



Family Firms and Employee Pension Underfunding: Good Corporate Citizens or Unethical Opportunists?

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Abstract

This study draws upon the behavioral agency model and the concept of socioemotional wealth to investigate how family firms' employee pension underfunding decisions differ from those of non-family firms. We explore how these differences are influenced by financial distress, generational stage, and whether the firm is eponymous. We test our hypotheses using data from 452 US firms over an eleven-year period. Our results suggest that family firms are less likely to underfund pensions, but this effect is attenuated in later generational ownership stages and in non-eponymous firms.

Keywords Family firm · Ethics · Socioemotional wealth · Pension underfunding · BAM

Introduction

Pension funding decisions have a clear ethical dimension, as failure to adequately fund pension assets (which cover future pension liabilities) increases the probability that a firm's employees will not have adequate funds for retirement (Martin et al., 2019). Several researchers and the media have highlighted the solvency of various pension plans as a systemic issue, elevating the significance of decision making regarding pension funding as an important theoretical subject (Anantharaman et al., 2022; Cumbo et al., 2020; Flood, 2020; *The Economist*, 2018, 2020). However, the

antecedents to pension underfunding—and its ethical consequences—remain poorly understood. This gap is problematic at a time when the multi-stakeholder consequences of firm decision making are in the spotlight (Harrison et al., 2020). One important driver of ethical decision making is the role of the dominant owner, with family ownership in particular receiving much attention in recent years (Blodgett et al., 2011; Duh et al., 2010; Payne et al., 2011).

Family firms are the most prominent type of organization worldwide (Morck & Yeung, 2003). Family control extends to 44% of publicly listed firms in Europe (Faccio & Lang, 2002) and 33% of the S&P 500 in the US (Anderson & Reeb, 2003). A review of the family firm literature shows an ongoing and unresolved debate on whether family businesses are more concerned than their non-family counterparts about the well-being of employees or other non-family stakeholders. For instance, Berrone et al. (2010) argue that family firms are more likely to invest in external relationships. However, there is evidence elsewhere that family owners may opportunistically expropriate from non-family stakeholders (Fan & Wong, 2002; Schulze et al., 2001) or impose costs on non-family shareholders and external investors through information asymmetry (for instance, by managing earnings; Stockmans et al., 2010).

There is some evidence that family businesses offer higher job security (Gómez-Mejía et al., 2023a; Stavrou et al., 2007), are more sensitive to employees' quality of life (Cennamo et al., 2012), promote employees' involvement and long-term work relations (Kang & Kim, 2014),

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develop an inclusive work culture (Miller et al., 2008), support employees through a “community logic” (Christensen-Salem et al., 2021), and involve employees in CSR efforts (Akpınar et al., 2008). However, there is also evidence to the contrary, with findings suggesting that family firms offer lower compensation (Block et al., 2015; Neckebrouck et al., 2018), invest less in training (Neckebrouck et al., 2018), and adopt unfair performance appraisal systems that fail to nurture internal non-family stakeholders (Barnett & Kellermanns, 2006; Chua et al., 2009; Cruz et al., 2014; Fiegener et al., 1994).

Choices regarding funding of pension assets inherently involve ethical concerns because they are likely to affect employees’ well-being. We focus our study exclusively on defined benefit programs, as these schemes are solely managed by the employer (Rauh et al., 2013). A company’s decision to invest less in pension funds increases the risk that employees will not receive the pensions they are entitled to (Rauh, 2006). We argue that pension underfunding threatens family owners’ reputations—a dimension of family socioemotional wealth (SEW) (Berrone et al., 2020; Gómez-Mejía & Herrero, 2022)—because the family firm can be perceived as unfairly transferring risk to employees; and Perez and Del Bosque (2015) have found that unethical behavior will be penalized by customers and society.

We explore heterogeneity in ethical orientations among family firms by examining the roles of financial distress, family generation, and eponymous naming (i.e., naming firms after their founders) in shaping family firm pension funding decisions. Anantharaman and Lee (2014) have argued that financial distress drives firms to shift risks. Berrone et al. (2010) have argued that family generational involvement shapes the importance of the firm’s SEW to family members, which in turn might influence their ethical choices. And eponymous names can create a strong association between the company and its founder, adding a stronger personal touch and deeper values that might affect the firm’s pension funding.

Our study contributes to the business ethics literature and the family firm literature by advancing knowledge regarding ethical decision making by family owners (e.g., Long & Mathews, 2011; Martin et al., 2016a; Mitchell et al., 2011). First, we find an alignment between the interests of family principals and their employees (in the context of pension underfunding): the family firm advances employee interests—thereby preserving SEW derived from family reputation—even though external borrowing costs more than borrowing from employee pension funds. This finding challenges the view that family firms prioritize financial goals when SEW and financial goals are in tension (cf. Chrisman & Patel, 2012).

Second, we theoretically disaggregate the role of various SEW dimensions in influencing ethical decision making.

Berrone et al. (2010) argue that family principals attempt to preserve five dimensions of SEW: family control and influence (concern with ownership), family members’ identification with the firm (concern for image), binding social ties (concern for relationships with the community), emotional attachment of family members to the firm, and the need for dynastic succession (renewal of family bonds). Our findings suggest that family owners prioritize family reputation and social capital, potentially at the cost of dynastic succession (Berrone et al., 2012; Gómez-Mejía & Herrero, 2022). Lower pension underfunding implies greater reliance on external debt, increasing the risk that the firm will not survive long enough to be passed to the next generation. Hence, our findings suggest that family firms are weighing costs and benefits of the different dimensions of SEW when they make decisions that have ethical implications. Our moderating hypotheses also allow us to advance a nascent literature that has explored how different types of family firms make different choices, with differing ethical ramifications.

Theoretical Framework and Hypothesis Development

Family Firms, Ethics, and Employees

Family firms are generally found to have a stronger ethical focus than non-family firms (Vazquez, 2018). This difference is evident in ethical core values (Duh et al., 2010), commitment to customers (Blodgett et al., 2011), and virtue orientation (Payne et al., 2011). However, family firms are also likely to differ in their ethical orientation. Degree of family involvement and identification with the organization are likely to vary across family firms (Berrone et al., 2010; Gómez-Mejía & Herrero, 2022). Growth may dilute SEW (Gómez-Mejía et al., 2011) and attenuate the stronger ethical position of the family firm (Martin et al., 2016a). Stockmans et al. (2010) attribute ethical differences among family firms also to differences in founder involvement. Debicki et al. (2016) offer a measure of SEW importance based on family prominence, continuity, and materialistic values. Examining differences in family firms—including differences in ethical orientation—requires deconstructing SEW into various dimensions (Miller & Le-Breton Miller, 2014; Schulze & Kellermanns, 2015). Martin et al. (2016a) assume that family reputation and social capital are the key socioemotional drivers of a stronger ethical stance.

