Underperformance in Family Successions: The Role of Outside Work Experience

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Abstract

Studying CEO successions in family firms, we document that successors from the controlling families have been positioned in the firm for a remarkably long time prior to succession and that 45 percent of them has never worked full-time outside the family business. These "inside" family successors underperform successors from the controlling families who come with outside work experience. Notably, "outside" family successors perform on par with professional CEO-successors. We propose that outside successors' superior performance is rooted in cognitive diversity which enables thinking outside the box, whereas inside successors are more likely to adopt their parents' beliefs and business norms.

Keywords: Family firms, intergenerational succession, CEO succession

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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 (professional) 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 lack of work experience outside the family firm. Using administrative data, we study the performance of 2,400 CEO successions in the population of family-controlled Norwegian firms over a 10-year window around the time of succession. We document that a large majority of family successors are already positioned in the firm at the time they become CEOs, and have worked there as a full-time employee for up to 10 years prior to taking over. Also, a remarkably high fraction of such *inside* successors, over 40 percent, have never been full-time employed outside of the family firm.

We further 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 unrelated CEO successors. Notably, we find that family successors with outside work experience perform on par with unrelated CEOs.

In the population, family CEO successions are far more prevalent than unrelated CEO successions, constituting 67 percent of all successions. Furthermore, 74 percent of family successions are inside successions. Formally, we define an inside family

successor as a successor belonging to the firm's 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 nor formally employed in the family firm at any point during the three-year period prior to succession.[1]

The predominance of inside- over outside successors is strongest for the sons of the outgoing CEOs. Son-successions account for more than half (57 percent) of all family successions. On average, inside son-successors take over as CEOs at the age of 37.9, having previously worked 9.6 years in the family firm on average. We estimate that at least 45 percent of them have not had any outside full-time work experience at all. In contrast, the average outside son-successor leaves the family firm at 26.8 years of age and returns as CEO at 35.4 years, having worked for 3.0 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. This raises the question of why so many family successors are 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 the firm 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.[2] Extensive exposure to the family business could, therefore, facilitate the transfer of firm-specific assets to future generations. 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

[1]We apply a three-year criteria to ensure that inside successors' relationship with the firm is of a meaningful duration.

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

Habborshon and Williams (1999).

While extensive exposure to the family business culture thus may have benefits, it may also entail costs. 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.[3]

In the second part of the analysis, we compare the change in corporate performance of inside family successors to the performance of outside family- and unrelated CEO successors for a period of five years on each side of succession. We run cohort-based stacked difference-in-difference panel regressions (Gormley and Matsa (2011), Cengiz et al. (2019)) to account for possibly heterogenous treatment effects on a sample of family-controlled firms that undergo a CEO succession during the years 2005-2010. Family firms that undergo a CEO succession in the 2011-2016 period serve as control firms. The regressions estimate separate performance-changes for each type of CEO successor (inside, outside, unrelated) and we test whether the difference-in-difference coefficients are similar between pairs of successor types.

We find that firm-performance improves on average after outside family successors take over, while the performance of inside family successors is unchanged or deteriorates, and that the difference in performance between inside and outside successors is highly statistically significant. Inside successors generate lower returns, whereas the performance of outside successors is at par with, or superior to, that of unrelated successors. A small-pool effect might explain this result, because inside successions contain a higher proportion of sons, and sons are a subset of the family. The result, however, holds up when we re-run regressions only with son-successors (both inside and outside sons are draw from a limited pool). Insiders' under-performance persists even in regressions only with firstborn son-successors.

[3]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.

Furthermore, our sample reproduces previous papers' finding that family successors overall underperform unrelated successors. Our results show, however, that the underperformance of family successors is entirely driven by inside successors. The difference in the coefficient estimates of inside and outside successors exceeds the estimated difference between family and unrelated successors, and thus accounts for the entire gap.

The size and significance of the performance gap is lowered, when we add control variables that measure the *extent* of successors' outside work experience to the regressions. In particular, number of outside employers and the fraction of time spent outside the family firm are both associated with an independent positive effect on firm performance that render the performance gap insignificant at conventional levels. Furthermore, outside successors, on average, have work experience from firms that are significantly larger in terms of assets and employees than the family firms they take over. These results are consistent with our proposition that the superior performance of outside successors is closely connected to their outside work experience.

Successors with experience from larger firms, or from a variety of business cultures, may draw on a broader set of competencies compared to successors with a monocultural work background. We explore whether outside successors appear to run their firm differently. Considering corporate policies, we estimate that outside successors are better at growing the family firm in terms of assets and employees, they increase leverage, and we find some evidence that they may also invest more. In addition, we observe that employee and management turnover around the time of succession is relatively larger in outside-succession firms.

We then explore whether observable personal characteristics of successors can explain the performance gap. Outside successors are relatively more likely to have past CEO experience as well as higher-level education. Adding dummies for these personal traits to the regressions, however, leave the gap unchanged. Accounting for whether the outgoing CEO continues to have a formal role on the firm's board, also

does not affect the gap.

Our results may alternatively be explained by selection on *un*observable 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 during 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.

Finally, we consider whether outside successors self-select into firms with growth opportunities, even though event study plots do not suggest that the growth of outside-succession firms begins prior to the year of succession. We nevertheless run regressions that compare inside and outside successions in firms where the outgoing CEO dies. Arguably, the timing of CEO deaths is exogenous relative to the arrival of (positive) growth opportunities. While the sample of such deaths is small, we find that outside successors continue to significantly outperform inside successors. Lastly, placebo regressions that move the timing of succession ahead fail to estimate significant differences in the performance of inside and outside successors.

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 of succession. Conceivably, this preference is rooted in the family's desire to develop

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

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 the construction of the sample of CEO successions. Section 3 contains the empirical analysis. First, we present statistics for CEO successors' past work history. Second, we perform regression analyses that establish the presence of a performance gap between inside- and outside family successors. Third, the section presents results consistent with the proposition that cognitive diversity may explain the performance gap, and discusses alternative explanations related to observable and unobservable variables. Concluding remarks are in section 4.

2 Data and sample construction

We construct a data set of family firms that undergo a CEO succession in the years 2005-2016 from administrative data on the population of Norwegian corporations and their (domestic) owners, obtained from the Norwegian Tax Authority. We identify the ultimate individual owners of all firms and compute their indirect ownership stakes.

Firm-owner pairs are matched to annual administrative data of firm and owner-specific characteristics as well as information about kinship between individuals available from Statistics Norway. We employ registry data on a range of social and economic characteristics, including employment, education, gender, and age. Corporate accounting data are from the Brønnøysund registry. Firm and individual variables are available for the period 2000-2017, ownership data from 2004 to 2017.

The sample is then constructed through the following steps: First, some basic cleaning is performed on the population of corporations. We retain only firms that are active and above a minimum threshold size[5] and require they have been incorporated

[5]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.

for at least five years at the time of succession. Further, we eliminate financial and real estate firms, firms in agricultural sectors (which are regulated and subsidised), as well as firms that provide public services.

We match owners with information about their formal corporate roles and identify a set of firms that undergo a CEO succession during 2005-2016. We further identify the outgoing and the incoming CEOs, as well as the family members of the outgoing CEO, and compute the combined family ownership of the firm before and after succession. A family-relation is defined on blood or marriage up to the second degree of kinship, excluding for siblings-in-law. That is, family successors belong 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, the family must wield substantial control which we define as instances where the outgoing CEO's family indirectly owns at least 33.4% of a firm's equity. This threshold constitutes a negative majority according to Norwegian corporate law, enabling the family to block important decisions pertaining to control of the firm.[6] We also require that the family remains in control after CEO-succession, as we want to compare the outcome of different managerial choices holding family ownership constant. In the population, over 30 percent of CEO-changes are accompanied by a fall in the family's aggregate stake below the 33.4% threshold. In the majority of these cases the family's ex post-stake falls to zero or close to zero, indicating that the firms have been sold. Such firms are excluded from the sample.

For tractability, we omit firms that undergo more than one CEO-succession. We also omit firms with multiple CEOs, as one succession would not necessarily imply a shift in management control. The above restrictions result in a base sample of 4,952 family-controlled firms.

The last year we can identify a CEO-change is 2016. Using five-year windows

[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.

around a CEO succession, we may form six cohorts with treatment years ranging from 2005 to 2010. Late treated firms, i.e. firms that experience a succession in the years 2011-2016 (at least six years later than a given cohort) function as clean control firms. All family-owned firms must eventually undergo a succession, but we believe that firms that are close to succession are more credible counterfactuals, and more likely to satisfy the parallel trends assumption, than (younger) firms which are multiple years away from succession.[7]

Finally, we define three different successor types. Inside family successors are individuals related to the outgoing CEO who are either full-time employed or hold a board seat in the family firm three years prior to the year of succession (i.e. at event date -4). Thus, inside successors have been present in the firm for at least three years prior to the succession year.[8] 16 percent of inside successors are on the board at date -4 without simultaneous employment. Outside family successors are defined as the remaining family successors.

Table 1 shows the sample which has 2,372 treated firms and 2,580 control firms. In the group of treated firms, family successions account for 67 percent of CEO-successions and unrelated (professional) successions account for 34 percent. There is a clear prevalence of inside family successions. Among treated firms, inside successions make up 73.6 of family successions and outside successions make up the remaining 24.6 percent. The distribution of successions is very similar in the group of control firms. Appendix Table A2 displays the ownership stakes of the outgoing and succeeding CEOs as well as the aggregate ownership stake of the controlling family. CEOs generally own a considerable stake in the firm, 40-50 percent for family CEOs and 20 percent for unrelated CEOs. Thus, they hold the formal control to exert a decisive impact on firm performance.

