Conflicts in Private Family Firms*

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Abstract

We use Norwegian household-level data and full structures of family relationships to understand how family firm ownership is transferred when the family has multiple potential heirs. We find that the decision on whether the family firm is bequeathed to one or a few heirs is related to the potential of future family conflicts. Such considerations also define how long the firms remain in the family's hands, their investment, and their growth. Our identification strategy is based on the observation that heir conflicts are more likely if a founder has experienced a divorce or a separation in the past.

Keywords: Family Firms, Corporate Governance, Ownership Structures, Divorce

JEL Classification: G32, G34

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1 Introduction

Open since 1938, Yung Kee Restaurant in Hong Kong has been thriving under the leadership of Kam Shui Fai, earning a Michelin star and getting named as one of the world's top 15 restaurants in Fortune magazine in 1968. When Kam Shui Fai passed away in 2004, he transferred the ownership of his roast goose restaurant to his three children. The brothers, Kinsen Kam Kwan-sing and Ronald Kam Kwan-lai, inherited 45 percent each, while the daughter Kam Mei-ling held the remaining 10 percent. A bitter feud quickly emerged between the brothers about the management of the firm, resulting in the loss of Michelin star and Hong Kong's Court of Final Appeal confirming restaurant's liquidation in late 2015. The two feuding brother families tried to negotiate that one of them gets bought out but could not bridge the difference between HK$1.2bn (154m USD) and HK$1.3bn (167m USD).[1]

Despite the anecdotes, little systematic evidence exists on such family firm conflicts and how costly they are for firm growth. Most of them remain unobserved as media and courts are likely to notice only the prominent cases, such as the ones between the heirs of Koch Industries in the US or the Ambani brothers in India. Moreover, by the time such conflicts and diverging views about firm future strategy arise, they might be the result of the deteriorating firm performance or of the family's limited resources, and so it is challenging to assert that by themselves they affect firm operations and destroy its value.

One solution to avoid future conflicts would be to bequeath the firm ownership to a single heir. However, second-generation family firms more often than not have siblings sharing the ownership.[2] Do families take into account potential conflicts when deciding about firm ownership structures? In fact, do such expected conflicts between heirs even affect whether

[1] The Economist (2021) writes "Succession is easier when there is only one descendant, or when others show little interest in business. It gets complicated in dynasties with plenty of children from multiple marriages. (...) Conflict is often not chiefly over money. Relatives spar because they have different aspirations for the business, or feel they are being mistreated." An international survey of family firms by PricewaterhouseCoopers (2015) indicates that discussion about the future strategy of the business is the most likely reason to cause tension in the families and over a third of surveyed firms experience it.

[2] Based on the 2007 Survey of Business Owners, out of 13,667 US family firms with the inherited ownership, 12,433 have more than one owner (see the discussion in Section 2.2).

the firm stays in the family's hands altogether or it is passed to outside ownership? And do these considerations have implications for firm investment and growth?

This paper aims to understand how the conflict anticipation shapes the bequeathed ownership stakes and minimizes the negative effects on firm investment and growth. We motivate our empirical study with a stylized conceptual framework where we argue that the potential for family conflicts over the business strategy of a family firm affects the ownership distribution. Before making the bequest decision, the founder evaluates the expected agreement among his heirs. Although the founder is interested in maximizing heirs' private valuations of the firm, he also wants to reduce the chance that because of disagreement no voting majority is formed. When the potential for family members to disagree about the corporate policy is higher, "parental love" is sacrificed for "firm efficiency" and the control is bequeathed to a smaller number of heirs. Our argument relies on the assumptions that are likely to be specific to family firms: heirs receive non-pecuniary private benefits from the firm's decisions even if they do not hold ownership in the firm, and, compared to the cash flow benefits, such private benefits are of substantial value, generating a friction that makes side transfers or share sales not always possible.

We test the claims that the decision whether to bequeath the ownership to a single heir or to multiple heirs is related to potential conflicts between heirs by using granular data on Norway's privately held firms. In particular, we match the population-wide family relationship data to the individual ownership data for the period 2000–2019. This lets us not only understand which family members own stakes in family firms but also capture which family members do not hold any ownership in these firms. By knowing the characteristics of all family members at the time of firm transitions, we can shed light on the topic of the counterfactual in family firm transitions.[3]

We focus on the ownership transitions when the founder gives up a major portion of his initial ownership either at the time of death, or even before that. In particular, we identify

[3]Our data thus allows us to observe who could have owned the stakes in the firms but do not own them. Just looking at the actual ownership data does not provide such a counterfactual.

6,523 Norwegian firms that have experienced a within-family ownership transition, and the founder had at least two children or stepchildren of legal age. We link the decision whether the ownership is passed to a single child or to multiple children to the potential of sibling conflicts that we proxy with family characteristics. Based on the literature in social sciences, we suggest that the potential sibling conflicts are related to such family characteristics as larger age spacing between children, lower similarity among their educational attainments, and whether they are born to different parents.

We find that these proxies for higher potential heir conflicts are related to fewer heirs receiving ownership in the family firms at the time of ownership transitions. In addition, we find that potential conflicts are also linked to a higher probability that the shares will be sold outside the nuclear family, and that this external transition will happen faster, suggesting that the potential disagreement might be related to how long the firm stays in the family's hands. For example, if children have different education, the probability of the within-family transition decreases by 8% and the firm is transitioned to outside ownership 0.9 years quicker. Meanwhile, having different parents are related to a 16% lower probability of a within-family transition and to a two-year faster external transition.

We further explore whether the relationships between the potential family disagreements, the ownership allocation, and the firm performance are causal. Based on our observations that the bequest is more concentrated if the potential heirs come from different parents and are more spaced in age, we suggest that such dispersion can be related to the founder having had a divorce or a separation in the past. Because divorce can still be argued to be related to the firm performance, we instrument it with the social acceptability of divorces in the founder's family.

For this, we rely on deep family relationship data to suggest that while founder's divorce is likely to be related to the firm's performance, social acceptability of divorce might vary across families. We argue that past divorces in the family make the founder's divorce more likely. We thus instrument the founder's divorce by past divorces or separations of the members

of the family who do not work in or are not otherwise related to the firm in question. In particular, we focus on first-cousin divorces because first cousins are likely to be similar in age to the founder, and we find a significant positive relationship between first-cousin divorces and founder divorces in the future.

Such instrumental variables estimates show that first-cousin family-instrumented divorces are related to less dispersed within-family bequest and to a lower likelihood of the firm staying within the family at the transition time. These estimates thus suggest that the potential family conflicts shape ownership structures and affect firm survival rates, and that the results are unlikely to be driven by the unobserved firm characteristics.

Importantly, we also look at the effects on firm investment and sales growth. We find that divided bequest is related to lower firm investment and lower sales growth during the next three years following the transition within the family. These firms are also more likely to disappear from our sample three years after the ownership transfer. This effect is not absorbed by the personal characteristics of the family heirs, and suggests that the social friction of within-family dynamics might be an important constraint on how family firms expand and grow.

The paper relates to the literature on family firms. Prior empirical literature has primarily looked at the managerial succession in family firms or has compared family firm decision making and performance with those of non-family firms.[4] The theory literature has also offered reasons for the existence of family firms[5] as well as for their specific corporate governance structures.[6] We contribute to the family firm research by studying how within-family dynamics relate to the ownership allocation and future firm performance, conditional on the firm staying in the family's control.[7] With this we abstract from the managerial succession

[4]See, e.g., Faccio and Lang (2002); Claessens et al. (2002); Anderson and Reeb (2003); Pérez-González (2006); Villalonga and Amit (2006); Sraer and Thesmar (2007); Bennedsen et al. (2007); Franks et al. (2011); Mehrotra et al. (2013); Tsoutsoura (2015); Lee et al. (2016); Bennedsen et al. (2021). Also, see Villalonga and Amit (2020) for a recent review of the empirical findings on family firms.

[5]See, e.g., Bhattacharya and Ravikumar (2001); Burkart et al. (2003); Caselli and Gennaioli (2013).

[6]See Bennedsen and Wolfenzon (2000) and Ellul et al. (2010), and also broader discussions in Villalonga and Amit (2009) and Villalonga et al. (2015) on unique corporate governance mechanisms in family firms.

[7]In a related paper, Bertrand et al. (2008) links ownership of Thai family businesses to family size.

considerations and instead focus on ownership transitions that are not as easily reversed in private family firms, and link them to anticipated disagreements within the family. We show that firms take into account potential conflicts in setting up their ownership structures, which suggests that the conflict costs are significant.

More broadly, we highlight a particular friction that can limit family firm investment and growth. We argue that the presence of personal private benefits and disagreement costs can generate the potential of family conflicts that could lead to less expansionary strategies. While Tsoutsoura (2015) and Ellul et al. (2010) suggest external constraints such as inheritance taxes and laws contribute to lower family firm investment around the time of succession, we argue that frictions can also arise endogenously from the social dynamics within the families.

The findings in this paper also add to the studies on intergenerational wealth concentration and how that translates into the persistence of inequality and into economic growth. Most of the literature on bequest concentrates on the consumption of heirs (e.g., altruism models such as Becker and Tomes (1979)) rather than on how bequest division affects productive assets.[8] Empirically, while the division of bequeathed wealth is often equal or favors heirs who need more assistance, Menchik (1980) shows that if the inherited property is a family business, the bequest is 15–29% more unequal than in the full sample of family transfers.

Finally, we relate to the corporate finance literature on the benefits and costs of diversity in organizations, e.g., corporate boards (see Ferreira (2010) for a review on this topic and Donaldson et al. (2020) for a recent study on the implications of board deadlock on the choice of board parameters).[9] Our study focuses on the ownership allocation based on the inherent family characteristics that are likely more exogenous to firm performance than to

[8] Among the studies that look into productive assets, Bertocchi (2007) considers that some assets, such as land, are indivisible, while Chu (1991) assumes increasing returns to scale in how bequeathed wealth can be invested. See Kopczuk (2009) for a summary of the theoretical and empirical literature on bequest motives.

[9] Donaldson et al. (2020) cite survey evidence that 67% of directors report the inability to decide about some issues in the boardroom and 30% say they have encountered a boardroom dispute threatening the very survival of the corporation.

the directors' choices, thus circumventing some of the challenges of the empirical literature in identifying the effects of diversity on corporate performance.

2 Hypothesis development

We provide a stylized conceptual framework of ownership distribution in the family firms. We argue that family members realize non-pecuniary private benefits from the firm's activities but they disagree about which actions of the firm provide these private benefits. The founder faces a dilemma about how to divide the ownership between his heirs. Bequeathing the voting shares to all heirs maximizes their valuation of private benefits because such a structure increases their chances of being a part of the winning coalition that chooses the course of the firm. However, if no winning coalition is formed, no course of action is taken and the firm experiences the cost of deadlock. At the other extreme, concentrating the voting shares in the hands of one heir eliminates the chance of deadlock but reduces the valuation of expected private benefits by the other heirs. Thus, when there is a large potential disagreement about the private benefits, the control of the firm is concentrated with one heir. If the probability of disagreement is low, a divided bequest is optimal.