Much research on family firm behaviors has focused on altruism, which can be a double-edged sword (Marques et al., 2014). On the one hand, altruism toward family members can advantage them at the expense of other firm stakeholders (Schulze et al., 2003). However, altruism can also place the firm’s objectives ahead of the interests of family

members (Zahra, 2003). Kellermanns et al. (2012) have argued that SEW can be divided into negatively and positively valenced dimensions; the negative dimensions reduce proactive stakeholder engagement, and it is difficult to assess ex-ante which tendency is more likely to exceed the other.

Evidence suggests that family firms recognize that their workers are important and embody an integral part of the firm's long-term vitality (Hoopes & Miller, 2006; Le Breton-Miller & Miller, 2006). However, scholars examining how family firms treat their workers show a mixed picture, with some arguing that family businesses treat employees better than non-family firms (Cennamo et al., 2012; Kang & Kim, 2014; Sanchez-Bueno et al., 2020; Stavrou et al., 2007), while others suggest the opposite (Block et al., 2015; Chua et al., 2009; Cruz et al., 2014; Fiegener et al., 1994). For instance, Cruz et al. (2014) demonstrate that family firms invest less in internal CSR practices (with an employee dimension) than do non-family firms. This behavior makes the implications of family ownership for employees still more ambiguous (Zientara, 2017).

Statistical analyses based on proxies, such as change in employment (e.g., Gómez-Mejía et al., 2023a, 2023c; Stavrou et al., 2007), wages (Block et al., 2015), off-site training (Neckebrouck et al., 2018), and performance attributions based on quantitative data (Gómez-Mejía et al., 2001), provide some understanding of how family firms manage their relationship with their workers. However, these studies scrutinize management practices that are readily observable by employees and exert a discernible influence on their current well-being. For example, employees are likely to notice dismissals in their workplace, can judge whether they receive enough training, and notice whether the company meets job standard and security regulations. But much of what transpires in employment relations is not so easily captured through these “observable” quantitative indicators.

We propose that a key indicator of family firms' concern about employee well-being is how they manage the employee pension fund. Pension underfunding is much harder for employees to figure out, even if they are highly educated. In the following section, we provide background on how the pension system works in the USA and draw on the behavioral agency and SEW literatures to investigate pension funding decisions in family firms.

Employee Pensions and Underfunding

Defined benefit pension plans have been commonly offered to employees over the past decades in many countries, particularly in the United States, where there are more than 26,000 private defined benefit plans (CNN Money, 2020). In these plans, the employer (company) has agency to set aside the money for employees' retirement (Rauh et al., 2013). The payment received by retirees is related to the length

of employment, with long service rewarded by higher payments. Promised payments are determined by factors such as end-of-career salary or career-average salary.

In the United States, private defined benefit plans are partially insured by the Pension Benefit Guarantee Corporation (PBGC). If a company goes out of business or bankrupt, the PBGC assumes the pension obligation, with a statutorily mandated annual cap of \$64,428/year (PBGC guidelines 2017). However, this insurance coverage depends on the PBGC's solvency, which is predicted to be a significant problem in years ahead (GAO, 2017). If the PBGC is unable to cover the loss, employees will lose their pensions.

At a minimum, if their firm goes bankrupt and their annual defined benefit plan exceeded the maximum, employees incur losses. To minimize the PBGC's liability in the event of bankruptcies, employers must hold assets worth 90% of estimated pension liabilities at any point in time. If a firm's pension assets are greater than the 90% threshold, further contributions to fund pension assets are not compulsory (Rauh, 2009). But below the 90% funding level, “catch-up” contributions to pension assets are required by law (Anantharaman & Lee, 2014): firms must deposit 13.75–30% of the deficit into the pension assets, and the residual shortfall is amortized over 3 to 5 years (cf. Pension Protection Act of 1987). However, in the wake of the financial crisis, intense corporate lobbying led to a series of congressional measures delaying the law's implementation, so that in recent years employers have not only delayed depositing funds to cover deficits but also postponed contributions to their company pension plans (*The Economist*, 2020). This is worrisome because the way companies fund (top-up) the employee pension plan is vital for ensuring that employees actually receive their pensions (Martin et al., 2019; Rauh, 2006). Good management of the pension fund today will benefit retirees tomorrow.

Pension Underfunding

Pension underfunding occurs when the firm's pension liabilities are higher than its pension assets. An underfunded pension plan suggests that the focal firm is electing to invest in other activities such as working capital, capital assets, or acquisitions (Rauh, 2006). In essence, by borrowing from employees (Martin et al., 2019; Rauh, 2006), the firm avoids having to secure external debt and/or use equity markets for the funds necessary to operate or grow the business. It thus shifts risk to the employees. While existing pension assets cannot be diverted to other uses, if the firm's pension liabilities are at least 90% covered, it can avoid directing additional funds to top-up pension assets. Employees are unlikely to be aware of such implicit borrowing, unlike cuts to other inducements such as salary and benefits, training programs, or promotion systems. Pension underfunding below 90%

has been recognized to possess an ethical dimension, as it imposes potential risk on employees in exchange for low-cost internal capital to fund the firm (Martin et al., 2019).

Socioemotional Wealth and Pension Underfunding

Family firms aim to preserve their SEW, possibly to the detriment of economic outcomes (Gómez-Mejía et al., 2007, 2011, 2023a, 2023c). The literature exploring family SEW combines the concept of loss aversion from prospect theory (Kahneman & Tversky, 1979) and the behavioral agency model (BAM) with that of non-financial (or affect-related) utility in family firm decision making. The BAM proposes that agent risk bearing and risk taking are negatively related: agents (1) estimate their prospective losses—their risk bearing, or wealth-at-risk—when making decisions with uncertain outcomes and (2) are increasingly motivated to avoid losses as their risk bearing increases (Gómez-Mejía et al., 2000; Wiseman & Gómez-Mejía, 1998; Wiseman et al., 2000).

The BAM suggests that family firms will be averse to losses of non-financial or socioemotional utility. That is, family firms' strategic decisions will aim to preserve SEW rather than exclusively to accumulate financial wealth (Gómez-Mejía et al., 2007, 2011). The family firm literature suggests that family firms are unique in having this additional kind of risk bearing, over and above the financial risk bearing they share with non-family firms.

Underfunding employee pensions can damage the family reputation if the underfunding is revealed publicly or leads to employees not receiving benefits they are contractually entitled to. Damaged reputation will affect not only the firm itself but also the image of family members, as they are strongly identified with their firm (Berrone et al., 2012). Stakeholders such as customers, partners, and the community might condemn and disassociate from the family if it is perceived as taking advantage of employees.

On the other hand, pension underfunding can reinforce family control and ownership. By underfunding pensions, family businesses reduce the risks of losing firm control to external financiers. Indeed, research has found that family firms are less likely than non-family firms to rely on external financing because they fear dilution of family control (Gómez-Mejía et al., 2010). Besides, using internal funds lowers firm risk and the cost of capital, thereby improving profitability and firm longevity (Rauh, 2006)—and with it, the chance of family succession.

