Planning for Family Succession*

Ciprian Domnisoru,† Aalto University-Helsinki GSE
Robert A. Miller,‡ Carnegie Mellon University

January 31, 2025

Abstract

Sons succeed their exiting CEO parents more often than daughters. How do entrepreneurial families reach this gender imbalanced decision, and how does it affect the prospects of their firms and their offspring? Using Finnish administrative data on firms linked to population register data on shareholders and their extended families, we trace the steps leading to the succession decision. We examine fertility patterns, finding evidence of son preference among entrepreneurs – families with first born daughters are larger than those with first born sons. Relative to employees, entrepreneur parents are also less likely to adopt daughters. We then examine the human capital accumulation process of the children of entrepreneurs. Strong same-gender human capital transmission patterns are mediated by the female employment share in the industry of the entrepreneur parent. Thus daughters have a higher chance of being groomed for succession if the family firm operates in a female-dominated industry. Turning to firm outcomes, we find no evidence that children of exiting CEOs who take control of the firm hurt its performance, relative to the results of professional CEOs.

Keywords— Family Firms, Son preference, CEO transition, Gender differences, Human Capital

JEL— G32, L25, J13, J24

*We are grateful for research funding support from the Yrjö Uitto, Yrjö Jahnsson and HSE support foundations. We thanks participants at the Nordic Labor Economics Conference, Cornell-Dordona conference, Leuven Summer Event 2023, Nordic Initiative for Corporate Economics 2013 Conference, Finnish Economic Association 2024 conference, and VATT Institute for their comments and suggestions. We also thank Oskari Ijäs for excellent research assistance.

†ciprian.domnisoru@aalto.fi

‡ramiller@cmu.edu

1 Introduction

It is well known that few women are employed as top managers in corporations.[1] This is also true of family businesses, which are far more likely to be run by men rather than women. Likewise, daughters of entrepreneurs are less likely to become CEO successors than their brothers (Pérez-González (2006), Bennedsen et al. (2007), Tsoutsoura (2015), Kustec et al. (2020)). How do entrepreneurial families reach the decision to perpetuate this gender imbalance? How do their decisions affect the prospects of their children and their firms? Family businesses play a prominent role in the economy generating about 70% of world GDP (UNCTAD (2021)). With rising female labor force participation and declining fertility, answering these questions about succession and the consequences for those born into family run businesses is a pressing policy concern.

Lacking a successor from within the family, these firms may be inefficiently liquidated or sold under duress.[2] If business owners do not anticipate a family succession, they may also reduce their investment in their firm.[3] Declining fertility reduces the potential for family-run firms to produce any heir. More generally, declining fertility rates reduce the choice set for determining which sibling will assume responsibility for the firm, and hence diminishes the firm's profitability outlook. This exacerbates concerns that appointing a family member, rather than a professional CEO, may hurt firm performance, and in particular affect minority (non-family) shareholders.

This paper is an empirical investigation of how entrepreneurial families prepare for succession. We examine the fertility patterns of entrepreneurs, their offspring's human capital accumulation, the succession decision, as well as firm and offspring outcomes leading to and post-succession. Our approach is descriptive, leveraging extensive links in Finnish administrative data over the lives of entrepreneurs, their children and their firms.

We observe the entire population of Finland in administrative register data, and we match individuals to their (extended) families, the firms they own and/or work for, and their periods of education and training.

[1] Only about 7% of Finnish firms and 8% of S&P 500 companies had a female CEO in 2023, according to the Finnish Chamber of Commerce and respectively catalyst.org. Sources: Women CEOs of the S&P 500. (2023, February 3). Catalyst; Keskuskauppakamari, Naiset pörssiyhtiöiden johdossa - kansainvälinen vertailu, March 2023

[2] For example, the European Investment Fund sponsors funding for businesses that would cease to operate or would be sold piecemeal or under duress, when there are no family successors willing to take over the business.

[3] Kodama et al. (2021) find that among Japanese family firms, the presence of a potential family successor leads to firm growth and investments in IT and operational efficiency.

We track shareholder data and CEO exits in all Finnish corporations. We draw upon several non-overlapping sub-samples: CEOs of family owned corporations, CEOs of corporations that are not family owned, individuals registered as self-employed at some point during their working lives, and individuals who are always classified as employees (as opposed to self-employed). We also follow a sample of individuals recorded as self-employed at age 57 through their retirement. Across these subsamples, we compare fertility patterns and the human capital accumulation process of their children. For entrepereneurs and CEOs, we additionally compare their firm outcomes pre- and post-succession, as well as the outcomes of their children following CEO exits or the entrepreneur parent's retirement.

We link the fertility decisions, offspring human capital accumulation and succession stages in the lives of entrepreneurs through two channels. First, we observe entrepreneurs whose fertility stopping patterns may indicate son bias (Bharadwaj et al. (2014), Dossi et al. (2021)). We then track how human capital accumulation and succession decisions differ between families exhibiting son bias fertility patterns and other families. Second, we observe the modal industry in which entrepreneurs operate throughout their lives, and classify it as female(male) dominated based on whether women(men) represent more than 50% of the workforce. As we describe below, the fertility, offspring human capital accumulation and succession patterns of entrepreneurs are strongly aligned with the gender balance of the industry in which they operate.

To understand, statistically, why sons are over represented in the pool of successors, we begin with an examination of the fertility patterns of entrepreneurs. A large literature in demography and economics has documented contexts in which families that have a first born daughter tend to have more children overall. This pattern has been observed in both developing and developed country contexts, and we briefly summarize this literature in section 2. We document this pattern in Finland: for individuals classified as never having been self-employed (always employees), having a first born daughter raises the overall number of children by 1.25%. Among the self-employed, the effect reaches 2.55%, and is highest for entrepreneur parents in male dominated industries such as agriculture, manufacturing, mining and construction. As a benchmark for these magnitudes, using U.S. census data, Dahl and Moretti (2008) find an increase of 0.3% in the total number of children in families with a first-born daughter. In section 2, we discuss several interpretations for this empirical regularity: it may reflect pure preferences for one gender over the other or a perceived lower cost of raising sons conditional on the father's occupation. The higher magnitudes we find for entrepreneurial families relative to employees may also reflect early calculations about the desired

gender of the heir meant to take over the family business. We observe the same gender imbalances in a sample of adopted children. Entrepreneurs in male dominated industries are less likely to adopt daughters. Interestingly, female CEOs are significantly more likely to adopt girls rather than boys.

Next, we document how the children of entrepreneurs accumulate human capital and work experience, and compare their pathways to those of children of employees. We find strong same-gender intergenerational transmission of fields of study for employees, self-employed entrepreneurs and CEOs of family-owned firms, particularly if the entrepreneur parent is male and working in a male-dominated industry. The magnitudes of these patterns are more muted for children of CEOs of non-family owned firms. Overall, daughters are much less likely than sons to have pursued the same field of study as the entrepreneur father, they have their first episode of formal employment later than their brothers, accumulate fewer years of work experience in the parent's industry, and are less likely to work in the same firm as their father. In cases where mothers are CEOs or self-employed, the previous patterns change sign, but the magnitudes of the effects are smaller and often statistically insignificant. We find daughters of entrepreneurs in families that display son-biased fertility stopping rules accumulate less work experience with their parents, especially in male dominated industries.

We find that daughters of Finnish entrepreneurs are less likely to take over the CEO role from their parents,[4] unless their mother is a CEO working in an industry where a majority of employees are also female. We also examine this pattern in smaller firms without an explicit board and CEO position, and similarly find that daughters are less likely to be linked to the firm of their retiring self-employed parent. The magnitude of the daughter penalty in likelihood of succession is larger in families that exhibit son-bias in fertility. Over the period of our analysis, the fraction of successions in favor of daughters increases only slightly, due to a volatile upward trend coming from female-dominated industries (Figure 2).

Turning to firm outcomes, we employ difference-in-differences and instrumental variable models to compare the performance of firms managed by professional versus family CEOs. We find positive effects on firm revenue, assets and number of employees in OLS and median regressions, and no statistically significant negative effects in IV regressions if the incoming CEO is the child of the exiting CEO. This pattern holds in both family-owned and non-family owned firms. Similar to Bennedsen et al. (2007), we find that family

[4]This pattern has been documented in the U.S. by Pérez-González (2006), in Denmark by Bennedsen et al. (2007), in Greece by Tsoutsoura (2015) and in Norway by (Kustec et al. (2020))

CEOs seem to under-perform relative to professional CEOs in family firms, but only if the appointed CEO is a member of the extended family (as opposed to a child). In smaller firms without explicit boards or CEOs, succession in favor of a family member is actually associated with positive effects on turnover, assets, and number of employees. In these smaller firms, the involvement of family members is arguably more important for ensuring firm continuity and growth.

How are children affected by the succession decision? Four years before the time of succession, the total earnings of daughters of family business CEOs are 27 per cent lower than those of their brothers, an earnings gap larger than the gap in the overall Finnish economy, which stood at 16 per cent in 2020.[5] After the succession decision, male heirs who become CEOs do not see significant earnings gains (previous evidence indicates they are already in top earning roles), whereas daughters who are promoted to the CEO role see a 15 per cent increase in earnings. However, the share of daughters taking over the CEO role is small, and the overall effect is that successions increase the gender earnings gap between the daughters and sons of CEOs.

Our paper draws upon and contributes to four related separate strands of literature, in demography, labor economics, management and corporate finance. Collectively, this work examines gender-biased fertility preferences and adoption patterns, gender-biased inter-generational transmission of human capital, women's role in the management of family firms, and the outcomes of family firms which undergo a generational transition. Our investigations contributes to each of these strands in ways that we detail below.

The remainder of this paper is laid out as follows. We review the related work and explain how our analysis fits into the literature in Section 2. Section 3 outlines the steps taken to assemble our sample. We summarize the empirical strategy in Sections 4 and explain our empirical results in Section 5. Section 6 concludes.

2 Related literature

Our work is related to four strands of literature that examine gender-biased fertility preferences and adoption patterns, same-gender intergenerational transmission of human capital, the role of women in the management of family firms, and the outcomes of family firms which undergo a generational transition. This section

[5] Gender Pay Gap, Finnish Ministry of Social Affairs and Health, https://stm.fi/en/gender-equality/equal-pay

briefly reviews each component and explains our contribution to it.

2.1 Son preference

Fertility patterns reveal parental preferences over the gender of children. These preferences might be based on idiosyncratic, cultural or economic factors. In many developing countries boys are preferred as they may ensure the continuity of the family farm. These revealed preferences skew gender ratios at birth, and are associated with different human capital investments depending on the gender of the child (Bharadwaj et al. (2014), Jayachandran and Kuziemko (2011)). This pattern has been called *son preference*, and has also been documented in developed economies. Dahl and Moretti (2008) analyze parent preferences over the gender of children in the United States. They find that among couples in first marriages with at least one child, the relative risk of having another child is 1.007 (0.3% higher probability) for couples with a first-born daughter, relative to those with a first-born son. They find particularly high effects for Asian mothers, 2.1%, but statistically insignificant effects for college-educated mothers. Lundberg (2005) points out that these empirical results may reflect different perceived productivity of parenting same gender children, or differences in the costs of raising boys versus girls (for example education costs, given women are more likely to attend college). Blau et al. (2020) revisits the extent son preference prevails in the U.S. and find a reversal of son preference for natives, which they argue may be due to increased intra-family female bargaining power or increased cost concerns about raising girls.

Andersson et al. (2006) examine son preference patterns in Nordic countries, and find, for second-birth risks, statistically insignificant effects in Denmark, Sweden and Norway, with positive and statistically significant effects for son preference in Finland. The authors conjecture that the late industrialization and urbanization in Finland is associated with lingering cultural norms that attach a higher value to sons as heirs. The relative risk of 0.98 they find for Finland translates into a 2% probability relative to families with first-born boys. Saarela and Finnäs (2014) also find evidence of son preference in Finland, but show it has been gradually weakening since 1970 and has reached small magnitudes for children born in the 1990s.

There is a limited amount of research investigating the preferences for the gender of adopted children. In the U.S., Baccara et al. (2014) find significant preferences favoring girls and against African American children. Larsen Gibby and Thomas (2019) find the gender of adopted children is consistent with parental preferences for balanced sex composition among their children.

Our investigations show entrepreneurial families in Finland exhibit a greater degree of son preference than other families, and are much more likely to have a higher number of children in response to a first born child being a daughter. Importantly, and new to the literature in this field, we show that this behavior is connected to the gender balance in the entrepreneur parent's industry. Our paper also documents adoption practices by Finnish entrepreneurs and CEOs. We find their revealed preferences are aligned with the modal gender in the entrepreneur parent's industry, and in this way are somewhat reminiscent of the Japanese practice of CEOs adopting promising adults as principal heirs (see e.g. Mehrotra et al. (2013).

2.2 Intergenerational association in entrepreneurship

A large body of work documents how children follow in their parent's footsteps, through intergenerational correlations in occupation, field of study, and employers (Corak and Piraino (2011)). Entrepreneurs and their children are no exception, and intergenerational correlations in entrepreneurship are very high. Lindquist et al. (2015) review results in this literature and find that having an entrepreneur parent raises the probability of the child becoming an entrepreneur by between 30% and 200%.

An important question in this literature is whether the transmission of entrepreneurship is dictated by nature, nurture or inherited wealth. Comparing biological children to adoptees, Lindquist et al. (2015) find that role model effects dominate the estimated effects of greater access to capital enjoyed by the children of entrepreneurial parents, or the effect of genetics alone. Dunn and Holtz-Eakin (2000), Lindquist et al. (2015), Hoffmann et al. (2015) and Vladasel et al. (2021) document patterns of same-gender occupational transmission of entrepreneurship.

We investigate the education and work experience choices of children of entrepreneurs, and address how they affect succession. We show that the same-gender transmission of human capital is mediated by the gender balance of the entrepreneur parent's industry and the shareholder structure of the firm. We integrate this literature with research on son preference, by showing how patterns of human capital accumulation and succession decisions differ in families that exhibit son biased fertility stopping rules versus those that don't.

2.3 Women's role in the management of family firms

A growing literature in management, summarized in Jimenez (2009), explicitly explores women's role in family firms and the gendered nature of the succession process. Early contributions by (Galiano and Vinturella (1995)) document the prevalence of biases against women as potential successors. Byrne et al. (2019) list several mechanisms perpetuating masculine successor roles: (1) associating leadership with dominant masculine constructions, (2) framing entrepreneurial traits as inherently male, and (3) linking desirable successor traits with male family members.

Dumas (1992) describes the conflicts between family and business roles as daughters become candidates for succession. While role conflict applies to sons of family business owners as well, in the case of daughters, this conflict is amplified by what may be perceived as gender atypical roles which challenge typical family relations, for example between mothers and daughters. Lyman (1989) points out that when daughters (or wives) do participate in the family business, their roles are often informal and/or unpaid, which results in lower earnings relative to male family members. Several authors point out that daughters are 'untapped resources' whose education and work experience is underutilized in the family firm, compared to sons (Dumas (1992), Lyman et al. (1985)). Ahrens et al. (2015) later find, analyzing a sample of German firms, that daughters are passed over for succession despite being more educated and experienced.

2.4 Family or professional CEOs

Many firms, including corporations with a wide shareholder base, are controlled by family owners.[6] Several authors have suggested that choosing a successor to lead the firm from within the family because of say birthright or gender, rather than from professionals competing for the job based on their leadership skills, could reduce the firm's profitability. Bloom and Van Reenen (2007) conjecture that primogeniture rules may cause a moral hazard problem: the designated male heir invests less in human capital than he would if his future as head was not guaranteed. Several authors have empirically investigated whether a leadership transition arising from a succession that installs a family member, rather than a professional CEO from outside the family, leads to better or worse firm outcomes. Findings by Pérez-González (2006), Bennedsen

[6] Across Europe, the Austrian Institute for SME Research (2008) documented that 70%-80% of enterprises are family businesses and they account for 40%-50% of employment. In the U.S., Anderson and Reeb (2003) documented that 35% of S&P 500 firms were family owned.

et al. (2007), Tsoutsoura (2015) and Kustec et al. (2020) point to large negative effects from appointing a family CEO on firm activity, including revenue, assets and profitability. Kustec et al. (2020) find that the negative effects are largely coming from families where the family successor never had any work experience outside the family firm.

The decision to seek a successor outside the family might be influenced by many unobserved variables related to the motivation and ability of potential heirs. As such unobservables will bias ordinary least square estimates, authors in this literatuure have sought instrumental variables likely to affect firm outcomes solely by influencing whether a professional CEO or a family member are recruited at the transition stage. Pérez-González (2006) and Bennedsen et al. (2007) use the gender of the first born child, or the fraction of female children of the retiring CEO as instrumental variables. Daughters are considerably less likely than their brothers to be selected for succession, and the gender of the first born child is random, suggesting the instrument is likely to meet the relevance and exogeneity conditions.

Compared to previous empirical work, we use shareholder data to distinguish family owned firms from non-family owned firms. We also extend the analysis of the effect of family versus professional successions to smaller firms that do not have a board or CEO. These distinctions are qualitatively and quantitatively important; for example family successions are positively correlated with the performance of smaller firms, whereas results are more mixed for larger firms. Our analysis also extends previous work by explicitly tracing the gender imbalanced succession decision to earlier choices that entrepreneurial families make about fertility and the human capital accumulation of their children.