[7]Thus, for cohort 2005, firms that undergo a CEO succession in years 2011-2016 function as clean control firms. For cohort 2006, firms that undergo successions in years 2012-2016 are control firms, etc.. Lastly, for cohort 2010, the control firms are firms with CEO successions in 2016.

[8]CEO-identities are observed at end of a year, thus our definition implies that inside successors are observed in the firm 3-4 years prior to succession year—three years if succession occurs at the beginning of the year, four years if it occurs at the end of the year.

Table 2 compares ex ante characteristics of treated and control firms. The median control firm is a year older than the median treated firm, but is of similar size in terms of total assets and employees. Control firms generate significantly higher returns than treated firms. Also, inside succession firms generate higher returns than outside succession firms. Since treated and control firms together constitute the population of Norwegian family firms that undergo a CEO succession during 2005-2016, the higher age and profitability of control firms should not result from biased sample selection. One plausible explanation for the differences is that economic challenges relating to the 2008 financial crisis and subsequent recession have prompted some high-performing firms to postpone succession. Our regression model accounts for potential sorting on differences in levels through the inclusion of firm fixed effects.

3 Empirical analysis

3.1 Identity and careers of family successors

Table 3 shows the family relations between the outgoing and the succeeding CEOs in the treated firms. It shows that children, partners, and siblings of the outgoing CEO are the most frequent successors, in that order. Sons are by far the most common group of successors and make up 57.6 and 54.2 percent of inside and outside family successors respectively, and firstborn sons constitute 42.5 and 36.0 percent.

In Table 4, we examine successors' careers by tracing their employment as far back in time as data is available for a given individual. Our discussion focuses on son-successors as they constitute the largest group and some regressions are run on samples comprised of son-successors only. The left-side panel of Table 4 displays information for treated firms. Inside successors are around three years older than outside successors, on average 41.2 years and 38.3 years of age respectively. Son-successors are a three years younger than the average successor, 37.9 and 35.4 years respectively. On average, only 24.4 percent of inside sons have worked outside the

family firm. They have spent 6.33 years in the firm before succession and have had only 0.32 outside employers. In contrast, 88.8 percent of outside sons have had external full-time employment[9]. They leave the family firm at age 26.8 and become CEO around 9 years later, having worked for 2.09 external employers in the meanwhile. Only 8.37 percent of outsiders have worked full-time in the family firm in the past.

The above numbers may be affected by truncation, however, as our employment data goes back only to 2000. Truncation is more serious for the earliest cohorts. To assess how a longer time series may alter the averages, we turn to the sample of control firms whose successions occur during 2011-2016. The right-hand panel shows that a longer time series increases the number of inside sons who have experience outside the family firm to 56.1 percent, which is a considerable increase. The number has to be interpreted with caution though, as there is a positive time trend in the number of inside successors with outside work experience, implying that earlier cohorts may not necessarily display equally high numbers had the data been available. With the longer data series, inside sons' time in the family firm before succession rises to 9.55 years, outside sons have been 7.57 years away from the firm, and we continue to observe that only a modest fraction (19.1 percent) of outsiders have been full-time employed in the family firm.

Overall, these figures show that inside family successors are installed in the firm several years prior to taking over management. This is likely a deliberate choice, which, as discussed above, may be rooted in the integration of the family's identity with that of the business, a desire to keep the next generation close, or because firm-specific assets are essential for the operation of the business. The three-year threshold applied in our definition of an inside successor does not appear restrictive, as the average successor is in place well in advance of the threshold. Furthermore, a remarkably large fraction of inside successors appear to have no full-time work experience outside

[9]The number is not 100 because of missing information or because outside successors are in fact not employed prior to succession.

the family firm. Symmetrically, a remarkably low fraction of outside successors do have work experience in the family firm, suggesting that career paths are decided at a relatively early age.

3.2 Regression model

To estimate the change in corporate performance around succession we use a cohort-based stacked regression design similar to Gormley and Matsa (2011) and Cengiz, Dube, Lindner, and Zipperer (2019). Our setting is one of staggered treatment as firms' CEO successions occur in different sample years. Recent studies have pointed out that the two-way fixed effects difference-in-differences (TWFE) model produces unreliable estimates in staggered settings when treatment effects are heterogenous across units or across time, see e.g. Callaway and Sant'Anna (2021), Sun and Abraham (2021), and Baker, Larcker, and Wang (2022).

We create cohorts of treated and appropriate control firms, re-organize observations in event time and estimate a TWFE model on the stacked cohort data where cohort-by-time fixed effects capture a common cohort-specific trend between treated and control firms. The stacked cohort design avoids the "bad comparisons" problem in traditional TWFE regressions where early-treated firms effectively function as control units for late-treated firms (Goodman-Bacon (2021)).

Furthermore, we split firms into three orthogonal groups according to whether they undergo an inside family succession, an outside family succession or an unrelated succession, and estimate a separate DiD-coefficient for each group:

$$Y_{i,t} = \alpha_{i,c} + \gamma_{j,t,c} + \delta_k \sum_{k=1}^{3} D_{k,t} + \beta_x \mathrm{X_{i,t}} + \mathrm{u_{i,t}}. \tag{1}$$

In (1), $Y_{i,t}$ is a generic corporate outcome variable (firm performance), $\alpha_{c,i}$ is a cohort-by-firm fixed effect and $\lambda_{c,j,t}$ is a cohort-by-industry-by-year fixed effect based on two-digit NACE industry codes. The firm fixed effects allow for treatment assignment to depend on the level of Y, absorbing differences between succession types in the

levels of Y from the estimates of δ_k. $D_{k,t}$ is an indicator variable which equals one in post-succession years for firms of type k and zero otherwise. The coefficients of interest, the δ_ks, estimate the effect of CEO succession for inside-, outside-, and unrelated successors respectively. They capture the shift in the average level of Y around succession for each succession type relative to the control firms. Because the three succession-effects are estimated jointly, all succession types in a given cohort are subjected to the same time trend.

Our interest is to compare the relative performance of inside and outside successors, besides estimating the effect of succession as such. We examine whether the ex-post trend of inside successors differs from that of outside successors by testing whether $\delta_{\text{inside}} = \delta_{\text{outside}}$ and whether the ex-post trend of outside successors differs from that of unrelated successors by testing whether $\delta_{\text{outside}} = \delta_{\text{unrelated}}$.[10]

The regressions include pre-treatment time-varying covariates, $\text{X}_{i,t}$, for firm size (lagged total assets) and firm age. We fix their values in post-succession years at their levels at the time of succession. We omit the year of succession (event date T=0) because we only observe CEO-identity ultimo year, and hence do not know if a new CEO is in place from the beginning of the year or only from the end of the year.

Firm performance measures OROA and ROA are measured in percent, such as OROA and the coefficients reflect the change in percentage points. Some measures of Y are logged (e.g. employement) and in those cases the coefficient estimates of μ_g 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 the common (industry-specific) trend. We winsorize all numeric dependent and independent variables at the 5 and 95 percent levels.

We also show results from regressions that apply the Sun and Abraham (2021)

[10]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) (disregarding the stacked regression design). We employ a fixed-effect model to estimate changes in average levels relative to untreated firms and compare the effects of treatment across different succession types, whereas they estimate the relative change in Y between family and unrelated successors over a three-year horizon.

estimator which only uses last-treated firms as controls. It weights estimated cohort-specific average treatment effects by the sample shares of the cohorts, whereas the TWFE OLS estimator applies variance weighting.

3.3 Performance of inside and outside family successors

This section estimates the change in performance around succession across succession types. Table 5 presents results from regression model (1) where firm performance is measured by operating return on assets (OROA) in columns one to four, as well as return on assets (ROA) in columns five to eight. Column one compares inside-, outside-, and unrelated successors and tests the null of equality of DiD-coefficients. Outside and unrelated successors improve OROA relative to control firms, whereas there is no change in the performance of inside successors. The superior performance of outside successors compared with inside successors is statically significant below the 1 percent level. The estimated coefficient for outsiders is twice the size of that of unrelated successors (2.06 and 1.30 respectively), but the difference is not statistically significant. Thus outside successors perform on par with unrelated successors. The coefficient estimate of 2.06 for, e.g., outside successors implies that they shift OROA up by 2.06 percentage points relative to trend after taking over.

One may suspect that the underperformance of inside successors is just a reflection of the small pool effect, as the inside-group contains a higher proportion of sons than the outside-group (Table 3). If business families have a preference for sons, and perhaps even firstborn sons, the pool of successors becomes very small. The importance of the small pool-effect can be assessed by comparing the performance of inside sons to outside sons, as sons are drawn from the same limited pool. Column two of Table 5 shows results from a re-estimation of model (1) that redivides the sample into inside son-successors, outside son-successors, unrelated successors, and a group of remaining (non-son) family successors. The coefficient estimates on inside and outside son-successors are very similar to the estimates in column one and still

highly statically significant. The underperformance of inside successors even remains intact when first-born son-successors are compared, even though standard errors go up as a result of the smaller numbers in the group. The small pool-effect, therefore, does not appear to be driving insiders' underperformance.