Prospect theory proposes that potential losses are weighed more heavily in decision making; prospective gains need to be at least twice the value of prospective losses for individuals to proceed with a gamble (Kuhberger, 1998). Within the BAM literature, Gómez-Mejía et al. (2014, 2018a) have argued that decision-makers in family firms

weigh prospective gains, financial and socioemotional, against prospective losses when deciding whether to proceed with investments that have uncertain payoffs. However, as Tversky and Kahneman (1992) and Martin et al. (2016b) have argued, the losses are weighed more heavily because of their stronger emotional impact if they are realized. This suggests that prospective losses due to reputational damage or damaged social ties should make family firms more likely to fund pensions:

Hypothesis 1 Family control is likely to be negatively related to pension underfunding.

We next ask what other factors might affect the relationship between family firms and pension underfunding.

Financial Distress

Family firm owners face catastrophic loss of SEW if the firm ceases to exist. Financial distress jeopardizes the non-economic benefits derived from ties between the firm and its stakeholders (Berrone et al., 2012). Gómez-Mejía et al. (2007) propose that when both financial and socioemotional wealth are at stake, family members are willing to take more risks (Gómez-Mejía et al., 2007) to protect the family firm and family welfare (Gómez-Mejía et al., 2023a, 2023c).

Greater financial distress makes prospective financial and socioemotional losses far more salient in the pension underfunding decision. If funds are diverted from pension funds to finance family firm needs, and if this makes the difference between firm failure and survival, the family owners stand to receive substantial gains. Hence, we propose that when family firms approach distress, they act more like non-family firms, lessening differences in pension underfunding (Chrisman & Patel, 2012):

Hypothesis 2 Financial distress is likely to attenuate the negative relationship between family control and pension underfunding.

Family Generational Stage

Several studies have highlighted disparities in management styles and decision-making processes among different generations within family firms (e.g., Bettinelli et al., 2017; Bjornberg & Nicholson, 2012; Miller et al., 2007; Sonfield & Lussier, 2004). These disparities suggest that the extent of employee pension underfunding may vary depending on whether the firm is led by its founder or by someone in a subsequent generation. Empirical evidence suggests that the significance attributed to non-economic objectives diminishes as family firms transition to later generations (e.g., Gómez-Mejía et al., 2007, 2011). First-generation family members share values and goals with the firm's founders

(Eddleston et al., 2013; Le Breton-Miller & Miller, 2013; Sonfield & Lussier, 2004), and they are likelier to pursue long-term objectives and aspire to pass on a robust business to future generations (Gómez-Mejía et al., 2007). They also perceive their personal image to be closely intertwined with that of the organization, so they demonstrate greater loss aversion when making strategic decisions that could damage the family's reputation. Le Breton-Miller and Miller (2013) suggest that such identification with the firm tends to weaken in subsequent generations; similarly, Gómez-Mejía et al. (2007) propose that later generations show less loyalty toward the firm and toward its various stakeholders.

Drawing upon the logic above, we posit that first-generation family decision-makers are more sensitive than later generations to prospective SEW losses related to reputation and social ties from a failure to fund employee pensions adequately:

Hypothesis 3 The negative relationship between family control and pension underfunding is likely to be attenuated when the family business is managed by later generations.

Eponymous Family Firms

Eponymous firms—those that bear the name of their owners—are more profitable (Belenzon et al., 2017), report a higher quality of financial information (Minichilli et al., 2022), and have a stronger propensity for dynastic succession (Bach & Serrano-Velarde, 2015). Researchers reason that eponymy reflects an intimate tie between the family's name and the firm, which induces family owners to care more about its reputation (e.g., Deephouse & Jaskiewicz, 2013; Lange et al., 2015).

Eponymy is also likely to drive external and non-family stakeholders to perceive the firm's failure as a failure of the family itself (Belenzon et al., 2017). Hence, we posit that the socioemotional losses associated with reputation and damaged social relationships experienced by family owners are likely to be greater in eponymous family firms. Said formally

Hypothesis 4 The negative relationship between family control and pension underfunding is likely to be stronger for eponymous family firms.

Methods

Sample

To test our hypotheses, we conducted an empirical analysis merging data on publicly traded US firms from four sources. We began with the entire population of US firms from the NRG Metrics Family Firms dataset, a comprehensive and

specialized collection of data of family and non-family firms, which has undergone rigorous validation and has been recognized and cited in scholarly publications across the fields of management and finance (Bothello et al., 2023; Delis et al., 2019; Pinelli et al., 2023). From this dataset, we retrieved information related to firm ownership and family involvement, and corporate board composition. Next, we collected company-related data, including balance sheet and income statement information from Compustat, and information pertaining to pension assets and liabilities from Compustat's "Pension Annual" database. Details regarding executives and their compensation came from Execucomp, and CSR scores from the Refinitiv ASSET4 database. Owing to the limitations of our primary source, the NRG Metrics database, our study period covers the years 2007–2017 (inclusively). Following previous research investigating pension funding (Martin et al., 2019), we incorporated data from all available industries. Our final merged sample consists of 1511 firm-year observations spanning 11 years, representing 452 unique firms. Among these, approximately, 16% are classified as family firms.

Dependent Variable

Pension underfunding. We focus on defined benefit pensions because they involve discretionary funding decisions. Pension assets average \$2.4 billion in our sample (compared to median total assets of \$3.6 billion), highlighting the empirical significance of defined benefit pension plans. We calculated pension underfunding using end-of-fiscal-year reported values of pension liabilities¹ and fair value of pension assets² (Anantharaman & Lee, 2014; Martin et al., 2019). The formula applied to calculate pension underfunding was as follows: $Pension\ underfunding = (Pension\ liabilities - Fair\ value\ of\ pension\ assets) / Pension\ liabilities$. Therefore, positive values mean that the pension is underfunded.

Independent Variables

Researchers have operationalized the variable of interest, *family firm*, in various ways (Gómez-Mejía & Herrero, 2022; Gómez-Mejía et al., 2011). In alignment with previous studies, we indicate family firm status with a dummy variable taking the value of one when the family holds a significant controlling stake > 20% and zero otherwise. In robustness tests, we employ two alternative definitions: the presence of at least one family member as director or blockholder (*family*

¹ Pension liabilities are defined as the company's pension assets minus the projected benefit obligations.

² The fair pension asset corresponds to the company pension plan assets.

involvement), and the presence of the founder or other family members as officers, directors, and equity owners above a 5% threshold (*family involvement and ownership*).

We also examine the influence of moderating variables. *Firm in second generation or beyond* is represented by a dummy variable indicating the involvement of descendants or family members (from the second generation onwards) as CEO, directors, officers, or large shareholders. To construct a dummy variable for *eponymous firms*, which takes the value of one when the firm carries the founder's name and zero otherwise, we compared family names and firm names using company websites, proxy statements (DEF-14A), and annual reports.

To capture *financial distress*, a key consideration in our analysis, we use the inverse Altman Z-score, a metric commonly employed in strategic management research (Chirico et al., 2019; Dowell et al., 2011). Higher values indicate greater financial difficulties.