3 Data, and Summary Statistics

We use Finnish administrative data covering the entire population of approximately 5.5 million inhabitants, whom we observe in a yearly panel between 1987 and 2019. The data contains information on employment status at the end of the year, highest level of education, field of study, and background demographic characteristics. The self-employed[7] are divided into three groups. First we count the number of years these individuals appear recorded as self-employed in the Finnish register data. Then we create terciles based on

[7]In the overall population, self-employment accounted for 14% of employment in Finland compared to 7% in the U.S. and 14% in the EU-27, according to the recent OECD data and definitions. Source: OECD (2024), Self-employment rate (indicator). doi: 10.1787/fb58715e-en

the duration of self-employment relative to total observed labor market experience. This partition roughly distinguishes individuals who were occasionally self-employed from individuals who are recorded as entrepreneurs most of their lives. We also identify individuals who are never recorded as self-employed as an additional group of (always) employees. 82% of the sample are always employees, while 18% are recorded at some point as self-employed. In empirical analyses we treat the CEOs as separate categories, regardless of whether they were recorded as self-employed or employees in the administrative data. This partition yields six mutually exclusive categories: CEOs exiting a firm owned by their family, CEOs exiting firms not owned by their family, self-employed individuals grouped by the duration of their self-employment spell, and individuals who are always recorded as employees. Among the self-employed we additionally examine a sample of individuals recorded as such at age 57, whom we track into their retirement.

CEO entry and exit data is identified off of the administrative data which contains information about board positions for every limited liability company in Finland between 1994 and 2019. We further determine whether the exiting CEO was part of the family owning a majority of shares in the firm. For this purpose, we use share ownership data, which is available since 2006. Limited liability companies must provide information about their shareholders if there are no more than 10 shareholders. If there are more shareholders, the limited liability company must report the personal information of the shareholders who own at least 10% of the company's stock, as well as all shareholders who have received a shareholder loan. To determine whether businesses are family owned, we first determine family structures: for each individual, we identify, through linkages in administrative data, all their children and parents as well as spouses/cohabitants. Combining information on parent-child and spouse linkages, we also identify all siblings and children in law for each individual. Then, for each exiting CEO, we determine whether their family (defined as parents, children, spouses, siblings, and children-in-law) collectively owned 50% or more of the firm. Table A2 displays summary statistics on the turnover (revenue), assets, and number of employees of the firms which experience a succession, four years before the succession year. The average family owned business has 9.8 employees, 1.7 million euros in assets, and 2 million euros in revenue, while firms classified as not family owned have 68.6 employees on average, 33.9 million euros in assets and 26.3 million euros in revenue.

Table 1 shows summary statistics for each CEO's last observed exit in the data, by the age of the exiting

CEO.[8] In family owned firms, 55.9% of exiting CEOs are replaced by a family member.[9] Among firms where the family of the CEO does not own a majority of the shares, 15.6% of exiting CEOs are succeeded by a family member. In the broader sample of firms (including those for which ownerships structure is unknown), 27.1% of CEO successors are linked to a family member.[10] The share of successions in favor of a family member naturally increases with age for all CEOs, as a higher share of new CEOs is recruited from the exiting CEO's children. For example, among CEOs over 70 in family owned firms, 72% of successions favor the CEO's children, with 50% favoring sons and 11% favoring daughters.

In order to study successions in smaller firms, which do not have a board structure or a CEO, we create a subsample of individuals recorded as self-employed at age 57 and track their yearly employment status until age 68, when virtually all self-employed entrepreneurs retire or pass away.[11] For CEOs explicitly identified in board data, the timing of their exit is precisely determined. For self employed business owners, we define a succession as the event that a parent previously working in year T at a firm no longer appears to be working in year $T+1$, but one of their children is working at the same firm in year $T+1$. For a majority of entrepreneurs observed self-employed at age 57, we also observe the legal status of the firm they are associated with. The majority of self-employed individuals are recorded as natural persons or sole proprietorships, with the remainder operating in limited liability companies or in partnerships. About 29.9% of limited liability companies and 22.3% of partnerships continue to be linked to a family member after the retirement of the entrepreneur, with about half being linked to a male heir of the retiring entrepreneur. As many sole proprietorships operate in the name of the self-employed person, some operate under a registered trading name and can be passed on. The linkage rate to a family member is much lower, but the same gender imbalanced patterns apply; male heirs are much more likely to take over the activity.

[8] In Table A1 we show very similar patterns of gender differences between successor sons and daughters for all observed CEO exits.

[9] For comparison, Kustec (2020) found 64 percent of CEO successions in family firms in Norway are in favor of a family member.

[10] This proportion is comparable to the 33% found by Bennedsen et al. (2007) in Denmark, notwithstanding some small differences in sample timing and restrictions.

[11] Figure A1 shows the yearly status of these individuals, indicating whether they are still alive, retired, employed in the same firm they worked for at age 57, employed in a different firm, out of the labor force or out of the sample (potentially because of out migration). By age 68, virtually all self-employed retire or pass away. The high rates of retirement around age 62-63 are influenced by the Finnish system of entrepreneurs' pensions, mandatory for individuals who register as self-employed for longer than six months throughout their periods of self-employment. This system creates incentives for entrepreneurs to draw upon their pensions beyond a certain age. Patterns are very similar between men and women, except for the lower mortality rates for women.

In table 2 we examine the characteristics of the exiting and incoming CEOs in family firms. First, we find there are fundamental differences between the circumstances under which a professional CEO, a child, or another family member take over. Children in particular are much more likely than professional CEOs to take over upon the retirement or death of the exiting CEO. In turn, they take over at much younger ages than the usual professional CEO. The average child or daughter successor is aged 33.4 and 34.9, while the average professional CEO takes over at age 41.3. Furthermore, situations where family members other than children (spouses, siblings, parents, children-in-law) take over display different patterns than successions in favor of children. For example, the average age of the exiting CEO is 45.5 for other family member successions, whereas it is 62 and 63 for sons and daughters, respectively. These successions are also less likely to follow the retirement of the exiting CEO. This suggests that successions in favor of children may be more planned, or 'legacy' successions, compared to successions in favor of other family members.

Turning to differences in human capital, we notice professional CEOs tend to be more educated than son CEOs, but differences are not statistically significant when compared to daughter CEOs or other family members. In turn, family successors have more experience in the firm than professional CEOs. Son CEO successors are more likely than daughter CEO successors to have any previous experience in the firm. Consistent with their higher age, professional CEOs have more managerial experience and experience outside the family firm. Among child successors, about 19% of sons and 11% of daughters have no experience outside the family firm.

Patterns for non-family owned firms, shown in Table A15, are very similar. One exception is the fact that the education of professional CEOs relative to family CEOs is higher across the board, whereas in family firms differences in formal education are smaller, and not statistically significant when comparing professional CEOs and daughters who become CEOs, for example.

In our empirical analysis, we examine how the gender of the children of employees and entrepreneurs affects overall family size, the succession decision and the growth of the firm. In Table 3 we display summary statistics about fertility patterns for individuals aged 57 and above. Entrepreneurs and CEOs are overall more likely to have larger families, and less likely to be childless. We also show gender ratios by the type of family composition. For individuals with exactly one child, the overall ratio of boys to girls is higher among entrepreneurs and particularly high for CEOs in family businesses. This pattern is consistent, as we will show, with entrepreneurs and CEOs displaying pronounced "son preference" patterns which make them

more likely to stop having children after having a male heir. As such, having just one daughter may be a less desirable outcome for these individuals, and they end up having more children. In turn, one male child is likely a desirable outcome, and the ratio between sons and daughters ends up being particularly high. Similar patterns can be observed for entrepreneurs who have two or three children: having two or three boys is a more common outcome than having two or three girls. In families with two children, it is also more common to observe among entrepreneurs (relative to employees) that the last child is a boy. This can be interpreted as a fertility stopping rule associated with son bias (Bharadwaj et al. (2014), Dossi et al. (2021)). This type of fertility stopping rule can be observed more clearly in families with more than two children. The probability that the last son is a boy is larger in entrepreneurial families and for CEOs of family owned businesses.

We also document the human capital accumulation process of the children of exiting CEOs and retiring entrepreneurs, and compare it to that of employees. For these purposes, we use the education information in the Finnish administrative data, for example yearly data on highest educational attainment and field of study for the highest attained degree. We also construct yearly work experience histories for the children of entrepreneurs and employees. We measure overall years of work experience, years of experience in the firm from which the parent entrepreneur/CEO retires/exits, and overall years of experience in a managerial occupation.[12]

The outcome variables for the firms from which CEOs exit/ entrepreneurs retire are obtained from the FIRM_FSS Financial Statement Data panel, which contains balance sheet information on revenue (turnover), assets, number of employees and the overall wage bill, among other items. We also use a measure of firm profitability, the Operating Return on Assets (OROA), defined as the ratio of (adjusted operating profits- depreciation) and assets. We also use an industry adjusted OROA measure, subtracting from the firm OROA the average OROA for the 2-digit industry in which it operates.

4 Empirical methods

In the steps outlined below, we examine fertility, human capital accumulation and succession decisions within the entrepreneur's family, comparing daughters to sons. In examining firm and child outcomes around

[12] Identified using the one-digit "Managers" code of the Finnish National Classification of Occupations.

the time of succession, we employ difference in differences specifications, comparing firms with family successor CEOs to those where an unrelated CEO takes over. We also compare the earnings outcomes of children of CEOs who are appointed as successors to those who are not.

We examine how effects at various stages of the fertility, human capital accumulation and succession processes are influenced by the gender composition in the parent's industry. We use the modal industry of employment over the parent's employment history and calculate fraction female employment based on register data for all employees in the respective industry.[13] We then define male(female) dominated industries as those in which more(less) than 50% of the employees in the industry are male.

We also link the fertility stage to later human capital accumulation and succession stages by identifying families that exhibit son-biased fertility patterns (Bharadwaj et al. (2014), Dossi et al. (2021)). Such families are defined within a subsample of families with two or more children with mixed genders, and exhibit a pattern of having *n* children, where the first *n-1* children are girls and the last is a boy. We focus on a subsample of individuals aged 52 and above, whose fertility spells are likely to be completed.[14] We create an indicator for son biased families and in subsequent analyses compare the magnitudes of effects for families exhibiting this fertility pattern.

4.1 Pre-Succession Outcomes

We examine the impact of the gender of the first born on the total number of children. Let Y_i denote the total number of children in the ith family, in the linear probability model:

$$Y_i = \alpha + \beta FBD_i + \delta X_i + \varepsilon_i, \tag{1}$$

where FBD_i indicates whether the firstborn child is a daughter, and X_i include controls for parental age, gender, income, place of residence, and education. This specification is estimated separately for (always) employees, terciles of self-employed when they are 57 years old, CEOs in family-owned businesses and as

[13] We calculate this measure at the two-digit industry level. In practice, as our time horizon spans several changing industrial classifications, we use a harmonization crosswalk prepared by Joonas Tuhkuri , https://joonastuhkuri.com/

[14] For the purposes of our analyses below on human capital accumulation and firm succession, we compare children aged 18 and above. As such, even though some individuals continue to grow their families past the age of 52, by the time children born after age 52 turn 18, the vast majority of CEO successions and entrepreneur retirement have already occurred (see Figure A1 and Table A1).

well as CEOs in firms without family majority ownership. We also estimate this specification separately for male and female entrepreneurs working in male and female-dominated industries, as well as separately by industry.

Turning to human capital accumulation, we show how the educational and early employment decisions of daughters of entrepreneurs differ from those of sons within families who have both sons and daughters. Here Y_i denotes a series of educational and employment outcomes of children: whether the child's field of study is the same as the parent's, the age at which the child is first employed, the number of years of schooling accumulated by age 30, years of cumulative work experience in the parent's industry, and an indicator for whether the child ever worked in the same firm as the parent:

$$Y_i = \alpha + \beta Daughter_i + \delta ParentFE_i + \gamma ChildAgeFE_i + \varepsilon_i \tag{2}$$

The explanatory variables in these regressions are $Daughter_i$, an indicator variable for offspring gender, with coefficient β capturing differences in the outcomes between brothers and sisters, and $ChildageFE_i$, a sequence of indicator variables that control for the child's age. We also include include a parent fixed effect, denoted by $ParentFE_i$. In a separate specification we add an interaction $Daughter_i * SonBias_i$, with coefficient β_2, to capture additional differences between daughters and sons in son-biased families:

$$Y_i = \alpha + \beta_1 Daughter_i + \beta_2 Daughter_i \times SonBias_i + \gamma ChildageFE_i + \delta ParentFE_i + \varepsilon_i. \tag{3}$$

The summary statistics in Table 1 indicate daughters are considerably less likely than sons to take over as CEOs or to continue small family firms. Those results aggregate variation both between and within families. To further investigate this pattern, we conduct a within-family analysis, running the linear probability models in equation 2 above. The outcome Y_i is an indicator for whether the child takes over the firm, either becoming the new CEO after the parent CEO exit, or, in the case of smaller firms, whether the child is linked to the family firm after the parent retires. We also partitioned the sample and ran the regression separately on each subsample, by the parent's gender and by whether the entrepreneur parent's industry is male or female dominated.

4.2 Post-succession outcomes

After the succession decision, we examine how the income of the exiting CEO's children has changed, using the specification in equation 2. We document to what extent earnings, stock ownership and board membership differ between the sons and daughters of entrepreneurs before the succession, and how these outcomes change after the CEO exit or parent's retirement. We also examine the impact of becoming a CEO for sons and daughter by employing a descriptive difference in difference specification:

$$\Delta Y_i = \alpha + \beta ChildCEO_i + \gamma Daughter_i + \mu ChildCEO_i \times Daughter_i + \delta X_i + \varepsilon_i, \tag{4}$$

where Y_i is total income, $ChildCEO_i$ is an indicator for whether a child was appointed CEO, further interacted with whether the daughter was appointed CEO. We add further controls X_i for children's highest educational attainment, a quadratic in the years of total experience accumulated by each of the CEO's children before the succession decision, and child age fixed effects.

To analyze changes in firm performance after succession we begin by using the difference in differences specification previously employed by Pérez-González (2006) and Bennedsen et al. (2007):

$$\Delta Y_i = \alpha + \beta FamilyCEO_i + \delta X_i + \varepsilon_i, \tag{5}$$

where ΔY_i indicates the difference between average firm outcomes three years after succession and three years before the succession year, and X_i includes fixed effects for the year of succession. It is plausible that one or more of the regressors might be correlated with the disturbance. To address the potential endogeneity of the decision to appoint a non-family CEO, Bennedsen et al. (2007) use, as an instrument, the gender of the first born child, and in a different specification, the ratio of male to total children. We adopt their instruments to ensure comparability between our results and theirs. Excluding the instrument as a regressor in this difference in differences model is rationalized by assuming the gender of the first born has no impact on firm growth prospects aside from those associated with the appointment of a successor.

To investigate the assumption that the gender of the firstborn is uncorrelated with the disturbance in the equations characterizing firm outcomes, we check, in Table A16, whether having a first born daughter is associated with the size and activity of the firm, four years before succession. Evidence of a statistically

significant effect would indicate firms may grow differently depending on the gender composition of the entrepreneur's family. We estimate the following equation:

$$Y_i = \alpha + \beta_1 FBD_i + \gamma ChildageFE_i + \delta ParentFE_i + \eta X_i + \varepsilon_i, \tag{6}$$

where Y_i is a firm outcome (turnover, assets, number of employees, wages, and logs of these variables), FBD indicates the first born child is a daughter and X_i includes controls for the total number of children. Results shown in Table A16 indicate having a daughter as a firstborn is weakly negatively associated with firm size for entrepreneurs in firms without a board and CEO. These firms tend to be generally smaller in size, and it seems plausible that if sons are more likely to be involved in the family firm than daughters, the firm will grow in size, almost mechanically, given the additional son employee. This raises concerns about the exclusion restriction for small firms. In the case of family owned firms with a board (panel B) and in the case of non-family owned firms, we do not find statistically significant effects. This is an indication that the growth of these larger firms may be less impacted by whether entrepreneurs have a first born son that becomes involved in the family business.

5 Results

5.1 Fertility outcomes

Table 4 shows the effect of having a first born daughter on the overall number of children. Among individuals never recorded as self-employed (always employees), a first born daughter raises the overall number of children by 0.028, or 1.25%. The magnitude is slightly higher among terciles one and two of the self-employed, but considerably higher in tercile 3, standing at 0.056, or 2.49%, and in the sample of entrepreneurs aged 57, where the effect is 0.061, or 2.55%. Among exiting CEOs, the magnitudes are higher than in the employee sample, but estimates tend to be more imprecise, as sample sizes are lower.

Columns 3-6 of Table 4 show results separately by the gender of the parent and by whether the modal industry they worked in was male or female dominated. The largest magnitudes for the first born daughter effect occur for fathers who are entrepreneurs in male dominated industries. Among female entrepreneurs, the magnitudes also tend to be larger in male-dominated industries. In female-dominated industries, magni-

tudes tend to be smaller and effects are not statistically significant. Turning to results by industry, table A3 compares magnitudes of the son preference effect between employees and entrepreneurs, across one-digit industries. The effects are largest in agriculture and forestry, mining and construction, and manufacturing. Within these industries, effects are considerably larger and statistically significant for entrepreneurs, whereas they are not statistically significant for employees.

