.0192)
Firm generation	-1.4902 (1.0834)	-1.6337 (1.0591)	-1.4813 (1.0255)	-1.5075 (1.0023)	-1.4065 (0.9831)
Number of board members	0.4004 (0.5297)	0.2131 (0.5352)	0.1044 (0.5185)	0.2330 (0.5064)	0.1471 (0.4971)
Firm size	-0.6474 (4.4859)	-1.7591 (4.3686)	-2.3511 (4.2302)	-1.3875 (4.1340)	-1.8884 (4.0555)
Firm age	-25.6841 (31.0145)	-16.3028 (30.3115)	-23.1810 (29.3740)	0.4088 (28.8076)	-6.9677 (28.3148)
ROA	-0.0400 (0.1577)	-0.0242 (0.1531)	0.0292 (0.1486)	0.0224 (0.1451)	0.0576 (0.1426)
Constant	152.3673 (138.2563)	91.1254 (135.0696)	125.8944 (130.9376)	-105.9256 (131.7178)	-54.4935 (129.8872)
Year dummies	YES	YES	YES	YES	YES
Observations	424	424	424	424	424
Number of Rank	88	88	88	88	88
R-squared	0.197	0.252	0.301	0.332	0.360

Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1