Control Variables

To capture the firm's access to capital markets we use *firm size*, measured as sales and book-to-market value (Anantharaman & Lee, 2014). To account for the reduction in estimated pension liabilities, we incorporate the *pension discount rate* (Amir & Gordon, 1996). *Plan size* and *Return on plan assets* may be associated with riskier asset allocation (Rauh, 2009), so we control for them.

CEOs, as key actors in organizational decision making, warrant meticulous consideration (Saura-Díaz & Gómez-Mejía, 1997; Wowak et al., 2017). *CEO power* was measured by whether the CEO simultaneously serves as the board chair (Devers et al., 2008). In alignment with past studies, we incorporate the *CEO's tenure* (in years), *gender* (with a value of one assigned for females), *cash pay*, *share ownership*, *pension assets at risk*, and *current and prospective wealth* (Devers et al., 2008). We also account for *CEO option Delta and Vega*, factors that have been found to influence pension underfunding (Anantharaman & Lee, 2014).

To elucidate the intricate relationship between governance practices and pension underfunding, we control for *institutional ownership*, the *ratio of independent directors* on the board, and the presence of *published governance guidelines* (a dummy variable; see Warner et al., 1988). Lastly, we account for the potential impact of corporate social responsibility (CSR) on pension underfunding. The *CSR performance score* from the Refinitiv ASSET4 database meticulously assesses strengths and weaknesses across five categories, including community, environment, product innovation, corporate governance, and human rights (Hartjoto & Laksmana, 2021; Hsueh et al., 2023).

While we endeavored to control for family power by introducing a dummy variable denoting CEO family membership,

the presence of high collinearity and the limited significance of that variable within our theoretical framework led us to exclude it from our models.

Estimation Procedure

In order to obtain consistent and efficient coefficients without making any assumptions regarding the independent variables and the time-invariant error term (firm heterogeneity, Wooldridge, 2010), we employed fixed-effects models to analyze the impact of time-invariant observable characteristics. The results of the Hausman test (which rejected the null hypothesis) further justified the use of fixed-effects estimation.

To account for potential firm-level factors, we clustered standard errors by firm in all estimations (Petersen, 2009). To mitigate the influence of outliers, we winsorized all continuous variables at the 1% level. Additionally, variables were standardized by centering them around a mean of zero and scaling them to one standard deviation. This standardization procedure enhances comparability and facilitates interpretation across variables.

Following established research practices, we lagged both the independent and control variables by one year in all our models to capture potential time lags and allow for a more nuanced understanding of the relationships under investigation. Finally, to account for variations across different industries, time periods, and geographical locations, we included industry, year, and state dummies in our models.

Results

The results of the analysis are presented in Tables 1, 2, and 3. Table 1 displays the correlation matrix, revealing significant relationships between pension underfunding and various variables. Table 2, Panel A provides descriptive statistics for the main variables: number of observations, means, standard deviations, and minimum and maximum values. Panel B of Table 2 reports the differences between mean values of the variables for family firms and non-family firms. Table 3 presents the key results of the regression models testing Hypotheses 1–4. Model 1 includes the control variables, revealing significant relationships that are consistent with previous findings. Specifically, the pension discount rate, CEO cash pay, and CEO Vega exhibit positive associations with pension underfunding, while return on plan assets and pension plan size display negative and statistically significant coefficients.

Model 2 presents the main effect of the family firm variable on pension underfunding. The negative coefficients for family firms in Models 2–5 support the prediction of

Table 1 Pairwise correlations

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
(1) Pension underfunding	1.00													
(2) Family firm	0.01	1.00												
(3) Financial distress	-0.02	0.12*	1.00											
(4) Firm in second generation or beyond	0.02	0.41*	-0.05	1.00										
(5) Eponymous firm	-0.10*	0.04	0.09*	-0.02	1.00									
(6) Firm size	-0.08*	-0.09*	-0.03	-0.06	0.06	1.00								
(7) Mkt to book ratio	-0.04	-0.06	0.22*	-0.05	0.17*	0.07*	1.00							
(8) Pension discount rate	-0.25*	0.06	-0.10*	0.02	-0.05	0.03	-0.07	1.00						
(9) Return on plan assets	-0.16*	-0.08*	-0.11*	-0.05	0.07*	0.60*	0.15*	0.01	1.00					
(10) Log Pension plan	-0.39*	-0.15*	-0.26*	-0.10*	0.16*	0.52*	0.13*	0.11*	0.59*	1.00				
(11) Pension plan assets	-0.13*	-0.09*	-0.13*	-0.06	0.06	0.64*	0.17*	0.03	0.94*	0.62*	1.00			
(12) CEO cash pay	-0.07*	0.04	-0.09*	0.01	0.01	0.35*	0.08*	0.06	0.31*	0.41*	0.34*	1.00		
(13) CEO shares	-0.04	0.25*	-0.02	0.27*	0.02	0.08*	-0.05	0.03	0.08*	0.04	0.06	0.10*	1.00	
(14) CEO tenure	0.03	0.32*	0.08*	0.37*	0.00	-0.05	-0.05	0.02	-0.03	-0.13*	-0.04	0.04	0.46*	1.00
(15) CEO female	-0.01	0.06	-0.02	-0.03	-0.03	0.18*	0.04	0.03	0.20*	0.15*	0.21*	0.02	-0.03	-0.09*
(16) CEO duality	-0.12*	-0.16*	-0.03	-0.04	0.04	0.12*	-0.02	0.03	0.14*	0.21*	0.15*	0.15*	0.01	0.10*
(17) CEO current wealth	-0.08*	0.04	0.23*	-0.06	0.04	0.28*	0.21*	-0.07*	0.21*	0.27*	0.20*	0.39*	0.07*	0.11*
(18) CEO prospective wealth	-0.11*	0.04	0.14*	-0.05	0.09*	0.41*	0.20*	-0.03	0.32*	0.41*	0.31*	0.47*	0.09*	0.06
(19) CEO pension risk	-0.07*	-0.05	-0.11*	0.00	0.09*	0.43*	0.12*	0.05	0.47*	0.53*	0.51*	0.36*	0.21*	0.14*
(20) CEO Vega option	-0.11*	-0.09*	0.00	-0.06	0.02	0.30*	0.25*	-0.02	0.36*	0.34*	0.37*	0.15*	-0.05	-0.04
(21) CEO Delta option	-0.10*	-0.05	0.20*	-0.03	0.02	0.16*	0.19*	-0.08*	0.20*	0.15*	0.19*	0.17*	0.05	0.05
(22) Institutional ownership	0.14*	-0.09*	0.03	-0.05	-0.12*	-0.30*	-0.05	-0.10*	-0.17*	-0.41*	-0.18*	-0.24*	-0.12*	-0.02
(23) Governance guidance	-0.10*	0.03	0.00	0.02	0.03	0.06	0.04	-0.01	0.05	0.13*	0.05	0.07*	0.03	-0.01
(24) Board Independence	-0.09*	-0.30*	-0.03	-0.24*	0.07*	0.13*	0.07	-0.06	0.14*	0.22*	0.14*	-0.02	-0.07*	-0.20*
(25) CSR performance	-0.10*	0.00	0.11*	-0.02	0.11*	0.13*	0.13*	0.01	0.14*	0.33*	0.14*	0.07	0.05	-0.12*
Variables	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)			
(15) CEO female	1.00													
(16) CEO duality	0.02	1.00												
(17) CEO current wealth	-0.02	0.11*	1.00											
(18) CEO prospective wealth	-0.03	0.13*	0.76*	1.00										
(19) CEO pension risk	0.06	0.22*	0.32*	0.41*	1.00									
(20) CEO Vega option	0.15*	0.13*	0.23*	0.34*	0.33*	1.00								
(21) CEO Delta option	0.03	0.13*	0.35*	0.29*	0.18*	0.30*	1.00							
(22) Institutional ownership	0.00	-0.09*	-0.19*	-0.29*	-0.24*	-0.19*	-0.06	1.00						
(23) Governance guidance	0.02	0.05	0.05	0.07*	0.07*	0.04	0.04	-0.03	1.00					
(24) Board Independence	-0.01	0.24*	0.02	0.08*	0.16*	0.11*	0.11*	0.00	0.09*	1.00				