These results are estimated at the parent level, and include individuals who had children while married, single, or cohabiting, from one or several relationships. The effect of a first born daughter raising the overall number of children has been documented in married couples (e.g. Dahl and Moretti (2008)), but an additional mechanism is relationship dissolution following the birth of a daughter, which may lead to subsequent children from other relationships. We document this pattern in Table A4. Having a first born daughter increases the probability that the couple will no longer be cohabiting, five years after the birth of the first child. This effect is statistically significant in the employees sample, an increase of 0.4 percentage points in the probability of relationship dissolution, but double (0.8-0.9 percentage points) for the sample of entrepreneurs.

Another mechanism through which families could achieve their desired family size and gender composition is adoption. In table A5 we compare the fraction of daughters among adoptive parents, separately for employees, entrepreneurs in smaller firms, and CEOs, by the gender of the adoptive parent and the gender composition of their industry. In regression estimates shown in Table 5, we find entrepreneurs are less likely to adopt daughters. Interestingly, more than 65% of female CEOs adopt girls. Despite the sample sizes for female CEOs being small, we can reject the null that the fraction of adopted girls is the same as in the overall population.

5.2 Human capital accumulation

In Table 6 we examine how the probability that daughters pursue the same field of study as the parent varies with entrepreneurial status, parent's gender, and whether the parent's industry is male or female dominated. Daughters are more likely than sons to follow the same field of study as their mothers, but this pattern predominantly holds when the mother is working in a female dominated industry. Daughters are much less likely than brothers to pursue the field of study of a father working in a male dominated industry, but the coefficients become considerably less negative if the father works in a female dominated industry. We

summarize these patterns for the offspring of CEOs in family firms in Figure 1A, displaying the gap between daughters and brothers in the likelihood of following in the parent's field of study against the fraction female employees for each two-digit industry. There is a clear correlation between the gender predominance in the parent's industry and the likelihood that daughters will follow the parent's field of study. This suggests same-gender patterns of following in the parent's footsteps are strongly mediated by the gender specificity of the parent's industry. Similar patterns hold for the children of CEOs in non-family firms (Appendix Figure 4A) and children of entrepreneurs (Appendix Figure 5A)

Panel B of Table 6 shows differences between sons and daughters of entrepreneurs in whether they ever worked in the same firm as their parents before the year of succession.[15] Sons of CEOs in family owned businesses are considerably more likely than their sisters to work in the same firm as their parents. About 43 per cent of sons of entrepreneurs in male dominated industries have joint experience with their fathers, while their sisters are 24 percentage points less likely to have joint experience, a gap wider than that observed for employees, entrepeneurs or CEOs in non-family owned enterprises. The pattern is reversed, although magnitudes are smaller, when the mother is an entrepreneur in a female-dominated industry. It is then daughters who are 10 percentage points more likely than their brothers to be working in the same firm as their mother in family owned firms. These patterns are summarized at the two-digit industry level in Figure 1B, which shows the strong correlation between the likelihood of daughters working in the family business and the fraction of female employees in the industry.

Consistent with the patterns of overall experience accumulation, we find that sons of CEOs in family firms also have their first formal employment experience earlier than their sisters, and in fact earlier than sons of employees or other types of entrepreneurs. These results are presented in Table A6. Relative to their brothers, daughters of entrepreneurs have their first formal employment experience later if the industry of the entrepreneur parent is male dominated. Interestingly, if parents are employed in a female dominated industry, daughters have their first employment experience earlier than their brothers.

Daughters accumulate more years of schooling overall than their brothers, regardless of parent's entrepreneurial status or industry. The higher level of educational attainment for daughters relative to brothers holds for all families, but the relative educational gap is particularly high for children of CEOs in family owned businesses. Results in Table A8 indicate that daughters of entrepreneurs accumulate more education

[15] Similar patterns for years of experience in the same firm as the parent are shown in Table A7

than their brothers when the entrepreneur parent works in a male dominated industry. Conversely, the educational advantage is relatively smaller when the family business is operating in a female-dominated industry. These results are consistent with the higher work experience and earlier first episode of employment of sons of entrepreneurs in male-dominated industries.

We further investigate whether human capital accumulation patterns differ in families which are classified as exhibiting son bias. Table A12 examines whether work experience accumulation differs between daughters in sons in families which exhibit son bias fertility patterns.[16] We find daughters of entrepreneurs accumulate even less work experience in their parent's industry in son-biased families. These effects are largest for entrepreneur fathers in male-dominated industries.

5.3 Succession outcomes

Before analyzing the actual succession decision, we analyze differences in board membership and share ownership between sons and daughters before the year of succession. In Table 7 we find daughters are less likely than sons to ever be on the board of the firm before succession and also less likely to be on the board four years before succession. The magnitude of the effect is larger in family owned firms, for father entrepreneurs, and in male dominated industries. We find similar patterns when analyzing share ownership before succession. The magnitude of the gap is largest in family owned firms in male dominated industries led by a father CEO: daughters are 14.9% less likely to own any shares in the firm before succession relative to their brothers. The magnitude of the gender gap between offspring decreases in female dominated industries, and becomes statistically insignificant if the mother is a CEO in a female dominated industry.

Table 8 quantifies the gap in the probability of succession for daughters (relative to their brothers) across the samples of exiting CEOs in non-family businesses, CEOs in family businesses, and self-employed retiring after age 57. Among this latter group, we further distinguish between entrepreneurs whose firm is a sole proprietorship (natural person), a limited liability company or a partnership. The table also displays how the daughter coefficient differs by parent's industry, contrasting gender succession patterns in male versus

[16] Additional results on differences in human capital accumulation in families that exhibit son biased fertility stopping rules are presented in Appendix Tables A9, A10 and A11 and A13 We find that daughters accumulate more education relative to their brothers in son-biased families. This result is consistent with sons of entrepreneurs accumulating relatively more work experience than daughters in son-biased families. We do not find statistically significant effects on the son bias interaction term for the "same field of study" and "age of child's first employment" outcomes.

female-dominated industries. Across all samples, daughters are less likely than sons to take over, except in some instances when the entrepreneur parent is the mother, and she is also working in a female-dominated industry. The daughter's lower likelihood of becoming a successor is particularly high if the entrepreneur father is working in a male dominated industry, and becomes less negative if the father works in a female dominated industry or if the mother is an entrepreneur. Across types of firms, family owned businesses with an explicit board and CEO position display the highest magnitudes of the daughter penalty in succession, albeit from a higher overall baseline rate of family successions (see Table 1, panel B). Succession patterns are also aligned with the gender composition of the retiring CEO/entrepreneur's industry. In Figure 1C and we plot the daughter coefficient in the succession equation, estimated separately for two-digit industries, against the fraction female employees in the industry. The slopes are very similar to the patterns observed at the stage of human capital accumulation in Figures 1A and 1B.

In Table A14 we examine how succession patterns differ in families that exhibit son bias fertility preferences. We find that daughters exhibit a larger penalty relative to brothers in CEO successions in family businesses (Panel A) and in self-employed successions (Panel C). These penalties are driven by successions where the exiting CEOs/self-employed are men working in male-dominated industries.

5.4 Firm outcomes

We analyze the impact of CEO transitions on firm performance in Table 9. In Panel A we compare firm performance when a family member is appointed CEO against cases when the successor was an unrelated CEO. OLS and median regressions do not indicate a clear pattern of statistically significant effects on changes in turnover (revenue), assets, the number of employees, the total wage bill or operating return on assets (OROA). We find some evidence of lower revenue and lower number of employees in the OLS regressions (but not in the median regression), and a negative effect of family CEOs on unadjusted OROA. Using the same instrument as Bennedsen et al. (2007), our estimates are imprecise, despite the first stage F statistic being fairly large (approximately 78).

As pointed out by the summary statistics in Table 2, circumstances under which a child vs. another family member take over are fundamentally different, as successions in favor of children are much more likely to follow the retirement of the exiting CEO. Descriptive evidence in Figure 3 on the evolution of firm revenue around the succession event point to fundamental differences in the evolution of firm revenue post-

succession. As such, we proceed to separately analyze outcomes for children and other family successors. In Panel B, we compare the performance of children of CEOs against that of professional CEOs. We find little evidence of underperformance of child CEOs (a small statistically significant negative effect on OROA, but not industry adjusted OROA), and generally positive effects on turnover, assets, number of employees and the overall wage bill, particularly in the median regression. IV results remain imprecise. When we turn our attention to appointments of family members other than children, we find, in the OLS and median regression results, a negative association with turnover and assets, and a decline in the number of employees and the overall wage bill. We also again find statistically significant negative effects on unadjusted OROA. Turning to 2SLS estimates using the first born daughter instrument, we again obtain very imprecise estimates. Our results differ from findings by Bennedsen et al. (2007) and Pérez-González (2006), as we do not find negative effects across the board on the firm's activity, either in the OLS or the IV regressions. Our results however point to systematic under performance in cases where the family CEO is not one of the heirs of the exiting CEO. Summary statistics in Table 2 point to the fact that the majority of family successions not in favor of children occur when the CEO exits at a younger age. This raises the question as to whether earlier CEO exits differ from later life CEO exits which have a bequest or legacy component.

We repeat the analysis separately for family owned businesses and for firms without majority family ownership in Tables A18 and A19. The same patterns hold across the two types of firms: OLS and median regression effects for children of CEOs taking over are either positive statistically significant or not statistically significant. IV results remain imprecise. The observed underperformance of family CEOs is largely coming from family members other than children, and OLS and median regression results in both family-owned and non-family-owned firms point to decreases in revenue, assets and the number of employees. In the case of non-family owned firms we also find negative effects on OROA.

Taken together, these results point to the negative effects of appointing a family member as CEO are driven by family members other than the children of the CEO, although we cannot establish a clear causal effect, given the imprecision of our IV estimates. In specifications not reported, we have also attempted to use other instrumental variables which plausibly affect the appointment of a family, as opposed to a professional CEO, and do not have a direct impact on the firm other than through the appointment decision. We have used the fraction of CEOs with business degrees in the two-digit industry, or the fraction of CEOs with a college education. Results remain imprecise, despite fairly strong first stage effects.

Turning to smaller firms without a board and CEO, OLS and median regression results in Table A17 indicate positive effects on firm turnover, assets, number of employees and overall wage bill of having a child employed by the firm of the retiring entrepreneur. IV results are positive and weakly statistically significant, but should be interpreted with caution, given the exclusion restriction is unlikely to hold for these smaller firms, where the gender of the first born can impact firm growth prospects over and above the decision to appoint a family successor, as discussed in section 4.2.

5.5 Children's outcomes

In table 10 we examine differences in earnings, employment and involvement in the firm of the exiting CEO, differences between daughters and sons four years before the CEO succession and five years thereafter. Consistent with the human capital accumulation processes described in tables 6 and A7, we find daughters are less likely than their brothers to be employed by the firm of the exiting CEO four years before succession, but effects are only statistically significant for father CEOs, -11% in male dominated industries and -4.3% in female dominated industries. Five years after succession, the employment gap narrows to -7.4% and -2.2%, respectively. Daughters' overall income is smaller than that of their brothers, and the gap depends on the industry of the parent CEO. For daughters with a mother CEO, the gap is 12%, but it stands at 24% and 27% if the father and respectively mother are CEOs in a male-dominated industry. These earnings gaps are larger than the overall gender pay gap in the economy, which stood at 16 per cent in 2020.[17]

Five years after succession, the earnings gap widens in all industries, notably in the female dominated ones. Part of the widening income gap can be explained by sons' higher rates of access to managerial positions. Sons were more likely than daughters to hold managerial positions four years before the succession in the case of father CEOs. After the succession, the managerial position gap widens in all industries, also in cases where the retiring CEO was the mother. Similarly, the gap in share ownership and board membership widens after succession.[18] Examining the change in incomes, we find that becoming CEO after the exit of a parent has a small impact on the earnings of sons, but does boost the earnings of daughters who become

[17] Gender Pay Gap, Finnish Ministry of Social Affairs and Health, https://stm.fi/en/gender-equality/equal-pay

[18] As some successions occur at the death of the exiting CEO (see table 2), they may be linked to the inheritance process. Inheritance is ruled by the 1965 Finnish inheritance Code, which lays the primary right to inherit with direct descendants (not the spouse). The Code of Inheritance specifies that 'Each child shall receive an equal share of the inheritance'.

CEO. This is illustrated in Figure A6. We summarize these effects in a difference-in-difference analysis in Table A20, where we find statistically insignificant effects for sons who become CEOs relative to sons who do not, but earnings gains of up to 19 per cent for daughters who become CEOs in family firms. These figures suggest the earnings gap between daughters and sons of CEOs is likely to narrow only if daughters become CEOs. This is indeed illustrated in figure 4, which shows the evolution of the earnings gap depending on the type of transition in family firms. The gap is stable if sons become CEOs, but narrows and becomes statistically insignificant when daughters are preferred for succession. The figure also highlights two other stylized facts: 1) the gap widens in circumstances where other family members or professional CEOs take over and 2) the magnitude of the earnings gap between the sibling who eventually takes over and siblings of the opposite sex is well established four years before succession.

6 Conclusion

Succession is a crucial turning point in the life of a family business. We examine how entrepreneurs prepare for this decision, beginning with the stage of family formation, where we document a relatively high preference for sons among entrepreneurs, particularly for those whose firm activates in male-dominated industries. The family size son preference patterns are corroborated by evidence on gender preferences for adopted children, and effects on separations following the birth of a daughter.

At the human capital accumulation stage, daughters of CEOs accumulate less work experience with their fathers and are much less likely to pursue the same broad field of study relative to their brothers. But these patterns are mediated by the industry of the entrepreneur parent, with daughters more likely to be employed in the family business or follow the parent's field of study if the industry is female-dominated. We find the gender predominance in the industry of the entrepreneur parent to be a strong predictor of the gap between sons and daughters in the human capital accumulation process as well as the succession decision. Using information on son biased fertility stopping rules, we additionally find the gap between daughters and sons to be larger in son-biased families.

Like many other analysts, we find the appointment of a family CEO is associated with some negative firm outcomes. Examining the family links closer, we do not find negative effects in cases where the incoming CEO is one of the children of the retiring CEO. Actually smaller firms see gains in revenue and employment

if the child of the retiring entrepreneur is employed by the firm. Negative effects are driven by family members other than children, which tend to be appointed as CEO successors when the exiting CEO successor is younger, and when the exit is likely not influenced by bequest motives.

By the time of the succession decision, daughters of exiting CEOs have accumulated less overall and managerial experience, have considerably lower earnings than their brothers, but have more years of schooling, and are more likely to have worked outside the family firm. In line with the net preference for sons in the succession decision, the share ownership and gender earnings gap between the daughters and sons of CEOs increases post-succession.

Our analysis is descriptive, so of limited use in inferring the effects of counterfactual or hypothetical regimes predicated on policy or technological changes that might affect behavior in this sphere. However our findings strongly suggest that temporary changes in policy may have little effect, and that permanent changes might work their way through the system only slowly, but have much bigger long term ramifications. Ignoring the long term dynamics associated with developing and nurturing successors could produce misleading interpretations along with biased predictions about counterfactual regimes.

References

Ahrens, J.-P., A. Landmann, and M. Woywode (2015). Gender preferences in the CEO successions of family firms: Family characteristics and human capital of the successor. *Journal of Family Business Strategy 6*(2), 86–103.

Anderson, R. C. and D. M. Reeb (2003). Founding-family ownership and firm performance: Evidence from the S&P 500. *The Journal of Finance 58*(3), 1301–1328.

Andersson, G., K. Hank, M. Rønsen, and A. Vikat (2006). Gendering family composition: Sex preferences for children and childbearing behavior in the Nordic countries. *Demography 43*(2), 255–267.

Austrian Institute for SME Research (2008). Overview of family business relevant issues contract no. 30-ce-0164021/00-51 final report.

Baccara, M., A. Collard-Wexler, L. Felli, and L. Yariv (2014). Child-adoption matching: Preferences for gender and race. *American Economic Journal: Applied Economics 6*(3), 133–158.

Bennedsen, M., K. Meisner Nielsen, F. Perez-Gonzalez, and D. Wolfenzon (2007). Inside the Family

Firm: The Role of Families in Succession Decisions and Performance. *The Quarterly Journal of Economics* (May).

Bennedsen, M., K. M. Nielsen, F. Pérez-González, and D. Wolfenzon (2007). Inside the family firm: The role of families in succession decisions and performance. *The Quarterly Journal of Economics 122*(2), 647–691.

Bharadwaj, P., G. B. Dahl, and K. Sheth (2014). Gender discrimination in the family. *The economics of the family: How the household affects markets and economic growth 2*, 237–266.

Blau, F. D., L. M. Kahn, P. Brummund, J. Cook, and M. Larson-Koester (2020). Is there still son preference in the United States? *Journal of Population Economics 33*, 709–750.

Bloom, N. and J. Van Reenen (2007). Measuring and explaining management practices across firms and countries. *The quarterly journal of Economics 122*(4), 1351–1408.

Byrne, J., S. Fattoum, and S. Thébaud (2019). A suitable boy? gendered roles and hierarchies in family business succession. *European Management Review 16*(3), 579–596.

Corak, M. and P. Piraino (2011). The intergenerational transmission of employers. *Journal of Labor Economics 29*(1), 37–68.

Dahl, G. B. and E. Moretti (2008). The demand for sons. *The review of economic studies 75*(4), 1085–1120.

Dossi, G., D. Figlio, P. Giuliano, and P. Sapienza (2021). Born in the family: Preferences for boys and the gender gap in math. *Journal of Economic Behavior and Organization 183*, 175–188.

Dumas, C. (1992). Integrating the daughter into family business management. *Entrepreneurship Theory and Practice 16*(4), 41–56.

