Underperformance in Family Successions: The Role of Outside Work Experience

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Abstract

The underperformance of family successors relative to professional CEOs in family firms has been repeatedly documented. Using administrative data, we study 4,000 CEO transitions in the population of family-controlled Norwegian firms over a 17-year period. First, we document that a large majority of family successors are employed in the firm well before they take over as CEOs, and that a remarkably high fraction of such inside recruits, around fifty percent, have never had full-time employment outside the family firm. This early positioning of successors in the firm may result from families' desires to foster identity and loyalty to their business norms and thinking. Second, we find that the previously documented underperformance of family successors is entirely driven by successors recruited from inside the firm, whereas family successors recruited from outside employers perform on par with professional CEOs. We propose that extensive exposure to the family firm may entail a lack of cognitive diversity and "thinking outside the box", resulting from internalization of older generations' beliefs and business norms. We are able to rule out a range of alternative explanations for our results, including differences in inside and outside family successors' prior management experience and education. The performance gap between inside and outside successors holds up when we consider only son-successors of the outgoing CEOs, as well as when we compare inside and outside professional CEOs. At the same time, the duration of family successors' outside work experience explains a substantial part of the performance gap. We also consider whether selection on unobservable characteristics of outside family successors can explain our results. If the most talented family members receive outside work offers, the performance gap reflects differences in innate ability rather than skills acquired from outside employment. To the extent that this is the case, our results have the important implication that outside offers are an observable signal that family owners can use to guide their succession decisions. Finally, we verify our results in instrumental variables regressions.

Keywords: Family firms, family succession, CEO transition.

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CEO successors in family-controlled companies are often drawn from within the family. Several studies, however, document that the selection of family successors is financially detrimental for the average firm, as family successors subsequently tend to underperform relative to unrelated successors, cf. Bart, Gulbrandsen, and Schøne (2005), Pérez-González (2006), Villalonga and Amit (2006), Bennedsen, Nielsen, Pérez-Gonzalez, and Wolfenzon (2007), Bloom and Van Reenen (2007), and Amit and Villalonga (2013).

This finding is often believed to reflect a "small pool-effect." The preference for a family successor increases the chance that the successor's ability is inferior to what can be hired in the market for professional CEOs, see e.g. Burkart, Panunzi, and Shleifer (2003) and Pérez-González (2006).

In this paper we explore a different explanation for the relative underperformance of family successors—the importance of having work experience outside the family firm. We document that a large majority of family successors are already employed in the firm at the time they take over as CEOs, and that a remarkably high fraction of such *inside* recruits, up to fifty percent, have never been full-time employed outside the family firm. We find that inside family successors significantly underperform *outside* family successors, i.e. family successors that are recruited from positions of employment outside the family firm. In our sample, the performance gap between outside and inside family successors is so large that it explains the entirety of the performance gap between family and professional CEO successors. Specifically, we find that family successors with outside work experience perform on par with professional CEOs.

Using administrative data, we study over 4,000 CEO successions in the population of family-controlled Norwegian firms over a 17-year period. The data include both family successions and professional CEO successions. The former are more prevalent, constituting 64 percent of all successions, and among this group, 69 percent are inside successions. Formally, we define an inside family successor as a successor belonging to the controlling family, who are situated in the firm as an employee or as

a board member at least 3 years prior to the year of succession. An outside family successor is a successor from the controlling family who is not a director and is not formally employed in the family firm at any point during the three-year period prior to succession.

The predominance of inside over outside successors is strongest for sons of the outgoing CEOs. Son-successions account for about half (53 percent) of all family successions. On average, inside son-successors take over as CEOs at the age of 38 and have previously worked 10 years in the family firm. We estimate that at least half of them do not have any outside full-time work experience at all. For those successors with past outside employment, the experience occurred up to nine years prior to taking over. In contrast, the average outside son successor leaves the family firm at age 27 and returns to take over as CEO at age 35, having worked for 2.3 other employers in the meanwhile.

Our first result, therefore, is that the classic image of a family firm where generations work alongside each other, is still fitting for the majority of family-controlled firms today. Why are so many family successors positioned in the firm well in advance of taking over? One answer is that to preserve control of the business, the family fosters identity and loyalty by involving its members in management early. If younger generations settle in different cities and pursue different careers, they risk becoming too removed and eventually lost for the family business. Another answer is that the transfer of firm-specific assets and skills takes considerable time. Such assets are often intangible and may involve the maintenance of stakeholder relationships built on trust and reputation.[1] Indeed, it is often proposed that intangible assets and skills are more easily transferred in family firms, see e.g. Bennedsen, Fan, Jian, and Yeh (2015) and Habborshon and Williams (1999).

Extensive exposure to the family business would seem beneficial by facilitating transfer of firm-specific assets to future generations, but it may also entail costs.

[1] Wernerfelt (1984) and Barney (1991) argue that firms' competitive advantages arise form bundles of specialized assets and skills residing inside the organization.

Younger generations that grow up observing how the family runs the firm, and work under the supervision of their parents, may develop set perceptions of the best way of doing things, internalizing parents' beliefs and business norms. A lack of cognitive diversity may prevent thinking "outside the box" and hold back changes in corporate strategy when required.[2]

In the second part of the analysis, we compare the change in corporate performance following inside family successions to the performance of outside family and professional CEO successions in a 5-year window on each side of the transition year. The change in corporate performance is estimated as the change in the firm-specific average value (fixed effect) of the performance variable in a generalized difference-in-difference model.[3]

Initial regressions establish that family successors overall underperform professional CEO successors also in our sample. However, when the regression allows inside and outside family successors' performance to differ, the underperformance of family successors turns out to be entirely driven by inside successors. The difference in the coefficient estimates of inside and outside family successors far exceeds the estimated difference between family and unrelated successors in the restricted regression and thus accounts for the entire gap. Our estimates show that the post-succession performance of inside successors deteriorates in absolute terms. They are poorer at generating revenue and return, they have lower asset turnover, and employment grows more slowly.

What is the mechanism for this result? A small-pool effect could be at play, because inside family successions contain a higher proportion of sons, and sons are a subset of the family. We examine this, by comparing the performance of inside sons to outside sons, as both are drawn from the same limited pool. We find that also inside sons underperform outside sons. Insiders' underperformance persists even

[2]Van den Steen (2010) models homogenous corporate cultures as comprised of individuals with shared beliefs and values and shows that they are more efficient at doing what they already do, but engage in less experimentation and collection of information.

[3]Fixed effects models have been used to study persistence in corporate policies also by, e.g., Bertrand and Schoar (2003) and Cronqvist, Low, and Nilsson (2009).

when we only compare firstborn sons.

We consider two alternative explanations for insiders' underperformance. First, insiders may develop inferior management skills because they tend to occupy a junior position in the firm until they take over. Second, they may be more constrained ex post by the outgoing CEO, extending the authority-patten in their past relation. Interference by the outgoing CEO is difficult to observe, but the scope would seem to be the largest in cases where he goes on to assume a seat on the board. We continue to estimate the difference between son-successors to account for the small pool-effect, and add controls for prior CEO experience and outgoing CEO board positions to the regressions. Insiders' underperformance, however, remains intact.

We then explore the effect of having work experience outside the family firm. Successors with experience from a variety of business cultures may draw on a broader set of competencies compared to successors with a monocultural work background. We count the number of firms in which successors have been employed, which varies for both inside and outside sons. Added to the regression, the variable lowers estimated marginal effects of both insider and outsider son performances to the extent that the difference becomes insignificant, although the underlying performance difference remains in the coefficient estimates.

The importance of work experience can be addressed from a different angle by considering the group of professional CEO successors of which half are recruited internally. Arguably, the controlling family will prefer to recruit CEOs with beliefs and norms compatible with their own, and internal candidates are more likely to possess such traits. Estimating the difference between inside and outside professional CEOs, we again find that inside successors underperform, although the pattern is less pronounced compared to the pattern in family successions.

We consider whether the above results can be explained by selection on unobservable firm growth prospects, such that outside family successors leave poorly performing firms and only return to firms with growth opportunities. We argue that such sorting on growth opportunities is unlikely, because it would imply that firms to

which no family successor is willing to return have the poorest prospects for growth, and this does not appear consistent with the data.

We also consider whether the results can be explained by selection on unobservable CEO successor characteristics such as ability. If the most talented family members receive outside work offers, outside successors' superior performance would result from their innate ability rather than skills acquired from outside employment. To the extent that this is the case, our results have the important implication that family owners should exposure their children to outside offers and use such offers to guide their succession decisions. Anecdotal evidence suggest that children in family firms feel considerable pressure to join the business early.[4] Our results suggest that outside employment is an *observable* signal of successors' potential for success and hence informative for business families that prioritize intergenerational management succession.

In two-state-least-squares instrumental variable estimations we show that the underperformance of family inside successors is robust. We instrument selection into outside work experience with variables that capture industry-level asset-specificity following Parrino (1997) and Cremers and Grinstein (2014). Dependence on intangible assets makes within-firm training more valuable and limits the pool from which successor candidates can be drawn, giving rise to a positive correlation between inside successor-status and industry heterogeneity (Parrino (1997)). Given that a firm's industry-association is largely pre-determined, this measure is likely to be uncorrelated with firm-level growth options as well as individual-level ability.

Our analysis speaks to the fundamental question of whether the family has some inherent advantage as a structure for the organization of production. The uniqueness of the family business is the integration of production with "preexisting and ongoing significant personal relationships" (Pollak (1985)). We highlight the widespread practice to place successors in the firm they eventually take over, well ahead of the time

[4]E.g. "Should I go straight into the family business or get a job?" Dear Jonathan, The Financial Times (2022-01-10).

of succession. Conceivably, this preference is rooted in the family's desire to develop successors who are simultaneously informed about its business and emotionally loyal to its mission. Our results suggest that this choice comes with a financial cost.