Table 1 (continued)

Variables	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)
(25) CSR performance	0.10*	0.01	0.09*	0.19*	0.15*	0.17*	-0.03	-0.21*	0.00	0.21*	1.00

Industry, state, and year dummies and the alternative robustness definitions are not shown

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Hypothesis 1 ($b = -0.38$, p value < 0.01 in Model 2), suggesting that family firms are less likely to underfund pensions.

Hypothesis 2 proposes that the negative relationship between family firms and employee pension underfunding will be moderated by financial distress. However, Model 3 of Table 3 does not find significant support for this proposition, as the coefficient for the interaction term is positive but insignificant.

Hypothesis 3 posits that family firms controlled by family generations after the first allow higher levels of pension underfunding. Model 4 in Table 3 provides evidence in support of this hypothesis ($b = 0.09$, p value < 0.1), suggesting that the goal of preserving socioemotional well-being becomes less prominent for subsequent family generations.

Finally, Model 5 reveals a negative and statistically significant coefficient ($b = -0.26$, p value < 0.01), confirming Hypothesis 4: the negative relationship between family control and pension underfunding is amplified for eponymous family firms.

Robustness Tests

To ensure the robustness of our findings, we conducted several complementary analyses. First, we explored alternative definitions of family firms. In addition to our primary variable focusing on ownership stake, we introduced *family involvement*: specifically, when one or more family members serve as directors. This variable proxies the continued engagement of the family in the business (family continuity) and the significance family members attach to socioemotional wealth. We also consider *Family involvement and ownership* that captures both family ownership and family involvement simultaneously. Tables 4 and 5 present results that are consistent with our main findings, providing further support for the robustness of our results.

Second, to address concerns regarding endogeneity, we performed two-stage least squares (2SLS) tests. These allowed us to examine the direct effect of family firms on pension underfunding. We selected two instrumental variables: the percentage of family firms within a state and the age of the firm. Previous research has indicated that family firms are more likely to maintain ownership in areas with a higher concentration of family firms (Bird & Wennberg, 2014; Greenwood & Suddaby, 2006) and that firm age is associated with family stage and involvement (Gómez-Mejía et al., 2011). Importantly, no theoretical basis links these instrumental variables directly to pension underfunding. A significant F-statistic of 5.65, with a p value of 0.003, indicates the validity of our instruments. We also conducted an overidentification test to assess the instrumental variables' validity in the IV regression model. Both the Sargan test statistic and the Basman test statistic exhibited high p values

Table 2 Descriptive statistics and descriptive analysis: non-FFs vs. FFs

Variables	Panel A				Panel B		
	Mean	Std. dev	Min	Max	Non-FFs	FFs	<i>p</i> stat
Underfunding	0.24	0.18	−0.3	0.99	0.24	0.23	0.37
Family firm	0.16	0.37	0	1	0	1	
Financial distress	3.44	1.99	−1.53	23.74	3.34	3.98	0.00
Firm in second generation or beyond	0.11	0.31	0	1	0	0.67	0
Eponymous firm	0.31	0.46	0	1	0.31	0.36	0.06
Sales ^a	12,240.74	21,851.68	121.85	127,245	13,138.05	7535.41	0.00
Log of sales	8.42	1.39	4.8	11.75	8.49	8.10	0.00
Market to book ratio	3.22	4.12	−12.08	29.41	3.33	2.66	0.01
Pension discount rate	4.36	.7	1.3	7	4.34	4.45	0.01
Return on plan assets ^a	212.26	539.67	−353	3885	231.19	113.01	0.00
Pension plan size ^a	2428.69	5,942.11	0.12	45,810	2657.98	1226.33	0.00
Log of pension plan size	6.07	2.03	1.12	10.75	6.20	5.37	0.00
CEO cash ^b	1135.15	695.15	0	5100	1122.16	1203.30	0.05
CEO shares ^b	610.06	1994.16	0	29,119.69	390.87	1759.43	0.00
CEO tenure	8.68	7.05	0	42	7.70	13.83	0.00
CEO female	0.03	.18	0	1	0.03	0.06	0.01
CEO duality	0.49	.5	0	1	0.31	0.52	0.00
CEO current wealth ^b	15,853.45	28,025.5	0	175,393.5	15,315.78	18,672.88	0.04
CEO prospective wealth ^b	32,838.29	44,563.29	0	274,974.28	32,124.75	36,579.95	0.08
CEO pension risk ^b	5989.19	9,301.14	0	48,320.40	6208.46	4839.43	0.02
CEO Delta option	0.07	0.1	0	0.45	0.08	0.05	0.00
CEO Vega option	0.47	0.24	0.07	1.39	0.47	0.44	0.03
Institutional ownership %	0.24	0.13	0	0.63	0.24	0.21	0.00
Board independence	84.55	7.76	50	93	85.58	79.14	0.00
Governance guidance public	0.98	0.13	0	1	0.98	0.99	0.14
CSR performance	47.87	16.88	10.6	85.09	47.86	47.88	0.50

^aValue in million dollars^bThousand dollars. *N* = 1511 corresponding to 452 unique firms, 73 family firms

(0.912 and 0.913, respectively), suggesting that we cannot reject the null hypothesis that the instrumental variables are valid. Table 6 presents the results of the 2SLS estimation, showing that the coefficient testing Hypothesis 1 remains significant and negative, further confirming our findings.

Lastly, we employed a quasi-experimental matching method based on Rosenbaum and Rubin's (1983) approach, to verify whether family firms are indeed less likely than non-family firms to engage in pension underfunding. Specifically, we estimated treatment effects using nearest-neighbor matching.³ Table 7 demonstrates the effect of family firms on pension underfunding after matching. The coefficient remains negative and significant, corroborating our initial findings.