Dunn, T. and D. Holtz-Eakin (2000). Financial capital, human capital, and the transition to self-employment: Evidence from intergenerational links. *Journal of labor economics 18*(2), 282–305.

Galiano, A. M. and J. B. Vinturella (1995). Implications of gender bias in the family business. *Family Business Review 8*(3), 177–188.

Hoffmann, A., M. Junge, and N. Malchow-Møller (2015). Running in the family: parental role models in entrepreneurship. *Small Business Economics 44*(1), 79–104.

Jayachandran, S. and I. Kuziemko (2011). Why do mothers breastfeed girls less than boys? evidence and implications for child health in India. *The Quarterly journal of economics 126*(3), 1485–1538.

Jimenez, R. M. (2009). Research on women in family firms: Current status and future directions. *Family*

Business Review 22(1), 53–64.

Kodama, N., Y. Murakami, and M. Tanaka (2021). No successor, no success? impact of a little son on business performance. *Journal of the Japanese and International Economies 62*, 101169.

Kustec, I. (2020). *Three Essays on Family Firm Succession*. Ph. D. thesis.

Kustec, I., C. Ostergaard, and A. Sasson (2020). Underperformance in family successions: The role of outside work experience.

Larsen Gibby, A. and K. J. Thomas (2019). Adoption: a strategy to fulfill sex preferences of US parents. *Journal of Marriage and Family 81*(2), 531–541.

Lindquist, M. J., J. Sol, and M. Van Praag (2015). Why do entrepreneurial parents have entrepreneurial children? *Journal of Labor Economics 33*(2), 269–296.

Lundberg, S. (2005). Sons, daughters, and parental behaviour. *Oxford Review of Economic Policy 21*(3), 340–356.

Lyman, A., M. Salganicoff, and B. Hollander (1985). Women in family business an untapped resource. *SAM Advanced Management Journal (07497075) 50*(1).

Lyman, A. R. (1989). Life in the family circle. *Women in Management Review 4*(3).

Mehrotra, V., R. Morck, J. Shim, and Y. Wiwattanakantang (2013). Adoptive expectations: Rising sons in Japanese family firms. *Journal of Financial Economics 108*(3), 840–854.

Pérez-González, F. (2006). Inherited control and firm performance. *American Economic Review 96*(5), 1559–1588.

Pérez-González, F. (2006). Inherited control and firm performance. *American Economic Review 96*(5), 1559–1588.

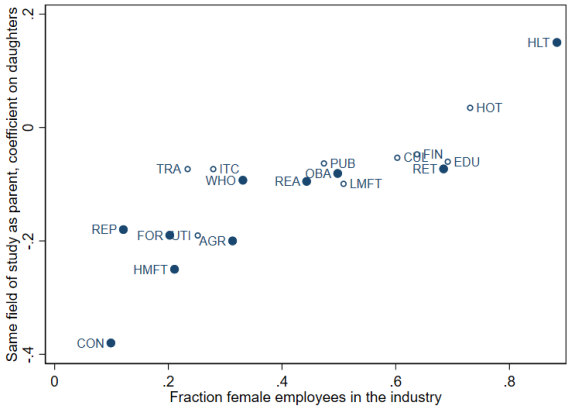
Saarela, J. and F. Finnäs (2014). Sex composition of children, parental separation, and parity progression: Is Finland a Nordic outlier? *Demographic Research 30*, 49–70.

Tsoutsoura, M. (2015). The effect of succession taxes on family firm investment: Evidence from a natural experiment. *The Journal of Finance 70*(2), 649–688.

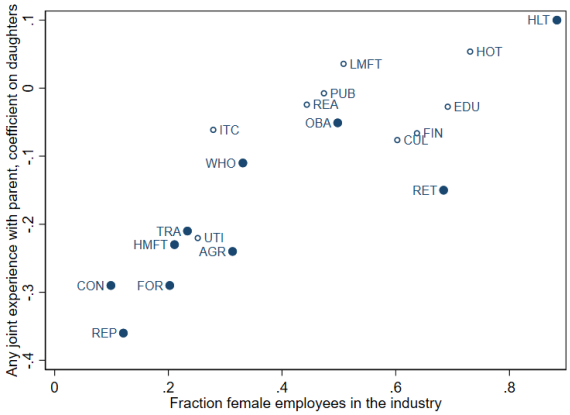
UNCTAD (2021). Empowering family businesses to fast-track sustainable development. https://unctad.org/news/empowering-family-businesses-fast-track-sustainable-development.

Vladasel, T., M. J. Lindquist, J. Sol, and M. Van Praag (2021). On the origins of entrepreneurship: Evidence from sibling correlations. *Journal of business venturing 36*(5), 106017.

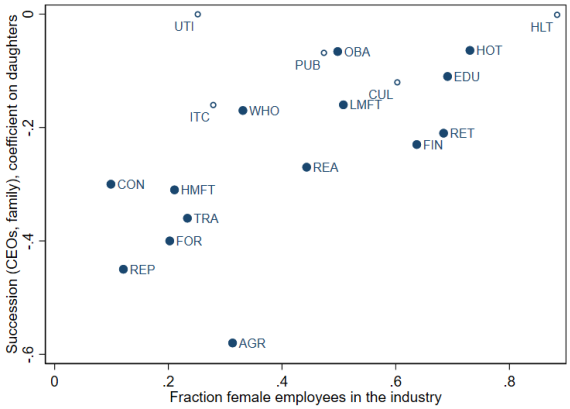
Figure 1: Human capital accumulation and succession decisions, CEOs in family firms and their offspring



(A) Child has the same field of study as the CEO parent



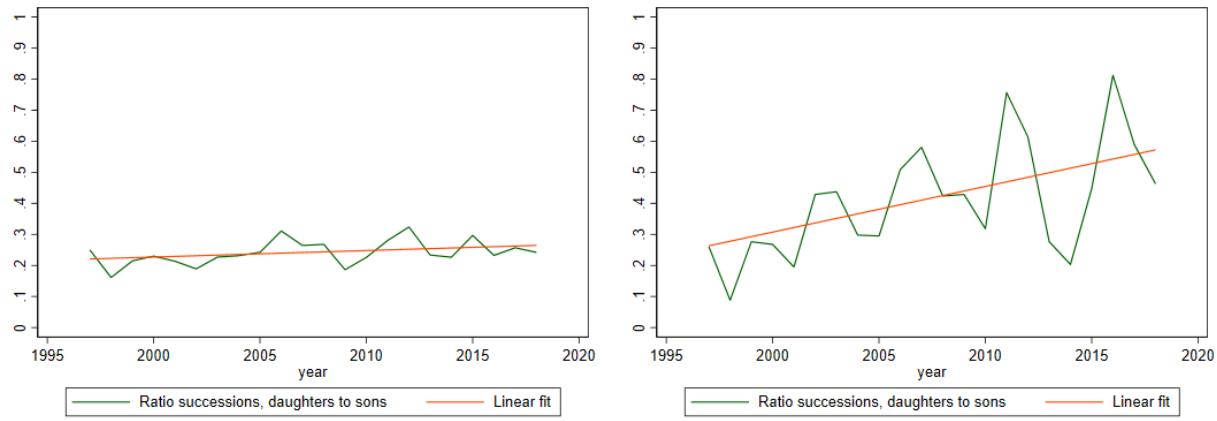
(B) Child has worked in the same firm as the CEO parent by the time of succession



(C) Child of departing CEO took over as CEO

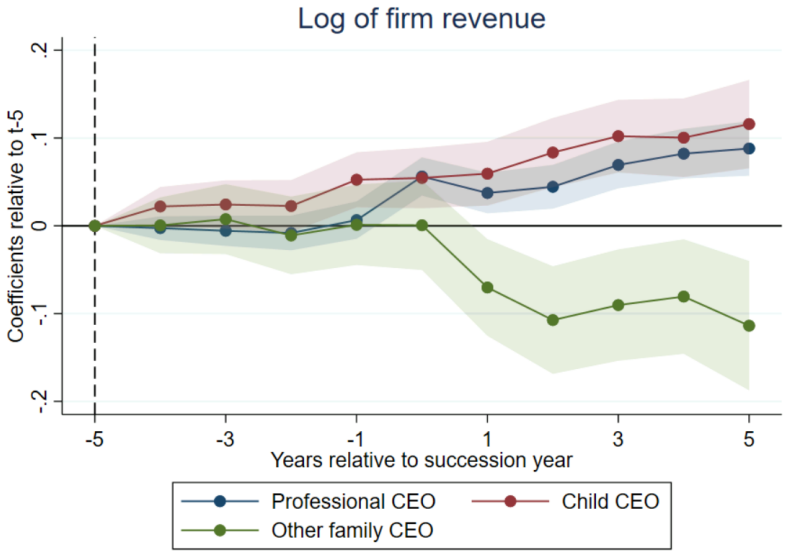
Scatterplots show the coefficient on daughters (relative to brothers) in equation 2. Hollow dots indicate coefficients which are not statistically significant. Regressions are conducted separately by the modal two-digit industry of employment of the parent for field of study and same firm experience regressions, and the industry of the firm from which the parent CEO exits for succession outcomes (panel C). AGR: Agriculture, FOR: Forestry + manufacturing of wood products, LMFT: Light manufacturing, PUB: Publishing, HMFT: Heavy manufacturing, UTI: Utilities, CON: Construction and mining, REP: Repairs of motor vehicles, WHO: Wholesale trade, RET: Retail trade, HOT: Hotels and restaurants, TRA: Transportation, FIN: Financial intermediation, REA: Real estate activities, ITC: Information technology and communication, OBA: Other business activities + research, EDU: Education, HLT: Health and social work, CUL: Cultural activities.

Figure 2: Ratio of daughter CEO successors to son successors, all industries (left) and female-dominated industries (right)



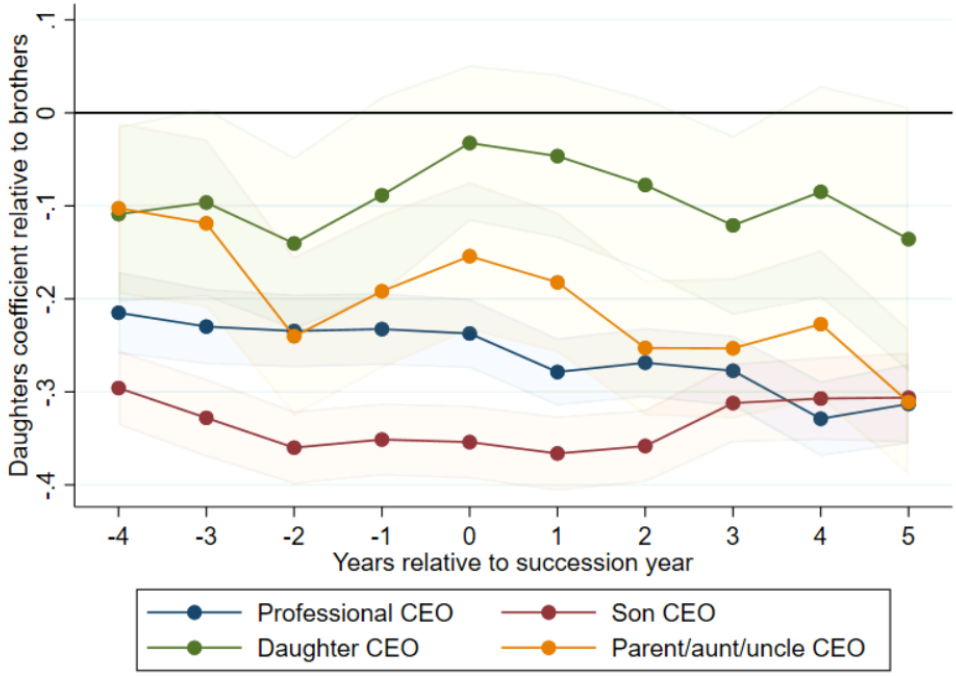
Notes: Figures show the ratio of CEO successions in favor of daughters to successions in favor of sons, 1997-2018. On average, each year we observe 67 successions in female-dominated industries and 210 successions in male-dominated industries.

Figure 3: Evolution of firm revenue by type of succession, family firms



Notes: Successions in firms where the family of the exiting CEO holds the majority of shares, 2007-2019. This graph is a descriptive event study plotting the log of firm revenue around the time of the event: $Y_{it} = \sum_{\ell \in (-4,\ldots,5)} \beta_\ell D^\ell_{i,t} + \varepsilon_{it}$. Coefficients normalized to T-5 years before the succession year. Other family CEO includes spouses, siblings, parents and children-in-law.

Figure 4: Effect of type of succession in family firms on the gap between daughters' and sons' incomes



Notes: Figure shows the earnings gap between the daughters and sons of exiting CEO around the succession event, by the type of incoming CEO.

Table 1: CEO and Entrepreneur Successions, Summary Statistics

	Observations	Family member becomes CEO	Child becomes CEO	Son becomes CEO	Daughter becomes CEO
A. CEO transitions, 1994-2019, by departing CEO age:					
20-29	<5				
30-39	139	0.273	0.022	0.022	
40-49	5,105	0.169	0.035	0.028	0.007
50-59	12,747	0.198	0.116	0.096	0.020
60-69	9,676	0.297	0.241	0.195	0.046
70+	1,512	0.521	0.448	0.343	0.103
All	29,181	0.271	0.223	0.177	0.047
B. CEO transitions, firms without family majority ownership, 2007-2019, by departing CEO age:					
30-39	40	0.200			
40-49	2,137	0.091	0.015	0.008	0.006
50-59	5,429	0.084	0.041	0.033	0.008
60-69	4,611	0.147	0.112	0.092	0.021
70+	641	0.371	0.315	0.232	0.080
All	12,859	0.156	0.135	0.103	0.032
C. CEO transitions, family owned firms, 2007-2019, by departing CEO age:					
30-39	32	0.375			
40-49	692	0.389	0.075	0.058	0.017
50-59	1,883	0.500	0.304	0.254	0.050
60-69	2,364	0.587	0.480	0.382	0.098
70+	492	0.738	0.632	0.502	0.130
All	5,463	0.559	0.444	0.355	0.089
D. Entrepreneurs without explicit CEO role[a]					
All	42,705	0.140	0.081	0.058	0.019
Natural persons	21,672	0.066	0.038	0.026	0.009
Limited liability companies	7,276	0.299	0.210	0.147	0.054
Partnerships and others	5,150	0.223	0.152	0.112	0.033
Legal form information missing	8,607	0.140	0.036	0.031	0.004

a. Sample of individuals recorded as self-employed at age 57 without an explicit CEO role but linked (employed) to a specific firm in administrative data. In their case, columns 2-5 indicate whether a family member/child/son/daughter are working for the same firm after the parent is no longer working for the firm. Table displays summary statistics for the last observed CEO succession or retirement decision (as of 2019). Appendix Table A1 shows all CEO successions (including all successions for individuals observed exiting multiple times). Family members include the CEO's parents, spouses, siblings, children and children-in-law. In firms without family majority ownership, we observe fewer than five transitions below the age of 30 in non-family owned firms. In family owned firms, there are 21 transitions between the ages of 20 and 29 (of which 0.381 are linked to a family member).

Table 2: Succession summary statistics, family businesses

	Professional	Sons	Daughters	Other
Mean /(s.e. Mean)				
Tenure of the exiting CEO	7.972	11.872	11.969	8.347
	(0.066)	(0.119)	(0.245)	(0.105)
CEO died	0.026	0.095	0.135	0.071
	(0.002)	(0.006)	(0.015)	(0.005)
CEO retired	0.114	0.391	0.454	0.096
	(0.004)	(0.010)	(0.021)	(0.006)
Age of exiting CEO	48.369	61.928	63.037	45.516
	(0.150)	(0.151)	(0.317)	(0.234)
Age of new CEO	41.289	33.380	34.894	47.080
	(0.122)	(0.159)	(0.336)	(0.231)
Years of schooling new CEO	14.338	13.596	14.442	14.257
	(0.028)	(0.045)	(0.092)	(0.045)
% College degree new CEO	0.504	0.408	0.502	0.480
	(0.006)	(0.010)	(0.022)	(0.010)
Any previous experience in the firm	0.317	0.651	0.528	0.530
	(0.006)	(0.010)	(0.022)	(0.010)
Any previous managerial experience	0.475	0.308	0.281	0.446
	(0.006)	(0.010)	(0.019)	(0.010)
Any outside experience	0.959	0.811	0.889	0.972
	(0.002)	(0.008)	(0.014)	(0.003)
Observations	6,781	2,216	540	2,725

Notes: Successions in firms where the family of the exiting CEO holds the majority of shares, 2007-2019.