The paper proceeds as follows: Section 2 describes our data sources and explains how the construction of the sample of CEO transitions. In Section 3 we set up the regression model, and Section 4 discusses the results. Concluding remarks are in section 5.

2 Data and sample construction

We construct a data set of family firms that undergo a CEO transition from administrative data on the population of Norwegian corporations and their owners over the period 2005-2017 obtained from the Norwegian Tax Authority. Wealth is taxed in Norway, so corporate owners and their direct stakes are observable which is a unique characteristics of our data. We compute indirect (ultimate) ownership stakes by iterating over owners in cases where firms are owned by other firms, accounting for cross-ownership, until we are able to identify an individual as the ultimate owner.

Firm-owner pairs can then be matched to public registry data of firm and owner-specific variables and information about kinship between individuals available from Statistics Norway. We employ registry data on a range of social and economic characteristics, including employment, family relations, gender, and age. Firm-level accounting data is obtained from the Brønnøysund firm registry. Ownership data are available from 2004, accounting and employment data from 2000. All variables are described in the data appendix.

The sample is then constructed through the following steps: First, some basic cleaning is performed on the population of corporations. We want to retain only firms that are active and above a minimum threshold size. Firms with average sales below 0,25 million NOK and average total assets below 1 million NOK are eliminated, as measured by 2015-prices (approximately 31,000 and 124,000 USD, respectively). This

is desirable as, prior to 2006, Norwegian taxation of dividends provided incentives to incorporate very small personal firms with little activity. We also require that firms are at least five years of age (counted from year of establishment). Further, we eliminate financial and real estate firms, firms in the agricultural sector (which is subsidised), and public services.

In the next step, we identify family firms that undergo a CEO transition. We match (domestic) owners with information about their formal roles in the corporations, including CEO and board positions, and identify a set of firms that undergo one or more CEO transitions as well as the outgoing and the incoming CEOs.[5] We then identify the family members of the outgoing CEO and compute their combined ownership in the firm. A family-relation is defined on blood or marriage up to the second degree of kinship, excluding for siblings-in-law. That is, a CEO successor is defined as being related to the outgoing CEO if he/she belongs to the set of the outgoing CEO's grandparents, parents, partners, children, grandchildren, children-in-law, siblings, nephews and nieces, aunts, uncles, and cousins.

To be meaningfully characterized as a family firm, a family must wield substantial control. Substantial control is defined as instances where the outgoing CEO's family indirectly owns at least 33.4% of equity. The 33.4% threshold stake gives the family a negative majority according to Norwegian corporate law. It enables the family to block important decisions concerning the future control of the firm.[6]

In the empirical analysis, we estimate performance in the five-year periods before and after CEO transition. We thus limit our sample to CEO transitions in the years 2005-2013, as this leaves fives years of accounting data on either side of the transitions in 2005 and 2013 (except for 2013 where post-transition performance is estimated with four observations).

For tractability, we omit firms that undergo more than one CEO transition in the 5-year window following the year of the first observed transition. We also omit firms

[5]Foreign residents are omitted because they cannot be matched with other data.

[6]Owners with stakes at or above 33.4% can block changes in the articles of association, prevent mergers, demergers, and distributions via write-downs of equity.

with multiple CEOs—in such firms, a CEO transition would not necessarily imply a shift in management control. These above restrictions result in a base sample of 6,295 family-controlled firms that undergo a CEO transitions.

Because ownership is observable in our data, we are able to define the treatment and control group quite precisely. To evaluate the effect of choosing successors from within the family, one should compare successions where the family preserves managerial control *in addition to* ownership control to successions where the family preserves ownership control but managerial control passes to an individual outside the family.

The 6,295 transitions in the base sample thus fall into four categories: In the largest subset, 2,636 cases (41.9 percent), the controlling family remains in control after transition and the incoming CEO belongs to the family of the outgoing CEO, with family defined as above. This is what we typically understand as a family succession. In these cases, we observe that the controlling family owns more than 90% of the equity on average, both before and after succession.

Another large subset of successions involve cases where CEO transition is accompanied by a loss of family control. In 2,007 cases (31.9 percent), the family's equity stake drops below the 33.4% threshold ex post and the new CEO is unrelated. In almost 60 percent of these cases, the family's ex post stake falls to zero, indicating that the firms have been sold. In a small number of cases, 185 or 2.9 percent, the family's stake falls below the 33.4 threshold even though the successor is related to the outgoing CEO. Both types of transitions involve a loss of family ownership control and are not an appropriate benchmark against which to measure family succession—even if the firms continue to be controlled by a family, the identity of the family has changed. These 2,196 observations are therefore not included in the regressions.

In the last category, 1,467 (23.3 percent), the family retains its controlling stake and the successor is unrelated to the outgoing CEO. On average, the controlling family owns around 70 percent of the firm's equity prior to succession in these cases, and the incoming CEOs receive an ownership stake of around 20 percent. Overall, we are left with a regression sample of family-controlled firms that undergo 2,636 family

successions and 1,467 professional successions during the period 2005-2013, in total 4,103 observations.

We define inside family successors as individuals that are either employed or hold a board seat in the family firm three years prior to the year of succession. Because we observe CEO successions at the end of a year, this definition implies that inside successors have been installed in the firm for 3-4 years prior to the time of succession (three years if succession occurs in the beginning of the succession year, four years is it occurs at the end of the succession year). Or put differently, inside successors arrived in the family firm at least three years prior to the transition year. We apply this three-year threshold to ensure that inside successors' relation with the firm is of a meaningful duration. About 10 percent of inside successors have a seat on the board without being simultaneously employed. Outside family successors are simply defined as the remaining family successors.

3 Empirical model

We specify a general difference-in-difference model with multiple time periods at the firm level:

$$Y_{it} = \beta_{0i} + \beta_1 \mathrm{INSIDE}_{it} + \beta_2 \mathrm{OUTSIDE}_{it} + \beta_3 \mathrm{PROF}_{it} + \beta_x \mathrm{X_{it}} + \mathrm{u_{it}}. \tag{1}$$

In (1), Y_{it} is a generic corporate outcome variable (measuring performance) and the indicator variables INSIDE_{it}, $\mathrm{OUTSIDE}_{it}$, and PROF_{it} take the values of one in (treated) years $t > 0$ and zero in (control) years $t < 0$ for firms that undergo an inside family CEO succession, an outside family CEO succession, or a professional CEO succession, respectively, at time $t = 0$. β_{0i} is a firm fixed effect which allows for treatment assignment to depend on the level of Y. The coefficients of interest, β_1, β_2, and β_3, capture shifts in the average level of Y around the time of CEO transition for each type of succession. We examine whether inside family successions differ from

outside family successions by testing whether $\beta_1 = \beta_2$ and whether outside family successions differ from professional CEO successions by testing whether $\beta_2 = \beta_3$. We omit the year of CEO transition from the regressions.

Apart from our focus on comparing inside to outside family successions rather than family to professional CEO successions, the above specification resembles that of Bennedsen et al. (2007) and Pérez-González (2006). We employ a fixed-effect model to estimate changes in average levels over five-year windows, whereas they compute three-year differences. In addition, we prefer to estimate the absolute changes in Y to observe the direction of change for each type of transition, whereas they estimate the relative change in Y.

The model includes control variables, X_{it}, for firm size (total assets), cash ratio, and operating revenue. In regressions where Y is operating revenue, we leave out operating revenue from the set of control variables. We also include a set of dummy variables for firm age, grouping age by deciles from 10 and below to 50 and above. Operating revenue proxies for investment opportunities, the cash ratio proxies for external financing need, and firm age dummies capture life-cycle effects. For each year, we adjust Y_{it} for the average industry level defined according to the 2-digit NACE industry code (equivalent to including year-industry fixed effects). The estimated values of β_1—β_3 therefore reflect changes in performance relative to the average of other sample firms that belong to the industry.

Some measures of Y are logged and in those cases the coefficient estimates of β_1—β_3 reflect percentage changes. A coefficient estimate of, say, 5.50 implies that after CEO succession, the average of Y increases by 5.5 percent relative to its average pre-CEO succession level. When a variable is measured in percent, such as OROA, we do not log it, and the coefficients reflect the change in percentage points. Prior to logging, we truncate variables by 5% in each tail in order to eliminate excess kurtosis in the distribution of the variable.

4 Empirical analysis

4.1 Careers of inside and outside family successors

Table 1 shows the distribution of the 4,103 CEO successions onto inside- and outside family successions, professional successions, as well as average firm size and age. The table shows a clear prevalence of inside family successions. Family successions constitute 64.2 percent of sample successions and inside successions make up 69.1 percent of family successions (2,636 firms) compared to 30.9 percent outside family successions (814 firms). The 1,467 unrelated (professional CEO) successions are split evenly into inside and outside successions (761 versus 706 firms), a fact that we will exploit later in the analysis. Firms that undergo family successions are on average somewhat younger than firms that undergo unrelated successions (11.1 versus 14.5 years) and smaller in size (9.81 versus 13.5 million NOK), where size is measured in the year of CEO transition. The Norwegian population of firms is comprised of many small firms—on average family succession firms have total assets of 1.21 million USD compared to 1.67 million USD for unrelated successions firms, measured in 2015-prices. There is little difference between the size of inside and outside family succession firms, but firms with inside successions are somewhat older than firms with outside successions (12.1 compared to 8.85 years).