As we further describe in more detail, the relevance of such a trade-off crucially depends on two assumptions. First, non-pecuniary private benefits should be relatively large, as compared to cash flow benefits, and this friction, commonly faced by family firms, makes it suboptimal to sell the shares externally or impossible to trade between the heirs. Second and also likely most relevant to family firms, heirs receive non-pecuniary private benefits from the firm even without having ownership or control. These two assumptions drive our hypothesis that families might find it optimal to have dispersed ownership that allows for some conflict even if such dispersed ownership results in lower investment and growth.

2.1 Baseline structure

Consider a firm initially fully owned by its founder. At $t = 0$, the founder retires after dividing his ownership among N heirs. At $t = 1$, the firm's shareholders must pick one of many mutually exclusive projects. At $t = 2$, each project yields a cash flow as well as non-pecuniary private benefits to the heirs. We first discuss the assumptions behind the investment problem at $t = 1$ and further outline the founder's decision at $t = 0$.

Investment problem Assume that a fixed investment (of size 1) has to be made to choose any of the projects. Although all projects bring equal cash flows $C > 1$, the N family members disagree about the value of private benefits of each project. As suggested by Hart and Holmstrom (2010), private benefits can be viewed as a way of capturing different beliefs held by agents about the consequences of strategic choices, i.e., they could reflect the disagreement about the cash flow benefits that each project brings and thus these benefits are ex ante private and non-pecuniary (e.g., the heir is convinced about the potential of the strategy but cannot persuade others). Another interpretation could be that heirs disagree about the types of projects that best preserve the family legacy ("family name"), i.e., the private benefits are about the preferences (e.g., avoid environmentally unfriendly strategies) and they are non-pecuniary and private even ex post. As a simplification, let each heir get private benefits $B > 1$ from one of the available projects and 0 from all others.

Importantly, we assume that heirs realize the private benefits irrespective of their ownership, i.e., they care about the direction that the firm takes even if they are not getting direct cash flow benefits out of it. For instance, even if their main sources of income are not related to the original family firm, children might still benefit from a good standing of their family's reputation.

The choice of the project involves one of the owners suggesting a project and all of the owners voting whether to take it. Unless the voting majority agrees to take the project,

the project is not taken. If none of the projects are chosen, the firm goes into a deadlock[10] and neither the owners realize cash flows from the new project, nor family members get respective private benefits,[11] but the initial investment is also not wasted.

When the heirs need to choose the project, they observe the realization of everyone's preferences for the projects; however, ex ante, before allocating the control, the founder observes only the distributional properties of how preferences are assigned. That is, the mapping from projects to private benefits B is not necessarily independent among heirs. A high correlation can be interpreted as having similar value systems or agreement about the mission of the firm, and we denote such conditional probability that two heirs get B from the same project by $\alpha \in [0, 1]$, which is exogenously given.[12] In other words, both B and α capture different aspects of disagreement. While B can be seen as the disagreement value at stake, $1 - \alpha$ is the probability that such disagreement is realized.

Inheritance problem The founder observes the probability that heirs agree on the project α and divides the ownership of the firm among them, given a one share-one vote structure.[13] Assume that the founder cares equally about them and maximizes the combined value of the firm as valued by all his descendants – the sum of private benefits and cash flow benefits of all his heirs:

$$\max_{w=w^1,\ldots,w^N} \sum_{i=1}^{N} \left[E\left(B^i\right) + w^i \lambda C\right] \tag{1}$$

where $(1-\lambda)$ is the probability of a deadlock, w^i is heir i's ownership share (s.t. $\sum_{i=1}^{N} w^i = 1$), C are cash flows while B^i is the size of heir i's private benefits. In other words, the objective

[10] Deadlock can be seen as the continuation of usual activities as in Donaldson et al. (2020), i.e., the firm does not take the new investment project and continues along its current path.

[11] If several projects provide different private values for the heirs and each heir has a ranking of projects, a deadlock can be interpreted as the probability of Condorcet cycles.

[12] Such α can be related to the congruence parameter between agents in Aghion and Tirole (1997) and Burkart et al. (1997). In family business literature, such agreement within a family is also referred to as family cohesiveness (Salvato and Melin, 2008), cumulative emotional capital (Sharma, 2004), or family culture (Poza et al., 1997).

[13] Dual-class shares are uncommon in private family firms in Norway. Che and Langli (2015) find that in their sample, only 3.8% of the privately held Norwegian firm-year observations have dual-class shares.

function of the founder is independent of how cash flow benefits are allocated, and depends only on how many children end up getting the private benefits.

We first discuss the intuition of the main result, when the founder has three heirs. The general result for N heirs is discussed in Appendix 2.

Three heirs Denote heirs by $i \in \{1;2;3\}$, equally likely J different projects by j, s.t. $J \geq 3$, and a draw that i receives B from j by $i = j$. These draws are not independent among heirs and are related via the parameter α. When $\alpha = 1$ and their preferences are perfectly aligned, the probability that all heirs prefer the same project $P(\cap i = j) = 1$, while when $\alpha = 0$, neither of the two heir pairs prefers the same project, $P(\cap i = j) = 0$.

While that is not key to deriving our result, we assume that the congruence parameter might differ across heir pairs. Heir 1 has on average higher agreement with other heirs than heirs 2 and 3 between themselves. In particular, while $P(2 = j \& 1 = j) = P(3 = j | 2 = j \& 1 = j) = P(3 = j | 2 \neq j \& 1 = j) \equiv \alpha$, $P(3 = j | 2 = j \& 1 \neq j) \equiv \alpha(1-\alpha)$. These assumptions imply that the probability that all heirs prefer the same project is α^2, probability that heirs 1 and 2 prefer the same project but heir 3 does not is $\alpha(1-\alpha)$, probability that heirs 1 and 3 prefer the same project but heir 2 does not is $\alpha(1-\alpha)$, probability that heirs 2 and 3 prefer the same project but heir 1 does not is $\alpha(1-\alpha)^2$, while the probability that all of the heirs prefer different projects is $(1-\alpha)^3$.

A heir realizes private benefits B if (a) all heirs prefer the same project; (b) other heirs prefer the same project and they together hold a majority of votes; (c) he holds the majority of votes by himself and can impose his preferred project. So, the expected private benefits for heir 1 are:

$$E(B^1) = [\alpha^2 + \alpha(1-\alpha)1_{(w^1+w^2>\frac{1}{2})} + \alpha(1-\alpha)1_{(w^1+w^3>\frac{1}{2})} + (\alpha(1-\alpha)^2 + (1-\alpha)^3)1_{(w^1>\frac{1}{2})}]B$$

In other words, heir 1's expected value of private benefits depends on the probability that private benefits B are realized, which happens if all heirs prefer the same project (with

probability α^2), in which case, who holds voting power is irrelevant; or if both heir 1 and heir 2 prefer the same project and they hold the majority of votes (with probability $\alpha(1-\alpha)$); or if both heir 1 and heir 3 prefer the same project and they hold the majority of votes (with probability $\alpha(1-\alpha)$); or if heir 1 disagrees with other heirs on the preferred project but heir 1 holds the majority of votes and can impose his preferences (with probability $\alpha(1-\alpha)^2 + (1-\alpha)^3$).

Based on similar logic, the expected private benefits for $i \in \{2;3\}$ are:

$$E(B^i) = [\alpha^2 + \alpha(1-\alpha)1_{(w^i+w^1>\frac{1}{2})} + \alpha(1-\alpha)^2 1_{(w^2+w^3>\frac{1}{2})} + (\alpha(1-\alpha) + (1-\alpha)^3)1_{(w^i>\frac{1}{2})}]B$$

Adding all the cases together, we can see that if none of the heirs hold the majority of votes, then the ex ante probability λ that some project will be chosen and the firm will not end up in deadlock is: $\lambda \equiv 1 - (1-\alpha)^3$.

We assume that compared to C, private benefits B are large enough that deadlock cannot be avoided with the side transfers that could sway the decision of one of the heirs. Also, discontented family members cannot be bought out with the deferred payments.[14] In addition, as a simplification, family members neither have external wealth nor receive income from outside of the family firm. Finally, we assume that the firm cannot be split up into multiple divisions, i.e., the costs of spin-offs are prohibitively expensive or the firm's production function is such that the output can be produced only with the full set of existing inputs.

[14]While we normalize private benefits to be equal to 0 for the non-preferred project, in the family firm setting one could imagine that the private benefits for the non-preferred project might in fact be negative, i.e., the heirs strongly dislike the strategy that they do not vote for. Given that we assume no outside wealth, by dismissing side transfers that come from the final cash flow, we assume that they are not sufficient to compensate for such negative private benefits. In addition, one might also consider that players are infinitely patient. They are able to make such binding counterbid offers to some of the players that discriminate against other players but also cannot precommit ex ante to a non-discriminatory agreement by mutual consent with all other players. Harsanyi (1977, p. 235) argues that "in an n-person cooperative game with free communication, if the players can make firm offers to each other, then *every* possible sectional coalition S is vulnerable to disruption by outsiders who can bribe one or more members of S into withholding their cooperation from the other members of S. Since every coalition is vulnerable in this way, no stable agreement can arise, unless the players agree not to use such disruptive tactics against any possible coalition in the game." Agreement not to use such disruptive tactics might not be renegotiation-proof. See also an argument in Acemoglu et al. (2016) on why beliefs might not converge under Bayesian learning.

Analysis The founder faces a trade-off. If he passed ownership to a single heir, the other heirs would still receive the private benefits but would not be able to influence the choice of projects, so their ex ante valuations would be lower than in the cases when they might be in the winning coalition which imposes its choice of projects. In other words, with or without ownership, the heir might internalize the effects of the corporate decisions made by his sibling(s) on the family name or on the valuation of the firm, so (in addition to all cash flow benefits), he would value the chance to influence decision making. On the other hand, shared ownership among three increases the possibility of deadlock, which would be costly to the firm. There is some threshold ex ante agreement α^* below which unilateral control is optimal and above which joint control is optimal.

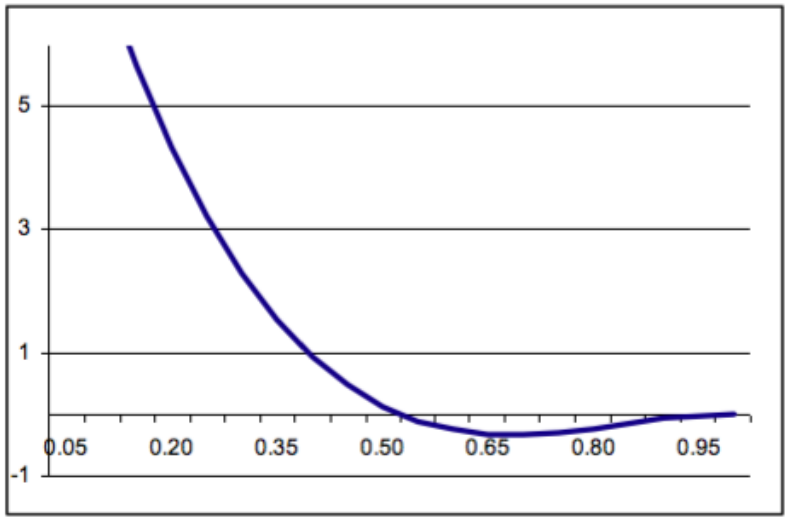
Proposition 1. When $N = 3$, there exists such $\alpha^* = \frac{B+C}{2B+C}$ that for $1 > \alpha > \alpha^*$ all children hold votes with equal voting power and for $\alpha < \alpha^*$ one child holds the majority of votes. The founder is indifferent between these two options if $\alpha = \alpha^*$ or $\alpha = 1$.