Table 3: Summary statistics, number and gender of children

	Always employees	Entrepreneurs Tercile 1	Entrepreneurs Tercile 2	Entrepreneurs Tercile 3	Entrepreneurs at age 57	CEOs, all	CEOs, non-family firms	CEOs, family firms
% Had no children	18.59	12.78	11.89	13.60	12.41	8.19	8.03	6.13
% One child	17.99	15.17	14.86	13.59	15.03	13.91	13.06	13.71
Ratio boys/girls	1.07	1.08	1.14	1.16	1.14	1.21	1.13	1.29
% Two children	37.37	35.32	36.77	37.21	38.73	42.24	43.48	41.29
Ratio all boys /all girls	1.12	1.14	1.25	1.22	1.18	1.14	1.10	1.23
Gender mix ending with son/... .../Gender mix ending with daughter	1.008	1.006	0.997	1.028	1.044	1.032	1.030	1.135
% More than two children	25.62	36.32	36.12	35.25	33.41	35.32	35.16	38.59
Ratio all boys / all girls	1.11	1.10	1.13	1.06	1.03	1.25	1.16	1.65
Several daughters ending with son/... ...Several sons ending with daughter	1.013	1.033	1.059	1.106	1.111	1.036	1.006	1.085
Observations (parents)	847,584	66,234	61,946	65,767	61,890	22,118	8,692	3,151
Average number of children	2.24	2.52	2.50	2.49	2.43	2.45	2.45	2.54
Overall ratio boys/girls	1.04	1.04	1.07	1.05	1.04	1.06	1.05	1.10

Notes: Sample of individuals aged 57 or older. CEO (all) denotes individuals recorded as CEOs in firm administrative data 1994-2019. CEOs, non-family firms(family firms) is the sample of CEOs in firms without(with) family majority ownership, 2007-2019.

Table 4: Effect of having a female firstborn on the total number of children

	Effect of first born daughter	N	Father in MD industry	Father in FD industry	Mother in MD industry	Mother in FD industry
Employees	0.028**	792,362	0.021***	0.031***	0.038***	0.029***
	(0.003)		(0.005)	(0.006)	(0.006)	(0.004)
Tercile 1 Entrepreneurs	0.032**	65,568	0.021	0.054**	0.006	0.029
	(0.010)		(0.022)	(0.020)	(0.030)	(0.017)
Tercile 2 Entrepreneurs	0.034**	59,607	0.062***	−0.004	0.046	0.020
	(0.011)		(0.018)	(0.023)	(0.028)	(0.020)
Tercile 3 Entrepreneurs	0.056***	60,171	0.054***	0.054*	0.074*	0.051*
	(0.011)		(0.015)	(0.027)	(0.029)	(0.021)
Entrepreneurs at age 57 sample	0.061***	39,384	0.069***	0.014	0.12***	0.041
	(0.012)		(0.019)	(0.028)	(0.033)	(0.026)
CEOs, all	0.045**	25,758	0.064*	0.006	0.11	0.073*
	(0.012)		(0.027)	(0.023)	(0.063)	(0.032)
CEOs, non-family firms	0.019	12,680	0.030	0.025	-0.009	-0.014
	(0.021)		(0.037)	(0.031)	(0.076)	(0.047)
CEOs, family firms	0.083	4,006	0.098	−0.032	0.38*	0.091
	(0.043)		(0.066)	(0.088)	(0.16)	(0.087)
Both parents entrepreneurs	0.063***	81,217	0.085***	0.042	0.058**	0.057***
	(0.010)		(0.019)	(0.026)	(0.021)	(0.018)

Notes: Data for 2018, individuals aged 50 and above. The Employees category denotes individuals who have never been self-employed. 'Entrepreneurs' are individuals recorded as self-employed, whom we allocated to terciles based on how many years they have been registered as self-employed between 1995 and 2019. Both parents are identified as entrepreneurs if they are allocated to any of the terciles. CEO information is based on Finnish board data (PRH_BOARD), years 1994-2019, and firm ownership data (FLOWN_OWNER), years 2006-2019. Non-family owned and family owned businesses -samples include only CEOs that stepped down between 2007 and 2019, as information on ownership is only available starting 2006. Regressions include controls for parental age, gender, income, place of residence and education. MD and FD indicate male and respectively female dominated industries, identified using the modal gender of employees in the parent's two-digit industry.

Table 5: CEO or entrepreneur parents and the gender of adopted children

	Adopted child is a girl
Entrepreneur	-0.024^{*}
	(0.011)
Adoptive parent female × Entrepreneur	0.006
	(0.016)
Parent is CEO	0.001
	(0.019)
Adoptive parent female × Parent is CEO	0.126^{**}
	(0.045)
Adoptive parent female	0.003
	(0.004)
Constant	0.498^{***}
	(0.004)
Observations	36,418
Specification	Weighted

Notes: Administrative data from 2019 on children ever adopted and their adoptive parents, which has been combined, through individual identifiers, with information on parental careers, specifically whether the adoptive parent was ever self-employed (denoted here as "Entrepreneur") or ever held a CEO role. The specification uses weights of 1/2 for children adopted by two parents and 1 for children adopted by one parent in the dataset. Coefficients are relative to children adopted by parents who were always employees (omitted category). Further summary statistics and number of observations by groups are shown in Table A5. Standard errors clustered at the adopted child level. * p < .05 ** p < .01 *** p < .001.

Table 6: Same broad field of study and any same firm experience with parent, gap between daughters and sons, within family estimates

	Father in:		Mother in:	
	MD[a] industry	FD industry	MD industry	FD industry
A. Same field of study as parent				
Employees	-0.31***	-0.15***	-0.022***	0.10***
	(0.003) [0.40]	(0.002) [0.25]	(0.004) [0.20]	(0.002) [0.13]
Entrepreneurs	-0.28***	-0.15***	0.003	0.10***
	(0.009) [0.38]	(0.009) [0.29]	(0.013) [0.19]	(0.006) [0.13]
CEOs, all	-0.23***	-0.094***	0.003	0.073***
	(0.011) [0.37]	(0.011) [0.27]	(0.032) [0.22]	(0.018) [0.16]
CEOs, non-family firms	-0.18***	-0.099***	0.006	0.063*
	(0.016) [0.34]	(0.010) [0.23]	(0.054) [0.22]	(0.027) [0.16]
CEOs, family firms	-0.31***	-0.14***	0.053	0.100*
	(0.022) [0.43]	(0.030) [0.27]	(0.057) [0.19]	(0.041) [0.17]
B. Any joint (same firm) experience with parent				
Employees	-0.11***	-0.016***	0.023***	0.085***
	(0.002) [0.18]	(0.002) [0.082]	(0.003) [0.16]	(0.001) [0.076]
Entrepreneurs	-0.17***	-0.065***	-0.069***	0.045***
	(0.004) [0.25]	(0.007) [0.19]	(0.006) [0.18]	(0.006) [0.12]
CEOs, all	-0.15***	-0.031***	-0.051**	0.072***
	(0.006) [0.34]	(0.005) [0.17]	(0.017) [0.33]	(0.008) [0.16]
CEOs, non-family firms	-0.099***	-0.022***	-0.034	0.072***
	(0.007) [0.29]	(0.005) [0.15]	(0.021) [0.31]	(0.010) [0.14]
CEOs, family firms	-0.24***	-0.059***	-0.081**	0.072***
	(0.010) [0.42]	(0.010) [0.22]	(0.030) [0.37]	(0.016) [0.19]

a. MD and FD indicate male and respectively female dominated industries, identified using the modal gender of employees in the industry. Square brackets indicate the average outcome for sons. Each coefficient comes from a different regression, estimated using equation 2 separately by parental occupation/entrepreneurial status and parental industry. Sample restricted to children who are at least 30 years old.

Table 7: Board membership and share ownership, within family estimates, gap between daughters and sons, within family estimates

	Father		Mother	
	MD[a]	FD	MD	FD
A. Child of CEO ever on the board before succession				
1. CEOs, all	-0.024***	-0.019***	-0.012***	-0.011
	(0.001) [0.022]	(0.002) [0.021]	(0.003) [0.026]	(0.006) [0.044]
2. CEOs, non-family owned firms	-0.014***	-0.014***	-0.004	-0.006
	(0.001) [0.014]	(0.003) [0.012]	(0.003) [0.014]	(0.008) [0.019]
3. CEOs, family owned firms	-0.051***	-0.028***	-0.040***	-0.013
	(0.005) [0.052]	(0.008) [0.050]	(0.012) [0.060]	(0.012) [0.060]
B. Child of exiting CEO on the board, T-4 years before succession				
1. CEOs, all	-0.009***	-0.007***	-0.005***	-0.007
	(0.001) [0.006]	(0.001) [0.005]	(0.002) [0.007]	(0.004) [0.011]
2. CEOs, non-family owned firms	-0.005***	-0.003*	-0.002	-0.001
	(0.001) [0.004]	(0.001) [0.002]	(0.002) [0.004]	(0.004) [0.004]
3. CEOs, family owned firms	-0.020***	-0.012*	-0.009	-0.023**
	(0.003) [0.015]	(0.005) [0.015]	(0.008) [0.015]	(0.008) [0.016]
C. Child of exiting CEO ever held shares in the firm before succession				
1. CEOs, all	-0.045***	-0.029***	-0.012**	0.019*
	(0.002) [0.058]	(0.004) [0.067]	(0.004) [0.059]	(0.009) [0.107]
2. CEOs, non-family owned firms	-0.013***	-0.011***	-0.004	0.008
	(0.001) [0.020]	(0.003) [0.026]	(0.003) [0.024]	(0.008) [0.050]
3. CEOs, family owned firms	-0.149***	-0.061***	-0.042**	0.029
	(0.007) [0.186]	(0.010) [0.156]	(0.015) [0.193]	(0.016) [0.165]

Notes: Regressions include controls for the age of the child. Whether the industry is male- or female-dominated is determined examining if the industry where the firm operates had more male or female employees in the transfer year. Square brackets indicate the mean of the dependent variable.

Table 8: Succession outcomes, gap between daughters and sons, within family estimates

	Father		Mother	
	MD[a]	FD	MD	FD
A. Child of departing CEO becomes CEO, all				
Daughter	-0.099***	-0.050**	-0.046**	-0.033**
	(0.005)	(0.006)	(0.013)	(0.012)
	[0.056]	[0.037]	[0.061]	[0.052]
Obs.	22,612	8,141	3,793	3,805
A1. Child of departing CEO becomes CEO, non-family businesses				
Daughter	-0.040***	-0.028**	-0.027*	-0.027
	(0.004)	(0.006)	(0.013)	(0.014)
	[0.023]	[0.014]	[0.037]	[0.024]
Obs.	13,383	3,968	2,130	1,607
A2. Child of departing CEO becomes CEO, family businesses				
Daughter	-0.264***	-0.115***	-0.092*	-0.056
	(0.014)	(0.027)	(0.036)	(0.032)
	[0.159]	[0.116]	[0.124]	[0.092]
Obs.	5,078	1,155	969	899
B. Firm links to child after parent retires, self-employed sample				
Daughter	-0.087***	-0.047***	-0.088***	0.019***
	(0.003)	(0.007)	(0.006)	(0.004)
	[0.061]	[0.078]	[0.076]	[0.049]
Obs.	47,013	9,122	10,804	16,886
B1. Firm links to child after parent retires, sole proprietorship				
Daughter	-0.055***	-0.030***	-0.064***	0.012**
	(0.004)	(0.008)	(0.012)	(0.004)
	[0.034]	[0.031]	[0.041]	[0.021]
Obs.	19,346	3,945	2,554	10,904
B2. Firm links to child after parent retires, limited liability companies				
Daughter	-0.163***	-0.084***	-0.142***	0.024
	(0.009)	(0.017)	(0.021)	(0.018)
	[0.136]	[0.147]	[0.185]	[0.141]
Obs.	9,144	2,619	2,054	2,234
B3. Firm links to child after parent retires, partnerships and others				
Daughter	-0.177***	-0.031*	-0.139***	0.039*
	(0.011)	(0.015)	(0.026)	(0.015)
	[0.107]	[0.093]	[0.133]	[0.102]
Obs.	5,450	2,102	1,073	2,646

Notes: a. MD and FD indicate male and respectively female dominated industries, identified using the modal gender of employees in the industry. Square brackets indicate the mean of the dependent variable. Regressions include parent fixed effects and child age fixed effects.

Table 9: Difference in differences estimates: professional versus family transition
(All firms with CEO roles)

	First stage	Ln turnover	Ln assets	Ln employees	Ln wages	OROA	OROA, ind. adj.
A. Family vs. professional CEO							
1. OLS							
Family CEO	-	-0.073***	-0.001	-0.027*	-0.011	0.0064	0.12
	-	(0.014)	(0.011)	(0.011)	(0.014)	(0.095)	(0.12)
2. Median regression							
Family CEO	-	0.001	0.036***	0.004	0.0024	-0.010***	-0.002
	-	(0.008)	(0.008)	(0.007)	(0.008)	(0.003)	(0.039)
3. IV, first born daughter	-0.053***	-0.26	0.12	-0.079	0.012	-0.27	1.82
	(0.006)	(0.25)	(0.20)	(0.19)	(0.24)	(2.70)	(3.05)
Mean		0.021	0.067	-0.021	0.034	-0.12	-0.51
Median		0.036	0.033	0	0.058	-0.016	-0.15
N	18,945	18,945	18,945	18,945	18,945	18,945	18,945
B. Child vs. professional CEO							
1. OLS							
Child CEO	-	-0.017	0.034**	0.011	0.036*	0.089	0.14
	-	(0.015)	(0.012)	(0.012)	(0.015)	(0.095)	(0.13)
2. Median regression							
Child CEO	-	0.021*	0.056***	0.022**	0.043***	-0.009**	0.029
	-	(0.009)	(0.009)	(0.007)	(0.008)	(0.003)	(0.042)
3. IV, first born daughter	-0.071***	-0.22	0.074	-0.095	0.016	-0.26	1.34
	(0.06)	(0.19)	(0.15)	(0.15)	(0.18)	(2.15)	(2.41)
Mean		0.035	0.072	-0.013	0.042	-0.12	-0.52
Median		0.040	0.037	0.005	0.062	-0.015	-0.15
N	17,687	17,687	17,687	17,687	17,687	17,687	17,687
C. Other family vs. professional CEO							
1. OLS							
Other family CEO		-0.20***	-0.081**	-0.12***	-0.12**	0.0035	0.072
		(0.029)	(0.022)	(0.021)	(0.028)	(0.10)	(0.17)
2. Median regression							
Other family CEO		-0.056***	-0.027	-0.052***	-0.031	-0.014**	-0.10
		(0.016)	(0.019)	(0.013)	(0.020)	(0.005)	(0.084)
3. IV, first born daughter	0.013***	1.86	0.24	0.95	1.06	1.81	-4.60
	(0.004)	(1.35)	(0.93)	(0.97)	(1.18)	(13.4)	(14.9)
Mean		0.021	0.060	-0.024	0.026	-0.13	-0.53
Median		0.032	0.022	-0.001	0.052	-0.014	-0.15
N	15,968	15,968	15,968	15,968	15,968	15,968	15,968

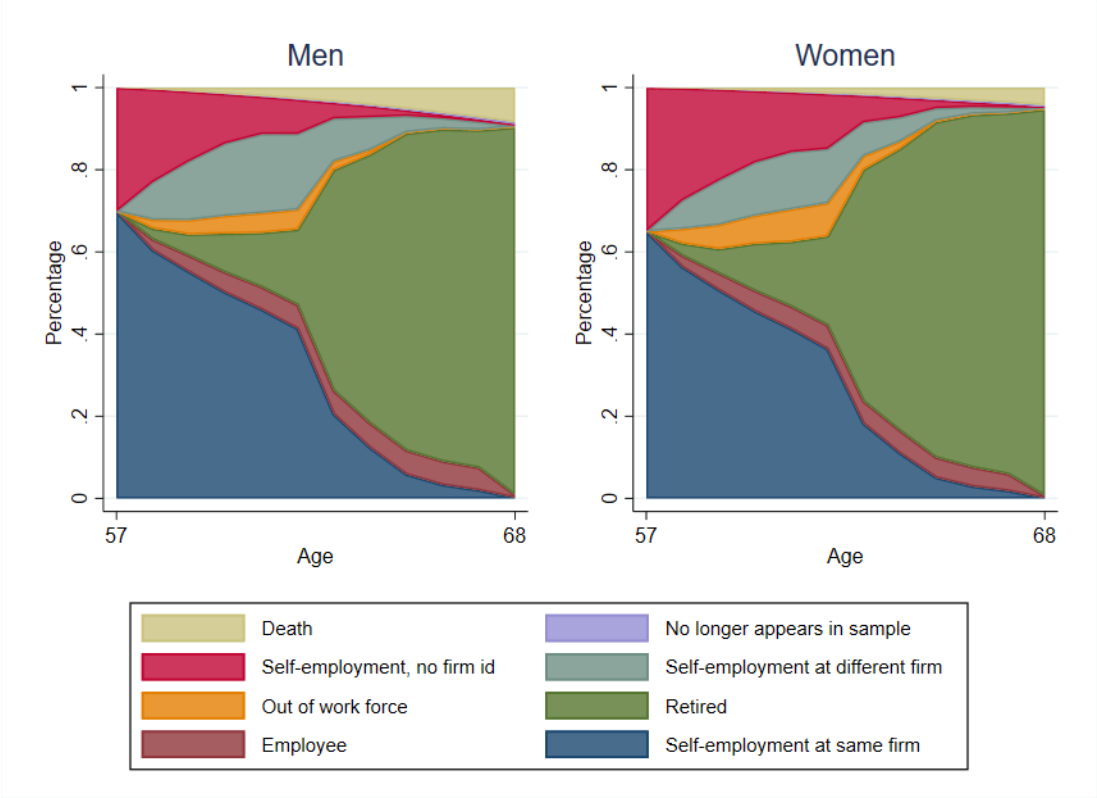
Notes: Sample is constructed from Finnish board data (PRH_BOARD) and firm ownership data (FLOWN_OWNER), years 2006-2019. Firm is classified as family owned if the family of the exiting CEO owns at least half of the shares. Outcome variable indicates the difference between average firm outcomes in the three years after succession and three years before the succession year. Regressions include controls for the year of the transition.