Column four estimates regressions that compares family successors generally to unrelated successors, akin to the comparisons made in previous literature (e.g. Bennedsen et al. (2007)). Although our methodology differ somewhat, we find similar results. Unrelated successors outperform family successors. Our previous findings, however, reveal that family successors inferior performance is entirely driven by inside successors. Thus, the difference between family and unrelated successors in column four amounts to 1.11 (1.31 - (0.20)) percentage points, but the difference between inside and outside successors in column one is an even larger 2.51 (2.06 -(-0.44)) percentage points.

Columns four-eight in Table 5 presents results with ROA as the measure of corporate performance. The results are very similar to those obtained with OROA as the measure of performance, except that the difference between outside and unrelated successors is sometimes statically significant at the 15 percent level, but notably in the favor of outside successors.

Appendix Table A3 shows regression results with the Sun and Abraham (2021)-estimator in place of the stacked DiD-estimator. The results are virtually unchanged. Overall, our regressions show that outside family successors are significantly better at generating revenue and return than inside family successors.

Figure 1 plots the average levels of OROA and ROA for the three succession types in event time, adjusted for cohort-industry-year fixed effects. Inside-succession firms generally perform better than outside succession-firms prior to succession, generating higher returns on assets and outperforming their industry peers, whereas the opposite is true for outside succession-firms. This may reflect that it is easier to tie a family successor to a firm well in advance of succession when that firm is performing well. After succession, however, inside successors' performance trend downwards, whereas

outside (and unrelated) successors' performance trend upwards.

Figure 2 displays dynamic treatment effects estimated with the Sun and Abraham (2021)-model for each of the three measures of performance.[11] We re-estimate model (1) with time-varying treatment effects for inside- and outside family successions in turn, by replacing $D_{k,t}$ with a series of event-time dummies for group k and keeping the rest of the specification unchanged. Pre-succession, point estimates are generally close to zero and insignificant. Post-succession, inside successors' performance decline below trend while outside successors' performance increase above trend. The confidence intervals for the point estimates are larger due to the smaller number of observations available to estimate each coefficient. This is especially evident for outside successions. Overall, neither inside- nor outside successors appear to have systematic pre-succession trends that predict the evolution of performance after succession.

One may worry that some outside successors are not truly externally employed in cases where they work in a firm that belongs to the same business group as the family firm. In our view, however, it is still relevant to study the consequences of management changes in any individual firm in a group, as it is desirable that all firms in the group perform well. A second issue is whether outside successors have worked independently of the outgoing CEO in such cases. The data allows us to identify whether the outgoing CEO is identical to the CEO of the outside successors' external employer (measured at event date -4). We find that 50 individuals, or 11.9 percent of outside successors, have worked under the outgoing CEO. These cases are likely to make it harder to find differences in the performance of inside and outside successors, but we nevertheless drop them from the sample and re-estimate the performance regressions to assess whether the observations are outliers that bias our previous results. Appendix Table A4 reports the results. The standard errors of the estimates for outside successors are somewhat higher and the coefficient estimates are somewhat lower, but the performance gap between is still highly significant.

[11] Implemented with Stata module "eventstudyinteract".

3.4 Explaining the performance gap

This section explores potential mechanisms for the superior performance of outside successors. We first present evidence that support our proposition that outside successors possess more cognitive diversity resulting from their exposure to a more diverse set of business strategies, cultures, and norms. We then consider alternative explanations based on observable and unobservable differences between inside- and outside successors. We focus regressions on son-successors in order to control for a small pool effect.

3.4.1 Observable changes in the firms

If outside successors perform better because they have accumulated a more diverse skill set, we would expect their ex post improvement in firm-performance to originate from actions that "change things" in the family firm. Figure 3 shows that outside successor-firms experience higher employee turnover, both at the management and at lower levels, than other sample firms. The fraction of ex-post employees that continue to work for the firm after succession falls the longer the window considered for all firms, but retention rates are far lower in outside succession-firms. This holds for lower level positions and to an even higher extent for management-level positions.

We explore whether key corporate policies change. Table 6 displays estimated changes in employment, assets, investment, and leverage around succession. Inside succession-firms shrink ex-post as growth rates of employees and assets are negative and the difference to outside succession-firms is highly statistically significant. Also, outside successors increase corporate leverage significantly more. We also find a significant difference in investment when measured as the change in (scaled) fixed assets, whereas the difference measured as (scaled) capex is insignificant. Because many of the sample firms are small, one may have concerns about accuracy of reported measures of depreciation and impairments and prefer the former measure. These results are consistent with the previous findings that outside successors are better

at generating revenue, and that improvements in revenue occur simultaneously with changes in corporate policies.

Finally, we would expect that a more diverse skill set to have been acquired in business environments that are different from the family firms outside successors take over. Table 7 compares outsider successors' family firms to the external firms where they work three years prior to the year of succession (i.e., at event date -4). The average outside successor has worked at a substantially larger firm, both in terms of assets and employees, although not necessarily in a more profitable firm.

3.4.2 Observable differences between inside and outside successors

Next we explore whether observable differences between inside and outside successors can explain the performance gap. Table 8 compares inside and outside successors on observable personal characteristics. Inside- and outside successors are equally likely to have attended high school but outside successors are more likely to have a university-level degree (BSc or MSc).[12] In previous work, Pérez-González (2006) shows that the underperformance of family successors is concentrated on successors who attend less prestigious colleges. Thus, outside successors' superior performance could result from skills acquired through education or education could be a signal of innate ability. Table 8 also shows that a higher proportion of outside successors have CEO- and manager-level experience. Inside successors, therefore, may underperform simply because their work experience have been limited to a position junior to the outgoing CEO.

The last three rows display information about the outgoing CEO. Considering son-successions, he/she is around 65 years old in the case of inside successions, on average, and about two years younger in outside successions. The outgoing CEO in outside successions is also significantly more likely to be divorced. This suggest that family dynamics may be a reason why some successors leave the family firm in the first place. Finally, we observe that the outgoing CEO has a position on the board

[12]Notice that the data provider classifies master's degree as five-years or longer.

after succession in 63.3 percent of inside succession-firms and in in 53.3 percent of outside succession-firms. Thus, the outgoing CEO is frequently in a position to exert formal, not just informal, influence over corporate decisions after CEO change.

We test whether these observable differences between successors can explain the performance gap by adding non-time varying covariates to the regression. The covariates capture personal characteristics for which there is variation within both the inside- and the outside group of successors. This allows for the shift in performance around succession to be captured by other explanatory variables than inside- or outside succession type.

Table 9 shows the results. In columns one and two, we add measures that capture the extent of son-successors outside work experience. The first measure is the number of external employers a son-successor is observed to have worked for prior to succession. The second measure is the fraction of time he has spent outside the family firm. It is constructed simply as the number of years in which he is not observed to work in the family firm prior to succession divided by the number of years he is observed in the sample prior to succession. Both measures are imperfect because earlier cohorts are observed for fewer years prior to succession compared with later cohorts. Added to the regression, both measures have an independent significantly positive association with firm performance (OROA). Furthermore they lower the coefficient estimate on OROA for outside successors, rendering the difference in coefficient estimates between inside and outside successors significant at the 15-20 percent level only. The measures, thus, are capable of explaining a significant part of the variation in the performance gap, although their inclusion do not eliminate it entirely. The results directly link the performance of outside succors to their outside work experience, in support of our hypothesis.

In columns three to five, we add a dummy variable that equals one if a successor has completed high school, a successor is hired from a CEO position, or the outgoing CEO continues on the board of the family firm after succession. A high school degree is positively and significantly associated with performance, in line with the results of

Pérez-González (2006). The coefficient estimates on inside and outside successors are diminished, as they now reflect the performance of successors without a degree, and noticeably, the coefficient on inside successors becomes strongly significantly negative. The performance gap between inside and outside successors, however, remains. Dummies for university degrees have little explanatory power and cannot account for the performance gap, hence we do not present them. The dummy variables for successors' having worked as a CEO and having the outgoing CEO on the board both have little explanatory power, and do not affect the performance gap. We conclude that these latter alternative explanations cannot account for the performance difference between inside and outside successors.

3.4.3 Unobservable differences between inside and outside successors

In this section, we discuss the possibility of selection on outside-status, i.e. whether some unobserved characteristic of outside successors or outside-succession firms can explain the performance gap. We discuss two possible scenarios.

We first consider individual characteristics of the successors. It is possible that outside successors are the most talented children in the controlling families who, consequently, receive attractive offers from external businesses at an early point in their careers. In this case, outside work experience adds no value per se, but reflects innate ability. Alternatively, outside successors may be individuals who possess innate cognitive diversity and therefore desire to pursue their own ways, self-selecting external employment over working in the family firm.

To the extent this explanation is correct, outside employment is an *observable* signal of CEO talent and has important implications for how family firms should go about generational change: Family businesses should rely on this signal by systematically using external employment as a training ground for potential successors. Our findings that almost half of family firms select successors with no outside experience at all, suggest that many firms would benefit from rethinking their model of generational change.

Selection could also arise from unobservable firm characteristics. In particular, it is possible that outside successors are more likely to return to family firms with high growth potential. If so, outside successors' superior performance would be baked-in and not result from their superior CEO-abilities. In this explanation, however, the outgoing CEOs would have to time their departures with the arrival of growth opportunities and prefer departure over staying put to realize the growth opportunities themselves. It is not obvious whey they would have such preferences, given that departing CEOs in outside succession-firms are on average younger than departing CEOs in inside succession-firms (cf. Table 8). Also, the event study plots in Figure 2 do not suggest that the growth of outside-succession firms begins prior to the year of succession.