³ Details on the nearest-neighbor matching estimation (the list of variables used and univariate statistics pre- and post-matching) are available from the authors.

Discussion

This study has examined differences in employee pension underfunding between family and non-family firms. Our findings suggest that family firms are less likely to underfund pensions. But this effect is weaker for family firms controlled by later generations (which are less SEW intensive) and stronger for eponymous family firms (which are more so). All three of these findings support our hypothesis that the desire to preserve family SEW is driving family decisions regarding employee pension underfunding. And this motive appears to be, on average, impervious to financial distress. These results have important implications for theory and practice.

First, our findings about pension underfunding support the more general arguments of Christensen-Salem et al. (2021) that family firms seem to exhibit more caring toward employees. As they resist the temptation to raid pension assets even when financial distress approaches, they appear

Table 3 Main results (dependent variable is pension underfunding)

Variables	Model 1	Model 2	Model 3	Model 4	Model 5
Family firm		−0.38*** (0.10)	−0.35*** (0.12)	−0.38*** (0.10)	−0.21** (0.09)
Family firm × financial distress			0.07 (0.15)		
Family firm × firm in second generation or beyond				0.09** (0.05)	
Family firm × eponymous firm					−0.26*** (0.09)
Financial distress	0.02 (0.07)	0.02 (0.07)	0.01 (0.08)	0.02 (0.07)	0.02 (0.07)
Firm in second generation or beyond	0.08 (0.08)	0.45*** (0.12)	0.45*** (0.12)	0.36*** (0.13)	0.29*** (0.11)
Eponymous firm	0.03 (0.05)	0.03 (0.05)	0.03 (0.05)	0.03 (0.05)	0.03 (0.05)
Firm size	0.03 (0.03)	0.03 (0.03)	0.03 (0.03)	0.03 (0.03)	0.03 (0.03)
Mkt to book ratio	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)
Pension discount rate	0.06* (0.04)	0.06 (0.04)	0.06* (0.04)	0.06 (0.04)	0.06 (0.04)
Return on plan assets	−0.03* (0.01)	−0.03* (0.02)	−0.03* (0.02)	−0.03* (0.02)	−0.03* (0.02)
Pension plan size	−0.85*** (0.27)	−0.85*** (0.27)	−0.85*** (0.27)	−0.85*** (0.27)	−0.85*** (0.27)
CEO cash pay	0.04** (0.02)	0.04** (0.02)	0.04** (0.02)	0.04** (0.02)	0.04** (0.02)
CEO shares	0.04 (0.05)	0.03 (0.05)	0.04 (0.05)	0.04 (0.05)	0.04 (0.05)
CEO tenure	0.04 (0.02)	0.05* (0.02)	0.05* (0.02)	0.05* (0.02)	0.04* (0.03)
CEO female	0.05 (0.05)	0.06 (0.05)	0.06 (0.06)	0.06 (0.06)	0.06 (0.05)
CEO duality	0.03 (0.03)	0.03 (0.03)	0.03 (0.03)	0.03 (0.03)	0.03 (0.03)
CEO current wealth	0.00 (0.01)	0.00 (0.01)	0.00 (0.01)	0.00 (0.01)	0.00 (0.01)
CEO prospective wealth	−0.02 (0.01)	−0.02 (0.01)	−0.02 (0.01)	−0.02 (0.01)	−0.02 (0.01)
CEO pension risk	0.01 (0.02)	0.01 (0.02)	0.01 (0.02)	0.01 (0.02)	0.01 (0.02)
CEO Delta option	−0.00 (0.01)	−0.00 (0.01)	−0.00 (0.01)	−0.00 (0.01)	−0.00 (0.01)
CEO Vega option	0.02* (0.01)	0.02** (0.01)	0.02* (0.01)	0.02** (0.01)	0.02** (0.01)
Institutional ownership	0.00 (0.04)	0.00 (0.04)	0.00 (0.04)	0.00 (0.04)	0.00 (0.04)
Governance guidelines	−0.16 (0.18)	−0.16 (0.19)	−0.16 (0.18)	−0.16 (0.19)	−0.16 (0.18)
Board independence	0.01 (0.02)	0.01 (0.02)	0.01 (0.02)	0.01 (0.02)	0.01 (0.02)
CSR score performance	−0.07 (0.09)	−0.07 (0.09)	−0.07 (0.09)	−0.07 (0.09)	−0.07 (0.09)
Constant	0.05 (0.18)	0.10 (0.18)	0.09 (0.18)	0.09 (0.18)	0.09 (0.18)
R-squared	0.41	0.41	0.41	0.41	0.41

This table reports the fixed effect regressions. Models include industry, state, and year dummies. Robust standard errors are given in parentheses *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. $N = 1511, 452$ firms

to prioritize socioemotional goals over financial ones—an insight that advances research exploring the idiosyncratic nature of family firm goal setting (Martin & Gómez-Mejía, 2015; Williams et al., 2019). Relatedly, Berrone et al. (2010) argued that family firms prioritize SEW associated with social capital and reputation over family control, but Chrisman and Patel (2012) maintained that concern for reputation is attenuated when financial performance declines. Our findings suggest that SEW goals do not become subordinated to financial goals quite so readily.

Second, we advance research examining the multiple dimensions composing the SEW construct and their relative importance (cf. Berrone et al., 2010; Samara, 2021). Previous research has emphasized that family principals have multiple non-financial goals (sources of non-economic utility; Samara, 2021). Researchers have also underlined the socioemotional costs and benefits of

different firm policies, including R&D and other forms of risk taking that involve trade-offs between family control and long-term financial outcomes affecting the potential for dynastic succession (e.g., ; Gómez-Mejía et al., 2011, 2014). Chrisman and Patel (2012) and Martin and Gómez-Mejía (2015) have argued that as financial distress looms, family firms prioritize long-term dynastic succession (and therefore financial sustainability). Our findings indicate that family goals to preserve family reputation and social capital are robust. This interpretation of our results is reinforced by the facts that eponymous family firms (where underfunding is likelier to threaten family reputation) and first-generation family firms (where identification with the family firm is likely to be stronger) are less likely to underfund employee pensions. In examining the various socioemotional drivers of our main finding, we address calls to “reify SEW” by deconstructing this concept (Schulze

