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1 INTRODUCTION

Members of the top management team (TMT) have the primary responsibility for defining a firm's strategic decisions and goals as well as for guiding and regulating the actions of middle- and lower-level managers who execute firm strategy (Calori et al., 1994; Hambrick, 2007; Hambrick et al., 2014). The TMT takes deliberate actions toward adjusting the firm's risk following the strategy (i.e. Kor, 2006). However, TMT members coordinate and execute the firm's risk across divisions or functions by following the direction and instructions of the company CEO. For this reason, a growing literature in corporate finance points to the central role of CEO's traits, e.g., age (Belenzon et al., 2019), personality (Cain and McKeon, 2016), gender (Faccio et al., 2016), education (Bhagat et al., 2010), professional experience, e.g., functional background (Rajagopalan and Datta, 1996; Koyuncu et al., 2010), tenure (Im and Cao, 2015), industrial (Hamori and Koyuncu, 2015), life experience e.g., early life (Bernile et al., 2017; Campbell et al., 2019) and behavioural bias, e.g., overconfidence (Malmendier and Tate, 2005) in explaining corporate decision-making. In the context of finance and management literature, understanding, monitoring, and controlling risks implicit in business operations is a major concern, and the CEO is the primary role participating in the process of risk management. Studies have highlighted how various attributes of the CEO influence firm-level risk-taking (Benischke et al., 2019; Bianchi and Mohliver, 2016). Yet literature overlooks the fact that CEO attitude toward risk-taking might be dynamic and subject to change in different stages of life (Cameron et al., 2010; Görlitz and Tamm, 2020).

Firm-level risk has been shown by research to be impacted by off-the-job characteristics and one prominent theme has been family and relatives to members of the top management teams, such as founders and CEOs (Gomez-Mejia et al., 2007; Hossain and Rabarison, 2023). Researchers have throughout the years illustrated that firm-level risk time is influenced by CEO characteristics from outside the workplace. With this study we aim to contribute to this debate, we speculate that children, more so the gender of children will impact the CEO risk-taking behaviour reflected at the firm level risk.

Parenthood, which is a novel cognitive psychology topic, has drawn lots of attention recently. The major responsibility of parents is to protect children from a variety of risks and dangers (Clutton-Brock, 1991). Parents, therefore, become more risk-averse in their decision-making to avoid exposing children to dangerous situations. Previous research demonstrates that people under parenthood make more risk-averse decisions than nonparents (Cameron et al., 2010; Chaulk et al., 2003; Spivey, 2010; Wang et al., 2009; Warner and Cramer, 1995). Risk attitudes evolved throughout CEO's parenthood and associated firm-level risk-taking has never been studied in the corporate finance field or management science field. Therefore, we propose this intriguing and novel research topic.

This study aims to provide evidence that the risk attitudes of a top manager in the finance field are rather dynamic, which should be taken into consideration for future study. In doing so, understand how different stages of CEO parenthood influence, and to what extent, firm-level risk-taking. Furthermore, our data allow us to understand how the sex of the first child further influences CEO risk attitude.

2 THEORY AND HYPOTHESES

CEO parenthood and firm risk

Motivated by the following selected literature in social sciences suggesting that the transition to parenthood has profound effects on risk-taking. In the spirit of Görlitz et al. (2020), men and women experience a considerable increase in risk aversion around the time of first childbirth. Scholars in management and financial research have shown that CEO traits affect firm decision-making. This research has also explored how these traits can alter due to a shock in the CEO's life, e.g. Kliendinst et al. (2022) found that CEO divorce has significant ramifications on firm operation performance. Dahl et al. (2012) investigated how fathering a child affected employee pay negatively, interestingly they found that this negative effect on pay is less when the CEO is fathering a daughter.

- H1: CEOs are expected to experience a considerable increase in risk aversion around the time of first childbirth. Thus, the risks (e.g., leverage, the riskiness of outcomes, volatility of accounting returns) of firms are expected to be lower than before.

CEO children age and firm risk

Given an increase in risk-aversion due to the 'transition' into parenthood, Görlitz et al. (2020) argue that this increase already starts as early as two years before they become parents, and it is largest shortly after childbirth and it disappears when the child becomes older.

- H2: CEOs are expected to gradually decrease risk aversion when their first child becomes older. Thus, the risks of firms are expected to be normal as it was.