We nevertheless examine this alternative explanation by considering the subsample of succession-firms where the outgoing CEO dies. Arguably, the health of the outgoing CEO is exogenous to the arrival of growth opportunities. We consider two cases: In the first, the outgoing CEO dies within five years of succession. This measure is meant to capture the cases where the CEO's state of health is poor for some years prior to death. In the second case, the outgoing CEO dies in the year of succession or in the year prior to succession.[13] Table 10 shows the results. The numbers in parenthesis indicated for the inside and the outside groups is the number of observations for the two cases of CEO death.[14] As expected the numbers are rather low, but nevertheless, the pattern of the estimated coefficients from the previous tables is preserved. The difference between inside and outside successors' performance is statistically significant at the 10 percent level or less, spite considerably larger standard errors. We do not report the test of outside successors vs. unrelated successors, as that test has low power given the low number of observations.

As a final examination of the selection on growth opportunities-alternative, we

[13]In the data, we observe several firms where CEO-identity is missing in the year between outgoing CEO death and CEO-succession, which may be indicative of the death being unexpected.

[14]For example, we observe 152 inside succession-firms where the outgoing CEOs die within five year of succession and 89 inside succession-firms where he/she dies prior to succession.

run placebo regressions where we move CEO succession to event date -4 on the sample of successions cohorts 2007-2010. Successions in the 2007-cohort are moved to 2003, successions in the 2008-cohort are moved to 2004 etc. We discard the 2005- and 2006-cohorts as they would leave us with less than three ex ante observations. The first two columns of Table 11 displays the results. Column one shows results with actual succession dates when the sample is limited to successions during 2007-2010. Dropping cohorts 2005 and 2006 leaves 823 inside succession-firms and 235 outside succession-firms. The results are quite similar to those in Table 5. Column two shows placebo results. The performance gap is now insignificant and the DiD coefficient estimates are insignificant for both inside- and outside successors, as well and insignificantly different from each other. In columns three and four we expand the sample to cohorts 2006-2010 in order to get more observations in the sample, moving successions to date -3 in the placebo regressions. The results are similar. Also, placebo regressions with ROA as the dependent variables look very similar and we do not show them here.

4 Conclusion

In this paper we document that family-owned companies not only 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 management. We find that 45 percent of internally-recruited family successors do not have full-time work experience from outside firms and have spent almost 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. Family successors who are recruited form outside the family firm, perform at least as well as unrelated successors.

The performance gap between inside- and outside family succession pertains if we

compare only sons or firstborn sons of the outgoing CEO, and it is robust when we control for several observable characteristics of the successors, such as education. We also show that it cannot be explained by outside successor self-selecting into firm with growth opportunities.

We propose that a monocultural business background in the family firm is an important explanation for our results. Inside successors' skill sets may suffer from a lack of cognitive diversity or successors may internalize particular family business norms. In contrast, successors with outside work experience may have acquired a broader set of competencies and an ability to think "outside the box". We show that outside succession-firm undergo changes in corporate policies and have larger employee turnover ex-post, compared with to inside succession-firms.

To the extent outside successors' superior performance is not caused by external experiences but reflect that individuals with higher innate abilities self-select experiences outside the family firm, our results have the policy implication that business families should abstain from pressuring children to work for the firm and use external experience as a mechanism for selecting successors.

References

Amit, Raphael, and Belén Villalonga, 2013, Financial performance of family firms, in Leif Melin, Mattias Nordqvist, and Pramodita Sharma, (eds.) *Handbook of Family Business*, 157—-178 (SAGE Publications).

Baker, Andrew C., David F. Larcker, and Charles C. Y. Wang, 2022, How much should we trust staggered difference-in-differences estimates, *Journal of Financial Economics* 144.

Barney, Jay, 1991, Firm resources and sustained competitive advantage, *Journal of Management* 17, 99–120.

Bart, Erling, Trygve Gulbrandsen, and Pål Schøne, 2005, Family ownership and productivity: the role of owner-management, *Journal of Corporate Finance* 11.

Bennedsen, Morten, Joseph P. H. Fan, Ming Jian, and Yin-Hua Yeh, 2015, The family business map: Framework, selective survey, and evidence from Chinese family firm successions, *Journal of Corporate Finance* 33.

Bennedsen, Morten, Kasper Meisner Nielsen, Francisco Pérez-Gonzalez, and Daniel Wolfenzon, 2007, Inside the family firm: The role of families in sucession decisions and performance, *Quarterly Journal of Economics* 20.

Bloom, Nicholas, and John Van Reenen, 2007, Measuring and explaining management practices across firms and countries, *Quarterly Journal of Economics* 122, 1351–1408.

Burkart, Mike, Fausto Panunzi, and Andrei Shleifer, 2003, Family firm, *Journal of Finance* 58, 2167–2201.

Callaway, Brantly, and Pedro Sant'Anna, 2021, Difference-in-difference with multiple time periods, *Journal of Econometrics* 225.

Cengiz, Doruk, Arindrajit Dube, Attila Lindner, and Ben Zipperer, 2019, The effect of minimum wages on low-wage jobs, *Quarterly Journal of Economics* 134, 1405–1454.

Goodman-Bacon, Andrew, 2021, Difference-in-differences with variation in treatment timing, *Journal of Econometrics* 225.

Gormley, Todd A., and David A. Matsa, 2011, Growing out of trouble? Corporate responses to liability risk, *Review of Financial Studies* 24, 2781–2821.

Habborshon, Timothy G., and Mary L. Williams, 1999, A resource-based framework for assessing the strategic advantages of family firms, *Family Business Review* 12, 1–26.

Pérez-González, Francisco, 2006, Inherited control and firm performance, *American Economic Review* 96, 1559—-1588.

Pollak, Robert A., 1985, A transaction cost approach to families and households, *Journal of Economic Literature* 23, 581–608.

Sun, Liyang, and Sarah Abraham, 2021, Estimating dynamic treatment effects in event studies with heterogeneous treatment effects, *Journal of Econometrics* 225.

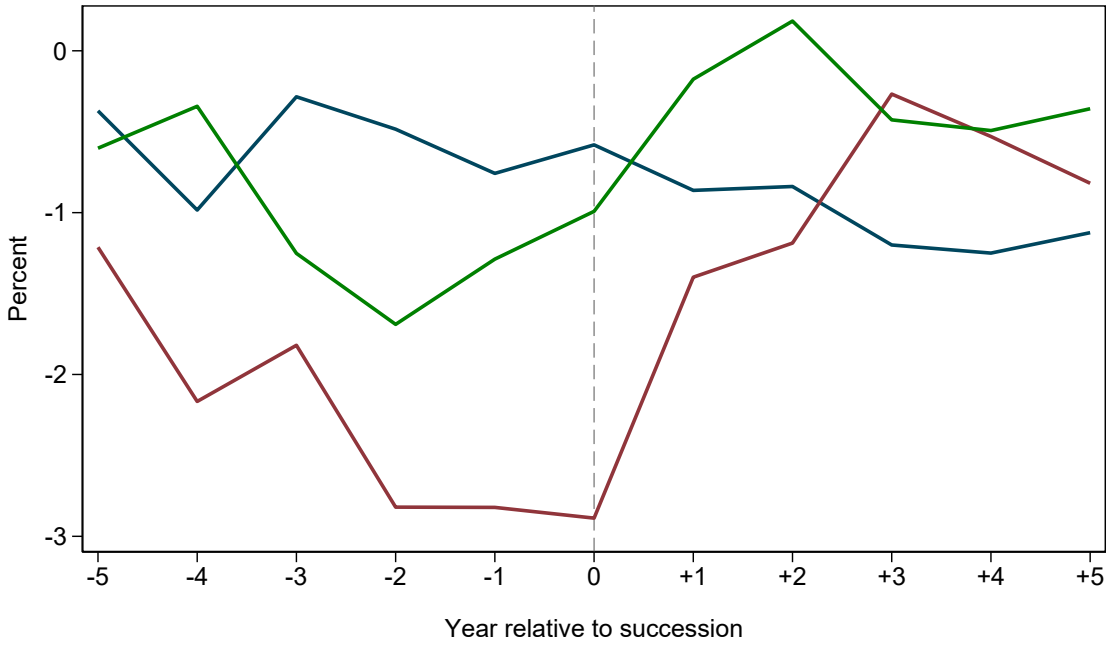
Van den Steen, Eric, 2010, Management succession and financial performance of family controlled firms, *Management Science* 55, 1718—-1738.

Villalonga, Belén, and Raphael Amit, 2006, How do family ownership, control, and management affect firm value?, *Journal of Financial Economics* 80, 385—-417.