Table 2 shows the personal relationships between incoming and outgoing CEOs in family successions. Children, partners, and siblings of the outgoing CEO are the most frequent successors, in that order. Sons are by far the most common successors and make up 56.3 and 46.7 percent of inside and outside family successors, respectively, and first-born sons become successors 2.5 times as frequently as other sons in both groups. Noticeably, the lower proportion of outside son-successors is not matched by a correspondingly higher prevalence of outside daughter-successors. Instead, partners of the outgoing CEO are more common in outside successions (14.5 versus 22.1 percent).

We then examine the employment histories of inside and outside family successors. Since the largest group of successors are children of the outgoing CEO, our

discussion will mostly focus on son- and daughter-successors. The first row in Table 3 Panel A shows that inside son (daughter) successors have worked 7.06 (6.81) years in the family firm prior to the year of succession, on average. Only 34.5 (26.2) percent of inside son (daughter) successors are observed to have full-time work experience outside the family firm. By definition, all outside successors have outside work experience, and 91.5 (84.1) percent of outside son (daughter) successors have full-time experience. On average, outside son (daughter) successors have worked for 2.26 (2.28) different outside employers, whereas inside son (daughter) successors have worked for 0.48 (0.37) outside employers. "Other" inside successors are on average more likely than son- and daughter-successors to have outside work experience (50.4 percent). Considering outside successors' employment history with the family firm, son-successors is the group with the strongest work association to the family firm, yet only 10.5 percent have been full-time employed, on average.[7] For son-successors, that engagement occurred 6.79 years prior to succession.

The above averages may be affected by truncation because our earliest employment observations are from 2000. We therefore also consider CEO transitions that occur after 2013, which provide the longest possible time series of employment data.[8] Panel B of Table 3 shows the corresponding averages for CEO transitions during 2014-2016. Truncation does appear to be an issue, as the fraction of inside family successors with outside work experience is now considerably higher—for son-successors 55 percent have outside work experience, but it occurred over nine years earlier and they have spent almost 11 years in the family firm prior to taking over. Inside son-successors, therefore, still display a strong attachment to the family firm and close to half of son-successors are entirely without outside experience.

Considering outside son-successors, the longer sample shows that 20 percent have been full-time employed in the family firm, which is double the number in Panel A

[7] A higher fraction, 18.9 percent have had en either part-time or full-time work association (not included in Table 3).

[8] CEO transitions after 2013 are omitted from the regression sample because their late occurrences do not leave five years of post-transition accounting data.

but still a relatively low fraction. On average, outside son-successors have been away from the family firm for almost 10 years. Considering that the average outside son-successor returns at age 35, this implies that only a fifth have worked full-time for the family firm while in their 20s.

We observe that the annual fraction of inside family successors with outside work experience increases over time. This may result from truncation, but could also be a consequence of an increasing trend. In the latter case, the true outside work experience of insider successors in our regression sample will be lower than the figures in Panel B. Overall, a conservative estimate is that approximately half of inside family successors do not have outside work experience at all, and that such experience lies 7-9 years back in time for successors who have it. On average, inside family successors have spent 10 years in the family firm prior to succession.

Furthermore, Panel A shows that a considerably higher fraction of outside son-successors have CEO experience compared to inside son-successors (15.3 versus 8.88 percent), whereas the difference is somewhat smaller for management-level experience (20.3 versus 17.0 percent). Perhaps surprisingly, inside daughter-successors are more likely to have CEO and especially management-level experience. One should keep in mind that the above averages are likely somewhat affected by truncation, as we can only trace individuals' employment history back to 2000.

One may wonder whether outside successors truly have outside employment. By construction, the family firm is the corporation which experiences a CEO transition, but many businesses consists of multiple separately incorporated firms. It is possible that outsiders tend to be hired from firms that are part of a same business group as the family firm. Even if that was the case, it is relevant to study the consequences of a change in management responsibility in any particular firm, as it is desirable that all individual firms in a business group perform well. Nevertheless, the relationship between a successor's former employer and the family firm can be informative about the likelihood that the two firms share a similar business culture, due to overlap in ownership. Our ownership data allows us to identify whether two firms have the

same owners. We therefore check whether the firm from which outside successors are recruited from are owned by the family of the departing CEO. We denote such firms "related firms." As can be seen, 35.5 percent of son-successors come from related firms, the fraction is lower for daughter- and other-successors (22.2 and 30.3 percent respectively). As many as two-thirds of son-successors, therefore, are in fact recruited from different business groups and among the one-third that are recruited from related firms, the vast majority have worked under a CEO different from the outgoing CEO.[9]

In Table 4 we display the age characteristics of outgoing and incoming CEOs. Departing CEOs are, on average, around 65 years old when an inside child takes over, and around 63 years old when an outside child takes over. Inside successor-children are around 38 years old when they take over, whereas outside successor-children are around 35 years old. The average age of the departing CEO's oldest child may give some clue as to why "other" successors take over. The average age of the firstborn child in other-successions is 24.2 years compared to approximately 40 years for successions involving children. This suggests that the outgoing CEO's children are too young to assume management responsibility, and that partner-mangaement may be an intermediary solution, as partners is the main component of the "other" group. The table further shows that while having a male firstborn is associated with a higher prevalence of son successors, is it not associated with any statistically significant difference between inside and outside successors. Finally, there is a higher proportion of divorced CEOs in the outside successor group.

4.2 Performance of inside and outside family successors

Table 5 reports summary statistics for the performance measures used in the regressions. The table displays average performance measures five years prior to succession as well as five years after succession, for inside and outside family successions and for unrelated (professional CEO) successions. Firms that undergo inside-successions are

[9]The fraction is 85.5 percent for successor-sons, 86.4 percent for successor daughters, and 92.4 percent for other successors.

larger in terms of total assets and number of employees, although only the difference in employment is statistically significant. This is consistent with their higher age (Table 1). Furthermore, they outperform firms that undergo outside successions in terms of industry-adjusted OROA and ROA prior to succession whereas the difference in performance becomes insignificant post-succession. In the regressions, this level effect will be absorbed by the firm fixed effects. Industry-adjusted returns are negative for all types of successions. This reflects that the regression sample contains firms where the controlling family retains its control after succession, whereas industry-adjustment is done on the larger base sample that also contains those firms where the family loses its control after succession. The negative returns, therefore, reflect that sold firms perform better than firms where the family remains in control. Also, because the table displays five-year averages according to each firm's succession year, the figures do not add up to zero across firm types.

Table 6 displays our main result. Panel A compares the performance change around succession of family successors to that of unrelated successors for various measures of performance.[10] We estimate model (1) by collapsing inside and outside family successions into one group in order to compare the performance of family successions to unrelated successions. In line with the previous literature, we find that successions by professional CEOs tend to outperform family successions. We estimate the absolute change in the level of performance for each group and find that the relative difference is statistically significant for three of the five performance measures (sales growth, asset-turnover, and employment growth).

In Panel B we allow for different effects of inside and outside family successions. Underperformance is now concentrated on inside successors whose performance deteriorates in absolute terms whereas the performance for outside and unrelated successors is either unchanged or improved. Notably, inside family successors significantly

[10]We considered range performance and policy variables but report only those that display a pattern of significant differences. For example, estimated differences in leverage and cash ratios were not significant. Generally we found that operating revenue is the variable that reacts strongest to succession.

underperform their outside counterparts, whereas outside successors perform no differently from unrelated successors. Inside family successors are poorer at generating revenue and return, efficiency (as measured by asset turnover) falls, as does the number of employees. For example, OROA falls by 0.51 percentage points and operating income growth falls by 5.99 percent after succession, on average.

To evaluate the size of these effects, consider e.g. OROA: the difference between family and unrelated successors in Panel A amounts to 0.73 (0.66 - (-0.07)) percentage points. The difference between inside and outside family successors in Panel B is an even larger 1.62 (1.11 -(-0.51)) percentage points, while the estimated coefficient for unrelated successors is unchanged. The underperformance of inside family successors can thus explain the entire difference between family and unrelated successors.

Figure 1 plots average corporate performance before and after CEO transition for the group of inside and outside family successors for four measures of performance (all measures are industry-adjusted on an annual basis). The difference in the ex post slope of inside and outside successors is evident—inside successors' performance trend downwards, outside successors' performance trend upwards. The ex ante trends of inside and outside successors do not appear to differ substantially. The performance of outside successors in some cases picks up a year prior to the formal installment of the incoming CEO, which likely reflects that our data record CEO positions on an ultimo-year basis.

4.2.1 Comparing inside and outside successor sons

We now investigate the mechanism behind the underperformance of inside successors relative to outside successors. The compositions of the two groups differ as the former has a higher proportion of sons (Table 2). If business families have a preference for sons, and perhaps even firstborn sons, the pool of successors becomes very small. Sons are also predominant among outside successors, hence a preference for sons appears strong in both types of successions.

The importance of the small pool-effect can be assessed by comparing the perfor-

mance of inside sons to outside sons, as sons are drawn from the same limited pool. Table 7 panel A shows the results of this estimation. The difference in performance of inside and outside sons is intact and statistically significant at the five percent level for all performance measures. The standard errors of the coefficient estimates are somewhat larger than those in Panel B of Table 6 due to the lower number of observations. In panel B of Table 7 we shrink the pool even further and compare the performance of firstborn sons—the underperformance of insider succssors remains large and statistically significant for all measures. The small pool-effect, therefore, does not appear to be driving insiders' underperformance.

Table 3 shows that outsiders successors tend to have more CEO experience. This raises the possibility that inside successors have accumulated less skills exactly because they have been in a junior position. Presumably, outsiders who were previously in a CEO position, have the best prerequisites for success after taking over the family firm. To test this idea, we add a dummy variable for (inside and outside) successors that were recruited from a CEO position, while we continue to compare son-successors to account for the small pool-effect. The inclusion of a CEO control variable barely affects the results, as shown in panel A of Table 8.[11]

In panel B, we examine the potential for interference by the outgoing CEO and add a control variable for his continued presence on the board. The latter's presence may constrain especially inside sons when father and sons have a history of working together and father-son personal relations may complicate successions. Although senior's formal presence is associated with higher growth in sales and employment, the effect works on both inside and outside sons and the underperformance of inside sons remains intact.