Proof. See Appendix 1.

Figure A depicts the benefits of unilateral control over joint control as a function of α when $\frac{B}{C} = 5$. The vertical axis shows the value to the founder from unilateral control minus the value to the founder from joint control. The horizontal axis plots α. The benefit of unilateral control is higher for low agreements because there is a high probability that no project will be chosen if all heirs jointly owned the firm. With very high agreements, the benefit of joint control over unilateral control recedes because the likelihood that family members would even agree to the dictatorial choice increases.

General result Appendix 2 provides the general result for any N. The optimal ownership structure depends on the number of heirs. Also, the division of control crucially depends on the tie-breaking rule, i.e., whether it is sufficient for the largest coalition to control half of the votes to implement the preferred project. If control of half the votes is enough to

Figure A. Benefits of unilateral control over joint control



implement the preferred project, it is never optimal to give control to an odd number of heirs. The (even) number of heirs to which it is optimal to give control depends on α. A range of α exists for any even number of heirs to have an optimal control and the larger α is, the larger is the number of heirs that share control. If control of half the votes is not enough to implement the preferred project, the optimal solution reverses and it is never optimal to give control to an even number of heirs. The control split between any even number of heirs is optimal for some α. Ex ante the founder prefers the former tie-breaking rule.

Endogeneity of α We have treated α as an exogenous parameter; however, it is in fact likely to be endogenous. First, α is (to some extent) a choice variable of the founder. The founder might face a trade-off in allocating his limited (time) resources between increasing the value of the firm or spending time with the family. Time spent with the family strengthens family ties and thus minimizes the chance of conflicts or establishes an efficient low-cost process to resolve them. Endogenizing α should thus increase the optimal range of the divided bequest. Moreover, α could be endogenous to the choice of ownership structure. One could imagine that simply *because* control is concentrated with one child, the other children can raise their disagreement with the decisions of the firm. Such situation would

increase the region where shared control is optimal but would not qualitatively change the predictions.

2.2 Empirical implications

This conceptual discussion builds our empirical hypotheses.

First, if α is high, that is the future conflicts about firm strategies are less likely, for any B and C, it is more likely that $\alpha > \alpha^*$ and thus by Proposition 1 all children hold votes with equal voting power. We thus hypothesize that family businesses are more often inherited by multiple family members as compared to a single family member when the family conflicts are less likely:

Hypothesis 1. In the cases where future conflicts are less likely, family businesses are more often inherited by multiple family members.

Second, the conceptual model suggests that the value of founder's objective function (1) increases with α : when children are more likely to agree on the firm strategies, the founder internalizes more of the children's private benefits B associated with the firm. On the other hand, assuming that external non-family investors do not receive private benefits B and only value cash flow benefits C, their valuation of the controlling stake is unvarying with α. However, if such external non-family investors derive other benefits from owning this firm (e.g., synergies), there might be a threshold where the advantages of keeping the firm in the family are lower than selling it to the non-family owners. As such advantages of keeping the firm in the family are increasing with α:

Hypothesis 2. In the cases where future conflicts are less likely, the ownership remains longer in the family's hands.

Third, if multiple heirs have shares, the disagreements about which project generates B might lead to a deadlock that is associated with no project chosen and no investment. Such deadlock further leads to no new cash flow benefits C. Even if ex ante the founder found

it optimal to pursue a divided bequest, ex post the conflicts might still arise and hamper investment and growth in the cases of divided bequest:

Hypothesis 3. The firms with divided bequest have lower investment and growth after the transfer than do the firms with the unilateral bequest.

Fourth, as $\frac{d\alpha^*}{d(B/C)} < 0$, the larger the private benefits are compared to the cash flow benefits, the more appealing is the divided bequest. Thus, if the perceived intangible firm value component is more important to heirs, when dividing the bequest, the founder puts more emphasis on how to generate higher expected private benefits for all heirs rather than on ensuring that there is no threat to the firm's cash flows. As $\frac{B}{C} \to \infty$, $\alpha^* \to \frac{1}{2}$, while as $\frac{B}{C} \to 0$, $\alpha^* \to 1$. That is, when $B = 0$, the family members are indifferent between any of the projects and the ownership structure is irrelevant. Meanwhile, if private benefits are very large, the bequest has to be divided for a wider range of disagreement values, and the actual level of disagreement becomes less relevant. In other words, the necessary condition for divided bequest to be optimal is for either private benefits or agreement to be large, i.e., they act as substitutes in defining ownership structure:

Hypothesis 4. Private benefits and agreement are substitutes in defining bequest ownership structure.

2.3 Preliminary evidence from the US

Because of the data quality, we will rely on the Norwegian sample in our empirical analysis, but we first provide evidence that the ownership distribution is also unequal in other, larger, economies and in particular in the US. That family firms vary in terms of the ownership stakes can be seen from the 2007 Survey of Business Owners Public Use Microdata Sample which reports the ownership distributions for the four largest owners of $2,165,680$ US firms. We investigate those firms that indentify themselves as family firms and where all of the four largest owners have inherited their stakes. Out of $13,667$ such firms, $12,433$ have between two and four owners. As we show in Internet Appendix 1, $6,936$, or 55.8% of these, have an

equal division of ownership (either 50% each in the case of two owners, 34% or 33% each in the case of three owners, or 25% each in the case of four owners).

While these figures are thought-provoking, the US data, even at the detailed Census level, does not allow us to study the bequest choice, since we do not observe the full set of potential heirs, i.e., those who could have inherited firm shares but did not. Also, even for the inheriting heirs, we do not have information on their demographic characteristics and we cannot identify their relationships (e.g., they might have inherited the ownership stakes from different, unrelated, founders). In fact, even the self-declared definition of "family firms" might not be consistent across firms. We thus turn to Norwegian data.

3 Data

3.1 Sample construction

In our main empirical analysis, we use the ownership data of the complete population of Norwegian economically active non-financial limited liability firms during 2000–2019. This data comes from Experian. We match it to the panel of the full family relationship data, which comes from the Norwegian Tax Authority. The data set from the Norwegian Tax Authority provides core relationships between those persons who are active in a firm in any role and their extended family members (spouses,[15] parents, grandparents, great grandparents, great-great grandparents). This matching allows us to build the deep family relationship map for all core individuals, i.e., to understand the sibling and cousin relationships, even if these siblings and cousins do not have ownership in the firm. Internet Appendix 2 describes the raw family relationship data, lists the key steps in the procedure we use to create the deep family relationship map, and tells how we merge it with the ownership data.

We aggregate corporate subsidiary structures at the ultimate owner level, i.e., we consider only one firm per business group. Moreover, in our sample of family firms, we consider only

[15] In the paper, we treat spouses in both marriages and civil partnerships in the same way.

firms that (a) have a family as the largest owner and that family's ownership stake is at least 20% in the firm. We also require (b) the largest owner ("founder") to have at least 50% of the family's stake and (c) be at least 40 years old in the first year in our sample. Further, we require that (d) this person has at least one descendant child or stepchild. After imposing these conditions on the whole population of Norwegian firms that are active and have more than one employee between 2000 and 2019, our sample includes 117,072 firms.

With the first condition (a) we focus on firms where family transitions are important to the firm. The condition (b) allows us to look at one nuclear family that is the most important in the transition rather than at the dynamics that involve interfamily interactions.[16] Conditions (c) and (d) limit the sample to the cases where ownership transitions are relevant, i.e., where the founder is old enough to consider a transition and has at least one heir.

3.2 Sample description: All sample firms

We describe our sample of 117,072 firms and their characteristics. We first reconfirm that the firms we study are important for the family. The median firm has 2.1m NOK of assets and that constitutes 21.8% of the majority family's net wealth. The median ownership fraction of the family is 100% and the median founder's share is 100%. That is, our sample primarily consists of firms owned by a single owner. The median founder's age is 47 years at the time we first observe the firm. In 17% of cases, the founders are women.

We are able to observe most of the firms almost since their inception. The median age of the firm at the start of their appearance in the sample is two years. Only 3.6% of firms (4,254 firms) are over 25 years old in 2000 and 0.9% of firms (1,002 firms) are over 50 years, with the oldest firm being 148 years of age in 2000.

We condition the sample on having at least one descendant child, including stepchildren. The median number of children that the founder has when we start observing the firm is two. Out of 117,072 firms, 15,316 firms have one descendant child, 51,887 have two descendants,

[16] For instance, we exclude firms where multiple second-generation heirs share ownership but none of them have a majority. We discuss some implications of multiple generations in Section 7.

35,951 have three descendants, 10,366 have four descendants, and the rest have more than four. The sample is quite balanced between male and female descendants.

If we focus on children that are over 18 years old and are more likely to be considered for ownership transfer, 30,084 firms have none, 17,554 firms have one descendant adult child, 38,091 have two descendant adult children, 23,047 have three descendant adult children, 6,300 have four descendant adult children, and the rest have more than four.

We further describe some characteristics that could be related to the disagreement between heirs. One potential disagreement between heirs could come from them being of different ages. The median age of descendant adult children is 29 years, with 1% and 99% being 18 and 54. The median of the maximum age difference of heirs within the family is four years, with 1% and 99% being 0 and 24. The median standard deviation of heir age within the family is three years. We observe 3,857 firms with at least one set of twins.

The other potential source of heterogeneity might be the different educational backgrounds of the children. Here we look only at the adult children heirs that are 24 years old or older. We have 53,008 firms with at least two children heirs over 24, and in just under half, 21,794 firms, at least two children heirs differ in whether they have a university education, suggesting considerable heterogeneity. We can also look into the fields of study.[17] In the cases with at least two children heirs over 24 and where we have the education field available, the field differs in 40% of the cases.

Disagreement might also arise if children have different parents or the family experienced major family events. We have 11.3% of firms where not all children have the same parents. In 39.2% of firms, the founder has experienced divorce or separation, a percentage consistent with the general trends in the Norwegian population. In our empirical tests, we will exploit the prevalence of divorces as a way to identify the potential of family conflicts.

Also, the children might differ because of their abilities. We do not observe abilities but

[17]Our data provides nine fields of study: general subjects; humanities and arts; teacher training and pedagogy; social sciences and law; business and administration; natural sciences, vocational and technical subjects; health, welfare and sport; primary industries; transport and communications, safety and security and other services.

those might be correlated with their salaries. For the cases for which we have salary data, we see that the median salary is 192,311 NOK and the largest salary is 8,154,152 NOK. On average, within-family average salary difference between grown-up children is 224,609 NOK.