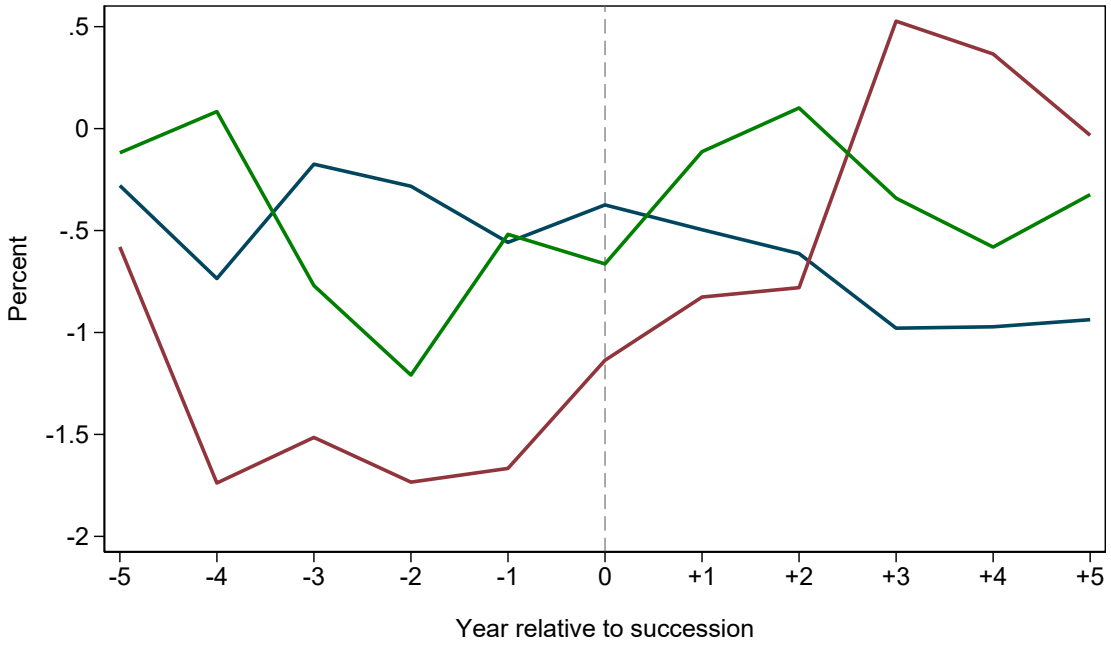
Wernerfelt, Birger, 1984, A resource-based view of the firm, *Strategic Management Journal* 5, 171–180.

Figure 1: Corporate performance for inside-, outside- and unrelated CEO successions

(a) *OROA (adjusted)*



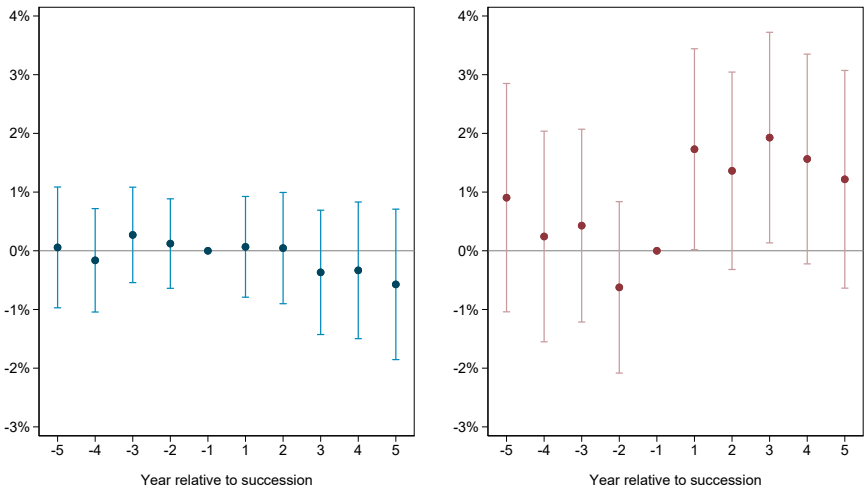
(b) *ROA (adjusted)*



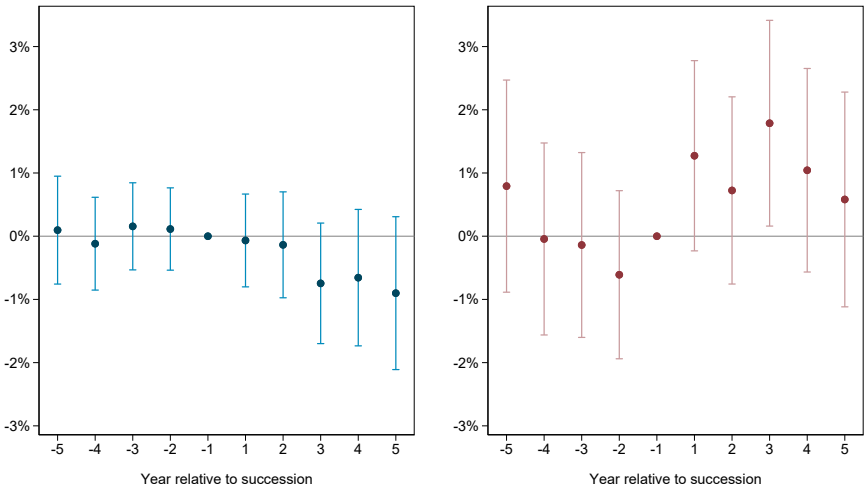
The figure displays the evolvement of cohort-industry-year adjusted OROA and ROA in the five years prior to and after CEO succession for family inside- (blue), family outside- (red), and unrelated (green) successions. Both figures are adjusted for cohort-industry-year fixed effects. Sample firms and succession types are defined in Table 1. Variable definitions are provided in Appendix Table A1.

Figure 2: Event study estimates of corporate performance around CEO successions

(a) *OROA*



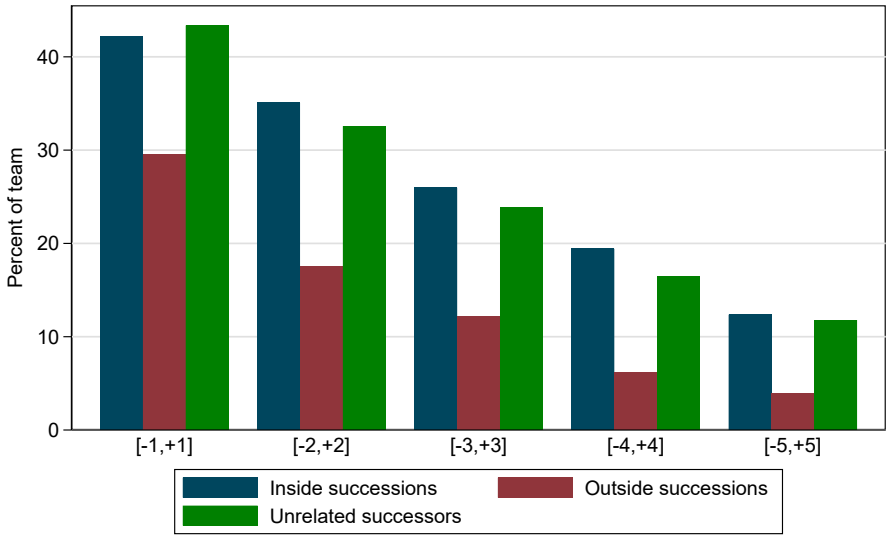
(b) *ROA*



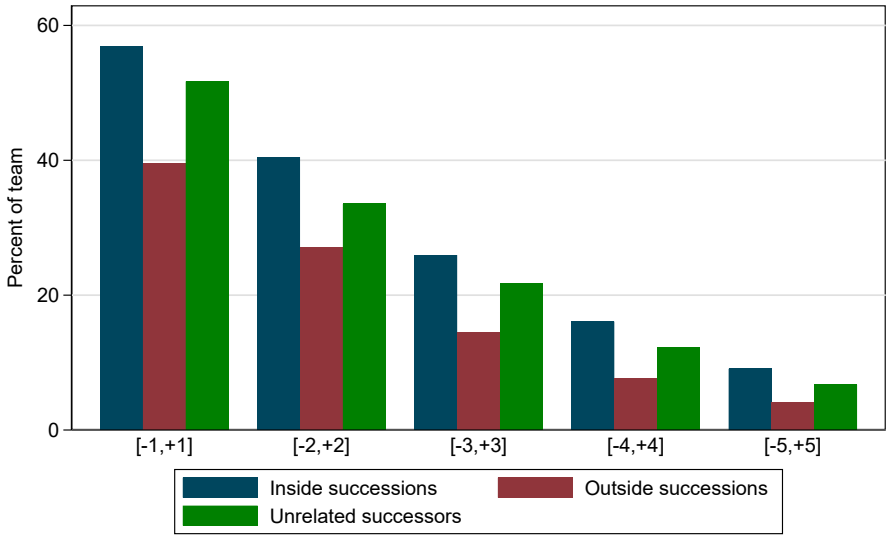
The figure displays the point estimates and standard errors from dynamic treatment effects-regressions as in Sun and Abraham (2021) (implemented with Stata module "eventstudyinteract"). The left-hand panel (blue) introduces time-varying treatment effects for firms that undergo inside family successions into regression model (1) while retaining post-succession dummies for outside- and unrelated succession firms, fixed effects, and pre-treatment time-varying covariates. The right-hand side panel (red) introduces time-varying treatment effects for firms that undergo outside family successions in a similar manner. Sample firms and succession types are defined in Table 1. Variable definitions are provided in Appendix Table A1.

Figure 3: Stability of employement teams around CEO succession

(a) *Management teams*



(b) *Lower level teams*



The figure displays the fraction of employees from the management and lower level teams that are in place in the family firm at date $-W$ as well as date $+W$, there $W \in [-5; 5]$ is event time relative to the year of succession. Outgoing and succession CEOs are included in the management teams if relevant. Variable definitions are provided in Appendix Table A1.