We then explore the role of outside experience further. Table 3 shows 41.4 percent of inside sons in the regression sample have work experience from firms other than the family firm. Thus, we have variation in the extent of outside work experience in both groups. Adding the number of past outside employers to the regressions, in

[11] We obtain similar results when we use a dummy for management-level experience.

panel A of Table 9, we find that the variable is positively associated with growth in operating revenue and employment, and with asset turnover. Thus, exposure to multiple employers is associated with improved performance for incoming CEOs. Furthermore, the difference between inside and outside sons becomes smaller and is now significant only at the 10 percent level.[12] In panel B we control for the length of time a successor has worked outside the family firm. This further shrinks the difference between inside and outside coefficient estimates and, furthermore, the difference becomes clearly insignificant. Lengthly outside experience, therefore, seems to account for a substantial part of outside-successors' superior ex post performance.[13] Overall, the results are consistent with the idea that exposure to different business cultures enhances successors' management competencies. The fact that the length of that exposure matters more than having multiple exposures, could reflect that deep familiarity with a business culture takes several years to acquire.

Additional evidence that "outside-ness" captures business culture comes from a difference group of successors, that of professional CEOs. About half of the professional CEO-successors are recruited from inside the firm (cf. Table 1). Because the controlling family continues to be in charge in unrelated successions, inside successors are likely to be selected exactly because they share beliefs and values with the outgoing CEO and the controlling family. In other words, the commonness of inside professional CEO- and son-successors is likely their exposure to the existing business culture.

In Table 10 we rearrange the regression and split unrelated successors into inside and outside successors. The pattern for professional CEOs is very similar to that of family successors, although the coefficient estimates for insiders and outsiders are no longer significantly different. This seems to result from higher coefficient estimates for insiders and somewhat larger standard errors. The differences in asset turnover,

[12]The correlation of the number of past outside employers with outside son successors is 0.51 and -0.09 with inside son successors.

[13]The correlation of the years of outside employers with outside son successors is 0.44 and -0.07 with inside son successors.

operating revenue and employment growth, however, continue to be highly significant at the 1 percent level.

Lastly, we explore whether differences in educational background are behind the insider-outside performance-gap. In previous work, Pérez-González (2006) interprets education as a reflection of innate ability, and shows that the underperformance of family successors is concentrated on successors who attend less prestigious colleges. In our sample, outside family successors have higher degrees of schooling, on average, cf. Table 4.[14] Thus, their superior performance could result from skills achieved through education or education could be a reflection of innate ability.

Table 11 shows the results from regressions where we add a dummy variable that equals one when successors have completed high school. A high school degree is strongly associated with positive successor performance, in line with the results of Pérez-González (2006). The performance gap between inside and outside successors, however, remains and, notably, the coefficient estimates for inside successors become more negative and more significant. Regressions with dummy variables for bachelors or masters level degree cannot account for the performance gap either, and in these regressions the education dummy variable is largely insignificant. We conclude, therefore, that differences in educational levels cannot explain our results.

4.3 Selection bias

In this section, we discuss the possibility of selection on outside-status, i.e. whether some unobserved characteristic of outside successions can explain the above results. We discuss two possible scenarios.

First, we consider whether outside successors are more likely to return to family firms with high growth potential. Outside-succession firms exhibit poorer performance ex-ante than inside-succession firms (cf. Table 5). Thus, one can imagine that succession-type largely derives from a sorting on ex-ante performance: inside-

[14]The low proportion of successors with a master's degree is partly due to the data provider's classification of masters degrees as five-years or longer.

successors are from well-performing firms and early decide to pursue their career in the family firm, while potential successors in poorly performing firms leave, only to return if the future economic prospects become sufficiently better. If so, outside successors' superior performance would be baked-in and not result from the ability of the incoming CEO.

We examine this possibility by comparing the performance of outside-succession firms to that of firms that are sold. The above reasoning implies that firms to which no successors are willing to return have the lowest growth potential. Hence, we would expect sold firms to underperform outside-succession firms prior to succession and not outperform outside-succession firms after succession.

Figure 2 juxtaposes the performance of inside and outside family succession firms with the performance of sold firms. Considering first ex post performance, sold firms perform best of all. Although a change in ownership may be accompanied by alleviation of capital constraints, e.g. through injection of equity capital from new owners, sold firms' performance is so superior that it seem difficult to reconcile with sold firms having inferior growth options prior to the sale. The change in ownership would have to entail a considerable turn-around in the firms' prospects. Ex ante, sold firms have the highest returns five years prior to CEO transition, but noticeably, OROA drops rapidly in the years leading up to transition. This could reflect passive management during the search for new owners, rather than dwindling growth opportunities. Indeed, sold firms persistently have the highest level of asset turnover. Overall, the graph paints a picture of sold firms as those with the highest, as opposed to the lowest, growth opportunities. This interpretation is also consistent with the summary statistics of performance Table 12, where the superior ex post performance in terms of OROA and asset turnover is highly significant. Sold firms' smaller size is consistent with the interpretation that they are typically growth firms. Taken together, outside succession firms' ex post performance does not appear to be driven by unobserved growth possibilities, or at least we can rule out that outside succession firms are the firms with the best growth prospects. Whether a family successor is available, is not

simply related to the firm's growth opportunities.

Second, it is possible that outside successor-status reflects selection on unobservable CEO characteristics. In particular, outside successors may be the most talented children in the controlling families and, consequently, receive attractive outside offers at an early point in time. If so, outside work experience adds no value per se, but reflects innate ability. Alternatively, outside successors are individuals with innate cognitive diversity who pursue their own ways, selecting external employment or education. Since we cannot observe outside offers of employment, the two alternatives are indistinguishable to us. They both, however, imply that outside employment is an *observable* signal of CEO talent. Our results have the important implication, therefore, that family businesses can benefit from relying on this signal by systematically using external employment as a training ground for potential successors.

We address the issue of selection in our analysis by instrumental variable regressions similar to that of Bennedsen et al. (2007). Because our instruments are unlikely to be correlated with firms' growth opportunities or successors' characteristics, the resulting coefficient estimates reflect the causal effect of outside employment experience.

The model specification (1) requires at least three instruments as it has three endogenous variables (INSIDE_{it}, OUTSIDE_{it}, and PROF_{it}). We employ two sets of instruments. The first instrument is correlated with the propensity of selecting a family successor over a professional CEO successor. Bennedsen et al. (2007) and Tsoutsoura (2015) show that the gender of the outgoing CEO's first born child is associated with a higher frequency of family successions (a lower frequency of professional CEO successions). The instruments are as good as randomly assigned, and therefore uncorrelated with the inherent talent of successors and independent of future expected firm performance.

The second set of instruments is correlated with the propensity of selecting an inside family successor over an outside family successor. When a firm's competitive advantage relies on intangible assets or skills, inside successors are more likely to have

acquired such skills than outside successors, and the pool of eligible outside candidates is smaller. Production technology is an important determinant of asset specificity. We use measures of industry homogeneity suggested by Parrino (1997) and Cremers and Grinstein (2014) as a proxies for the availability of outside candidates. The Parrino measure is the partial correlation of firm-level OROA with average-industry OROA during the years prior to a firm's succession. The Cremers-Grinstein measure is the percent of CEO turnovers in a firm's industry that is filled by outside CEOs computed over the years prior to a firm's succession year. In addition, we compute the average level of education attained by CEOs in the firm's industry as a proxy for the specificity of firm technology.[15] We allow for a nonlinear effect of education by including both average education and average education squared as instruments. While a firm's placement in an industry is not randomly assigned but is a choice of its owners, is it a past choice which is unlikely to have been based on observations of potential successors' talent. Thus, it is unlikely that our instruments for asset specificity are correlated with the inherent talent of the family successors or have an independent effect on the future performance of the individual firm.

In the first stage regressions, Table A2, we find that the instruments have the expected signs. The effect of male firstborn children is positively associated with family successions and the effect is three times as large on inside family successors as outside family successors. The effect is negative for unrelated successors. Industry homogeneity is negatively associated with insider family successors and unrelated successors, and positively with outside family successors, according to both the Parrino and Carmers-Grinstein measures. Average education of industry CEOs is associated with a positive and large effect on inside family successors and a small positive effect for outside successors. The Sanderson-Windmeijer multivariate F-test of excluded instruments in the first stage regressions are all highly significant.

The second stage regressions shown in Table 13 replicate the patterns of the OLS

[15] An education index assigns the value of "1" for secondary school or below; "2" for high school; "3" for a bachelor's degree; "4" for a master's degree; and "5" for a PhD degree.

regressions although with less precision as reflected in the larger coefficients and standard errors. The signs and relative magnitude of the IVE coefficients corroborates the conclusions from the OLS results. The performance of inside family successors' deteriorate in absolute terms and that they underperform outside family successors, who in turn perform similarly to unrelated successors.

5 Conclusion

In this paper we document that not only do family-owned companies tend to select CEO successors from within the family, they also tend to select successors that have worked in the family firm for a considerable time prior to taking over. We find that only a third of internally-recruited family successors have work experience from outside firms and have spent 10 years working in the family firms, on average.

We further estimate that the underperformance of family successors relative to professional CEOs that have been documented in the literature, is entirely driven by such inside family successors. After CEO transition, their performance deteriorates in absolute terms and they underperform family successors that are recruited from outside the family firm. The latter, notably, perform on par with professional CEOs. A substantial part of the difference can be accounted for by measures of the extent of outside work experience.