Some children are already involved in the firm even before their parents transfer the larger stakes. Upon first being observed in the sample, 3,275 of firms have heirs with some ownership stakes in the firm. The average age of descendant adult children who have ownership stakes in the firm initially is 39. In 3,199 of cases, the child is the CEO of the firm in question. In 15,391 of cases, at least one child sits on its board of directors. In 4,680 cases, at least one child works for the firm.

3.3 Sample description: Transfer firms

We record the firms in the year of the transition, where the time of the transition is defined as the year in which the accumulated decrease in the founder's share passes 10%, where such decrease is measured from when the firm is first observed in our sample.[18] We choose a gradual threshold because we expect that succession planning induces allocation of shares even before a major inheritance event.

Out of 117,072 firms, in 13.3% of cases (15,623 firms) we observe at least one founder ownership transfer of at least 10% between 2000 and 2019. Figure 1 reports the number of transfer firms over time. The number of family transitions averages at 780 per year and varies from around 293 in 2017 to 1,607 in 2003, possibly reflecting economic cycles. Figure 2 shows the breakdown of transfer firms by industries. While transition cases come from all twenty Norwegian industry sectors in our sample, 75% of the cases are from five sectors (Building; Retail and Wholesale; Financials; Real Estate; and Services), and this share is equivalent to the fraction of these five sectors in the overall 117,072 family firm sample, suggesting no particular bias regarding industries in which firms are transferred.

Table 1, Panel A provides summary statistics for our sample firms that have experienced

[18] We inspect if the founder has had any other transitions before to ensure that we are not capturing serial entrepreneurs who frequently exit their stakes in firms.

a transition. The average age of the founder in the transition year is stable at early-to-mid 50s to early 60s throughout the sample, with the median age being 57.5 years during the whole period. In 10.2% of transition firms, we observe founder deaths within two years of a transition. The average age of the firm at the time of transition is 16 years. In 15,192 transition cases (97%) the family has at least two children.

The median transfer is 45% of the ownership stake. In 7,171 cases, i.e., in 46% of the transfer sample, at least one of the children receives some shares, while in 54% of transfer cases, all transferred shares are sold outside the immediate family.[19] If we condition the sample on the firms that had full or partial within-family transitions and initially had at least two descendants, our sample is 6,667 cases, or 6,523 if we restrict the sample to the firms that had at least two descendants that were at least 18 years old.[20] Within this sample, we find that in 53% of cases, only one descendant receives the shares, while in 47%, more than one descendant receives the shares. The median fraction of children who receive the shares in cases in which there are multiple children in the family is 50%, and the mean is 61%. Importantly, as shown in Figure 3, there is no discernible difference between the distribution of children in the transfer firms and the overall sample of family firms.

In Table 1, Panel B, we tabulate the distribution of the number of heirs who receive the shares during the transfer together with the number of children in those families. We see that while the families in the transfer cases with two heirs have on average 2.64 children, the number of children in the families of the transfer cases in which one descendant receives the shares is in fact slightly larger – 2.81. Such non-monotonic relationship suggests that

[19] In the most restrictive subsample of 6,069 cases for which we provide robustness analysis in Section 6, all 100% shares were owned by the founder before the transition and all 100% were bequethed by the children.

[20] Norway's inheritance law states that the deceased's children are entitled to 2/3 of the deceased's total estate, split equally among them. The deceased can, in his will, reduce his children's inheritance to less than 2/3 of his total estate if his children get at least 1,000,000 NOK each. However, gifting before one's death is less regulated. Indeed, out of the 6,523 transition cases on which we focus, 6.4% involve the death of the founder in the year of the transfer (or 11.2% if we also consider the prior year to the death and the following year). Similarly, Hines et al. (2019) document the prevalence of inter vivos transfers of ownership in family firms in Germany, especially among the family firms with a perceived better outlook. Another feature of Norway's law that is relevant to our study is that it does not recognize the principle of a trust or a split between legal and beneficial ownership.

larger families with more possible disagreement might opt for fewer heirs. Similarly, Figure 4 shows that in the transitions involving just one heir, most of the families have in fact more than one child. That is the opposite to the transitions involving more than one heir, when in most of the cases all children receive ownership stakes.

We further look at how equal the division of shares is in those cases where multiple children receive them. Similarly to the US data that we discuss in Section 2.2, in Table 1, Panel B, we predominantly observe an equal division of shares. That is, in 79% of the cases in which two children receive the shares, we see a 50/50 split, in 64% of the cases with three heirs receiving bequests, we see each getting exactly 1/3 (and in another 7% of the cases, their bequests are in the 32%-34% range for each heir), and in 74% of the cases with four heirs, we see each getting a quarter of shares.

We also look at whether there is further redistribution of ownership between children after the transition, i.e., from the first year after the transition year until the end of our sample period. In 2,838 firms, or around 40% of within-family transitions, we observe that in the same post-transition year, for some children ownership increases and for some others ownership decreases, suggesting some redistribution of ownership after the transition.

Table 1, Panel C, compares some characteristics of children who received the shares during the transfers and those who did not (and also did not have any shares to start with). First, we see that the heirs are more likely to be male, more likely to have worked in the firm, and more likely to have sat on its board of directors or to have served as the CEO.[21] However, the heir age is rather similar to the age of non-heirs.

We also observe that heirs have a larger salary at the time of transition. Their wealth change is higher in the year after transfer, suggesting that the children without an ownership increase are not compensated proportionally in other monetary terms. However, the increase in terms of liquid assets in the year after the transfer is not statistically different, even though it is still larger for the heirs with the ownership increase, i.e. children without an ownership

[21] In 14% of the cases, we observe that the firm already has a CEO from outside the family at the time of transition. This fraction rises to 26% three years after the transition.

increase do not receive a windfall of cash or similar securities. We additionally check the differences in changes in wealth and liquid assets during the three years after the transfer rather than just in the transfer year, and we see similar patterns although the difference in the change in liquid assets becomes statistically significant.

4 Ownership dynamics

4.1 Within-family ownership dispersion

We start our empirical analysis from an observation we made in the last section that around half of children experience an increase in their ownership share in the year of transition in cases of within-family transitions. Our first step is to test Hypothesis 1, i.e., to examine whether in the cases where future conflicts are less likely, family businesses are more often inherited by multiple family members. We first provide the conditional correlations of the resulting ownership distribution with the family member characteristics at the time of ownership transition. We condition the sample on the firms being preserved within the family during the transition and the family having at least two children (of any age).

Table 2, Panel A, reports the tests where we estimate regressions with the dependent variable being the percentage of children with ownership increases in the transition year. We pick several proxies of the potential conflict between these children – dispersion in education levels, age dispersion, being born to different parents – and estimate regressions for each of the proxies separately. We control for the number of children since Bennedsen et al. (2007) and Bertrand et al. (2008) have shown that it is related to a higher probability of within-family transition. We cluster standard errors at a broad industry level.

First, we look at the dummy variable of children differing in their levels of education. We define the variable to be one if some children have university education but others do not; thus, they likely have more dispersion of opinion.[22] We find that the dummy of children

[22]Similarity in academic achievement has been shown to be an important and consistent predictor of

having different educational attainments is associated with fewer of them getting shares in the transition.

Second, we look at whether a dispersion in the ages of the children is related to how many children experience increases in their ownership stakes. Presumably, a dispersion in age is related to a higher possible dispersion in opinion and higher ex ante disagreements because children of widely different ages are likely to have spent less time bonding during their childhood years and are more likely to experience different world views and positions in life cycles. We see that the standard deviation in children ages is negatively associated with the number of children receiving shares.

Third, we look at whether children heirs are born to different parents, given that full siblings tend to be emotionally closer and have more contact than half-siblings do (Pollet, 2007; Pollet and Hoben, 2011). We find that the presence of different parents is negatively associated with the fraction of children inheriting the ownership.

These three proxies for potential conflict based on the characteristics of children – including those who do not inherit any shares – all suggest that higher disagreement is associated with fewer children inheriting the shares.[23] Arguably, each of these proxies individually might give rise to alternative explanations. However, taken together, they support our hypothesis that disagreement matters in ownership allocations.

We provide further evidence that would be inconsistent with one particular alternative explanation – differences in skills between children. Such differences might indeed be related to how the ownership is split. The past literature on family firm succession (e.g., Bennedsen et al. (2007)) has focused on the importance of heir's skills to whether the managerial succession occurs within the family, or is delegated to the professional management. Given that children talent is unobservable to us, to see whether such differences in managerial

friendship ties (Flashman, 2012).

[23]In Internet Appendix Table IA2, we report results for another proxy for the conflict potential – the average distance in home residences between the children. As geographic proximity in siblings' contact can increase emotional closeness (Connidis and Campbell, 1995), the extent of conflicts can be mitigated. We find that average proximity between children is indeed negatively correlated with the dispersion in inherited ownership shares.

skills confound our results, we focus on those cases where the children are not involved in the day-to-day business of the firm. With this approach, we can see if the conflicts between owners can arise without an active involvement of heirs in the firm's daily operations.

In Table 2, Panel B, we perform two sets of tests in which we focus on those cases in which children are likely to be involved in the firm operations only because of their ownership stakes and not because of other connections to the firm. First, in columns (1)–(3), we exclude those transitions where at least one of the heirs is a salaried employee in the firm, acts as its CEO, or sits on its board of directors. Second, in columns (4)–(6), we focus only on the firms that already have professional CEOs at the time of transition. That is, we exclude those cases in which the firm's CEO at the time of transition is the founder, one of the children, or an extended family member. In both sets of tests, we see that the same relationships between diversity in heirs' characteristics and the percentage of them receiving the bequest continue to hold, suggesting that ownership dispersion matters even when heirs are not involved in the daily decision making.

4.2 Internal and external transitions

We further investigate Hypothesis 2 which states that in cases where future conflicts are less likely, the ownership remains longer in the family's hands. With severe potential conflicts, the possibility that the business will be sold off outside of the family is less unappealing. Also, if potential conflicts are evident in the future, the transfer outside of the family will occur faster because the founder might internalize that the possibility of transition within the family might turn out to be too costly.[24]

Here we look at how proxies for conflicts correlate with whether at least one family member received ownership shares, i.e., whether the transition was within-family. In addition, we look at how these family characteristics correlate with the age of the firm at the time of

[24]Similarly, Bertrand and Schoar (2006) find that family businesses are more prevalent in the cultures with stronger family ties. In light of our framework, one could interpret that cultures with stronger family ties are more likely either to have less frequent conflicts in the family firms, or to have established norms for how to resolve such conflicts, i.e., they should be associated with a higher α.

transition if the transition is outside of the family.