Table 10: CEO children's outcomes, pre- and post- succession

	Father		Mother	
	MD[a]	FD	MD	FD
A. Four years before succession				
Log total income	-0.24***	-0.20***	-0.27*	-0.12*
	(0.026) [9.78]	(0.036) [9.64]	(0.11) [9.76]	(0.058) [9.77]
Log total income if employed	-0.29***	-0.24***	-0.38**	-0.15*
	(0.029) [10.1]	(0.046) [10.0]	(0.12) [10.1]	(0.068) [10.1]
Managerial position	-0.032***	-0.024**	-0.033	-0.008
	(0.007) [0.025]	(0.008) [0.023]	(0.023) [0.027]	(0.012) [0.022]
Any shares owned	-0.023***	-0.004	-0.026	-0.005
	(0.005) [0.027]	(0.004) [0.016]	(0.020) [0.049]	(0.008) [0.023]
Board membership	-0.014***	-0.007	-0.008	-0.016
	(0.004) [0.008]	(0.004) [0.005]	(0.010) [0.010]	(0.010) [0.010]
Employed by the firm	-0.11***	-0.043***	-0.060	0.006
	(0.012) [0.12]	(0.011) [0.049]	(0.046) [0.14]	(0.017) [0.058]
B. Five years after succession				
Log total income	-0.26***	-0.22***	-0.28***	-0.24***
	(0.019) [10.1]	(0.024) [9.94]	(0.059) [10.2]	(0.039) [10.0]
Log total income if employed	-0.29***	-0.28***	-0.28***	-0.23***
	(0.020) [10.4]	(0.026) [10.3]	(0.059) [10.4]	(0.042) [10.3]
Managerial position	-0.072***	-0.036***	-0.071**	-0.051***
	(0.007) [0.064]	(0.007) [0.038]	(0.025) [0.072]	(0.011) [0.044]
Any shares owned	-0.061***	-0.023***	-0.077**	-0.023*
	(0.006) [0.074]	(0.005) [0.030]	(0.024) [0.12]	(0.009) [0.055]
Board membership	-0.077***	-0.028***	-0.066*	-0.040***
	(0.006) [0.056]	(0.006) [0.024]	(0.028) [0.078]	(0.012) [0.042]
Employed by the firm	-0.074***	-0.022***	-0.050	-0.020
	(0.007) [0.082]	(0.005) [0.030]	(0.028) [0.099]	(0.011) [0.045]

Notes: Coefficient on daughters in equation 2. Square brackets indicate the mean of the dependent variable.

A Appendix: Additional Figures and Tables



Notes: Sample of individuals recorded as self-employed at age 57, 2001-2009 cohorts.

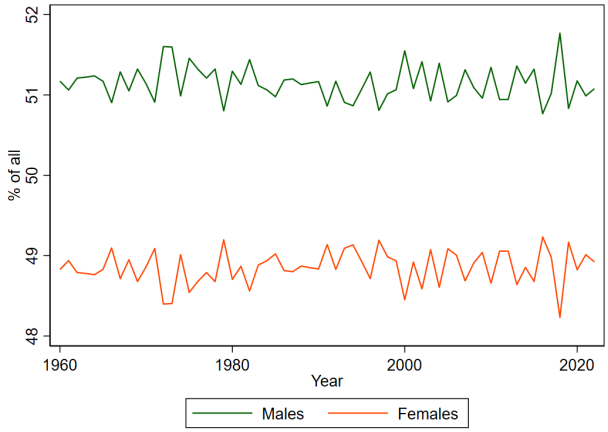
Figure A1: Entrepreneurs' retirement patterns

Figure A2: Number of births by gender in Finland, 1960-2022



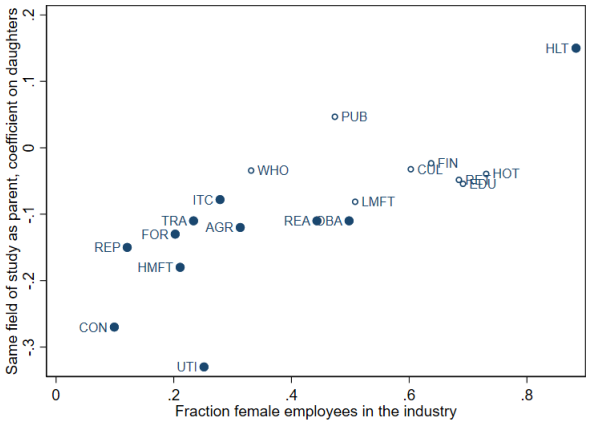
Source: Statistics Finland, StatFin database tables on population and society, https://stat.fi/en/topic/population-and-society

Figure A3: Fraction of boys and girls out of newborns, 1960-2022

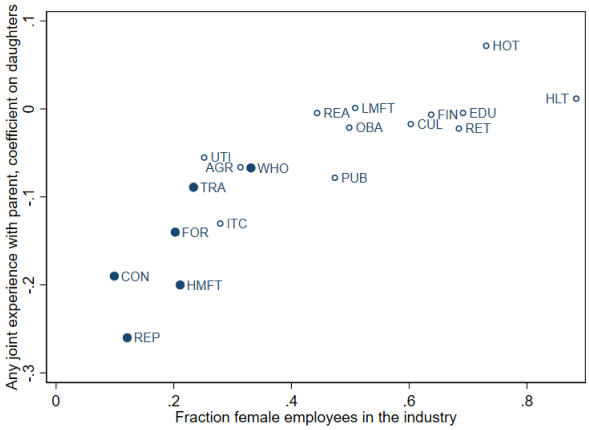


Source: Statistics Finland, StatFin database tables on population and society, https://stat.fi/en/topic/population-and-society

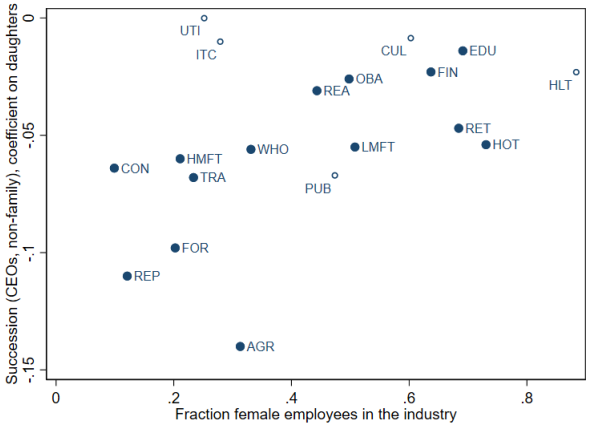
Figure A4: Human capital and succession decisions, CEOs in non-family firms and their offspring



(A) Child has same field of study as the CEO parent



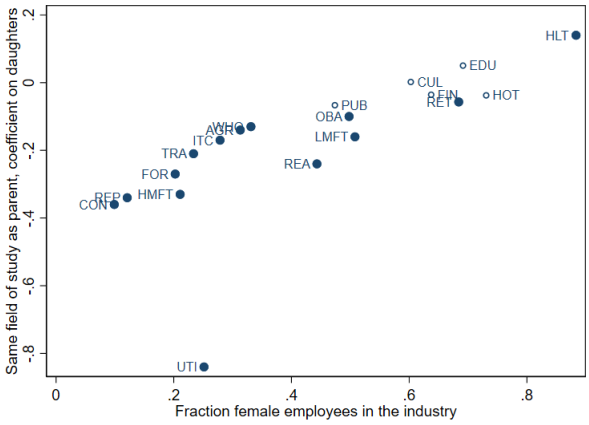
(B) Child has worked in the same firm as the CEO parent



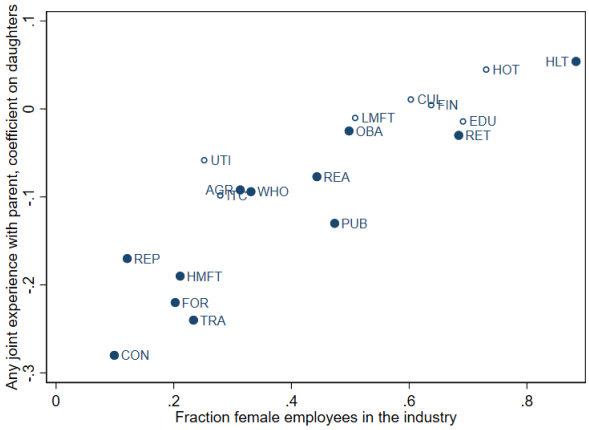
(C) Child of departing CEO becomes CEO

Scatterplots display the coefficient on daughters (relative to brothers) in equation 2. Sample is restricted to 2007-2016, when shareholder information allows us to identify family owned firms. Regressions are conducted separately by the modal two-digit industry of employment of the parent for field of study and same firm experience regressions, and the industry of the firm from which the parent CEO exits for succession outcomes (panel C). AGR: Agriculture, FOR: Forestry + manufacturing of wood and wood products, LMFT: Light manufacturing, PUB: Publishing, HMFT: Heavy manufacturing, UTI: Utilities, CON: Construction and mining, REP: Repairs of motor vehicles, WHO: Wholesale trade, RET: Retail trade, HOT: Hotels and restaurants, TRA: Transportation, FIN: Financial intermediation, REA: Real estate activities, ITC: Information technology and communication, OBA: Other business activities + research, EDU: Education, HLT: Health and social work, CUL: Cultural activities etc.

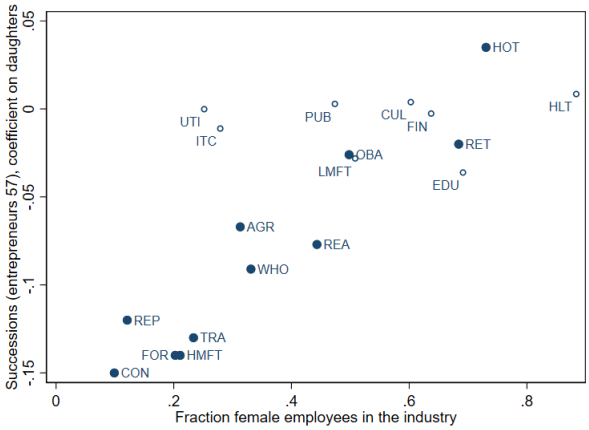
Figure A5: Human capital and succession decisions, retiring entrepreneurs and their offspring



(A) Child has same field of study as the entrepreneur parent



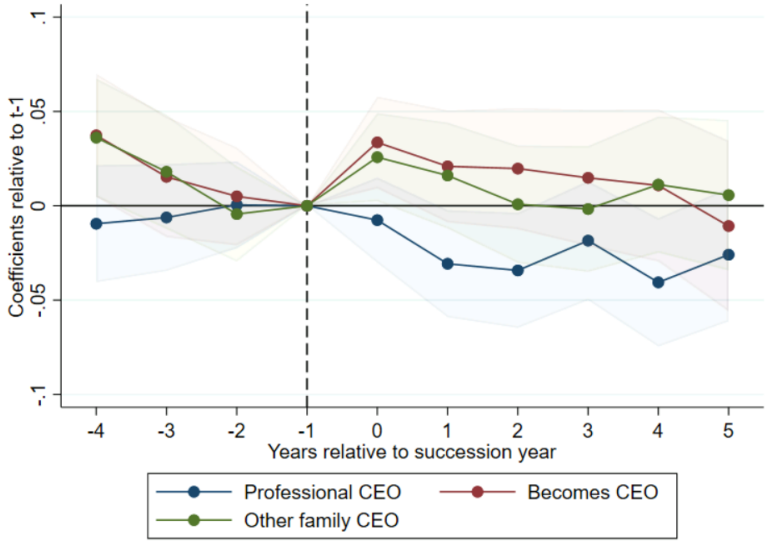
(B) Child has worked in the same firm as the entrepreneur parent



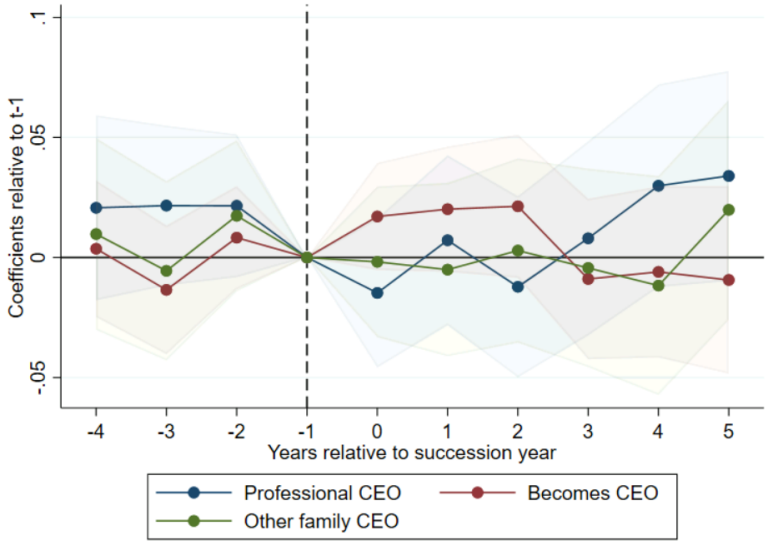
(C) Child of exiting entrepreneur becomes CEO

Scatterplots display the coefficient on daughters (relative to brothers) in equation 2. Sample is restricted to entrepreneurs aged 57. Regressions are conducted separately by the modal two-digit industry of employment of the parent for field of study and same firm experience regressions, and the industry of the firm from which the parent CEO exits for succession outcomes (panel C). AGR: Agriculture, FOR: Forestry + manufacturing of wood and wood products, LMFT: Light manufacturing, PUB: Publishing, HMFT: Heavy manufacturing, UTI: Utilities, CON: Construction and mining, REP: Repairs of motor vehicles, WHO: Wholesale trade, RET: Retail trade, HOT: Hotels and restaurants, TRA: Transportation, FIN: Financial intermediation, REA: Real estate activities, ITC: Information technology and communication, OBA: Other business activities + research, EDU: Education, HLT: Health and social work, CUL: Cultural activities etc.

Figure A6: Change in the incomes of daughters and sons of exiting CEOs in family businesses around the succession event



(A) Daughters



(B) Sons

Notes: Coefficients relative to the year prior to the succession event.

Table A1: Entrepreneur successions (all observed), summary statistics

	# of obs.	Fraction linked to family members	Linked to child	Linked to sons	Linked to daughters
A. CEO transitions (all)					
Departing CEO age					
20-29	4,192	0.220			
30-39	16,939	0.128	<0.001	<0.001	0
40-49	27,567	0.089	0.009	0.007	0.002
50-59	27,463	0.132	0.070	0.059	0.012
60-69	16,671	0.231	0.184	0.147	0.037
70+	2,347	0.477	0.399	0.306	0.092
All	95,210	0.184	0.174	0.136	0.038
B. CEO transitions (firms without family majority ownership, 2007-2019)					
Departing CEO age					
20-29	1,541	0.138			
30-39	6,682	0.081			
40-49	12,150	0.051	0.004	0.003	0.001
50-59	12,585	0.059	0.024	0.019	0.005
60-69	9,098	0.109	0.083	0.066	0.016
70+	1,074	0.339	0.280	0.212	0.066
All	43,130	0.110	0.110	0.084	0.025
C. CEO transitions (family owned firms, 2007-2019)					
Departing CEO age					
20-29	524	0.365			
30-39	2,047	0.334			
40-49	2,550	0.324	0.026	0.021	0.005
50-59	2,990	0.457	0.246	0.207	0.039
60-69	3,373	0.556	0.446	0.354	0.092
70+	777	0.692	0.577	0.449	0.126
All	12,262	0.475	0.404	0.320	0.084
D. Entrepreneurs (age 57)	47,619	0.117	0.059	0.045	0.014

Source: CEO samples use Finnish board data (PRH_BOARD) and firm ownership data (FLOWN_OWNER), 2006-2019. Entrepreneurs sample uses Finnish employment data (FOLK_TKT). Family members include parents, spouses, siblings, children and children-in-law.

Table A2: Firms with observed successions, summary statistics

	Entrepreneurs 57 Natural person	Entrepreneurs 57 Limited comp.	Entrepreneurs 57 Partnerships etc.	CEOs, all	CEOs, non-family businesses	CEOs, family businesses
Mean /[Median] /(s.e. Mean)						
Revenue	151.05	786.22	351.12	20,193.04	26,312.89	2,014.97
	[67.34]	[265.73]	[170.77]	[843.65]	[1,139.99]	[530.02]
	(527.94)	(2,321.12)	(756.05)	(339,981.2)	(382,315.1)	(8,247.32)
Assets	69.88	507.34	161.64	25,472.51	33,940.65	1,750.53
	[26.36]	[175.53]	[69.46]	[752.83]	[1,325.04]	[321.89]
	(193.63)	(1,902.86)	(682.70)	(352,314.8)	(431,590.6)	(21,407.85)
Number of employees	1.10	4.18	2.27	54.09	68.63	9.87
	[.9]	[2]	[1.4]	[5.5]	[7]	[3.8]
	(1.66)	(7.35)	(2.92)	(362.59)	(399.63)	(28.36)
Observations	21,536	7,242	4,959	27,398	14,468	5,265

Notes: Figures in thousands of 2022 euros for revenue and assets shown for year T-4 before the succession year.