Table 4 Robustness checks using an alternative definition for family firms

Variables	Model 2	Model 3	Model 4	Model 5
Family involvement	−0.38*** (0.10)	−0.35*** (0.12)	−0.38*** (0.10)	−0.38*** (0.10)
Family involvement × financial distress		0.07 (0.15)		
Family involvement × firm in second generation or beyond			0.09** (0.05)	
Family involvement × eponymous firm				−0.26*** (0.09)
Financial distress	0.02 (0.07)	0.01 (0.08)	0.02 (0.07)	0.02 (0.07)
Firm in second generation or beyond	0.45*** (0.12)	0.45*** (0.12)	0.36*** (0.13)	0.29*** (0.11)
Eponymous firm	0.03 (0.05)	0.03 (0.05)	0.03 (0.05)	0.03 (0.05)
Firm size	0.03 (0.03)	0.03 (0.03)	0.03 (0.03)	0.03 (0.03)
Mkt to book ratio	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)
Pension discount rate	0.06 (0.04)	0.06* (0.04)	0.06 (0.04)	0.06 (0.04)
Return on plan assets	−0.03* (0.02)	−0.03* (0.02)	−0.03* (0.02)	−0.03* (0.02)
Pension plan size	−0.85*** (0.27)	−0.85*** (0.27)	−0.85*** (0.27)	−0.85*** (0.27)
CEO cash pay	0.04** (0.02)	0.04** (0.02)	0.04** (0.02)	0.04** (0.02)
CEO shares	0.03 (0.05)	0.04 (0.05)	0.04 (0.05)	0.04 (0.05)
CEO tenure	0.05* (0.02)	0.05* (0.02)	0.05* (0.02)	0.04* (0.03)
CEO female	0.06 (0.05)	0.06 (0.06)	0.06 (0.06)	0.06 (0.05)
CEO duality	0.03 (0.03)	0.03 (0.03)	0.03 (0.03)	0.03 (0.03)
CEO current wealth	0.00 (0.01)	0.00 (0.01)	0.00 (0.01)	0.00 (0.01)
CEO prospective wealth	−0.02 (0.01)	−0.02 (0.01)	−0.02 (0.01)	−0.02 (0.01)
CEO pension risk	0.01 (0.02)	0.01 (0.02)	0.01 (0.02)	0.01 (0.02)
CEO Delta option	−0.00 (0.01)	−0.00 (0.01)	−0.00 (0.01)	−0.00 (0.01)
CEO Vega option	0.02** (0.01)	0.02* (0.01)	0.02** (0.01)	0.02** (0.01)
Institutional ownership	0.00 (0.04)	0.00 (0.04)	0.00 (0.04)	0.00 (0.04)
Governance guidelines	−0.16 (0.19)	−0.16 (0.18)	−0.16 (0.19)	−0.16 (0.18)
Board independence	0.01 (0.02)	0.01 (0.02)	0.01 (0.02)	0.01 (0.02)
CSR score performance	−0.07 (0.09)	−0.07 (0.09)	−0.07 (0.09)	−0.07 (0.09)
Constant	0.10 (0.18)	0.09 (0.18)	0.09 (0.18)	0.09 (0.18)
R-squared	0.41	0.41	0.41	0.41

This table reports the fixed effect regressions. Models include industry, state, and year dummies. Robust standard errors in parentheses *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. $N = 1511$ 452 firms

& Kellermanns, 2015) and enhance theory exploring the granularity of the construct (Berrone et al., 2012; Gómez-Mejía & Herrero, 2022). We hope to provide a platform for further research into how the family manages tensions or priorities among different socioemotional benefits of family firm ownership.

Evidence that family firms differ systematically from non-family firms in managing employee pensions has important implications for practice. Our findings suggest that US employees might prefer to work for family firms rather than for non-family organizations, as the former typically avoid underfunding employee pension plans. However, under the control of a later family generation, family firms will be more like non-family firms in this respect. This result may alert family business founders to the deleterious effects that later-generation family control may have on the commitment to employees.

Limitations and Future Research Directions

We have examined pension underfunding, given the importance of pensions to employees' future well-being; however, to enrich the understanding of the employee–employer relationship in family firms, future research should consider analyzing pension underfunding decisions along with other proxies for employee well-being such as compensation, training, and job security. It would also be helpful to understand how family firms may compensate family employees for pension underfunding, though that analysis would require separate compensation data on family versus non-family employees. The significance of this issue is mitigated by the fact that the firms in our sample average over 32,000 employees (whereas family employee numbers are unlikely to go beyond double figures).

Table 5 Robustness checks using an alternative definition for family firms

Variables	Model 2	Model 3	Model 4	Model 5
Family involvement and ownership	− 0.27** (0.11)	− 0.24* (0.12)	− 0.27** (0.11)	− 0.14** (0.06)
Family involvement and ownership × financial distress		0.07 (0.15)		
Family involvement and ownership × firm in second generation or beyond			0.34*** (0.13)	
Family involvement and ownership × eponymous firm				− 0.34*** (0.06)
Financial distress	0.02 (0.07)	0.00 (0.08)	0.02 (0.07)	0.02 (0.07)
Firm in second generation or beyond	0.34*** (0.13)	0.34*** (0.13)	0.039 (0.01)	0.21** (0.09)
Eponymous firm	0.03 (0.05)	0.03 (0.05)	0.03 (0.05)	0.03 (0.05)
Firm size	0.03 (0.03)	0.03 (0.03)	0.03 (0.03)	0.03 (0.03)
Mkt to book ratio	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)
Pension discount rate	0.06 (0.04)	0.06* (0.04)	0.06 (0.04)	0.06 (0.04)
Return on plan assets	− 0.03* (0.02)	− 0.03* (0.02)	− 0.03* (0.02)	− 0.03* (0.02)
Pension plan size	− 0.85*** (0.27)	− 0.85*** (0.27)	− 0.85*** (0.27)	− 0.85*** (0.27)
CEO cash pay	0.04** (0.02)	0.04** (0.02)	0.04** (0.02)	0.04** (0.02)
CEO shares	0.04 (0.05)	0.04 (0.05)	0.04 (0.05)	0.04 (0.05)
CEO tenure	0.04* (0.02)	0.04* (0.02)	0.04* (0.02)	0.04* (0.02)
CEO female	0.06 (0.05)	0.06 (0.06)	0.06 (0.05)	0.06 (0.05)
CEO duality	0.03 (0.03)	0.03 (0.03)	0.03 (0.03)	0.03 (0.03)
CEO current wealth	0.00 (0.01)	0.00 (0.01)	0.00 (0.01)	0.00 (0.01)
CEO prospective wealth	− 0.02 (0.01)	− 0.02 (0.01)	− 0.02 (0.01)	− 0.02 (0.01)
CEO pension risk	0.01 (0.02)	0.01 (0.02)	0.01 (0.02)	0.01 (0.02)
CEO Delta option	− 0.00 (0.01)	− 0.00 (0.01)	− 0.00 (0.01)	− 0.00 (0.01)
CEO Vega option	0.02** (0.01)	0.02** (0.01)	0.02** (0.01)	0.02** (0.01)
Institutional ownership	− 0.00 (0.04)	− 0.00 (0.04)	− 0.00 (0.04)	0.00 (0.04)
Governance guidance public	− 0.16 (0.19)	− 0.16 (0.18)	− 0.16 (0.19)	− 0.16 (0.18)
Board independence	0.01 (0.02)	0.01 (0.02)	0.01 (0.02)	0.01 (0.02)
CSR performance score	− 0.07 (0.09)	− 0.07 (0.09)	− 0.07 (0.09)	− 0.07 (0.09)
Constant	0.08 (0.18)	0.08 (0.18)	0.06 (0.18)	0.08 (0.18)
R-squared	0.41	0.41	0.41	0.41

This table reports the fixed effect regressions. Models include industry, state, and year dummies. Robust standard errors in parentheses *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. $N = 1511$ 452 firms

Our study is confined to a US empirical context, but cultural factors may influence how a family weighs SEW's different dimensions when they are in tension. Hence, future research could explore how our theory holds in different countries. The number of firms in our US sample also limits the generalizability of related findings of family influence on firm governance.