We propose that monocultural business background in the family firm is behind this result. Successors skill set may suffer from a lack of cognitive diversity or successors internalize particular family business norms which are prioritized over financial profit.

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Figure 1: Corporate performance in inside and outside family successions

The figure displays average corporate performance in the five years prior to and after CEO transition for firms that undergo an inside family succession as well as firms that undergo an outside family succession. Inside family successors are defined as successors from the controlling family that are employed or have a board seat in the family firm three years prior to the year of succession. Outside family successors are defined as the remaining family successors. Unrelated successors are successors that do not belong to the family of the outgoing CEO. The sample consists of family controlled firms that undergo a CEO transition during 2005-2013. Accounting variables are from 2001-2017. All performance variables are industry-adjusted annually and are defined in appendix Table A1.

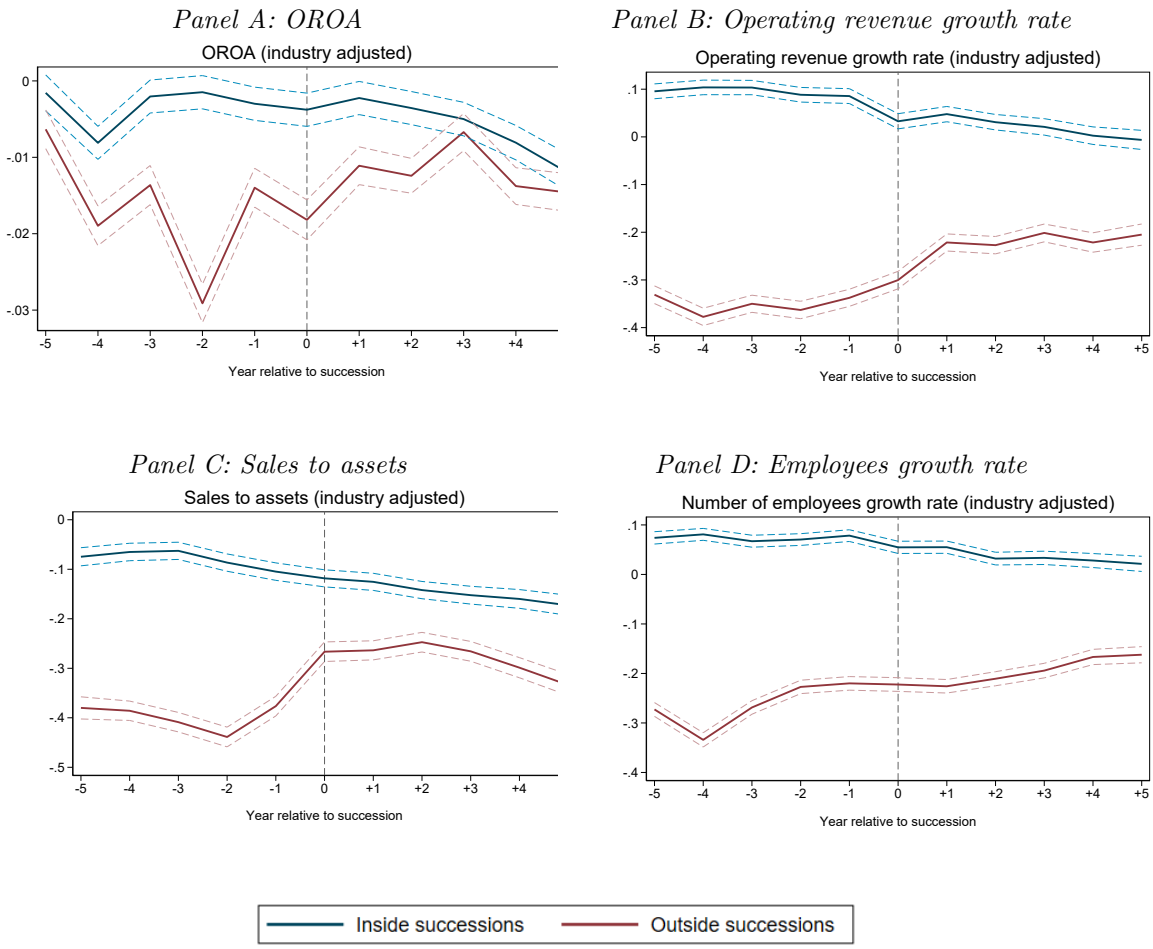

Figure 2: Corporate performance in family successions and sold firms

The figure displays average corporate performance in the five years prior to and after CEO transition for firms that undergo an (inside or outside) family succession as well as sold firms. Inside family successors are defined as successors from the controlling family that are employed or have a board seat in the family firm three years prior to the year of succession. Outside family successors are defined as the remaining family successors. Unrelated successors are successors that do not belong to the family of the outgoing CEO. Sold firms are firms where the controlling family's stake drops below 33.4% after a CEO transition. The sample consists of family controlled firms that undergo a CEO transition during 2005-2013. Data sample: 2001-2017. All performance variables are industry-adjusted annually and are defined in appendix Table A1.

Table 1: Firm successions in the sample

The table displays characteristics of the sample of family controlled firms that undergo a CEO transition during 2005-2013. It shows the distribution of observations on succession types, as well as firm age and size in the year of succession. Family-owned firms are defined as firms where the family of the outgoing CEO owns on average at least 33.4% two years prior to CEO transition and at least two years after succession. Inside family successors are defined as successors from the controlling family that are employed or have a board seat in the family firm three years prior to the year of succession. Outside family successors are defined as the remaining family successors. Unrelated successors are successors that do not belong to the family of the outgoing CEO. Firm age is computed from a firm' year of registered establishment. Firm size is the value total assets.

	Number of firms	Share of firms (percent)	Share of firms (percent)	Number of firm-year observations	Firm age at transition (years)	Firm size at transition (million NOK)
Family successions	2,636	64.2	100.0	45,900	11.1	9.82
Inside successions	1,822	–	69.1	32,522	12.1	9.76
Outside successions	814	–	30.9	13,522	8.85	9.96
Unrelated successions	1,467	35.8	100.0	24,780	14.5	13.5
Inside successions	706	–	48.1	12,421	11.2	13.0
Outside successions	761	–	51.9	12,359	8.40	13.9
Total	4,103	100.0	–	70,770	–	–

Table 2: Relationship between outgoing and incoming CEOs in family successions

The table shows the family relation between the outgoing CEO and the succeeding CEO in firms that undergo a family succession. Inside family successors are defined as successors from the controlling family that are employed or have a board seat in the family firm three years prior to the year of succession. Outside family successors are defined as the remaining family successors. The sample consists of family controlled firms that undergo a CEO transition during 2005-2013. Data sample: 2001-2017.

	Number of successions			Percent of successions		Percent of succession type	
	Total	Inside	Outside	Inside	Outside	Inside	Outside
Parent-son	1,405	1,025	380	56.3	46.7	73.0	27.0
Parent-firstborn son	*994*	*734*	*260*	*40.3*	*31.9*	*73.8*	*26.2*
Parent-daughter	329	227	102	12.5	12.5	69.0	31.0
Partners	442	262	180	14.5	22.1	59.3	40.7
Siblings	297	216	81	11.9	9.95	72.7	27.3
Other	163	92	71	5.05	8.72	56.4	43.6
Total	2,636	1,822	814	100.0	100.0	–	–

Table 3: Past work experiences of family successors

The table reports the average values of measures related to the work experiences of inside and outside family successors by successor-type. Inside family successors are defined as family successors that are employed or have a board seat in the family firm three years prior to the year of succession. Outside family successors are defined as the remaining family successors. *** (**) indicates that the difference between inside and outside family successors is significant at the 1% (5%) level in a two-sided t-test of difference in means. The sample consists of family controlled firms that undergo a CEO transition during 2005-2013. Data sample: 2001-2017.

	Inside successors			Outside successors		
	Sons	Daughters	Others	Sons	Daughters	Others
Time in family firm before succession (years)	7.06	6.81	5.48	–	–	–
	(0.10)	(0.22)	(0.16)	–	–	–
Has worked full-time outside the family firm (Y/N, percent)	34.5***	26.2***	50.4***	91.5	84.1	89.1
	(1.52)	(3.01)	(2.17)	(1.49)	(4.06)	(1.77)
Number of past full-time outside employers	0.48***	0.37***	0.71***	2.26	2.28	2.27
	(0.03)	(0.05)	(0.04)	(0.05)	(0.14)	(0.05)
Has past full-time employment in the family firm (Y/N, percent)	–	–	–	10.5	4.90	3.92
				(1.58)	(2.15)	(1.07)
Years since last family firm employment	–	–	–	6.79	6.38	6.29
				(0.22)	(0.55)	(0.26)
Recruited from position as CEO (Y/N, percent)	8.88***	4.41	14.6***	15.3	3.92	8.73
	(0.89)	(1.37)	(1.48)	(1.85)	(1.93)	(1.55)
Recruited from position at manager-level (Y/N, percent)	17.0	25.6**	25.7	20.3	12.0	26.4
	(1.35)	(3.51)	(2.18)	(2.99)	(4.64)	(3.51)
Recruited from related firm (Y/N, percent)	–	–	–	35.5	22.2	30.3
				(2.79)	(4.65)	(3.39)
Panel B: CEO successions 2014-2016						
Time in family firm before succession (years)	10.9	10.9	8.20	–	–	–
	(0.23)	(0.50)	(0.42)	–	–	–
Has worked full-time outside the family firm (Y/N, percent)	55.8***	49.2***	69.9***	91.9	85.7	92.0
	(2.71)	(6.25)	(3.60)	(2.75)	(7.82)	(3.88)
Years since last outside full-time employment (years)	9.33	8.96	7.65	–	–	–
	(0.21)	(0.45)	(0.27)	–	–	–
Has past employment in the family firm (Y/N, percent)	–	–	–	20.4	9.09	17.6
				(3.99)	(6.27)	(5.39)
Years since last full-time family firm employment	–	–	–	9.71	27.3	9.80
				(2.93)	(9.72)	(4.21)

Table 4: Personal characteristics of outgoing and succeeding family CEOs

The table reports mean values of various personal characteristics of outgoing and succeeding family CEO successors by successor-type. Inside family successors are defined as family successors that are employed or have a board seat in the family firm three years prior to the year of succession. Outside family successors are defined as the remaining family successors. *** (**) indicates that the difference between inside and outside family successors is significant at the 1% (5%) level in a two-sided t-test of difference in means. The sample consists of family controlled firms that undergo a CEO transition during 2005-2013. Data sample: 2001-2017.