Table 1: CEO succession-types in treated and control firms

	Number of firms	Share of firms (percent)	Share of firms (percent)	Number of firm-year observations
Treated firms (2005-2010):				
Family successions	1,589	67.0	100.0	15,770
Inside successions	1,170	–	73.6	11,605
Outside successions	419	–	26.4	4,165
Unrelated successions	783	33.0		7,770
Total	2,372	100.0		23,540
Control firms (2011-2016):				
Family successions	1,764	68.4	100.0	60,535
Inside successions	1,348	–	76.4	46,925
Outside successions	416	–	23.6	13,610
Unrelated successions	816	31.6		22,798
Total	2,580	100.0		83,333

The table shows the number of family-owned firms in the sample according to CEO succession type. Family-owned firms are defined as firms that experience a CEO transition and where the family of the outgoing CEO owns at least 33.4% of equity capital both two years prior to succession and two years after succession. Family successions are CEO successions where the succeeding CEO belongs to the family of the outgoing CEO. Inside family successions are family successions where the succeeding CEo is employed or sit on the board of the family firm three years prior to the year of succession. Outside family succession are the remaining family successors. Treated firms experience a CEO succession in one of the years from 2005-2010. Control firms are firms that experience a CEO succession at least six years later than a given cohort of treated firms (not-yet-treated firms) and firms that experience a CEO succession during one of the years from 2014-2016 (last-treated firms).

Table 2: Ex-ante characteristics of treated and control firms

	Treated firms			Control firms
	All family- and unrelated successions	Inside family successors	Outside family successors	All family- and unrelated successions
Median age at succession (years)	16	18	15	17
Total assets (million NOK)	8.42	7.28	7.46	8.38
	(0.31)	(0.36)	(0.74)	(0.19)
Number of employees	10.1	9.73	7.35	10.1
	(0.23)	(0.28)	(0.55)	(0.15)
OROA (percent)	12.1***	12.2	10.2	13.7
	(0.33)	(0.44)	(0.85)	(0.21)
ROA (percent)	9.93**	9.83	8.47	11.0
	(0.27)	(0.35)	(0.70)	(0.16)
Firm observations	2,372	1,170	419	6,037

The table shows average values of financial characteristics for treated firms and control firms measured over event years -5 to -1. Sample firms and succession types are defined in Table 1. NOK-amounts are reported as 2015-values and variables (except age) are winsorized at the 5 and 95 percent levels. Variable definitions are provided in Appendix Table A1. Standard errors are in parentheses and are computed from the pooled variances of the different cohorts of treated and control firms. *** (**) indicates that the difference in means between treated and control firms is significant at the 1% (5%) level in a two-sided t-test with unequal variances.

Table 3: Relation between outgoing and succeeding CEO in family successions

	Number of successions			Percent of successions		Percent of succession type	
	Total	Inside	Outside	Inside	Outside	Inside	Outside
Parent-son	901	674	227	57.6	54.2	74.8	25.2
Parent-firstborn son	*648*	*497*	*151*	*42.5*	*36.0*	*76.7*	*23.3*
Parent-daughter	212	151	61	12.9	14.6	71.2	28.8
Partners	223	156	67	13.3	16.0	70.0	30.0
Siblings	164	130	34	11.1	8.11	79.3	20.7
Other	89	59	30	5.04	7.16	66.3	33.7
Total	1,589	1,170	419	100.0	100.0	–	–

The table shows the family relation between the outgoing CEO and the succeeding CEO in inside and outside family successions. Sample firms and succession types are defined in Table 1.

Table 4: Past work experiences of family successors

	Inside successors		Outside successors		Inside successors		Outside successors	
	All	Sons	All	Sons	All	Sons	All	Sons
	CEO successions 2005-2010				*CEO successions 2011-2016*			
Age of suceeding CEO at succession (years)	41.2***	37.9***	38.3	35.4	42.8***	38.8***	40.6	36.5
	(0.27)	(0.26)	(0.45)	(0.46)	(0.27)	(0.35)	(0.54)	(0.53)
Has worked full-time outside the family firm (Y/N, percent)	28.5***	24.4***	86.5	88.8	59.6***	56.1***	91.1	94.2
	(1.36)	(1.69)	(1.78)	(2.20)	(1.39)	(1.88)	(1.44)	(1.62)
Number of past full-time outside employers	0.36***	0.32***	2.05	2.09	1.02***	0.89***	3.03	3.01
	(0.02)	(0.03)	(0.04)	(0.06)	(0.03)	(0.04)	(0.07)	(1.10)
Has past full-time employment in the family firm (Y/N, percent)	76.4***	83.8***	7.16	8.37	74.4***	82.7***	14.9	19.1
	(1.24)	(1.42)	(1.26)	(1.84)	(1.19)	(1.37)	(1.75)	(2.66)
Time in family firm before succession (years)	5.87	6.33	–	–	8.70	9.55	–	–
	(0.08)	(0.09)	–	–	(0.13)	(0.16)	–	–
Years since last full-time family firm employment	–	–	6.43	6.68	–	–	8.06	7.57
	–	–	(0.30)	(0.41)	–	–	(0.37)	(0.39)
Age at last employment in the family firm	–	–	30.6	26.8	–	–	30.6	27.0
	–	–	(1.37)	(1.07)	–	–	(1.03)	(0.82)

The table reports average values for family CEO-successors' past work experiences by successor-type. Values are provided for treated firms (succession years 2005-2010) as well as control firms (succession years 2011-2016) which have more years of data available prior to succession. Family firms, inside-, and outside successors are defined in Table 1. Variable definitions are provided in Appendix Table A1. Standard errors are in parentheses. *** (**) indicates that the difference in means between inside- and outside successors is significant at the 1% (5%) level in a two-sided t-test with unequal variances.

Table 5: Change in firm performance around CEO-successions

	OROA				ROA			
	Inside vs. outside successors	Inside vs. outside son-successors	Inside vs. outside firstborn son-successors	Family vs. unrelated successors	Inside vs. outside successors	Inside vs. outside son-successors	Inside vs. outside firstborn son-successors	Family vs. unrelated successors
Family successions								
Inside successors	-0.44	-0.06	-0.12		-0.55	-0.41	-0.53	
	(0.48)	(0.54)	(0.59)		(0.45)	(0.49)	(0.52)	
Outside successors	2.06***	2.18**	2.84**		1.64**	1.51	1.91**	
	(0.76)	(0.99)	(1.14)		(0.67)	(0.84)	(0.94)	
Remaining successors		-0.19	-0.06			-0.06	-0.01	
		(0.60)	(0.54)			(0.54)	(0.50)	
All successors				0.20				0.01
				(0.46)				(0.44)
Unrelated successors	1.30***	1.30**	1.30**	1.31**	0.49	0.50	0.49	0.50
	(0.59)	(0.59)	(0.59)	(0.59)	(0.54)	(0.54)	(0.54)	(0.54)
Inside = outside successors (p-value)	0.001	0.028	0.013		0.000	0.020	0.010	
Outside family = unrelated successors (p-value)	0.361	0.402	0.197		0.093	0.236	0.140	
Family = unrelated successors (p-value)				0.047				0.275
Ex-ante covariates	yes	yes	yes	yes	yes	yes	yes	yes
Firm-cohort FE	yes	yes	yes	yes	yes	yes	yes	yes
Year-industry-cohort FE	yes	yes	yes	yes	yes	yes	yes	yes
Adjusted R^2	0.41	0.41	0.41	0.41	0.35	0.35	0.35	0.35
Observations	90,903	90,903	90,903	90,903	90,903	90,903	90,903	90,903

The table reports coefficients from stacked firm-level panel regressions of OROA and ROA on indicator variables for family CEO successions and unrelated CEO successions, splitting family successors into orthogonal subgroups according to succession type. Column one splits family CEO successors into inside- and outside successors. Column two splits family CEO successors into inside- and outside successors who are sons of the outgoing CEO and places remaining famiy successors in its own subgroup. Column three splits family CEO successors into inside- and outside successors who are first-born sons of the outgoing CEO and places remaining family successors in its own subgroup. Column four keeps all family successors in one groups. Treated and control firms are defined in Table 1. Regressions include firm-by-cohort and time-by-industry-by-cohort fixed effects and pre-treatment time-vaying covariates of lagged total assets and firm age. Variables are annual and time-varying variables are winsorized at the 5th and 95th percentiles. Definitions are provided in Appendix Table A1. Reported p-values are from a Wald test of the null hypothesis that coefficients of subgroups are of equal value. Standard errors, clustered at the firm-level, are reported in parentheses. *** (**) indicates significance at the 1% (5%) level.