Table A3: Fertility effect of female firstborn, by parent's industry

	Employees	Entrepreneurs
Agriculture + hunting + forestry + fishing	0.039	0.087***
	(0.024)	(0.016)
	[11,084]	[35,478]
Mining and construction	0.038**	0.060**
	(0.013)	(0.022)
	[33,597]	[16,057]
Manufacturing	0.020***	0.052**
	(0.006)	(0.017)
	[137,499]	[22,029]
Electricity gas and water supply	0.040	0.026
	(0.021)	(0.095)
	[8,759]	[444]
Wholesale and retail trade + repair of vehicles and goods	0.028***	0.037*
	(0.008)	(0.015)
	[64,179]	[25,378]
Hotels and restaurants	0.030	0.042
	(0.015)	(0.029)
	[14,343]	[5,249]
Transport, storage and communication	0.022*	0.015
	(0.010)	(0.022)
	[42,687]	[11,189]
Financial intermediation + real estate	0.028***	0.021
	(0.007)	(0.016)
	[85,085]	[22,501]
Public administration and defence	0.024**	0.043
	(0.009)	(0.045)
	[56,785]	[2,486]
Education + Health + Social work	0.021***	0.030*
	(0.004)	(0.013)
	[230,468]	[32,111]

Notes: Square brackets indicate number of employees or entrepreneurs in each industry. Regressions include controls for parental age, gender, income, place of residence and education.

Table A4: Parents' separation, five years after birth of first child

	Effect of first born daughter	N
Employees	0.004***	770,588
	(0.001)	
Tercile 1 Entrepreneurs	0.001	64,387
	(0.003)	
Tercile 2 Entrepreneurs	0.009***	63,041
	(0.003)	
Tercile 3 Entrepreneurs	0.008***	63,078
	(0.002)	
Entrepreneurs 57 sample	0.008***	47,535
	(0.002)	
CEOs	0.001	26,859
	(0.004)	

Notes: Outcome is a binary variable indicating the parents are no longer cohabiting.

Table A5: Summary statistics, adoptions

	All parents	Male adoptive parent in:		Female adoptive parent in:	
		MD industry	FD industry	MD industry	FD industry
Mean/C.I./ Observations					
Employees	0.493	0.484	0.508	0.481	0.491
	[0.484; 0.497]	[0.471; 0.495]	[0.493; 0.523]	[0.464; 0.498]	[0.480; 0.502]
	22,028	6,743	4,397	3,245	7,643
Entrepreneurs	**0.470**	**0.457**	0.489	0.456	0.497
	[0.454; 0.486]	**[0.434; 0.481]**	[0.451; 0.527]	[0.418; 0.495]	[0.460; 0.534]
	3,698	1,717	654	633	694
CEOs	0.517	0.487	0.494	**0.675**	**0.652**
	[0.483; 0.551]	[0.439; 0.535]	[0.434; 0.554]	**[0.523; 0.827]**	**[0.553; 0.751]**
	824	423	269	40	92

Table A6: Age of child's first employment, within family estimates, coefficient on Daughters

	Father		Mother	
	MD[a]	FD	MD	FD
Subsamples:				
Employees	-0.007	-0.084*	0.033	-0.022*
	(0.012) [20.4]	(0.039) [20.5]	(0.018) [20.2]	(0.009) [20.6]
Tercile 1 Entrepreneurs	0.11**	-0.084*	0.26***	0.056
	(0.037) [20.0]	(0.039) [20.5]	(0.058) [19.9]	(0.029) [20.4]
Tercile 2 Entrepreneurs	0.30***	-0.23***	0.48***	0.086*
	(0.030) [20.0]	(0.049) [20.4]	(0.040) [20.1]	(0.037) [20.2]
Tercile 3 Entrepreneurs	0.29***	-0.27***	0.32***	-0.095
	(0.025) [20.2]	(0.060) [20.5]	(0.040) [20.4]	(0.049) [20.4]
CEOs, all	0.040	-0.34***	0.10	-0.30***
	(0.047) [20.0]	(0.054) [20.5]	(0.15) [19.8]	(0.084) [20.2]
CEOs, non-family own.	-0.27**	-0.39***	-0.27	-0.45***
	(0.071) [20.3]	(0.079) [20.6]	(0.25) [20.1]	(0.13) [20.3]
CEOs, family own.	0.55***	0.23	0.37	-0.21
	(0.088) [19.2]	(0.15) [19.8]	(0.28) [19.2]	(0.18) [19.9]

a. MD and FD indicate male and respectively female dominated industries, identified using the modal gender of employees in the industry. Square brackets indicate the average outcome for sons. Only children that are at least 25 years old are included. Employees category denotes individuals who have never been self-employed. Entrepreneurs are allocated to terciles depending on how many years they have been registered as self-employed between 1995 and 2019. CEO information is based on Finnish board data (PRH_BOARD), years 1994-2019, and firm ownership data (FLOWN_OWNER), years 2006-2019. Regressions include controls for parental age, gender, income, place of residence and education.

Table A7: Work experience in the same industry as parent, within family estimates, coefficient on Daughters

	Father in:		Mother in:	
	MD[a] industry	FD industry	MD industry	FD industry
A. Work experience in the same industry as parent				
Employees	-1.51***	-0.23***	-0.97***	0.027**
	(0.019) [2.37]	(0.011) [0.74]	(0.033) [2.70]	(0.009) [0.67]
Entrepreneurs	-1.58***	-0.65***	-0.54***	0.27***
	(0.033) [2.40]	(0.060) [2.23]	(0.060) [1.90]	(0.053) [1.35]
CEOs, all	-1.24***	-0.35***	-0.52***	0.092
	(0.044) [2.38]	(0.035) [1.29]	(0.120) [1.80]	(0.063) [1.12]
CEOs, non-family own.	-0.69***	-0.26***	-0.30*	0.038
	(0.049) [1.67]	(0.041) [1.19]	(0.12) [1.24]	(0.076) [0.98]
CEOs, family own.	-2.12***	-0.59***	-0.89***	0.20
	(0.096) [3.48]	(0.071) [1.55]	(0.25) [2.68]	(0.11) [1.34]

Notes: Work experience is measured as the number of years when the child appears employed either in the same firm as the parent, or in the same industry as the parent. Administrative data is available after 1987. This results in practice in censoring of joint experience spells for older children, who started working before 1987. Square brackets indicate the average for sons. Regressions include child age fixed effects and parent fixed effects. Entrepreneurs denote to the sample of entrepreneurs that were 57 years old between 2001 and 2009. Work experience of children measured one year before firm succession or parent retirement.

Table A8: Years of schooling, within family estimates, coefficient on Daughters

	Father		Mother	
	MD[a]	FD	MD	FD
Employees	0.74***	0.70***	0.73***	0.74***
	(0.011) [13.6]	(0.013) [13.9]	(0.015) [13.5]	(0.007) [13.7]
Tercile 1 Entrepreneurs	0.81***	0.68***	0.80***	0.76***
	(0.035) [13.5]	(0.036) [13.6]	(0.053) [13.5]	(0.025) [13.6]
Tercile 2 Entrepreneurs	1.00***	0.73***	1.13***	0.72***
	(0.028) [13.5]	(0.047) [13.9]	(0.031) [13.5]	(0.035) [13.7]
Tercile 3 Entrepreneurs	0.98***	0.77***	0.96***	0.79***
	(0.023) [13.6]	(0.058) [14.2]	(0.035) [13.7]	(0.046) [13.9]
CEOs, all	0.74***	0.67***	0.82***	0.78***
	(0.044) [14.3]	(0.052) [14.6]	(0.14) [14.0]	(0.083) [14.2]
CEOs, non-family own.	0.66***	0.69***	0.57*	0.69***
	(0.067) [14.6]	(0.077) [14.7]	(0.25) [14.1]	(0.13) [14.3]
CEOs, family own.	0.91***	0.60***	1.27***	0.97***
	(0.087) [13.9]	(0.15) [14.3]	(0.28) [13.7]	(0.17) [14.1]

Notes: Square brackets indicate the average for sons. Only children that are at least 30 years old are included. Employees category denotes individuals who have never been self-employed. Entrepreneurs are allocated to terciles depending on how many years they have been registered as self-employed between 1995 and 2019. CEO information is based on Finnish board data (PRH_BOARD), years 1994-2019, and firm ownership data (FLOWN_OWNER), years 2006-2019. Regressions include controls for parental age, gender, income, place of residence and education.

Table A9: Same broad field of study as parent, within family estimates, Son Bias interactions

		Father		Mother	
	All	MD[a]	FD	MD	FD
1. Employees					
Daughter	-0.033***	-0.31***	-0.14***	-0.019**	0.11***
	(0.002)	(0.004)	(0.003)	(0.005)	(0.002)
Daughter x Son Bias	-0.014***	-0.005	-0.007	-0.010	-0.016***
	(0.003)	(0.007)	(0.007)	(0.010)	(0.004)
2. Tercile 1 Entrepreneurs					
Daughter	-0.046***	-0.28***	-0.15***	0.001	0.10***
	(0.005)	(0.010)	(0.010)	(0.015)	(0.007)
Daughter x Son Bias	-0.010	-0.001	0.013	-0.007	-0.013
	(0.011)	(0.023)	(0.023)	(0.034)	(0.016)
3. Tercile 2 Entrepreneurs					
Daughter	-0.090***	-0.27***	-0.13***	0.020*	0.079***
	(0.005)	(0.009)	(0.013)	(0.009)	(0.009)
Daughter x Son Bias	-0.020	0.013	-0.049	-0.048*	-0.010
	(0.011)	(0.019)	(0.027)	(0.020)	(0.021)
4. Tercile 3 Entrepreneurs					
Daughter	-0.12***	-0.27***	-0.090***	0.016	0.094***
	(0.005)	(0.007)	(0.015)	(0.009)	(0.012)
Daughter x Son Bias	-0.015	0.006	-0.034	-0.056**	-0.059*
	(0.011)	(0.015)	(0.034)	(0.020)	(0.024)
5. CEOs, all					
Daughter	-0.13***	-0.23***	-0.096***	0.021	0.087***
	(0.008)	(0.013)	(0.013)	(0.040)	(0.022)
Daughter x Son Bias	0.011	0.013	0.011	-0.033	-0.047
	(0.017)	(0.027)	(0.027)	(0.074)	(0.043)
6. CEOs, non-family owned					
Daughter	-0.11***	-0.18***	-0.098***	0.039	0.066
	(0.012)	(0.018)	(0.019)	(0.067)	(0.034)
Daughter x Son Bias	0.005	-0.007	-0.003	-0.090	-0.008
	(0.025)	(0.039)	(0.041)	(0.12)	(0.066)
7. CEOs, family owned					
Daughter	-0.18***	-0.33***	-0.13***	0.068	0.13**
	(0.018)	(0.026)	(0.034)	(0.066)	(0.049)
Daughter x Son Bias	0.026	0.093	-0.057	-0.005	-0.12
	(0.039)	(0.054)	(0.079)	(0.12)	(0.10)

a. MD and FD indicate male and respectively female dominated industries, identified using the modal gender of employees in the industry. Employees category denotes individuals who have never been self-employed. Entrepreneurs (who reached the age of 57 between 2001-2009) are allocated to terciles depending on how many years they have been registered as self-employed between 1995 and 2019. CEO information is based on Finnish board data (PRH_BOARD) and firm ownership data (FLOWN_OWNER), years 2006-2019. Son bias is an indicator for individuals who had a son as their youngest child and all their other children were daughters, when they were aged 52 or above. Regressions include controls for parental age, gender, income, place of residence and education.

Table A10: Age of child's first employment, within family estimates, coefficient on Daughters

		Father		Mother	
	All	MD[a]	FD	MD	FD
1. Employees					
Daughter	-0.002	0.024	-0.12***	0.069**	0.018
	(0.008)	(0.015)	(0.018)	(0.023)	(0.011)
Daughter x Son Bias	-0.059***	-0.066*	-0.055	-0.025	-0.071**
	(0.015)	(0.031)	(0.037)	(0.044)	(0.023)
2. Tercile 1 Entrepreneurs					
Daughter	0.086***	0.13**	-0.051	0.26***	0.10**
	(0.023)	(0.044)	(0.046)	(0.072)	(0.035)
Daughter x Son Bias	-0.052	0.018	-0.13	0.034	-0.072
	(0.050)	(0.097)	(0.11)	(0.15)	(0.078)
3. Tercile 2 Entrepreneurs					
Daughter	0.24***	0.33***	-0.23***	0.51***	0.12**
	(0.023)	(0.036)	(0.059)	(0.048)	(0.047)
Daughter x Son Bias	-0.011	-0.021	-0.008	0.004	-0.030
	(0.049)	(0.078)	(0.13)	(0.10)	(0.10)
4. Tercile 3 Entrepreneurs					
Daughter	0.22***	0.32***	-0.26***	0.35***	-0.069
	(0.022)	(0.030)	(0.072)	(0.049)	(0.064)
Daughter x Son Bias	-0.035	-0.042	0.050	-0.025	0.013
	(0.047)	(0.063)	(0.15)	(0.11)	(0.13)
5. CEOs, all					
Daughter	-0.11**	0.098	-0.38***	0.21	-0.27*
	(0.039)	(0.057)	(0.065)	(0.20)	(0.11)
Daughter x Son Bias	-0.022	-0.16	0.14	0.005	0.017
	(0.081)	(0.12)	(0.14)	(0.37)	(0.21)
6. CEOs, non-family owned					
Daughter	-0.31***	-0.24**	-0.40***	-0.12	-0.42*
	(0.059)	(0.086)	(0.095)	(0.35)	(0.17)
Daughter x Son Bias	-0.022	-0.063	0.009	-0.33	0.076
	(0.12)	(0.18)	(0.20)	(0.63)	(0.32)
7. CEOs, family owned					
Daughter	0.42***	0.65***	0.18	0.43	-0.14
	(0.081)	(0.11)	(0.17)	(0.36)	(0.23)
Daughter x Son Bias	-0.091	-0.31	0.37	0.36	-0.21
	(0.17)	(0.23)	(0.38)	(0.67)	(0.49)

a. MD and FD indicate male and respectively female dominated industries, identified using the modal gender of employees in the industry. Employees category denotes individuals who have never been self-employed. Entrepreneurs (who reached the age of 57 between 2001-2009) are allocated to terciles depending on how many years they have been registered as self-employed between 1995 and 2019. CEO information is based on Finnish board data (PRH_BOARD) and firm ownership data (FLOWN_OWNER), years 2006-2019. Son bias is an indicator for individuals who had a son as their youngest child and all their other children were daughters, when they were aged 52 or above. Regressions include controls for parental age, gender, income, place of residence and education.

Table A11: Years of schooling, within family estimates, Son Bias Interactions

		Father		Mother	
	All	MD[a]	FD	MD	FD
1. Employees					
Daughter	0.68***	0.68***	0.66***	0.67***	0.69***
	(0.006)	(0.013)	(0.015)	(0.019)	(0.009)
Daughter x Son Bias	0.21***	0.20***	0.20***	0.20***	0.22***
	(0.013)	(0.027)	(0.031)	(0.035)	(0.018)
2. Tercile 1 Entrepreneurs					
Daughter	0.71***	0.73***	0.64***	0.81***	0.72***
	(0.019)	(0.041)	(0.041)	(0.061)	(0.029)
Daughter x Son Bias	0.23***	0.36***	0.22*	-0.017	0.22***
	(0.044)	(0.091)	(0.092)	(0.13)	(0.066)
3. Tercile 2 Entrepreneurs					
Daughter	0.90***	0.97***	0.70***	1.11***	0.68***
	(0.019)	(0.032)	(0.054)	(0.036)	(0.041)
Daughter x Son Bias	0.14***	0.15*	0.15	0.083	0.18*
	(0.042)	(0.070)	(0.12)	(0.079)	(0.090)
4. Tercile 3 Entrepreneurs					
Daughter	0.90***	0.95***	0.75***	0.93***	0.78***
	(0.020)	(0.027)	(0.067)	(0.040)	(0.055)
Daughter x Son Bias	0.13**	0.17**	0.051	0.14	0.051
	(0.042)	(0.057)	(0.15)	(0.087)	(0.11)
5. CEOs, all					
Daughter	0.69***	0.71***	0.65***	0.71***	0.69***
	(0.036)	(0.051)	(0.060)	(0.18)	(0.10)
Daughter x Son Bias	0.18*	0.15	0.10	0.37	0.35
	(0.074)	(0.11)	(0.13)	(0.34)	(0.20)
6. CEOs, non-family owned					
Daughter	0.64***	0.60***	0.70***	0.63*	0.62***
	(0.055)	(0.078)	(0.090)	(0.32)	(0.17)
Daughter x Son Bias	0.11	0.23	-0.040	-0.27	0.26
	(0.11)	(0.16)	(0.19)	(0.58)	(0.32)
7. CEOs, family owned					
Daughter	0.78***	0.83***	0.55**	1.29***	0.89***
	(0.077)	(0.10)	(0.17)	(0.34)	(0.21)
Daughter x Son Bias	0.32*	0.38	0.22	-0.16	0.38
	(0.16)	(0.21)	(0.38)	(0.61)	(0.44)

Notes: Employees category denotes individuals who have never been self-employed. Entrepreneurs (who reached the age of 57 between 2001-2009) are allocated to terciles depending on how many years they have been registered as self-employed between 1995 and 2019. CEO information is based on Finnish board data (PRH_BOARD) and firm ownership data (FLOWN_OWNER), years 2006-2019. Son bias is an indicator for individuals who had a son as their youngest child and all their other children were daughters, when they were aged 52 or above. Regressions include controls for parental age, gender, income, place of residence and education.