	Inside successors			Outside successors		
	Sons	Daughters	Others	Sons	Daughters	Others
Age of outgoing CEO at succession (years)	65.1***	66.8***	50.4***	63.0	62.4	47.1
	(0.22)	(0.49)	(0.45)	(0.36)	(0.87)	(0.64)
Age of succeeding CEO at succession (years)	38.0***	39.5***	49.4***	35.3	35.5	44.4
	(0.20)	(0.49)	(0.43)	(0.36)	(0.74)	(0.56)
Age at last employment in the family firm	–	–	–	27.4	24.7	42.7
				(0.79)	(1.90)	(2.08)
Age of outgoing CEO's firstborn at succession	40.4***	41.4*	24.2***	37.8	37.5	20.8
	(0.21)	(0.45)	(0.53)	(0.36)	(0.76)	(0.74)
Succeeding CEO has high school degree (Y/N, percent)	79.9	87.2*	81.0	75.7	75.5	82.5
	(1.25)	(2.22)	(1.65)	(2.21)	(4.28)	(2.09)
Succeeding CEO has bachelors degree (Y/N, percent)	21.8	34.8	24.8***	25.9	43.1	36.9
	(1.29)	(3.17)	(1.81)	(2.25)	(4.93)	(2.66)
Succeeding CEO has masters degree (Y/N, percent)	2.24**	7.49	5.28	6.33	10.8	8.16
	(0.46)	(1.75)	(0.94)	(1.25)	(3.09)	(1.51)
Outgoing CEO's firstborn is male (Y/N, percent)	70.0	26.0	48.1**	67.6	22.5	57.1
	(1.43)	(2.92)	(2.16)	(2.40)	(4.16)	(2.78)
Outgoing CEO is divorced (Y/N, percent)	4.78***	3.96	13.2	8.95	7.85	14.2
	(0.67)	(1.30)	(1.42)	(1.47)	(2.68)	(1.92)

Table 5: Summary statistics for family and unrelated successions

The table compares average values of firm-level financial statistics before and after CEO transition by successor-type (panels A and B, respectively). Inside family successors are defined as family successors that are employed or have a board seat in the family firm three years prior to the year of succession. Outside family successors are defined as the remaining family successors. Unrelated successors are successors that do not belong to the family of the outgoing CEO. All values, unless indicated otherwise, are reported in percent, and winsorized at the 5 and 95 percent level. Definitions of variables are available in Appendix Table A1. p-values are reported for a two-sided t-test with unequal variances for the difference in means between inside and outside succession firms. *** (**) indicates that the difference between inside and outside family successors is significant at the 1% (5%)-level. The sample consists of family controlled firms that undergo a CEO transition during 2005-2013. Data sample: 2001-2017.

	Family succession				Unrelated succession
	All firms	Inside successors	Outside successors	Difference in means	All firms
Panel A: Averages before succession					
Total assets (million NOK)	7.68	7.88	7.26	0.62	10.3
	(0.25)	(0.30)	(0.47)		(0.45)
Number of employees	8.81	9.49	6.96	2.53***	11.3
	(0.18)	(0.22)	(0.33)		(0.40)
OROA, industry-adjusted	-0.71	-0.34	-1.61	1.27**	-0.70
	(0.23)	(0.25)	(0.50)		(0.35)
ROA, industry-adjusted	-0.44	-0.14	-1.17	1.02**	-0.30
	(0.19)	(0.20)	(0.41)		(0.29)
Sales to assets (pct.)	2.12	2.26	1.77	0.49***	2.29
	(0.03)	(0.03)	(0.05)		(0.04)
Firm-year observations	12,594	9,062	3,532		6,756
Panel B: Averages after succession					
Total assets (million NOK)	11.5	11.2	12.0	-0.87	16.2
	(0.34)	(0.40)	(0.66)		(0.58)
Number of employees	9.75	10.3	8.32	1.98***	13.9
	(0.21)	(0.25)	(0.39)		(0.36)
OROA, industry-adjusted	-0.94	-0.70	-1.48	0.78	-0.48
	(0.24)	(0.28)	(0.45)		(0.37)
ROA, industry-adjusted	-0.59	-0.46	-0.89	0.42	-0.45
	(0.20)	(0.23)	(0.38)		(0.31)
Sales to assets (pct.)	1.84	1.96	1.58	0.38***	2.15
	(0.03)	(0.03)	(0.05)		(0.03)
Firm-year observations	10,397	7,187	3,210		5,772

Table 6: Change in firm performance for inside and outside family successors

Panel A compares the change in performance around CEO transition of family successors to that of unrelated successors. Panel B compares the change in performance of inside and outside family successors as well as unrelated successors. Inside family successors are defined as family successors that are employed or have a board seat in the family firm three years prior to the year of succession. Outside family successors are defined as the remaining family successors. Unrelated successors are successors that do not belong to the family of the outgoing CEO. The coefficient estimates are from panel regressions of performance on a set of control variables, firm fixed effects, and industry-year fixed effects. Firm control variables include firm age, lagged total assets, lagged cash ratio, and lagged OROA (except in column 1). Variables are annual and winsorized at the 5th and 95th percentiles. Variable definitions are provided in Appendix Table A1. Reported p-values are from a Wald test of the null of no difference between the estimated coefficients. Firm clustered standard errors are reported in parentheses. *** (**) indicates significance at the 1% (5%)-level. The sample consists of family controlled firms that undergo a CEO transition during 2005-2013. Data sample: 2001-2017.

	OROA	ROA	ln(Op. revenue)	Sales/ assets	ln(Employees)
Panel A: Family vs. unrelated successions					
Family successions	-0.07	-0.25	-3.99***	1.11	-3.87***
	(0.29)	(0.21)	(1.23)	(1.94)	(1.01)
Unrelated successions	0.66	0.01	5.13***	15.3***	4.93***
	(0.38)	(0.29)	(1.63)	(2.62)	(1.38)
Difference (p-value)	0.095	0.422	0.000	0.000	0.000
Controls and fixed effects	yes	yes	yes	yes	yes
Adjusted R-squared	0.32	0.32	0.86	0.70	0.85
Observations	35,383	34,565	33,624	34,565	30,459
Panel B: Inside vs. outside family successions					
Family successions					
Inside successors	-0.51	-0.64***	-5.99***	-4.01	-5.52***
	(0.31)	(0.23)	(1.29)	(2.10)	(1.09)
Outside successors	1.11	0.88**	2.49	16.2***	2.94
	(0.57)	(0.44)	(3.09)	(4.40)	(2.37)
Difference (p-value)	0.009	0.001	0.012	0.000	0.001
Unrelated successions	0.66	0.01	5.14***	15.4***	4.93***
	(0.38)	(0.29)	(1.63)	(2.62)	(1.38)
Outside family = unrelated successor (p-value)	0.495	0.085	0.453	0.876	0.465
Controls and fixed effects	yes	yes	yes	yes	yes
Adjusted R-squared	0.32	0.32	0.86	0.70	0.85
Observations	35,383	34,565	33,624	34,565	30,459

Table 7: Change in firm performance for inside and outside family successor sons

Panel A compares the change in performance around CEO transition of inside family son-successors to that of outside family son-successors. Panel B compares the change in performance around succession of inside firstborn son-successors to that of outside firstborn son-successors. Son-successors are sons of the outgoing CEO. Please refer to Table 6 for additional notes.

	OROA	ROA	ln(Op. revenue)	Sales/ assets	ln(Employees)
Panel A: Inside vs. outside son-successions					
Parent-son successions					
Inside successors	-0.36	-0.62**	-0.93	1.58	-1.93
	(0.38)	(0.27)	(1.52)	(2.39)	(1.25)
Outside successors	1.20	0.63	8.42**	17.6***	8.76***
	(0.74)	(0.55)	(3.84)	(5.60)	(3.26)
Difference (p-value)	0.054	0.035	0.023	0.008	0.002
Other family successions	-0.19	-0.16	-10.5***	-4.10	-9.21***
	(0.43)	(0.32)	(2.05)	(3.16)	(1.64)
Unrelated successions	0.66	0.01	5.22***	15.4***	4.98***
	(0.38)	(0.29)	(1.63)	(2.62)	(1.38)
Outside son = unrelated successor (p-value)	0.509	0.305	0.444	0.730	0.281
Controls and fixed effects	yes	yes	yes	yes	yes
Adjusted R-squared	0.32	0.32	0.86	0.70	0.85
Observations	35,383	34,565	33,624	34,565	30,459
Panel: Inside vs. outside firstborn son-successions					
Parent-firstborn son successions					
Inside successors	-0.60	-0.85***	-1.30	0.01	-2.04
	(0.43)	(0.30)	(1.73)	(2.74)	(1.42)
Outside successors	1.75**	1.04	8.20	16.2**	8.64**
	(0.84)	(0.61)	(4.65)	(6.74)	(4.00)
Difference (p-value)	0.011	0.005	0.055	0.025	0.011
Other family successions	-0.09	-0.25	-7.08***	-0.52	-6.51***
	(0.37)	(0.28)	(1.67)	(2.60)	(1.34)
Unrelated successions	0.66	0.01	5.20***	15.4***	4.97***
	(0.38)	(0.29)	(1.63)	(2.62)	(1.38)
Outside firstborn son = unrelated successor (p-value)	0.230	0.119	0.544	0.913	0.380
Controls and fixed effects	yes	yes	yes	yes	yes
Adjusted R-squared	0.32	0.32	0.86	0.70	0.85
Observations	35,383	34,565	33,624	34,565	30,459

Table 8: Change in firm performance controlling for successors' CEO experience and outgoing CEO's board presence

Panel A compares the change in performance around CEO transition of inside family son-successors to that of outside family son-successors, adding a dummy variable equal to one in firms where the successor holds the position of CEO three years prior to the year of success. Panel B compares the change in performance around succession of inside firstborn son-successors to that of outside firstborn son-successors, addition a dummy variable equal to one in firms where the outgoing CEO sits on the board three years after the succession. Son-successors are sons of the outgoing CEO. Please refer to Table 6 for additional notes.