We perform the same set of analyses as in Section 4.1 but with the dependent variables being a dummy of within-family transitions (Table 3, Panel A) and of the age of the firm at the time of transfer to outsiders (Table 3, Panel B). In the case of the dummy of whether the transition is within-family, we find that differing education, age dispersion, and different parents are all negatively associated with the firm staying in the family, a finding which is consistent with our hypothesis. Looking at the age of the firm in cases in which it is transferred externally, we also find that differing education, age dispersion, and different parents are all negatively associated with how long the firm stays in the family, a finding which is again consistent with our hypothesis. Moreover, as shown in Internet Appendix Table IA2, the firms are also less likely to remain in the family's ownership if children live in more geographically dispersed locations.

We further perform the same robustness tests as in Section 4.1 where we controlled for the differences in children's skills by focusing the sample of cases when children are not affiliated with the firm. Table 3, Panels C and D replicate Panels A and B, but exclude the cases where at least one of the children works for the firm in any capacity or serves on the board of directors. We see that even when the more passive owners are considered, their potential disagreement is related to how long the firm stays in the family's hands.

4.3 Private benefits

The effect of heir disagreement on ownership allocation is likely to be heterogenous. In particular, based on our conceptual framework, the range of disagreement values for which divided bequest is optimal depends on the size of private benefits. When the private benefits are relatively low, the deadlock effect (i.e., firm efficiency) dominates and the bequest is divided only when the ex ante agreement is high. On the other hand, when the private benefits are larger, the concern for all heirs getting private benefits (i.e., parental love) dominates and the divided bequest is optimal under a wider range of disagreement values.

This implies that the size of disagreement is relatively more important in influencing the choice of divided bequest in the cases of firms with lower private benefits as compared to those with higher private benefits.[25]

We construct two proxies for the non-pecuniary private benefits and compare the subsamples with higher and lower values of these proxies. First, following Gompers et al. (2010), we proxy for non-pecuniary private benefits by the firm's importance in the local economy. As argued by Gompers et al. (2010), private benefits of control are larger when insiders have the opportunity to be the major employer in their region, i.e., when the firm is the "only game in town." We consider a firm's ranking according to its asset size within the commune (municipality) where it is headquartered. During our sample time period, Norway had 444 distinct communes with an average of around 12 thousand residents per commune.[26] We take the ranking quintile in terms of firm's assets in the commune in order to adjust for the size of the commune. We exclude urban locations such as Oslo municipality[27] and we consider firms in the two largest quintiles as having high private benefits and firms in the two smallest quintiles as having low private benefits.

Second, we consider whether the owners' names are related to the firm name. Belenzon et al. (2017) has shown that firms with the entrepreneur name are associated with better operating performance but such cases are uncommon, suggesting that by giving the firms their name, entrepreneurs engage in costly signaling. We thus take the firm name and use Levenshtein distance to calculate the differences between character sequences between the founders' name and the firm name, and use the scaled similarity to the firm name. We take a cut-off similarity of 70% to sort between high and low similarity.

[25]To be more precise, the conceptual framework implies that in the cases of very low private benefits, the bequest to a single heir is optimal and the disagreement would also be irrelevant. Strictly speaking, the ex ante disagreement is the most important in the cases of the intermediate values of private benefits. In the interest of exposition, we provide comparisons between two subsamples and exclude cases with the lowest private benefits, e.g., urban locations in the "only game in town" tests.

[26]Norway had undergone multiple commune mergers during our sample period, with the number of communes being 356 in 2020.

[27]We use Norwegian administrative rankings of the localities by how populated they are ("population centrality rankings") to screen out urban localities.

In Table 4, we provide the summary of the subsample analysis based on these two proxies for private benefits: (a) eponymy in the firm's name and (b) the "only game in town" ranking of firm's importance in its geographic area. In Panel A, we show the effect where the dependent variable being the percentage of children with ownership share increases, corresponding to Table 2, while in Panel B, the dependent variable is a dummy of within-family transitions, corresponding to Table 3. Except for one specification, across all the others we see a stronger effect of disagreement in the subsamples of lower private benefits and in most of the cases such difference is statistically significant. The full coefficients are reported in Internet Appendix Table IA3.

These findings suggest that indeed when private benefits are high, they act as a substitute for disagreement in defining ownership structure. That is, in the cases when private benefits are likely to be larger, divided bequest is more probable as the founder's objective function internalizes the aggregated expected high private benefits that the heirs might capture and puts relatively less weight on the probability of the feuds that could limit cash flow benefits.

5 Divorces

We now turn to the analysis in which we focus on whether the relationship between the potential for family conflicts and the ownership concentration can be deemed to be causal. Indeed, while we have shown that ownership dispersion is related to children's characteristics, these characteristics might be influenced by the succession plan of the founder, e.g., by a decision to have more children. Moreover, the dispersion in the children's characteristics might be related to the skill differences rather to the potential for conflict.

We thus investigate how extreme crises in the founder's personal relationships, resulting in divorces or separations, affect resulting ownership dispersion. These are not only likely to alter the original succession plans, but are also directly related to the conflict potential between heirs given that divorces are associated with children having different parents. Since

adult full siblings tend to be emotionally closer and to have more contact than half-siblings do (Pollet, 2007; Pollet and Hoben, 2011), divorce is likely to lower affinity between the potential heirs. In addition, divorce is likely to have an effect on children from the same parents (Amato, 2000; Amato and Cheadle, 2005). In particular, psychology literature has argued that parental divorce has strong effects on sibling conflict and that the effects persist to later in life (Riggio, 2001; Sheehan et al., 2004; Poortman and Voorpostel, 2009).

Norway has had liberal divorce policy stretching back to 1909 (Johansen, 2018) and so parties in our sample period were unlikely to face legal constraints in dissolving their marriages. We first estimate the direct relationship between the founder's past divorce and the ownership dispersion. In Table 5, Panel A, we show that a founder's past divorce is related to fewer heirs receiving the bequest (column (1)); higher likelihood that the family sells off its ownership to outsiders (column (2)); and a faster external transition in case such an external transition happens (column (3)). Assuming that parental divorces are related to future disagreements between heirs, these findings confirm our results in the previous section, i.e., that potential conflicts shape ownership distribution around the family firm transition.

Still these estimates could face an empirical challenge that the founder's marital relationships, including the possibility of divorce, might be affected by the firm's performance and thus might not be independent of firm outcomes and of ownership distribution. Also, unobserved external factors, such as anticipated economic conditions, could affect both firm performance and the founder's relationship status.

We thus continue with the instrumental variables specification and rely on the extensive family relationship data. We instrument the founder's divorce by whether the founder's first cousins have experienced a divorce or a separation in the past. We argue that a history of divorce in the family makes it more acceptable socially and increases its cultural familiarity.[28]

We particularly focus on founders' first cousins because they are likely to have been in a similar age group. First cousins are thus among the extended family members who might

[28]In a similar vein, social science research has shown that parental divorces are associated with more frequent divorces of children (e.g., Wilfinger (2003); Amato and DeBoer (2001)).

have had most influence in changing the founder's perspective on the social norms of divorce. At the same time, they are further removed from the direct nuclear family of the founder and thus their own divorces are unlikely to be affected by the focal firm performance, nor are they likely to have a direct effect on the firm's operations by distracting the founder. Also, direct lineage divorces and separations might change heirs' personalities, which could affect firm performance. For instance, founders' parents' divorces might be associated with a greater likelihood for founders' divorces but might also change founders' risk-taking behavior. We make sure that these first cousins on whom we rely to create our instruments are not directly involved in the firm either as board members, owners, or salaried employees. After omitting these relatives who are involved in the firm, we believe that the remaining first cousins who we study affect the founder only through the family relationships and thus the exclusion restriction can be supported.

We report the instrumental variable results in Table 5, Panel B. We again condition on within-family transitions and founders having at least two children or two stepchildren. In column (1), we report the first stage (of the regression reported in column (2)), where the instrumented variable is a dummy variable of whether the founder has had divorces or separated before the firm transfer and the instrument is a dummy variable of the presence of prior divorces by first cousins. We see that the instrument is strong with the F statistic of the excluded instrument being 154.9.

In column (2), we report the estimation, where we explain the percentage of heirs receiving the bequest with the instrumented founder divorce. We find the coefficient to be significantly negative. In column (3), we see that within-family transfers are also less likely after the founder's divorce and in column (4), we see that when the firms are transferred to outsiders, these firms are likely to be younger if the founder has experienced a past divorce or separation. In all these specifications, we control for the number of children, that is, the effect does not seem to come from the divorces being correlated with fewer children in general and thus fewer potential heirs.

In Panel C, we repeat the same analysis but instead of using a number of first-cousin divorces as an instrument, we use a dummy of divorces by first cousins, and we find consistent results, except for the percentage of heirs receiving a bequest.

We also notice that one additional exogenous variation in the founder's divorce could come from the gender of his offspring. Based on Dutch registry and US survey data, Kabátek and Ribar (2021) have documented that couples with daughters face higher risks of divorce. We thus add the number of daughters that the founder has as the second instrument for the founder's divorce, together with the number of first-cousin divorces.[29] The F statistic of excluded instruments the first stage of the specification is still high at 94.5. As reported in Panel D, across all three specifications, we again find a consistently negative relationship between the ownership dispersion and founder divorces.

One remaining potential concern could be that the cultural norms systematically differ both in terms of divorce acceptance and of also inheritance outcomes. For instance, they could differ geographically between metropolitan areas and smaller towns. In Internet Appendix Table IA4, we control for commune (municipality) and industry fixed effects and all our estimates are consistent in terms of both economic and statistical significance.

Taken together, these results imply that potential heir conflicts shape ownership distributions in the family firms but also define how long the firms remain in the family's hands.

6 Real outcomes: Investment and growth

We further look at whether the succession decisions that we study are related to firms' real outcomes, and in particular to their investment and growth. Firms that are likely to experience disagreements about their strategies might have lower investment as the disagreements prolong the decision process and delay the choice of action. Lower investment might later result in lower firm expansion and growth.

Such disagreements and thus a predisposition to lower investment are more likely in the

[29] We get consistent results if we use only a single instrument of the number of daughters for identification.

firms with a divided bequest rather than single bequest where the heir can take a unilateral action. We now test this hypothesis.

6.1 Investment

We first start with the firm investment. We define investment as the change in the book value of fixed assets, after accounting for depreciation, accumulated during the three years after the share transfer and scaled by the fixed assets at the time of the transfer. We limit this ratio to be between 0 and 1. We condition the sample on the firms having multiple children. As before, we cluster standard errors by industry.

We report results in Table 6. In Panel A, we provide baseline specifications, where we link investment to how divided the bequest is between the children during the ownership transfer. In column (1), we provide the specification, where we link investment to the number of children who inherit the shares. In column (2), we look at the fraction of children who inherit the firm's shares, out of all children in the family. We can draw an overall conclusion that the number of children who inherit the shares (and how concentrated their ownership is) is negatively associated with the investment in the three years after the ownership transfer.[30]

In columns (3)–(4), we control for children's characteristics that might be linked to the firm's investment. In particular, we additionally control for the number of adult children, the average age of inheriting children, the fraction of male inheritors, and the fraction of inheritors with university education. Adding these controls does not affect the relationship between ownership dispersion and the investment. Among these controls, we see that the percentage of male heirs, a non-university education background, and the younger inheritors are associated with larger investment, which can possibly be explained by greater risk taking.