Table 6: Change in key corporate policies around CEO-successions

	ln(Employees)	ln(Total assets)	Capex/ total assets$_{t-1}$	ΔFixed assets/ total assets$_{t-1}$	Debt/ equity
Family successions					
Inside successors	-5.51***	-3.91	-0.30	-0.24	-8.17
	(1.72)	(2.12)	(0.23)	(0.32)	(12.6)
Outside successors	4.81	18.8***	0.11	0.56	44.2**
	(3.55)	(4.19)	(0.35)	(0.48)	(22.1)
Unrelated successors	6.16***	9.04***	-0.27	-0.05	28.4
	(2.17)	(2.81)	(0.25)	(0.36)	(15.0)
Inside = outside successors (p-value)	0.005	0.000	0.223	0.075	0.017
Outside family = unrelated successors (p-value)	0.729	0.039	0.284	0.198	0.495
Covariates and fixed effects	yes	yes	yes	yes	yes
Adjusted R-squared	0.89	0.89	0.23	0.07	0.36
Observations	81,683	95,875	90,902	90,902	90,910

The table reports coefficients from stacked firm-level panel regressions of changes in corporate policy-variables on indicator variables for family CEO successions and unrelated CEO successions, splitting family successors are split into inside- and outside successors. Treated and control firms are defined in Table 1. Regressions include firm-by-cohort and time-by-industry-by-cohort fixed effects and pre-treatment time-vaying covariates of lagged total assets and firm age. Variables are annual and time-varying variables are winsorized at the 5th and 95th percentiles. Definitions are provided in Appendix Table A1. Reported p-values are from a Wald test of the null hypothesis that coefficients of subgroups are of equal value. Standard errors, clustered at the firm-level, are reported in parentheses. *** (**) indicates significance at the 1% (5%) level.

Table 7: Summary statistics for family and external firms

	Family firms		External firms	
	Average	Median	Average	Median
Firm age (years)	13.2	11	19.7	13
	(0.62)		(1.81)	
Total assets (million NOK)	7.84	2.49	112.1***	14.2
	(0.74)		(10.7)	
Number of employees	7.53	4	23.2***	19
	(0.55)		(2.37)	
OROA (percent)	10.1	7.20	9.04	7.19
	(0.82)		(0.91)	
ROA (percent)	8.41	7.23	7.40	6.75
	(0.66)		(0.72)	
Firm observations	412	412	252	252

The table shows average values of financial characteristics for outside family succession firms and the external firms in which the outside successor is employed prior to succession (conditional on external employment). Family and external firms are compared three years prior to the year of succession (event date T=-4). Sample firms and succession types are defined in Table 1. NOK-amounts are reported as 2015-values and variables (except age) are winsorized at the 5 and 95 percent levels. Variable definitions are provided in Appendix Table A1. Standard errors are in parentheses. *** (**) indicates that the difference in means between family and external firms is significant at the 1% (5%) level in a two-sided t-test with unequal variances.

Table 8: Personal characteristics of outgoing and succeeding family CEOs

	Inside successors		Outside successors	
	All	Sons	All	Sons
Succeeding CEO has high school degree (Y/N, percent)	84.3	84.1	82.1	82.3
	(1.06)	(1.41)	(1.88)	(2.54)
Succeeding CEO has bachelors degree (Y/N, percent)	26.2***	24.6	33.3	29.6
	(1.29)	(1.66)	(2.31)	(3.04)
Succeeding CEO has masters degree (Y/N, percent)	4.44***	3.41**	9.09	7.52
	(0.60)	(0.70)	(1.41)	(1.76)
Recruited from position as CEO (Y/N, percent)	8.03***	7.27***	14.1	18.5
	(0.80)	(1.00)	(1.70)	(2.58)
Recruited from position at manager-level (Y/N)	19.9	17.9	25.5	27.7
	(1.47)	(1.83)	(3.44)	(4.94)
Age of outgoing CEO at at succession (years)	60.5***	64.9***	58.3	62.8
	(0.32)	(0.27)	(0.53)	(0.46)
Outgoing CEO is divorced (Y/N, percent)	6.07**	3.41**	9.31	7.49
	(0.70)	(0.70)	(1.42)	(1.75)
Outgoing CEO is on the board after succession (Y/N, percent)	58.7	63.3***	55.2	53.3
	(1.46)	(1.87)	(2.45)	(3.33)

The table reports average values for personal characteristics of treated family CEO-successors' by successor-type. Family firms, inside-, and outside successors are defined in Table 1. Variable definitions are provided in Appendix Table A1. Standard errors are in parentheses. *** (**) indicates that the difference in means between inside- and outside successors is significant at the 1% (5%) level in a two-sided t-test with unequal variances.

Table 9: Changes in OROA with ex-post controls for successor characteristics

	OROA	OROA	OROA	OROA	OROA
Parent-son succssions					
Inside successors	-0.26	-0.26	-2.09**	-0.03	-0.32
	(0.55)	(0.55)	(0.88)	(0.54)	(0.66)
Outside successors	1.41	1.16	0.16	2.27**	2.12**
	(1.07)	(1.11)	(1.17)	(1.01)	(1.04)
Inside = outside successors (p-value)	0.117	0.194	0.028	0.026	0.016
Number of son's past outside employers	0.65** (0.33)				
Fraction of time son has spent outside family firm		0.18** (0.09)			
Son has high school degree			0.02*** (0.01)		
Son hired from CEO-position				-0.46 (0.85)	
Outgoing CEO is on the board					0.62 (0.54)
Unrelated successors	yes	yes	yes	yes	yes
Remaining family successors	yes	yes	yes	yes	yes
Ex-ante covariates	yes	yes	yes	yes	yes
Firm-cohort FE	yes	yes	yes	yes	yes
Year-industry-cohort FE	yes	yes	yes	yes	yes
Adjusted R^2	0.41	0.41	0.41	0.41	0.41
Observations	90,903	90,903	90,903	90,903	90,560

The table reports coefficients from stacked firm-level panel regressions of OROA on indicator variables for inside- and outside family CEO successons, focusing on son-successors, as well as variables that capture successors' characteristics. Treated and control firms are defined in Table 1. Ex-post covariates are: In column one a measure of the fraction of the sample a son-succession does not work or have a board seat in the family firm; In column two a the number of external past employers of a son-successor; In column three a dummy equal to one when a son-successor has completed high school; In column four a dummy equal to one when a son-successor has previously had the title of CEO; In column five a dummy equal to one when the outgoing CEO continues after succession on the board of the firm. Regressions include firm-by-cohort and time-by-industry-by-cohort fixed effects and pre-treatment time-vaying covariates of lagged total assets and firm age. Variables are annual and time-varying variables are winsorized at the 5th and 95th percentiles. Definitions are provided in Appendix Table A1. Reported p-values are from a Wald test of the null hypothesis that coefficients of subgroups are of equal value. Standard errors, clustered at the firm-level, are reported in parentheses. *** (**) indicates significance at the 1% (5%) level.

Table 10: Changes in performance when outgoing CEO dies

	Outgoing CEO dies within five years of succession		Outgoing CEO dies prior to succession	
	OROA	ROA	OROA	ROA
Family successions, CEO dies				
Inside (152,89)	-1.64	-1.42	-3.17**	-2.57**
	(1.04)	(0.84)	(1.47)	(1.18)
Outside (64,47)	1.44	0.73	1.26	0.03
	(1.72)	(1.47)	(1.77)	(1.63)
Inside = outside successors (p-value)	0.116	0.184	0.049	0.183
Family successions, CEO lives				
Inside (1018,1081)	-0.26	-0.42	-0.21	-0.39
	(0.50)	(0.46)	(0.49)	(0.45)
Outside (355,372)	2.15***	1.79**	2.14***	1.82***
	(0.82)	(0.71)	(0.81)	(0.70)
Inside = outside successors (p-value)	0.003	0.010	0.003	0.001
Unrelated successors	yes	yes	yes	yes
Remaining family successors	yes	yes	yes	yes
Ex-ante covariates	yes	yes	yes	yes
Firm-cohort FE	yes	yes	yes	yes
Year-industry-cohort FE	yes	yes	yes	yes
Adjusted R^2	0.41	0.35	0.41	0.35
Observations	90,903	90,903	90,903	90,903

The table reports coefficients from stacked firm-level panel regressions of corporate performance measures on indicator variables for family inside- and outside CEO successions where the outgoing CEO of the treated firm dies. Columns one and two shows results for firms where the outgoing CEO dies after succession within the sample window of five years. Columns three and four shows results for firms where the outgoing CEO dies prior to the year of succession. Numbers in parenthesis indicate the number of firms in each group for each of the two types of CEO deaths. Treated and control firms are defined in Table 1. Regressions include firm-by-cohort and time-by-industry-by-cohort fixed effects and pre-treatment time-vaying covariates of lagged total assets and firm age. Variables are annual and time-varying variables are winsorized at the 5th and 95th percentiles. Definitions are provided in Appendix Table A1. Reported p-values are from a Wald test of the null hypothesis that coefficients of subgroups are of equal value. Standard errors, clustered at the firm-level, are reported in parentheses. *** (**) indicates significance at the 1% (5%) level.

Table 11: Changes in OROA: placebo tests

	Successions 2007-2010 moved to date -4		Successions 2006-2010 moved to date -3	
	Actual	Placebo	Actual	Placebo
Family successions				
Inside (823,1170)	0.11	-0.36	-0.36	-1.07
	(0.61)	(0.65)	(0.53)	(0.65)
Outside (235,419)	2.53**	-1.31	2.26**	-1.60
	(1.06)	(1.05)	(0.87)	(1.08)
Inside = outside successors (p-value)	0.016	0.363	0.002	0.612
Unrelated successors	1.77**	-0.40	1.01	-0.89
	(0.76)	(0.79)	(0.65)	(0.76)
Inside = outside successors (p-value)	0.495	0.423	0.182	0.513
Remaining family successors	yes	yes	yes	yes
Ex-ante covariates	yes	yes	yes	yes
Firm-cohort FE	yes	yes	yes	yes
Year-industry-cohort FE	yes	yes	yes	yes
Adjusted R^2	0.41	0.35	0.41	0.41
Observations	49,408	36,294	69,437	41,089

The table reports coefficients from stacked firm-level panel regressions of corporate performance measures on indicator variables for family inside- and outside CEO successions where the outgoing CEO of the treated firm dies. Columns one and two shows results for firms where the outgoing CEO dies after succession within the sample window of five years. Columns three and four shows results for firms where the outgoing CEO dies prior to the year of succession. Numbers in parenthesis indicate the number of firms in each group for each of the two types of CEO deaths. Treated and control firms are defined in Table 1. Regressions include firm-by-cohort and time-by-industry-by-cohort fixed effects and pre-treatment time-vaying covariates of lagged total assets and firm age. Variables are annual and time-varying variables are winsorized at the 5th and 95th percentiles. Definitions are provided in Appendix Table A1. Reported p-values are from a Wald test of the null hypothesis that coefficients of subgroups are of equal value. Standard errors, clustered at the firm-level, are reported in parentheses. *** (**) indicates significance at the 1% (5%) level.