CEO child gender and firm risk

Research has shown that parents both mothers and fathers alike tend to engage in more rough play with their sons compared to daughters (Jacklin et al., 1984). In addition, parents of daughters become almost twice as risk-averse as parents of sons (Pogrebna et al., 2018; Hong Chew et al., 2018). Recent research provides evidence that CEOs with daughters influence decision-making at the firm level (Cronqvist and Yu, 2017). We conduct this research to find out the impact of the evolution of risk attitudes of CEOs' parenthood on firm-level risk-taking.

- H3: CEOs are expected to have greater risk aversion in response to learning that the first birth is a daughter.
- H4: Male CEOs are expected to have greater risk aversion in response to learning that the first birth is a daughter, as compared to female CEOs.

3 METHODS

3.1 Related Databases

To analyze the impact of CEO parenthood on firm-level risk, we use the following databases:

For firm-related information, Experian assembles data from financial statements and management information that all limited liability firms in Denmark are required to file with the Danish Business Authority. Firms are required to disclose the value of total assets, as well as operating and net income. While most of the firms in Experian are privately held, external accountants audit firm financials in compliance with Danish corporate law. Critically, for our purposes, Experian includes the unique firm-level identifier issued by the Danish Commerce and Companies Agency (the CVR number), which serves as the firm identifier in all interactions with the Danish authorities. The inclusion of the CVR number allows us to match Experian data with other data sources

We merged the Experian firm-level data with Denmark's Integrated Database for Labor Market Research, (acronym IDA), as the main source of our data. The IDA contains demographic information on all firms, plants, and importantly for this study, all individuals in the Danish economy. We used the IDA to identify the CEO based on employees' occupational ranks and in the case where there is more than one person listed in the most highly ranked category, we assigned the CEO title to the person with the highest salary in this rank. (Dahl et al., 2012).

Our study will encompass all Danish firms to exclude the selection bias. The IDA contains detailed information on the families of all individuals. We used this information to generate our main variables of interest: gender, birth year, and the number of children of the CEO. We also collected information on CEOs' real wages, age, education, marital status, and tenure. At the firm level, we collected information on the firm's profitability (net income/sales, lagged by one year) and size (number of employees, lagged by one year and standardized).

After merging and appending all the databases above here our final sample consists of 419,633 CEO year observations in the period from 2002 to 2016. These include firms where CEO has been identified, and family and children variables were mergeable and we could obtain financial data to calculate the downside risk score for each firm-individual year.

3.2 Risk-taking (dependent variable)

Our theoretical construct of interest is firm-level risk-taking, which reflects the risk behaviour undertaken by the CEO on behalf of the firm. To capture risk at the firm level we calculate a firm-level downside risk for each firm which is a probability-weighted function of below-target performance outcome (Reuer and Leiblein, 2000; Miller and Leiblein, 1996). In that sense reducing downside risk is a means for the CEO to raise firm-level risk aversion (Menezes et al., 1980; Ang et al., 2006).

We measured downside risk in the following way, derived from Reuer and Leiblein (2000):

$$\text{Downside risk, } ROA_j = \sqrt{\frac{1}{5} \sum_{ROA_j < IROA_j} (IROA_j - ROA_j)^2}$$

Long-term debt was measured by taking the debt with maturity beyond 1 year held on each firm's balance sheet. R&D spending was measured by the annual expenditure in a given year and capital expenditure is the firm's spending on plant, equipment, and property, registered by the firms at the end of the reporting year.

4 Summary stats

The data has 419,633 CEO-year observations with 69,549 CEOs, of which around 10% are female CEOs.

Daughters are present in 49.17% of CEO-year observations, while 4.5% of CEO-year observations are without children.

In the period of the data, there are 5,99 instances of birth events for these CEOs. Table 1 below shows summary statistics for our dataset. CEOs on average have 2.4 children, with an even balance of sons and daughters.

Table 1: Summary statistics

Variable	Obs	Mean	Std. dev.	Min	Max
CEO has child	419,633	0.955	0.207	0	1
Children total	419,633	2.417	1.027	0	11
Number of daughters	400,778	1.241	0.915	0	7
Number of sons	400,778	1.290	0.932	0	8
Child daughter (=1)	400,778	0.492	0.500	0	1
Child age	372,966	17.026	10.130	0	73
Birth event	419,633	0.014	0.119	0	1
Female CEO (=1)	400,778	0.077	0.267	0	1
CEO age	419,633	46.915	9.294	16	98
Total wage (log)	419,630	13.538	0.580	6.849	17.823
Years of education (log)	404,319	5.151	0.197	2.773	5.529
Industry manufacturing	419,633	0.226	0.418	0	1
Firm full-time employees	419,633	57.209	258.364	10	23,208

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