Conclusion

This study sheds light on the differential in approaches to pension underfunding between family and non-family firms, also highlighting the boundary conditions that

influence the difference. The findings support the notion that family generational involvement and eponymous status play significant roles in shaping ethical choices related to pension funding in family firms. Family firms, driven by the need to preserve social and emotional benefits derived from strong employee relationships, demonstrate a lower tendency to underfund pensions than non-family firms. Furthermore, the preference for socioemotional goals over financial goals remains intact even in the face of financial distress. These results contribute to the theoretical understanding of family firms by emphasizing their ethical behavior, their caring toward employees, and their prioritization of the social and reputational dimensions of SEW.

Table 6 Robustness checks. IV and two-stage least squares for panel-data

Estimation method	IV fixed effect First stage	Second stage
Dependent variable	Family firm	Pension underfunding
Firm age	−0.002*** (0.00)	
% Family firm by state	0.30*** (0.11)	
Family firm	0.04 (0.04)	−0.19*** (0.05)
Financial distress	0.88*** (0.03)	0.16 (0.10)
Firm in second generation or beyond	0.00 (0.03)	0.05 (0.05)
Eponymous firm	−0.02 (0.02)	0.32*** (0.07)
Firm size	−0.02 (0.01)	0.03*** (0.01)
Mkt to book ratio	0.00 (0.02)	−0.28*** (0.04)
Pension discount rate	−0.00 (0.01)	−0.06*** (0.02)
Return on plan assets	0.02 (0.02)	−0.59*** (0.08)
Pension plan size	−0.00 (0.01)	0.00 (0.02)
CEO cash pay	0.04 (0.05)	−0.07 (0.07)
CEO shares	0.02 (0.02)	−0.02 (0.03)
CEO tenure	0.05 (0.06)	0.07 (0.09)
CEO female	−0.05** (0.02)	0.02 (0.03)
CEO no duality	−0.00 (0.02)	−0.01 (0.01)
CEO current wealth	0.01 (0.02)	0.02 (0.01)
CEO prospective wealth	0.00 (0.02)	0.04** (0.02)
CEO pension risk	−0.00 (0.01)	0.01 (0.02)
CEO Vega option	0.00 (0.01)	−0.02 (0.01)
CEO Delta option	−0.01 (0.01)	−0.01 (0.02)
Institutional ownership	−0.02* (0.01)	−0.03 (0.02)
Governance guidance public	0.04 (0.04)	−0.19*** (0.05)
Board independence	−0.88*** (0.03)	0.16 (0.10)
CSR performance	−0.002 (0.007)	−0.014 (0.011)
Constant	0.06 (0.05)	−0.69*** (0.16)
R-squared	0.73	

This table reports the result of instrumental variables and two-stage least squares for panel-data models. The instruments used for the variable family firm are (a) the number of years the firm has existed (Firm age) and (b) the fraction of family firms in each state (state number of family firms/total state number of firms). The instruments are unlikely to influence pension funding behavior, but they can directly affect the existence of family firms and involvement of family members. Firm age is related to family stage and involvement of family members with the firm (Gómez-Mejía et al., 2011), and families are less (more) likely to maintain control of the firm when located in areas with a higher concentration of FFs—Greenwood & Suddaby, 2006; Bird & Wennberg, 2014. Robust Standard errors in parentheses *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. $N = 1115$

Table 7 Robustness checks. Treatment-effects estimations

Dependent variable	Pension underfunded
Family firm	−0.11*** (0.0392)

This table contains the effect of family firm on pension underfunding after the matching. Estimator nearest-neighbor matching. Outcome model: matching. Distance metric: Mahalanobis. Standard errors in parentheses *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Appendix

Definition of variables

Variable	Definition
Dependent variable	
Pension underfunding	Measured by pension liabilities minus the fair value of pension assets divided by the pension liabilities (Source: Compustat)
Independent variable	
Family firm	Equals one if the family ownership stake is more than 20% of the votes, and zero otherwise (Source: NRG)
Moderator variables	

Variable	Definition
Firm in second generation or beyond	Equals one when a descendant or family member of the founder (from the second generation or beyond) is the CEO and there are descendants or family members of the founder (from the second generation or beyond) as directors or officers or large shareholders, and zero otherwise (Source: NRG)
Eponymous firm	Equals one when the business takes the founder's name and zero otherwise (Source: company website, the company's proxy (DEF-14) on sec.gov, and annual reports)
Financial distress	The inverse Altman Z-score (Source: Compustat)
Control variables	
Firm size	Log of total sales (Source: Compustat)
Market to book ratio	Ratio of market value to book value per share (Source: Compustat)
Pension discount rate	The discount rate used to determine the present value of the projected pension benefit obligations (Source: Compustat)
Return on plan assets	Market return on the plan assets (Source: Compustat)
Pension plan size	Log of pension plan assets (Source: Compustat)
CEO cash pay	CEO cash-based compensation
CEO share ownership	Shares owned by the CEO (Source: Execucomp)
CEO tenure	Years CEO has been in charge (Source: Execucomp)
CEO female	Equals one if CEO is female, zero otherwise (Source: NRG)
CEO duality	Equals one if the positions of CEO and board chair are held by the same person, zero otherwise. (Source: NRG)
CEO current wealth	Current cash value of CEO's unexercised stock options (Source: Execucomp)
CEO prospective wealth	CEO's potential wealth if risk taking is successful (Source: Execucomp)
CEO pension assets	CEO's pension value at risk (Source: Execucomp)
CEO Delta option	Sensitivity of option value to share price (Source: Execucomp)
CEO Vega option	Sensitivity of option value to share price volatility (Source: Execucomp)

Variable	Definition
Institutional ownership	The percentage of shares held by institutional investors (Source: NRG)
Public governance guidelines	Equals one if the board has public governance guidance, and zero otherwise (Source: NRG)
Board independence	Ratio of independent members to board size (Source: Compustat)
CSR score	Total CSR strengths minus weaknesses across the categories of community, environment, product innovation, corporate governance, and human rights (Asset 4)
Instrumental variables	
Firm age	Number of years the firm has existed (Source: NRG)
State % of FF	State number of family firms/total state number of firms (Source: NRG)
Robustness test variables	
Family involvement	Equals one if one or more family members are directors or blockholders
Family involvement and ownership	Takes the value of one if the founder or a member of the family is an officer or director and owns more than 5% of the firm's equity, and zero otherwise

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