5 Appendix Tables

Appendix Table A1: Definition of variables

Variable	Definition
Firm-level variables	
All nominal accounting values are converted to million 2015 Norwegian Kroner (NOK) with the consumer price index and are winsorized at the 5 and 95 percent level.	
Capex	Annual capital expenditures computed as the change in the book value of tangible fixed assets plus depreciation and minus impairments.
Debt	Book value of total debt.
Employees	Number of employees at ages 15-74 working at the firm in the administrative employment registry.
Equity	Book value of total equity.
Firm	Legal entity with limited liability (*aksjeselskap*).
Firm age	Number of years since the firm's incorporation.
Firm size	Book value of firm's total assets (million NOK).
Fixed assets	Book value of tangible and intangible fixed assets (million NOK).
OROA	Operating income divided by the two-year average book value of assets (percent).
ROA	Net income plus interest expense divided by the two-year average book value of assets (percent).
Total assets	Book value of assets (million NOK).
Family and ownership variables	
Controlling family	Owners that belong to the family of the outgoing CEO defined as related by blood or marriage up to the second degree of kinship, excluding siblings-in-law.
Family firm	Firms where the controlling family holds an ultimate stake of 33.4% or more two years before and two years after succession.
Family succession	Dummy variable that equals one if the successor is a member of the firm's controlling family, and zero otherwise.
Inside succession	Dummy variable that equals one if the successor had a formal role as an employee or a board member four years prior to taking over as CEO, and zero otherwise.
Outside succession	Dummy variable that equals one 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 zero otherwise.
Ownership stake	Ultimate equity stake held by an individual taking indirect equity holding into account (percent).
Unrelated succession	Dummy variable that equals one if the successor is not a member of the firm's controlling family, and zero otherwise.

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Successor's characteristics	
Age at employment in the family firm	Outside successor's age in latest year of full-time employment in the family firm.
Age of succeeding CEO at succession	Successor's age at event date 0.
Has past full-time employment in the family firm	Dummy variable that equals one if the successor has worked full-time in the family firm prior to event date -4, and zero otherwise.
Has worked full-time outside the family firm	Dummy variable that equals one if the successor is observed to be employed in a firm different from the family firm in one or more years prior to event date -4, and zero otherwise.
Number of past full-time outside employers	Number of different employers up to and including event date -4 excluding the family firm.
Recruited from position as CEO	Dummy variable that equals one if the successor was CEO in a limited liability firm at event date -4, and zero otherwise.
Recruited from position at manager-level position	Dummy variable that equals one if the successor has management-level position at event date -4, and zero otherwise (occupational codes are from Statistics Norway).
Succeeding CEO has bachelors degree	Dummy variable that equals one if the successor has bachelors level degree at event date -4.
Succeeding CEO has high school degree	Dummy variable that equals one if the successor has high school degree at event date -4.
Succeeding CEO has masters degree	Dummy variable that equals one if the successor has masters level degree at event date -4.
Time in family firm before succession	Number of years the successor is employed or has a board seat in the family firm prior to the year of succession.
Years since last full-time family firm employment	Number of years the successor is not observed as employed or on the board in the family firm prior to the year of succession.
Outgoing CEO's characteristics	
Outgoing CEO is divorced	Dummy variable that equals one if the outgoing CEO has children with more than one partner, and zero otherwise.
Outgoing CEO is on the board after successio	Dummy variable that equals one if the outgoing CEO sits on the board of the family firm at event date +4, and zero otherwise.

Appendix Table A2: Ownership in treated firms

	Ownership stake in percent					
	Outgoing CEO ex-ante	Outgoing CEO ex-post	Succeeding CEO ex-ante	Succeeding CEO ex-post	Controlling family ex-ante	Controlling family ex-post
Family successions						
Inside successions	42.4	26.1	34.9	45.9	93.7	93.2
Outside successions	50.4	26.6	19.0	38.3	92.2	91.4
Unrelated successions	53.5	42.7	15.2	20.5	73.9	71.6

The table reports average equity ownership in treated sample firms according to CEO succession types prior to succession (ex-ante) and after succession (ex-post). Family firms and succession types are defined in Table 1. The stake of the controlling family includes the stake of the family CEO.

Appendix Table A3: Change in firm performance around CEO successions: Sun and Abraham (2021)-estimator

	OROA				ROA			
	Inside vs. outside successors	Inside vs. outside son-successors	Inside vs. outside firstborn son-successors	Family vs. unrelated successors	Inside vs. outside successors	Inside vs. outside son-successors	Inside vs. outside firstborn son-successors	Family vs. unrelated successors
Family successions								
Inside successors	-0.06	0.22	-0.02		-0.20	-0.04	-0.27	
	(0.36)	(0.42)	(0.47)		(0.32)	(0.36)	(0.39)	
Outside successors	1.44**	1.69**	2.24***		1.19**	1.15	1.56**	
	(0.62)	(0.76)	(0.85)		(0.53)	(0.62)	(0.69)	
Remaining successors		-0.02	0.19			0.02	0.15	
		(0.47)	(0.41)			(0.40)	(0.36)	
All successors				0.31				0.15
				(0.35)				(0.31)
Unrelated successions	0.82	0.82	0.82	0.82	0.26	0.26	0.25	0.26
	(0.44)	(0.44)	(0.44)	(0.44)	(0.38)	(0.38)	(0.38)	(0.38)
Inside = outside successors (p-value)	0.016	0.065	0.014		0.007	0.063	0.011	
Outside family = unrelated successors (p-value)	0.358	0.286	0.116		0.093	0.171	0.069	
Family = unrelated successors (p-value)				0.254				0.763
Ex-ante covariates	yes	yes	yes	yes	yes	yes	yes	yes
Firm-cohort FE	yes	yes	yes	yes	yes	yes	yes	yes
Year-industry-cohort FE	yes	yes	yes	yes	yes	yes	yes	yes
Adjusted R^2	0.37	0.37	0.37	0.37	0.31	0.31 0.31	0.31	
Observations	53,609	53,609	53,609	53,609	53,609	53,609 53,609	53,609	

The table reports coefficients estimated by the Sun and Abraham (2021)-model of OROA and ROA on indicator variables for family CEO successions and unrelated CEO successions, splitting family successors into orthogonal subgroups according to succession type. Column one splits family CEO successors into inside- and outside successors. Column two splits family CEO successors into inside- and outside successors who are sons of the outgoing CEO and places remaining famiy successors in its own subgroup. Column three splits family CEO successors into inside- and outside successors who are first-born sons of the outgoing CEO and places remaining family successors in its own subgroup. Column four keeps all family successors in one groups. Treated and control firms are defined in Table 1. Regressions include firm-by-cohort and time-by-industry-by-cohort fixed effects and pre-treatment time-vaying covariates of lagged total assets and firm age. Variables are annual and time-varying variables are winsorized at the 5th and 95th percentiles. Definitions are provided in Appendix Table A1. Reported p-values are from a Wald test of the null hypothesis that coefficients of subgroups are of equal value. Standard errors, clustered at the firm-level, are reported in parentheses. *** (**) indicates significance at the 1% (5%) level.

Appendix Table A4: Change in firm performance: omitting outgoing CEO-successor CEO pairs in external firms

	OROA	ROA
Family successions		
Inside successors	-0.49	-0.60
	(0.48)	(0.45)
Outside successors	1.60**	1.32
	(0.80)	(0.70)
Unrelated successors	1.24**	0.44
	(0.59)	(0.54)
Inside = outside successors (p-value)	0.008	0.003
Outside family = unrelated successors (p-value)	0.676	0.219
Ex-ante covariates	yes	yes
Firm-cohort FE	yes	yes
Year-industry-cohort FE	yes	yes
Adjusted R^2	0.41	0.35
Observations	90,468	90,468

The table reports coefficients from stacked firm-level panel regressions of changes in corporate performance measures similar to Tables 5 but omitting outside son-successors who are employed under the outgoing CEO prior to succession (measures at event date -4). Treated and control firms are defined in Table 1. Regressions include firm-by-cohort and time-by-industry-by-cohort fixed effects and pre-treatment time-vaying covariates of lagged total assets and firm age. Variables are annual and time-varying variables are winsorized at the 5th and 95th percentiles. Definitions are provided in Appendix Table A1. Reported p-values are from a Wald test of the null hypothesis that coefficients of subgroups are of equal value. Standard errors, clustered at the firm-level, are reported in parentheses. *** (**) indicates significance at the 1% (5%) level.