Note that these investment decisions are already taken when the firm is controlled by the heirs. One could still argue that firms might differ in their general investment policies and

[30] Bennedsen and Wolfenzon (2000) propose that under certain conditions, control via coalitions of multiple owners might be even more efficient than single-owner control. Our data does not seem to suggest that the benefits of such coalitions to internalize the costs of private benefits outweigh the downsides of divided ownership, such as the predisposition to conflicts.

that such policy differences might be correlated with the dispersion in heirs' characteristics and thus with the ownership structures. For instance, founders with the more short-termist attitudes might divorce more often and invest less, while such low investment could persist even after the transition. In columns (3)–(4), we thus control for pre-transition investment, estimated in the same way as the dependent variable was in the year before the transition. While there is indeed strong auto-correlation, that does not affect our estimates of interest.

6.2 Sales growth and discontinued operations

We further look at two other sets of real outcomes. Similarly to the investment, ex post deadlocks might reduce firm expansion and growth and in the extreme cases might even result in the dissolution of the firm operations or takeovers by other firms.

First, we study sales growth in the three years after the transition. In Table 7, Panel A, we report the estimations, where the dependent variable is the cumulative sales growth during the three years after the transition. As with the investment, we report the associations between sales growth and two ownership dispersion variables: the number of children who inherit the shares and the fraction of children who inherit the firm's shares, out of all children in the family. In both cases, with and without controls, we see that the more dispersed within-family ownership is associated with lower sales growth after the ownership transition.

Second, we consider whether the firm discontinues its operations as a stand-alone entity, either because it is taken over or because it is dissolved. In Table 7, Panel B, we study whether the same two ownership dispersion variables are related to whether the firm is not reporting sales, assets, and employees at the end of the sample period. We find that both the number of children who inherit the shares and the fraction of children who inherit the firm's shares, out of all children in the family, are related to a higher probability that the firm discontinues operations as a stand-alone entity.

We perform a few robustness tests for our analysis of the inherited heir dispersion on the real investment, sales growth, and discontinued operations. First, one concern could be that

more dispersed ownership reduces incentives to exert effort by the children who are involved in the firm operations. We thus limit our sample to the cases where none of the children are employed in the firm at the time or transition. As reported in Internet Appendix Table IA5, we find that the dispersed heir transition is associated with lower investment and the sales growth even if children are not associated with the firm, suggesting that the incentive effect is unlikely to be a full explanation of how family conflicts shape firm growth. However, we do not see a statistically significant difference for the discontinued operations.

Second, to abstract from the cases where the family had already started the transition in the past or had owners outside of the nuclear family, we perform an additional robustness test where we condition the sample on the cases in which founder had full ownership in the firm before the transition and all the shares were divided by the children. As reported in Internet Appendix Table IA6, even in these cases of more pure transitions, we find similar trends of divided bequest associated with lower investment and growth as in our larger sample.

All in all, a divided bequest seems to be related to lower firm investment, slower sales growth, and more discontinued operations, and these findings suggest that within-family dynamics might be an important component of how family firms expand and grow.

7 Conclusions and discussion

This paper links family structures to ownership transitions in family firms. We use the population of Norwegian limited liability firms during 2000–2019 and the complete owner family relationships to examine the transition of ownership to the next generation, in particular, whether the bequest is passed to a single person or distributed among multiple heirs. We find that ex ante anticipations for conflicts are significant enough that they are taken into account in firm ownership structures.

We document that the divided bequest is more likely when the potential disagreement is lower. The occurrence of multiple heirs correlates negatively with children having different

educational attainments, larger dispersion in age, and different parents. For example, if children have different educational attainments, the probability of the within-family transition decreases by 8% and the firm is transitioned to outside ownership 0.9 years quicker. Meanwhile, having different parents is related to a 16% lower probability of within-family transition and to a two-year faster external transition. Importantly, these ex ante ownership allocations have real consequences on firm operations. We find that a divided bequest is associated with lower firm investment in the future, lower firm growth, and a higher chance of the firm disappearing from our sample.

Our identification strategy relies on the observation that the intensity of within-family heir conflicts is exacerbated by founder divorces. Since founder divorces might be related to firm performance, we instrument them by past divorces of extended family members not affiliated with the firm, such as the divorces of first cousins. We find that founder divorces shape heir ownership distribution and contribute to firm survival.

We motivate empirical work by providing a stylized conceptual framework of ownership distribution in the family firms. We argue that family members realize non-pecuniary private benefits from the firm's activities but they disagree about which actions of the firm provide these private benefits. The founder faces a dilemma about how to divide the ownership between his heirs. Bequeathing the voting shares to all heirs maximizes their valuation of private benefits because such a structure increases their chances of being a part of the winning coalition that chooses the course of the firm. However, if no winning coalition is formed, no course of action is taken and the firm experiences the cost of deadlock. At the other extreme, concentrating the voting shares in the hands of one heir eliminates the chance of deadlock but reduces the valuation of expected private benefits by the other heirs. Thus, when there is a large potential disagreement about the private benefits, the control of the firm is concentrated with one heir. If the probability of disagreement is low, a divided bequest is optimal.

These findings, showing that heir conflict potential affects ownership distributions and

how long the firm survives in the family's hands, but also perhaps more importantly that the divided bequest hampers firm investment and growth, raise cautionary policy notes. Given demographic statistics in the US and around the world,[31] it is expected that family firms will be facing significant leadership and wealth transfer challenges, and these challenges might result in the macroeconomic implications. As family firms often deliver positive externalities, there might be strong interest in developing optimal organization forms that would ensure smooth wealth transfer by minimizing conflicts.

Further work could extend the analysis to take into account multiple generations and "pruning the family tree" as the potential solution to the conflicts. In the multiple-generation setting, every generation would make the same choice of bequest as in our current setting. However, the decisions in the later generations differ from the founder's decision in the first generation. Decision makers in the later generations care only about how their own heirs value the firm and not how the heirs of other branches of the family value it (i.e., they care about their own children but not about their nephews and nieces). Also, it is likely that the agreement within the branch of the family is higher than the agreement across branches, i.e., there is higher agreement between siblings than between cousins (Becker (1981)).

We expect that the probability of a concentrated bequest is higher in the second generation because concentrated bequest creates the highest bargaining power with respect to other branches of the family. On the other hand, the set of correlations at which a concentrated bequest is made in the first generation is reduced. The founder has to take into account the unobservable correlations between his grandchildren and the fact that a single inheritor would not care for his nephews and nieces. With more generations taken into account, a single bequest becomes less common in the first generation, although it is more common with every subsequent generation than with the first generation. Thus, the number of family owners does not necessarily expand infinitely, i.e., the family tree gets effectively pruned.

[31]For instance, according to The Financial Times (2018), a whole generation of postwar German entrepreneurs were preparing for retirement and by 2022 more than one in five (840,000) owners of small and medium-size enterprises in Germany were expected to experience a change in ownership.

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Table 1: Descriptive Statistics

This table shows descriptive statistics for firms in our sample. We start with the population of 117,072 economically active limited liability firms between 2000 and 2019. We consider only firms that have a family as the largest owner. We require the largest owner ("the founder") to have at least 50% of the family stake in the first year in our sample. We consider only firms where the founder is older than 40 years at the start of the sample and has over 50% stake. We record the firms in the year after the transition where the transition is defined as the year when the accumulated decrease in the founder ownership share passes the threshold of 10%. Panel A provides a number of summary statistics for sample firms in the year of transition. Panel B looks at the within-family transitions in families with multiple children and provides the summary statistics by the number of heirs. Only the cases of one to five heirs are considered. Panel C compares characteristics between heirs who receive ownership during the transition and those who do not.

Panel A: Summary statistics at the transfer	
Family characteristics	Mean
Number of children	2.59
Number of children over 18	2.00
Number of male children	1.40
Number of female children	1.19
Age of adult children	33.27
Maximum age difference between children	6.23
Percentage of families with twins	2.78
Percentage of grown-up children with a university education	40.04
Average geographic proximity between children residences in km	1.83
Founder characteristics	
Founder age	57.52
Percentage of founders who are CEO	52.85
Percentage of founders who are Chairman	62.14
Percentage of founders who are salaried	75.68
Firm and ownership characteristics	
Firm age	15.98
Family's share at the start of the sample	90.84
Family's share at the end of the sample	79.98
Founder's share at the start of the sample	72.55
Founder's share at the end of the sample	24.92
Number of children with shares at the start of the sample	0.34
Number of children with shares at the end of the sample	0.73
Within-family transitions, multiple children, shares mostly to children	
Percentage of shares the founder transfers to the family members	45.24
Percentage of children with shares increase	60.82
Percentage of firms with children with share before transfer but no increase	4.67

Panel B: Number of heirs in families with multiple children			
Number of heirs	Mean number of children	Percentage of observations	Percentage of equal split
1	2.81	54.08	-
2	2.64	32.16	79
3	3.36	10.83	71
4	4.35	2.38	74
5	5.28	0.44	75

Panel C: Comparison of heirs with an ownership increase and no increase at a time of transition				
	Increase	No increase	Difference	Obs.
Number of children	1.08	0.51	0.58***	6,523
Number of males	1.08	0.51	0.58***	6,523
Number of children with a university education	0.63	0.38	0.24***	6,523
Number of children on the board or CEO	0.96	0.10	0.86***	6,523
Number of children working in the firm	0.45	0.10	0.35***	6,523
Age over 18	37.28	37.10	0.18	4,539
Salary	406,394	334,936	71,459***	3,047
Wealth change after transition	1,057,838	343,000	714,838***	4,327
Liquid asset change after transition	119,044	40,924	78,120	4,327

Table 2: Dispersion of ownership shares

This table provides the correlation between the ownership concentration and a number of proxies of the potential for family conflict. The data is based on the Norwegian private family firms matched to the family relationships and focuses on the within-family bequests during 2000–2019. In Panel A, we correlate the the percentage of heirs who receive the bequest (the left-hand-side variable) with the characteristics of the family of the founder. In column (1), we relate the dependent variable to a dummy if any of the children have different levels of education (Different education). In column (2), we relate it to the standard deviation in children's age (Age dispersion). In column (3), we relate it to the dummy if any of the children are born to different parents (Different parents). In Panel B, we focus on the transitions that are likely to focus on ownership rather than control. In columns (1)–(3), we exclude the transitions that have the heirs who are affiliated with the firm either as employees or board members. In columns (4)–(6), we consider only the firms that have non-family-related CEOs at the time of transition. We control for number of children. We report the coefficients and the robust standard errors, clustered at the industry level, in the brackets. ***, **, and * refer to the statistical significance at 1%, 5%, and 10%, respectively.