Table A12: Work experience in the same industry as parent, within family estimates, Son Bias

		Father		Mother	
	All	MD[a]	FD	MD	FD
Employees					
Daughter	-0.49***	-1.51***	-0.23***	-0.99***	0.018
	(0.009)	(0.023)	(0.013)	(0.042)	(0.010)
Daughter x Son Bias	0.007	0.008	-0.007	0.064	0.032
	(0.017)	(0.045)	(0.027)	(0.077)	(0.020)
Entrepreneurs					
Daughter	-0.94***	-1.53***	-0.66***	-0.48***	0.23***
	(0.028)	(0.039)	(0.070)	(0.072)	(0.063)
Daughter x Son Bias	-0.080	-0.19	0.007	-0.26	0.13
	(0.057)	(0.080)	(0.15)	(0.14)	(0.13)
CEOs, all					
Daughter	-0.76***	-1.32***	-0.41***	-0.56***	0.089
	(0.032)	(0.054)	(0.044)	(0.16)	(0.087)
Daughter x Son Bias	0.17**	0.076	0.16	0.036	0.063
	(0.064)	(0.11)	(0.090)	(0.29)	(0.16)
CEOs, non-family owned					
Daughter	-0.47***	-0.77***	-0.33***	-0.28	0.12
	(0.036)	(0.061)	(0.052)	(0.16)	(0.11)
Daughter x Son Bias	0.18*	0.19	0.20	-0.089	-0.20
	(0.072)	(0.13)	(0.10)	(0.29)	(0.19)
CEOs, family owned					
Daughter	-1.29***	-2.16***	-0.61***	-0.94**	0.068
	(0.062)	(0.10)	(0.085)	(0.34)	(0.14)
Daughter x Son Bias	0.061	-0.17	-0.042	0.14	0.51
	(0.13)	(0.21)	(0.18)	(0.62)	(0.27)

Notes: Son bias is an indicator for individuals who had a son as their youngest child and all their other children were daughters, when they were aged 52 or above. Regressions include child age fixed effects and parent fixed effects. Work experience of children at one year before firm succession or parent retirement.

Table A13: Any joint experience in the same firm as parent, within family estimates, Son Bias

		Father		Mother	
	All	MD[a]	FD	MD	FD
Employees					
Daughter	0.011***	-0.11***	-0.015***	0.019***	0.085***
	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)
Daughter x Son Bias	-0.004	-0.005	-0.002	0.015*	0.002
	(0.002)	(0.004)	(0.004)	(0.007)	(0.003)
Entrepreneurs (age 57 and above)					
Daughter	-0.100***	-0.17***	-0.067***	-0.062***	0.042***
	(0.003)	(0.004)	(0.008)	(0.008)	(0.007)
Daughter x Son Bias	-0.011	-0.025**	0.008	-0.025	0.011
	(0.006)	(0.008)	(0.016)	(0.015)	(0.014)
CEOs, all					
Daughter	-0.084***	-0.16***	-0.042***	-0.060*	0.054***
	(0.004)	(0.007)	(0.006)	(0.023)	(0.011)
Daughter x Son Bias	0.029***	0.014	0.015	0.019	0.048*
	(0.008)	(0.014)	(0.011)	(0.042)	(0.020)
CEOs, non-family owned					
Daughter	-0.058***	-0.11***	-0.037**	-0.047	0.061***
	(0.005)	(0.008)	(0.006)	(0.029)	(0.013)
Daughter x Son Bias	0.034***	0.025	0.027*	0.010	0.025
	(0.009)	(0.017)	(0.013)	(0.051)	(0.023)
CEOs, family owned					
Daughter	-0.13***	-0.23***	-0.058**	-0.090*	0.045*
	(0.008)	(0.011)	(0.011)	(0.040)	(0.020)
Daughter x Son Bias	0.018	-0.005	-0.013	0.036	0.079*
	(0.015)	(0.024)	(0.023)	(0.074)	(0.038)

Notes: Son bias is an indicator for individuals who had a son as their youngest child and all their other children were daughters, when they were aged 52 or above. Regressions include child age fixed effects and parent fixed effects. Work experience of children at one year before firm succession or parent retirement.

Table A14: Effect of first born daughter on succession decision, Son Bias interactions

	Father		Mother	
	MD[a] industry	FD industry	MD industry	FD industry
A. CEOs, family firms				
Daughter	-0.273***	-0.123***	-0.104*	0.027
	(0.019)	(0.032)	(0.050)	(0.050)
Daughter x Son Bias	-0.156***	-0.036	-0.046	-0.091
	(0.043)	(0.070)	(0.108)	(0.081)
B. CEOs, non-family owned firms				
Daughter	-0.057***	-0.026***	-0.055	-0.032
	(0.006)	(0.007)	(0.018)	(0.019)
Daughter x Son Bias	-0.002	-0.015	-0.001	0.020
	(0.011)	(0.014)	(0.033)	(0.031)
C. Entrepreneurs (age 57 and above)				
Daughter	-0.124***	-0.053***	-0.072***	0.016*
	(0.004)	(0.007)	(0.008)	(0.007)
Daughter X Son bias	-0.0261**	0.0134	-0.0231	0.0128
	(0.008)	(0.015)	(0.016)	(0.012)

Notes: a. MD and FD indicate male and respectively female dominated industries, identified using the modal gender of employees in the industry. Son bias is an indicator for individuals who had a son as their youngest child and all their other children were daughters, when they were aged 52 or above. Regressions include parent fixed effects and child age fixed effects.

Table A15: Information about old and new CEOs at succession, summary statistics, non-family businesses

	Professional	Sons	Daughters	Other
Mean /(s.e. Mean)				
Tenure of the exiting CEO	5.407	10.073	9.502	6.345
	(0.023)	(0.185)	(0.321)	(0.115)
CEO died	0.009	0.074	0.154	0.032
	(0.000)	(0.008)	(0.021)	(0.004)
CEO retired	0.054	0.411	0.472	0.078
	(0.001)	(0.015)	(0.029)	(0.006)
Age of exiting CEO	48.785	63.124	63.157	44.063
	(0.054)	(0.239)	(0.493)	(0.274)
Age of new CEO	44.322	34.669	35.147	46.724
	(0.048)	(0.245)	(0.523)	(0.266)
Years of schooling new CEO	15.194	13.961	14.640	14.314
	(0.010)	(0.068)	(0.127)	(0.052)
College degree new CEO	0.600	0.458	0.572	0.487
	(0.002)	(0.015)	(0.029)	(0.011)
Any previous experience in the firm	0.334	0.564	0.465	0.452
	(0.002)	(0.015)	(0.029)	(0.011)
Any previous managerial experience	0.639	0.387	0.351	0.482
	(0.002)	(0.015)	(0.028)	(0.011)
Any outside experience	0.982	0.913	0.946	0.973
	(0.001)	(0.008)	(0.013)	(0.004)
Observations	39667	1102	299	2074

Notes: Includes all successions from PRH_BOARD -data, years 1994-2019.

Table A16: Firm outcomes, four years before succession year

	Turnover	Assets	Employees	Wages	Ln Turnover	Ln Assets	Ln Empl.	Ln Wages	N
A. Entrepreneurs age 57									
First born daughter	-11688.4*	-8170.5*	-0.100*	-2751.3*	-0.057*	-0.076*	-0.051**	-0.068**	9,997
	(5753.6)	(3546.5)	(0.034)	(1275.8)	(0.027)	(0.034)	(0.018)	(0.031)	
	[608K]	[339K]	[3.39]	[105K]	[12.4]	[11.7]	[0.72]	[10.5]	
B. CEOs, all									
First born daughter	-3.96M	4.64M	3.52	-47.8K	0.022	0.039	0.040	0.043	18,965
	(4.82M)	(5.00M)	(5.01)	(264K)	(0.029)	(0.032)	(0.026)	(0.030)	
	[19.5M]	[23.7M]	[51.3]	[2.28M]	[14.1]	[13.7]	[1.96]	[12.4]	
C. CEOs, family own.									
First born daughter	136K	-31.5K	0.30	23.9K	0.065	0.060	0.047	0.060	4,080
	(167K)	(241K)	(0.60)	(23.6K)	(0.044)	(0.048)	(0.038)	(0.047)	
	[1.78M]	[1.40M]	[9.09]	[345K]	[13.3]	[12.8]	[1.44]	[11.8]	
D. CEOs, non-family own.									
First born daughter	-15.7M	7.09M	2.33	-371K	-0.011	0.006	0.044	0.053	7,373
	(11.8M)	(11.7M)	(10.7)	(613K)	(0.049)	(0.052)	(0.046)	(0.053)	
Mean	[29.8M]	[36.1M]	[69.3]	[3.37M]	[14.5]	[14.3]	[2.18]	[12.7]	

Notes: Succession year recorded in PRH_BOARD data. For entrepreneurs who retire after age 57, the succession year is defined as the last year they appear employed in the firm. Regressions include controls for number of children.

Table A17: Difference in differences estimates: professional versus offspring transition
(Sample of entrepreneurs at age 57)

	First stage	Ln turnover	Ln assets	Ln employees	Ln wages	OROA	OROA, ind. adj.
1. OLS							
Child linked to firm	-	0.22***	0.13***	0.18***	0.26***	26.5	26.9
	-	(0.022)	(0.029)	(0.017)	(0.028)	(22.6)	(22.6)
2. Median regression							
Child linked to firm	-	013***	0.052**	0.12***	0.17***	0.013	0.17*
	-	(0.015)	(0.016)	(0.016)	(0.022)	(0.008)	(0.072)
3. IV, first born daughter	-0.10***	0.62**	0.15	0.35*	0.68*	-103.0	-101.3
	(0.017)	(0.23)	(0.28)	(0.17)	(0.29)	(185.4)	(185.4)
Mean		-0.27	-0.18	-0.25	-0.19	5.92	5.23
Median		-0.14	-0.092	-0.18	-0.11	-0.039	-0.42
N		3,055	3,055	3,055	3,055	3,055	3,055

Notes: Sample is constructed from Finnish board data (PRH_BOARD) and firm ownership data (FLOWN_OWNER), years 2006-2019. Outcome variable indicates the difference between average firm outcomes in the three years after succession and three years before the succession year. Regressions include controls for the year of the transition.

Table A18: Difference in differences estimates: professional versus family transition
(Family owned businesses)

	First stage	Ln turnover	Ln assets	Ln employees	Ln wages	OROA	OROA, ind. adj.
A. Family vs. professional CEO							
1. OLS							
Family CEO	-	-0.069**	-0.016	-0.051**	-0.074**	0.38	0.18
	-	(0.022)	(0.021)	(0.018)	(0.024)	(0.36)	(0.39)
2. Median regression							
Family CEO	-	-0.006	0.006	-0.019	-0.004	0.017**	0.065
	-	(0.015)	(0.016)	(0.012)	(0.014)	(0.006)	(0.075)
3. IV, first born daughter	-0.092***	0.38	0.68**	0.32	0.44	-3.46	-3.67
	(0.015)	(0.25)	(0.25)	(0.21)	(0.27)	(3.64)	(3.98)
Mean		-0.006	0.048	-0.019	0.027	-0.26	-0.60
Median		0.020	0.042	0.008	0.027	-0.028	-0.17
N	4,317	4,317	4,317	4,317	4,317	4,317	4,317
B. Child vs. professional CEO							
1. OLS							
Child CEO	-	-0.007	0.022	-0.017	-0.019	0.42	0.16
	-	(0.022)	(0.021)	(0.019)	(0.025)	(0.37)	(0.40)
2. Median regression							
Child CEO	-	0.019	0.028	0.002	0.015	0.017**	0.051
	-	(0.015)	(0.017)	(0.013)	(0.014)	(0.006)	(0.080)
3. IV, first born daughter	-0.13***	0.26	0.52**	0.11	0.22	-2.96	-2.98
	(0.016)	(0.18)	(0.18)	(0.15)	(0.19)	(3.01)	(3.25)
Mean		0.027	0.066	-0.000	0.057	-0.27	-0.62
Median		0.031	0.054	0.020	0.064	-0.028	-0.17
N	3,714	3,714	3,714	3,714	3,714	3,714	3,714
C. Other family vs. professional CEO							
1. OLS							
Other family CEO		-0.23***	-0.12**	-0.14***	-0.22***	0.25	0.19
		(0.041)	(0.032)	(0.030)	(0.041)	(0.34)	(0.42)
2. Median regression							
Other family CEO		-0.087***	-0.081**	-0.068**	-0.070**	0.011	-0.033
		(0.026)	(0.027)	(0.020)	(0.027)	(0.008)	(0.14)
3. IV, first born daughter	0.010	-3.20	-6.99	-4.20	-4.36	54.7	71.2
	(0.016)	(5.69)	(11.5)	(7.00)	(7.47)	(104.5)	(129.4)
Mean		-0.022	0.029	-0.025	0.015	-0.39	-0.64
Median		0.008	0.016	0	0.041	-0.035	-0.18
N	2,716	2,716	2,716	2,716	2,716	2,716	2,716

Notes: Sample is constructed from Finnish board data (PRH_BOARD) and firm ownership data (FLOWN_OWNER), years 2006-2019. Firm is classified as family owned if the family of the exiting CEO owns at least half of the shares. Outcome variable indicates the difference between average firm outcomes in the three years after succession and three years before the succession year. Regressions include controls for the year of the transition.

Table A19: Difference in differences estimates: professional versus family transition
(Non-family owned businesses)

	First stage	Ln turnover	Ln assets	Ln employees	Ln wages	OROA	OROA, ind. adj.
A. Family vs. professional CEO							
1. OLS							
Family CEO	-	-0.090***	0.010	-0.026	0.010	-0.023	0.38
	-	(0.033)	(0.024)	(0.023)	(0.032)	(0.097)	(0.20)
2. Median regression							
Family CEO	-	-0.007	0.040*	0.003	0.014	-0.016*	-0.055
	-	(0.017)	(0.018)	(0.012)	(0.021)	(0.006)	(0.078)
3. IV, first born daughter	-0.015*	-3.40	-0.34	-1.38	-1.76	-4.20	3.24
	(0.006)	(1.90)	(1.05)	(1.18)	(1.47)	(11.2)	(13.9)
Mean		0.000	0.047	-0.027	0.005	-0.070	-0.57
Median		0.010	0.006	-0.007	0.029	-0.014	-0.13
N	9,176	9,176	9,176	9,176	9,176	9,176	9,176
B. Child vs. professional CEO							
1. OLS							
Child CEO	-	-0.039	0.022	0.001	0.047	0.030	0.53*
	-	(0.033)	(0.026)	(0.026)	(0.034)	(0.090)	(0.22)
2. Median regression							
Child CEO	-	-0.007	0.045*	0.012	0.028	-0.011	-0.042
	-	(0.021)	(0.018)	(0.013)	(0.020)	(0.007)	(0.10)
3. IV, first born daughter	-0.026***	-1.93*	-0.22	-0.83	-0.95	-2.85	1.22
	(0.005)	(0.84)	(0.60)	(0.62)	(0.75)	(6.44)	(8.03)
Mean		0.006	0.047	-0.025	0.007	-0.065	-0.57
Median		0.010	0.006	-0.006	0.030	-0.014	-0.13
N	8,884	8,884	8,884	8,884	8,884	8,884	8,884
C. Other family vs. professional CEO							
1. OLS							
Other family CEO		-0.18**	-0.011	-0.077	-0.059	-0.12	0.10
		(0.066)	(0.046)	(0.043)	(0.063)	(0.13)	(0.36)
2. Median regression							
Other family CEO		-0.011	0.001	-0.054	-0.046	-0.027*	-0.083
		(0.028)	(0.033)	(0.035)	(0.035)	(0.011)	(0.11)
3. IV, first born daughter	0.011**	4.70	0.056	2.03	2.68	5.90	-1.06
	(0.004)	(2.58)	(1.46)	(1.65)	(2.05)	(16.0)	(19.2)
Mean		0.002	0.046	-0.027	0.002	-0.071	-0.60
Median		0.011	0.003	-0.009	0.028	-0.014	-0.13
N	8,644	8,644	8,644	8,644	8,644	8,644	8,644

Notes: Sample is constructed from Finnish board data (PRH_BOARD) and firm ownership data (FLOWN_OWNER), years 2006-2019. Firm is classified as family owned if the family of the exiting CEO owns at least half of the shares. Outcome variable indicates the difference between average firm outcomes in the three years after succession and three years before the succession year. Regressions include controls for the year of the transition.

Table A20: Effect of succession on children's outcomes: difference in difference estimates

	CEO successions in		
	All firms	Non-family firms	Family firms
A. Log of total income			
Child becomes CEO	0.026	0.050	0.018
	(0.016)	(0.035)	(0.024)
Daughter	-0.088***	-0.086***	-0.075***
	(0.009)	(0.014)	(0.020)
Child becomes CEO x Daughter	0.15***	0.045	0.19***
	(0.038)	(0.076)	(0.051)
B. Fraction of shares owned			
Child becomes CEO	0.21***	0.18***	0.25***
	(0.007)	(0.015)	(0.010)
Daughter	-0.006***	-0.002	-0.019***
	(0.001)	(0.001)	(0.004)
Child becomes CEO x Daughter	-0.051***	-0.060*	-0.030
	(0.015)	(0.030)	(0.023)
N	44,588	20,754	9,783

Notes: Regressions include controls for educational attainment, a quadratic in previous work experience and age fixed effects.