	OROA	ROA	ln(Op. revenue)	Sales/ assets	ln(Employees)
Panel A: Inside vs. outside son-successions					
Parent-son successions					
Inside successors	-0.32	-0.61**	-0.84	1.54	-2.00
	(0.38)	(0.27)	(1.50)	(2.39)	(1.26)
Outside successors	1.27	0.66	8.59**	17.5***	8.65***
	(0.75)	(0.55)	(3.86)	(5.70)	(3.32)
Difference (p-value)	0.050	0.035	0.022	0.008	0.002
Past CEO position	-0.42	-0.18	-1.02	0.42	0.71
	(0.65)	(0.49)	(3.62)	(5.02)	(2.88)
Other family successions	yes	yes	yes	yes	yes
Unrelated successions	yes	yes	yes	yes	yes
Controls and fixed effects	yes	yes	yes	yes	yes
Adjusted R-squared	0.32	0.32	0.86	0.70	0.85
Observations	35,383	34,565	33,624	34,565	30,459
Panel B: Inside vs. outside son-successions					
Parent-son successions					
Inside successors	-0.41	-0.69**	-3.49	1.18	-5.63***
	(0.49)	(0.35)	(2.09)	(3.20)	(1.71)
Outside successors	1.37	0.70	6.91	18.1***	5.28
	(0.78)	(0.58)	(4.10)	(5.98)	(3.43)
Difference (p-value)	0.028	0.019	0.012	0.005	0.002
Outgoing CEO is on the board	0.11	0.12	4.40**	1.03	6.02***
	(0.45)	(0.33)	(2.14)	(3.27)	(1.70)
Other family successions	yes	yes	yes	yes	yes
Unrelated successions	yes	yes	yes	yes	yes
Controls and fixed effects	yes	yes	yes	yes	yes
Adjusted R-squared	0.33	0.32	0.86	0.70	0.85
Observations	35,383	34,565	33,624	34,565	30,459

Table 9: Change in firm performance controlling for successors' outside work experience

Panel A compares the change in performance around CEO transition of inside family son-successors to that of outside family son-successors, adding a measure of the number of the successor's prior employees three years prior to the year of transition. Panel B compares the change in performance around succession of inside firstborn son-successors to that of outside firstborn son-successors, adding a measure of the number of years the successor has spent outside the family firm prior to succession. Son-successors are sons of the outgoing CEO. Please refer to Table 6 for additional notes.

	OROA	ROA	ln(Op. revenue)	Sales/ assets	ln(Employees)
Panel A: Inside vs. outside son-successions					
Parent-son successions					
Inside successors	-0.56	-0.80***	-2.30	-1.64	-3.78***
	(0.39)	(0.28)	(1.52)	(2.46)	(1.28)
Outside successors	0.75	0.21	5.10	9.99	3.99
	(0.79)	(0.59)	(4.24)	(6.05)	(3.47)
Difference (p-value)	0.116	0.097	0.088	0.062	0.029
No. of past outside employers	0.31	0.29	2.27**	5.24***	3.25***
	(0.21)	(0.15)	(1.10)	(1.48)	(0.74)
Other family successions	yes	yes	yes	yes	yes
Unrelated successions	yes	yes	yes	yes	yes
Controls and fixed effects	yes	yes	yes	yes	yes
Adjusted R-squared	0.32	0.32	0.86	0.70	0.85
Observations	35,383	34,565	33,624	34,565	30,459
Panel B: Inside vs. outside son-successions					
Parent-son successions					
Inside successors	-0.57	-0.76***	-4.19***	-4.06	-4.74***
	(0.39)	(0.28)	(1.51)	(2.45)	(1.27)
Outside successors	0.54	0.20	-2.21	-0.61	-1.11
	(0.86)	(0.64)	(4.42)	(0.47)	(3.65)
Difference (p-value)	0.203	0.137	0.660	0.597	0.327
No. of years outside the family firm	0.09	0.06	1.44***	2.45***	1.39***
	(0.06)	(0.04)	(0.28)	(0.41)	(0.22)
Other family successions	yes	yes	yes	yes	yes
Unrelated successions	yes	yes	yes	yes	yes
Controls and fixed effects	yes	yes	yes	yes	yes
Adjusted R-squared	0.32	0.32	0.86	0.71	0.85
Observations	35,383	34,565	33,624	34,565	30,459

Table 10: Change in firm policies around succession for inside and outside professional CEO successors

The table compares the change in performance around succession of unrelated inside CEO successors to that of unrelated outside CEO successors. Family successors are successors who are from the family of the outgoing CEO. Unrelated successors are successors who are not from the family of the outgoing CEO. Inside successors are successors that are employed or have a board seat in the family firm three years prior to the year of succession. Outside successors are defined as the remaining unrelated successors. Please refer to Table 6 for additional notes.

	OROA	ROA	ln(Op. revenue)	Sales/ assets	ln(Employees)
Family successions					
Inside successors	-0.52	-0.64***	-6.12***	-4.19**	-5.68***
	(0.31)	(0.23)	(1.30)	(2.10)	(1.09)
Outside successors	1.10	0.88**	2.44	16.2***	2.84
	(0.57)	(0.44)	(3.09)	(4.40)	(2.37)
Difference (p-value)	0.008	0.001	0.011	0.000	0.010
Unrelated successions					
Inside successors	0.22	-0.08	-1.05	5.66	-1.78
	(0.48)	(0.36)	(1.73)	(2.97)	(1.65)
Outside successors	1.16**	0.13	13.4***	27.7***	14.8***
	(0.57)	(0.44)	(3.01)	(4.55)	(2.24)
Difference (p-value)	0.197	0.695	0.000	0.000	0.000
Controls and fixed effects	yes	yes	yes	yes	yes
Adjusted R-squared	0.32	0.32	0.86	0.70	0.85
Observations	35,383	34,565	33,624	34,565	30,459

Table 11: Change in firm performance controlling for successors' education

The table compares the change in performance around CEO transition of inside family son-successors to that of outside family successors, adding a dummy that equals one for successors with a high school degree. Please refer to Table 6 for additional notes.

	OROA	ROA	ln(Op. revenue)	Sales/ assets	ln(Employees)
Family successions					
Inside successors	-1.44**	-1.62***	-11.3***	-9.41*	-9.26***
	(0.53)	(0.39)	(2.46)	(4.03)	(2.15)
Outside successors	0.23	-0.03	-2.59	10.9*	-0.60
	(0.71)	(0.53)	(3.54)	(5.54)	(2.88)
Difference (p-value)	0.007	0.001	0.010	0.000	0.001
Unrelated successions	-0.39	-1.09*	-0.75	9.34*	0.97
	(0.61)	(0.45)	(2.72)	(4.54)	(2.38)
Outside family = unrelated successor (p-value)	0.352	0.038	0.606	0.765	0.568
Successor has high school degree	1.15*	1.20**	6.58**	6.83	4.62*
	(0.55)	(0.40)	(2.54)	(4.24)	(2.19)
Controls and fixed effects	yes	yes	yes	yes	yes
Adjusted R-squared	0.32	0.32	0.86	0.70	0.85
Observations	35,294	34,484	33,544	34,484	30,389

Table 12: Summary statistics for family successions and sold firms

The table compares average values of firm-level financial statistics before and after CEO transition by successor-type (panels A and B, respectively). Inside family successors are defined as family successors that are employed or have a board seat in the family firm three years prior to the year of succession. Outside family successors are defined as the remaining family successors. Sold firms are firms where the controlling family's stake drops below 33.4% after CEO transition. All values, unless indicated otherwise, are reported in percent, and winsorized at the 5 and 95 percent level. Definitions of variables are available in Appendix Table A1. p-values are reported for a two-sided t-test with unequal variances for the difference in means between outside family succession firms and sold firms. *** (**) indicates that the difference between inside and outside family successors is significant at the 1% (5%)-level. The sample consists of family controlled firms that undergo a CEO transition during 2005-2013. Data sample: 2001-2017.