Panel A: All transitions with multiple heirs			
	(1)	(2)	(3)
Different education	-0.014**		
	(0.005)		
Age dispersion		-0.016***	
		(0.002)	
Different parents			-0.153***
			(0.010)
Number of children (18+)	-0.088***	-0.078***	-0.085***
	(0.005)	(0.005)	(0.005)
Constant	0.859***	0.883***	0.855***
	(0.013)	(0.013)	(0.012)
R^2	0.098	0.115	0.116
N	6629	6629	6629

Panel B:	Heirs not affiliated with the firm			Firms with outside CEOs		
	(1)	(2)	(3)	(4)	(5)	(6)
Different education	-0.037**			-0.013*		
	(0.014)			(0.007)		
Age dispersion		-0.030***			-0.013**	
		(0.004)			(0.005)	
Different parents			-0.172***			-0.177***
			(0.021)			(0.029)
Number of children (18+)	-0.058***	-0.038***	-0.054***	-0.089***	-0.081***	-0.086***
	(0.010)	(0.012)	(0.011)	(0.009)	(0.009)	(0.008)
Constant	0.838***	0.880***	0.823***	0.936***	0.960***	0.933***
	(0.025)	(0.020)	(0.023)	(0.030)	(0.033)	(0.028)
R^2	0.039	0.086	0.060	0.089	0.109	0.109
N	1365	1365	1365	1014	1014	1014

Table 3: Within-family transition

This table provides the correlations between a number of proxies of the potential for family conflict and external vs internal transitions. The data is based on the Norwegian private family firms matched to the family relationships and focuses on the ownership transfers during 2000–2019. In Panel A, we correlate the dummy, equal to one if the ownership is transferred within the family and zero if the ownership is transferred outside of the family (the left-hand-side variable), with the characteristics of the family of the founder. In Panel B, we correlate the firm age at the time of its transition to outside ownership (the left-hand-side variable) with the same characteristics of the family of the founder. In Panels C and D, we repeat the estimations in Panels A and B but we exclude the transitions that have heirs who are affiliated with the firm either as employees or as board members. Across all panels, in column (1), we relate the dependent variable to a dummy if any of the children have different levels of education (Different education). In column (2), we relate the dependent variable to the standard deviation in children's age (Age dispersion). In column (3), we relate it to the dummy if any of the children are born to different parents (Different parents). We control for number of children. We report the coefficients and the robust standard errors, clustered at the industry level, in the brackets. ***, **, and * refer to the statistical significance at 1%, 5%, and 10%, respectively.

Panel A: Within-family transition			
	(1)	(2)	(3)
Different education	-0.128***		
	(0.010)		
Age dispersion		-0.018***	
		(0.003)	
Different parents			-0.208***
			(0.010)
Number of children (18+)	0.150***	0.173***	0.164***
	(0.004)	(0.004)	(0.004)
Constant	0.230***	0.171***	0.150***
	(0.020)	(0.020)	(0.021)
R^2	0.208	0.197	0.208
N	15623	13997	15623

Panel B: Firm age at outside transition			
	(1)	(2)	(3)
Different education	-1.552***		
	(0.345)		
Age dispersion		-0.318***	
		(0.084)	
Different parents			-1.844***
			(0.552)
Number of children (18+)	1.387***	1.762***	1.677***
	(0.107)	(0.123)	(0.115)
Constant	12.900***	12.390***	11.671***
	(0.908)	(0.868)	(0.680)
R^2	0.042	0.043	0.041
N	8452	7330	8452

Panel C: Within-family transition: Unaffiliated heirs			
	(1)	(2)	(3)
Different education	-0.050***		
	(0.008)		
Age dispersion		-0.014***	
		(0.001)	
Different parents			-0.118***
			(0.009)
Number of children (18+)	0.096***	0.108***	0.106***
	(0.010)	(0.010)	(0.009)
Constant	0.086***	0.084***	0.051***
	(0.013)	(0.011)	(0.010)
R^2	0.125	0.122	0.131
N	7965	6883	7965

Panel D: Firm age at outside transition: Unaffiliated heirs			
	(1)	(2)	(3)
Different education	-1.807***		
	(0.346)		
Age dispersion		-0.260***	
		(0.089)	
Different parents			-1.496**
			(0.607)
Number of children (18+)	1.214***	1.638***	1.579***
	(0.122)	(0.155)	(0.148)
Constant	12.961***	11.992***	11.411***
	(0.869)	(0.891)	(0.655)
R^2	0.039	0.039	0.037
N	6460	5484	6460

Table 4: Private benefits

This table provides heterogeneity analysis to Table 2 and Table 3 based on the proxies of private benefits. The data is based on the Norwegian private family firms matched to the family relationships and focuses on the within-family bequests during 2000–2019. We condition the sample on the families having multiple children. In Panels A-B, the dependent variable is the percentage of heirs who receive the bequest. In Panel C-D, the dependent variable is the dummy, equal to one if the ownership is transferred within the family and zero if the ownership is transferred outside of the family. We correlate these dependent variables with the characteristics of the family of the founder in the subsamples with large and small private benefits. In Panels A and C, the proxy of private benefits is the firm's size rank in its locality ("Only game in town"). In Panels B and D, the proxy of private benefits is whether family name appears in the firm's name. In columns (1)-(2), we relate the dependent variable to a dummy if any of the children have different levels of education (Different education). In columns (3)-(4), we relate it to the standard deviation in children's age (Age dispersion). In column (5)-(6), we relate it to the dummy if any of the children are born to different parents (Different parents). We focus on the differences in coefficients in these sample splits and report Chi-statistic on the differences in the last row of each panel. We report the coefficients and the robust standard errors, clustered at the industry level, in the brackets. Full set of coefficients are reported in Internet Appendix Table IA3. ***, **, and * refer to the statistical significance at 1%, 5%, and 10%, respectively.

Panel A: Percentage of heirs with bequest						
	Private benefits: "Only game in town"					
	High	Low	High	Low	High	Low
	(1)	(2)	(3)	(4)	(5)	(6)
Different education	0.010	-0.016**				
	(0.014)	(0.007)				
Age dispersion			-0.010**	-0.020***		
			(0.004)	(0.002)		
Different parents					-0.119***	-0.172***
					(0.021)	(0.011)
N	1041	2886	1041	2886	1041	2886
High-Low	0.026**		0.010**		0.053**	
χ^2	4.62		4.02		5.91	

Panel B: Percentage of heirs with bequest						
	Private benefits: Eponymy					
	High	Low	High	Low	High	Low
	(1)	(2)	(3)	(4)	(5)	(6)
Different education	0.035*	-0.017**				
	(0.020)	(0.008)				
Age dispersion			-0.006**	-0.018***		
			(0.003)	(0.001)		
Different parents					-0.135**	-0.154***
					(0.040)	(0.010)
N	554	4347	554	4347	554	4347
High-Low	0.052**		0.012***		0.019	
χ^2	4.99		16.05		0.19	

Panel C: Within-family transition						
	Private benefits: "Only game in town"					
	High	Low	High	Low	High	Low
	(1)	(2)	(3)	(4)	(5)	(6)
Different education	-0.107***	-0.114***				
	(0.015)	(0.018)				
Age dispersion			-0.007	-0.022***		
			(0.006)	(0.003)		
Different parents					-0.171***	-0.233***
					(0.021)	(0.019)
N	2997	5722	2637	5284	2997	5722
High-Low	0.007		0.014**		0.062*	
χ^2	0.06		5.35		3.01	

Panel D: Within-family transition						
	Private benefits: Eponymy					
	High	Low	High	Low	High	Low
	(1)	(2)	(3)	(4)	(5)	(6)
Different education	-0.174***	-0.116***				
	(0.041)	(0.012)				
Age dispersion			-0.005	-0.021***		
			(0.007)	(0.003)		
Different parents					-0.157**	-0.215***
					(0.056)	(0.011)
N	999	10120	905	9182	999	10120
High-Low	-0.057		0.016**		0.059	
χ^2	2.63		4.62		1.14	

Table 5: Divorces

This table provides the instrumental variables specification for the ownership transition outcomes. The data is based on the Norwegian private family firms matched to the family relationships and focuses on the ownership transfers during 2000–2019. In Panel A, we present non-instrumented specifications of linking the dummy of founder divorce to transition outcomes. In column (1), the dependent variable is the percentage of heirs who receive the bequest; in column (2), the dependent variable is the dummy, equal to one if the ownership is transferred within family and zero if the ownership is transferred outside of family; in column (3), the dependent variable is the firm age at the time of its transition to outside ownership. In Panel B, we instrument the founder's divorce with the number of divorces by the founder's first cousins. In Panel C, we instrument the founder's divorce with the dummy if there was any divorce among the founder's first cousins. In Panel D, we instrument the founder's divorce with two instruments: the number of divorces by the founder's first cousins and the number of daughters that the founder has. In Panels B–D, column (1) reports the first stage. Column (2) reports the second stage, where the dependent variable is the percentage of heirs who receive the bequest. Column (3) reports the second stage where the dependent variable is the dummy, equal to one if the ownership is transferred within the family and zero if the ownership is transferred outside of family. Column (4) reports the second stage, where the dependent variable is the firm age at the time of its transition to outside ownership. We report the coefficients and the robust standard errors, clustered at the industry level, in the brackets. ***, **, and * refer to the statistical significance at 1%, 5%, and 10%, respectively.

Panel A: A dummy of founder divorce			
	(1)	(2)	(3)
	% heirs with bequest	Within family transfer	Age at outside transfer
Founder divorce	-0.042***	-0.091***	-2.036***
	(0.007)	(0.014)	(0.265)
Number of children (18+)	-0.089***	0.161***	1.641***
	(0.005)	(0.004)	(0.105)
Constant	0.867***	0.166***	12.244***
	(0.013)	(0.019)	(0.722)
R^2	0.102	0.200	0.046
N	6629	15623	8452

Panel B: Instrument: Number of divorces by first cousins				
	(1)	(2)	(3)	(4)
	First stage	% heirs with bequest	Within family transfer	Age at outside transfer
First-cousin divorce (number)	0.032***			
	(0.003)			
Founder divorce		-0.252***	-0.833***	-16.129***
		(0.068)	(0.111)	(3.114)
Number of children (18+)	0.009*	-0.087***	0.152***	1.714***
	(0.005)	(0.005)	(0.004)	(0.119)
Constant	0.241***	0.919***	0.424***	17.306***
	(0.018)	(0.025)	(0.051)	(1.609)
R^2		-0.009	-0.285	-0.330
N	6629	6629	15623	8452

Panel C: Instrument: Dummy of divorces by first cousins				
	(1)	(2)	(3)	(4)
	First stage	% heirs with bequest	Within family transfer	Age at outside transfer
First-cousin divorce (dummy)	0.329***			
	(0.038)			
Founder divorce		-0.243***	-1.071***	-18.740***
		(0.072)	(0.130)	(3.626)
Number of children (18+)	0.009**	-0.087***	0.149***	1.727***
	(0.005)	(0.005)	(0.004)	(0.130)
Constant	0.237***	0.917***	0.507***	18.244***
	(0.017)	(0.026)	(0.057)	(1.789)
R^2		-0.000	-0.646	-0.483
N	6629	6629	15623	8452

Panel D: Instruments: Number of divorces by first cousins and number of daughters				
	(1)	(2)	(3)	(4)
	First stage	% heirs with bequest	Within family transfer	Age at outside transfer
First cousin divorce (number)	0.031***			
	(0.003)			
Number of daughters	0.014*			
	(0.007)			
Founder divorce		-0.317***	-1.268***	-16.990***
		(0.063)	(0.140)	(3.485)
Number of children (18+)	0.002	-0.087***	0.147***	1.718***
	(0.003)	(0.005)	(0.004)	(0.122)
Constant	0.242***	0.935***	0.576***	17.616***
	(0.018)	(0.025)	(0.058)	(1.740)
R^2		-0.090	-1.021	-0.378
N	6629	6629	15623	8452

Table 6: Investment

This table reports regression specifications, where the dependent variable is investment, defined as the change in the book value of fixed assets after accounting for depreciation, accumulated during the three years after the share transfer and scaled by the fixed assets at the time of the transfer, and capped between 0 and 1. The data is based on the Norwegian private family firms matched to the family relationships and focuses on the within-family bequests during 2000–2019. We condition the sample on the families having multiple children. In column (1), the explanatory variable is the number of children who inherit the firm's shares during the ownership transfer (Number of heirs). In column 2), the explanatory variable is the fraction of children who inherit the firm's shares, out of all children in the family (% Percentage of inheriting children). In columns (3)–(4), we provide the corresponding specifications to columns (1)–(2) but we control for family characteristics: number of adult children, the age of inheritors, the fraction of male heirs, the fraction of heirs with a university education, and investment in the year before the transfer. We report the coefficients and the robust standard errors, clustered at the industry level, in the brackets. ***, **, and * refer to the statistical significance at 1%, 5%, and 10%, respectively.