	Family successions		Sold firms	
	Inside successors	Outside successors		Difference in means
Panel A: Averages before succession				
Total assets (million NOK)	7.88	7.26	4.23	3.03***
	(0.30)	(0.47)	(0.18)	
Number of employees	9.49	6.96	7.04	-0.08
	(0.22)	(0.33)	(0.17)	
OROA, industry-adjusted	-0.34	-1.61	-1.42	-0.19
	(0.25)	(0.50)	(0.32)	
ROA, industry-adjusted	-0.14	-1.17	-1.68	0.51
	(0.20)	(0.41)	(0.27)	
Sales to assets (pct.)	2.26	1.77	2.55	-0.78***
	(0.03)	(0.05)	(0.03)	
Firm-year observations	9,062	3,532	9,078	
Panel B: Averages after succession				
Total assets (million NOK)	11.2	12.0	7.13	4.93***
	(0.40)	(0.66)	(0.28)	
Number of employees	10.3	8.32	8.17	0.15
	(0.25)	(0.39)	(0.20)	
OROA, industry-adjusted	-0.70	-1.48	0.49	-1.97***
	(0.28)	(0.45)	(0.35)	
ROA, industry-adjusted	-0.46	-0.89	-0.29	-0.60
	(0.23)	(0.38)	(0.29)	
Sales to assets (pct.)	1.96	1.58	2.32	-0.74***
	(0.03)	(0.05)	(0.03)	
Firm-year observations	7,187	3,210	7,912	

Table 13: Change in firm performance for inside and outside family successors: Instrumental variable regressions

The table re-estimates the regressions in Table 6 (Panel A) and Table 7 (Panel B) with instrumental variables. The instrumental variables are a dummy variable that equals one if the outgoing CEO's firstborn is male, an index that counts the number of firstborn males among the siblings of the outgoing CEO that are also owners of the family firm, a measure of the industry homogeneity of the family firm following Parrino (1987), the fraction of CEO successors in the family firm's industry that are hired from outside the firm, and an index of the average level of education of CEOs in the family firm's industry. Please refer to Table 6 for additional notes.

	OROA	ROA	ln(Op. revenue)	Sales/ assets	ln(Employees)
Panel A: Inside vs. outside family successions					
Family successions					
Inside successors	-3.84**	-3.11***	-18.7**	-13.8	-34.1
	(1.93)	(1.24)	(9.32)	(11.2)	(21.6)
Outside successors	18.6**	11.5**	108.2**	115.0**	159.3
	(8.20)	(5.54)	(50.5)	(52.2)	(136.0)
Difference (p-value)	0.018	0.023	0.029	0.033	0.218
Unrelated successions	-3.61	1.54	-24.9	-19.4	-10.1
	(3.14)	(2.08)	(15.2)	(19.4)	(21.6)
Outside family = unrelated successor (p-value)	0.036	0.069	0.036	0.049	0.277
Controls and fixed effects	yes	yes	yes	yes	yes
Centered R-squared	-0.096	-0.010	-0.017	-0.053	-0.530
Kleibergen-Paap	16.8***	17.0***	10.2***	17.0***	1.98
Observations	33,649	32,902	32,000	32,902	29,100
Panel B: Inside vs. outside son-successions					
Parent-son successions					
Inside successors	-6.42**	-4.39**	-29.8**	-30.1	-27.8
	(3.10)	(1.97)	(14.8)	(17.0)	(21.7)
Outside successors	31.3**	19.3**	172.0**	165.5**	136.4
	(13.6)	(8.89)	(75.9)	(78.2)	(126.7)
Difference (p-value)	0.021	0.025	0.024	0.035	0.267
Other family successions	-3.40	-4.43**	-22.6**	17.4	-32.4**
	(3.62)	(2.51)	(15.2)	(22.8)	(13.1)
Unrelated successions	0.93	2.34	1.46	-13.9	21.4
	(3.50)	(2.41)	(13.7)	(21.3)	(12.5)
Outside son = unrelated successor (p-value)	0.042	0.083	0.037	0.038	0.389
Controls and fixed effects	yes	yes	yes	yes	yes
Centered R-squared	-0.14	-0.05	-0.06	-0.09	-0.16
Kleibergen-Paap	13.65**	15.4***	9.55***	15.5***	2.57
Observations	33,649	32,902	32,000	32,902	29,100

6 Appendix Tables

Appendix Table A1: Definition of variables

This table documents the definitions of the variables used in the empirical analysis.

Variable	Definition
Firm accounting variables	
Employees growth rate	See Ln(Employees).
Firm age	The number of years since the firm's incorporation.
Firm size	The book value of firm's assets in millions of Norwegian Kroner (NOK).
Ln(Employees)	The natural logarithm of total number of employees.
Ln(Operating revenue)	The natural logarithm of firm's total operating revenue in millions of Norwegian Kroner (NOK).
Number of employees	Total number of employees.
Operating revenue growth rate	See Ln(Operating revenue).
OROA	The operating income to 2-year average book value of assets. OROA is reported in percent.
ROA	Net income to 2-year average book value of assets. ROA is reported in percent.
Sales to assets	Sales to 2-year average book value of assets. Sales to assets are reported in percent.
Total Assets	Book value of assets in millions of Norwegian Kroner (NOK).

Industry-adjusted variables are calculated as a difference between the value of the variable and the average of its two-digit industry benchmark in the observation year.

Industry classification is based on two-digit NACE (European industry classification system) codes.

All accounting variables are winsorized at the 5 and 95 percent level.

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Other firm variables	
Family firm	A dummy variable that equals 1 if the controlling family holds the ultimate stake of 33.4% or more in 2 years before and 2 years after succession, and 0 otherwise. Family is a group of owners who are related by blood or marriage up to the second degree of kinship, except we do not include siblings-in-law.
Family succession	A dummy variable that equals 1 if the successor is a member of the firm's controlling family, and 0 otherwise.
Inside succession	A dummy variable that equals 1 if the successor had a formal role as an employee or a board member four years prior to taking over as CEO, and 0 otherwise.
Number of family owners	Number of firm's owners that are members of the controlling family.
Number of owners	Number of firm's owners.
Outside succession	A dummy variable that equals 1 if the successor did not have a formal role as an employee or a board member four years prior to taking over as CEO, and 0 otherwise.
Ownership stake	The ultimate equity stake held by the individual measured in percentages.
Unrelated succession	A dummy variable that equals 1 if the successor is not a member of the firm's controlling family, and 0 otherwise.
Outgoing CEO's characteristics	
Age of the oldest child	Age of the outgoing CEO's oldest child at succession.
Divorced senior	A dummy variable that equals 1 if the outgoing CEO has children with more than 1 partner, and 0 otherwise.
Male firstborn	A dummy variable that equals 1 if the outgoing CEO's firstborn child is male, and 0 otherwise.
Senior's age	The age of outgoing CEO at succession.
Senior sits on the board ex post	A dummy variable that equals 1 if the outgoing CEO sits on the board four years after the succession, and 0 otherwise.

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Successor's characteristics	
Eldest son	A dummy variable that equals 1 if the successor is the outgoing CEO's eldest son, and 0 otherwise.
No. of past outside employers	Number of employers the successor had up to four years prior to succession (family firm not included).
No. of years outside the family firm	Number of years the successor spend working outside the family firm prior to succession.
No. of years in the family firm before succession	Number of years the successor worked in the family firm prior to succession.
No. of years since last family firm employment	Number of years since outside successor's last family firm employment.
Other family employees	A dummy variable that equals 1 if there were other family members (in addition to the senior and the successor) working in the family firm four years prior to succession, and 0 otherwise.
Part-time last family firm employment	A dummy variable that equals 1 if the outside successor worked part-time at the last family firm employment, and 0 otherwise.
Past CEO position	A dummy variable that equals 1 if the successor was CEO of an AS/ASA firm four years prior to succession, and 0 otherwise.
Past employment in the family firm	A dummy variable that equals 1 if the successor worked in the family firm four years prior to succession or before that, and 0 otherwise.
Past manager-level position	A dummy variable that equals 1 if the successor had a management position four years prior to succession, and 0 otherwise.
Recruited from related firm	A dummy variable that equals 1 if the successor worked in the firm owned by the same family as the succession firm four years prior to succession, and 0 otherwise.
Successor's age	Successor's age at succession.
Successor's age at the last family firm employment	Outside successor's age at the last family firm employment.
Worked outside the family firm	A dummy variable that equals 1 if the successor worked outside the family firm four years prior to succession or before that, and 0 otherwise.

Appendix Table A2: First-stage regressions

The table displays results from first-stage instrumental variables regressions of two of the performance variables. F-test is the p-value of an F-test of excluded instruments. Sanderson-Windmeijer is the p-value from a Sanderson-Windmeijer multivariate F-test of excluded instruments.

	OROA			ln(Op. revenue)		
	INSIDE	OUTSIDE	PROF	INSIDE	OUTSIDE	PROF
Outgoing CEO's firstborn is a son (Y/N)	4.14***	1.43	-5.31***	4.81***	0.52	-5.06***
	(1.65)	(1.26)	(1.55)	(1.72)	(1.25)	(1.61)
Industry homogeneity (Parrino (1997))	-622.2	921.1**	-193.8	-205.6	7.14	-382.2
	(547.1)	(535.5)	(516.6)	(582.9)	(4.30)	(545.8)
Incoming CEOs are outsiders (fraction of industry) (Cramers-Grinstein (2014))	-12.7***	8.34***	-0.93	-12.3***	6.61**	-0.52
	(3.88)	(3.14)	(3.60)	(4.04)	(3.12)	(3.74)
Education level of CEOs (industry average)	54.1***	5.93***	20.9***	55.1***	5.95***	19.7***
	(2.80)	(2.21)	(2.56)	(2.93)	(2.21)	(2.66)
Education level of CEOs (industry average)	-14.2***	-0.37	-0.62	-14.3***	-0.48	-0.34
	(0.90)	(0.69)	(8.28)	(0.94)	(0.69)	(0.87)
Controls and fixed effects	yes	yes	yes	yes	yes	yes
F-test	527.9***	114.8***	292.0***	549.0***	93.7***	270.0***
Sanderson-Windmeijer	7.51***	4.93***	8.54***	4.46***	3.19***	5.33***