Investment				
	(1)	(2)	(3)	(4)
Number of heirs	-0.038**		-0.029*	
	(0.014)		(0.015)	
% Percentage of inheriting children		-0.110*		-0.082*
		(0.054)		(0.045)
Number of children (18+)			0.007	-0.007
			(0.009)	(0.009)
Age of heirs			-0.002***	-0.002***
			(0.001)	(0.001)
% Male children heirs			0.080***	0.081***
			(0.017)	(0.017)
% University education of heirs			-0.057**	-0.057**
			(0.025)	(0.025)
Pre-transition investment			0.192***	0.191***
			(0.034)	(0.033)
Constant	0.471***	0.475***	0.430***	0.470***
	(0.039)	(0.036)	(0.044)	(0.035)
R^2	0.005	0.005	0.041	0.041
N	4886	4886	4186	4186

Table 7: Sales growth and discontinued operations

This table reports regression specifications, where in Panel A the dependent variable is the cumulative sales growth during the three years after the share transfer, and capped at -100% and 200%, and in Panel B the dependent variable is a dummy if the firm is not reporting sales, assets, and employees at the end of the sample period. The data is based on the Norwegian private family firms matched to the family relationships and focuses on the within-family bequests during 2000–2019. We condition the sample on the families having multiple children. In both panels, in columns (1) and (3), the explanatory variable is the number of children who inherit the firm's shares during the ownership transfer (Number of heirs). In columns (2) and (4), the explanatory variable is the fraction of children who inherit the firm's shares, out of all children in the family (% Percentage of inheriting children). In columns (1) and (2) we provide the associations without controls, while in columns (3) and (4) we control for family characteristics: number of adult children, the age of inheritors, the fraction of male heirs, and the fraction of heirs with a university education. ***, **, and * refer to the statistical significance at 1%, 5%, and 10%, respectively.

Panel A: Sales growth				
	(1)	(2)	(3)	(4)
Number of heirs	-0.751*		-0.640*	
	(0.408)		(0.316)	
% Percentage of inheriting children		-1.221**		-1.959
		(0.558)		(1.138)
Number of children (18+)			-0.318	-0.632
			(0.468)	(0.601)
Age of heirs			-0.013	-0.012
			(0.052)	(0.053)
% Male children heirs			1.981*	1.965*
			(1.122)	(1.098)
% University education of heirs			2.998	3.004
			(1.900)	(1.904)
Constant	3.065***	2.592***	1.860	2.839**
	(0.906)	(0.602)	(1.201)	(1.278)
R^2	0.000	0.000	0.001	0.001
N	4689	4689	4664	4664

Panel B: Discontinued operations				
	(1)	(2)	(3)	(4)
Number of heirs	0.003**		0.003*	
	(0.001)		(0.001)	
% Percentage of inheriting children		0.010**		0.010**
		(0.005)		(0.004)
Number of children (18+)			0.001	0.002
			(0.001)	(0.001)
Age of heirs			-0.000***	-0.000***
			(0.000)	(0.000)
% Male children heirs			-0.003	-0.002
			(0.002)	(0.002)
% University education of heirs			0.004	0.004
			(0.002)	(0.002)
Constant	0.007***	0.006*	0.019***	0.013**
	(0.002)	(0.003)	(0.005)	(0.005)
R^2	0.001	0.001	0.002	0.002
N	6667	6667	6629	6629

Figure 1: Transfer firms over time and average breakdown of heirs

This figure shows the time trend for transfer firms in our sample. We start with the population of 117,072 economically active limited liability firms between 2000 and 2019. We consider only firms that have a family as the largest owner. We require the largest owner ("the founder") to have at least 50% of the family stake in the first year in our sample. We consider only firms where the founder is older than 40 years at the start of the sample and has over 50% stake. We record the firms in the year after the transition where the transition is defined as the year when the accumulated decrease in the founder ownership share passes the threshold of 10%. We end up with 15,623 such "transfer firms". We plot the number of such transfers each year together with the average number of heirs.

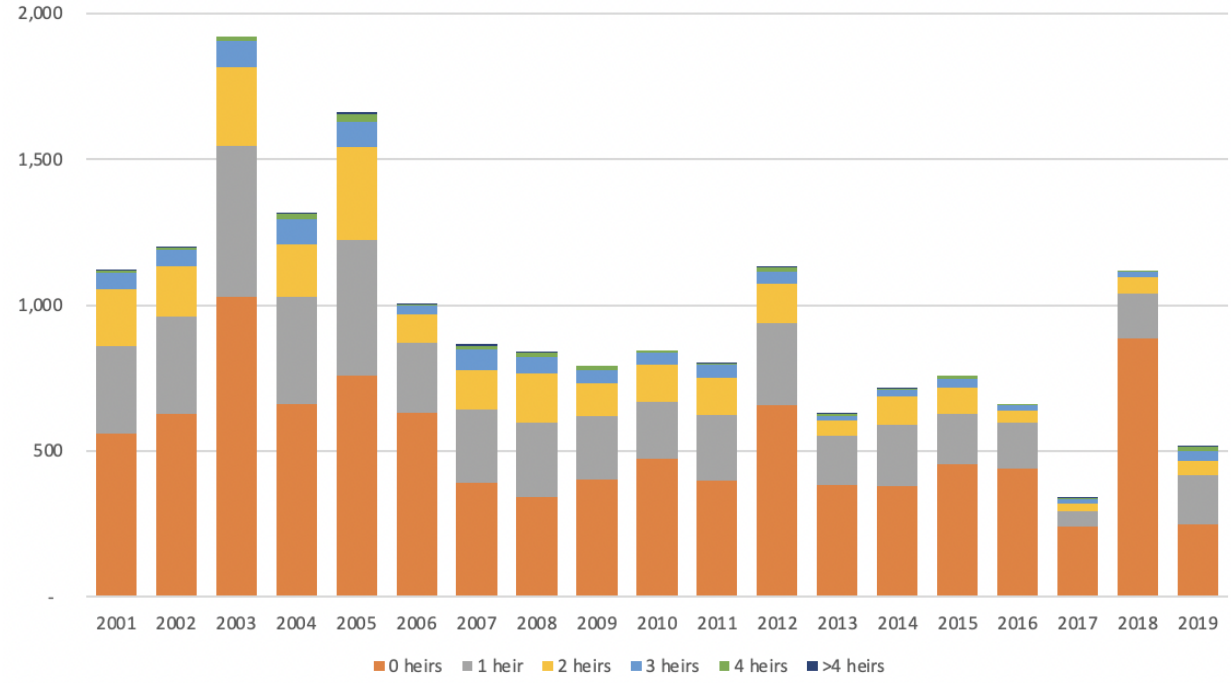
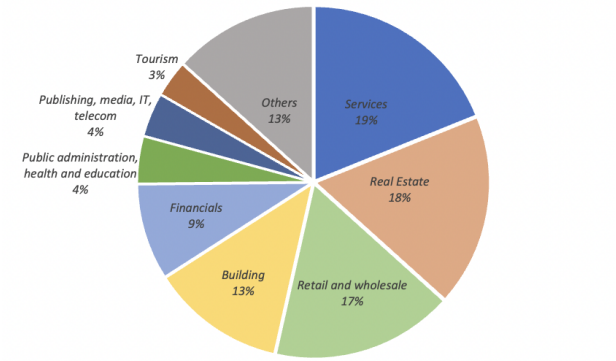
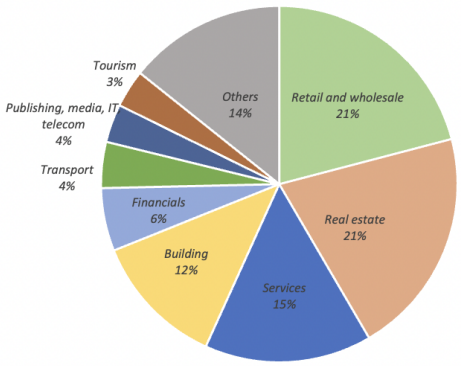


Figure 2: Industry breakdown

This figure separately shows the industry breakdown for all family firms in our sample (left figure) and the transfer firms (right figure).



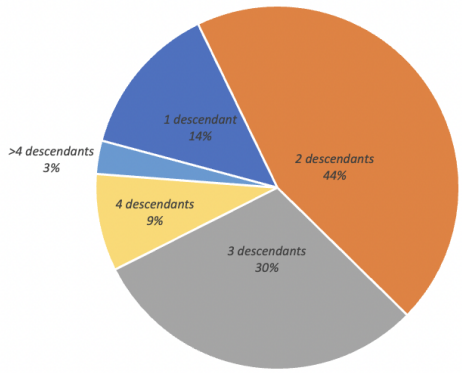
(A) All firms



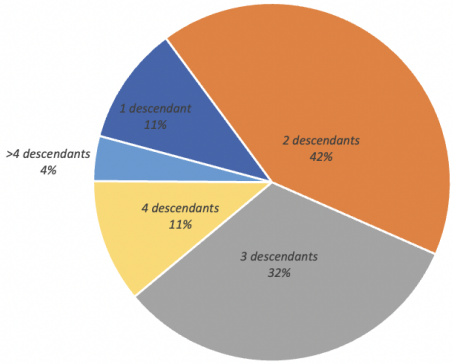
(B) Transfer firms

Figure 3: Descendant breakdown

This figure separately shows the descendant breakdown for all family firms in our sample (left figure) and the transfer firms (right figure).



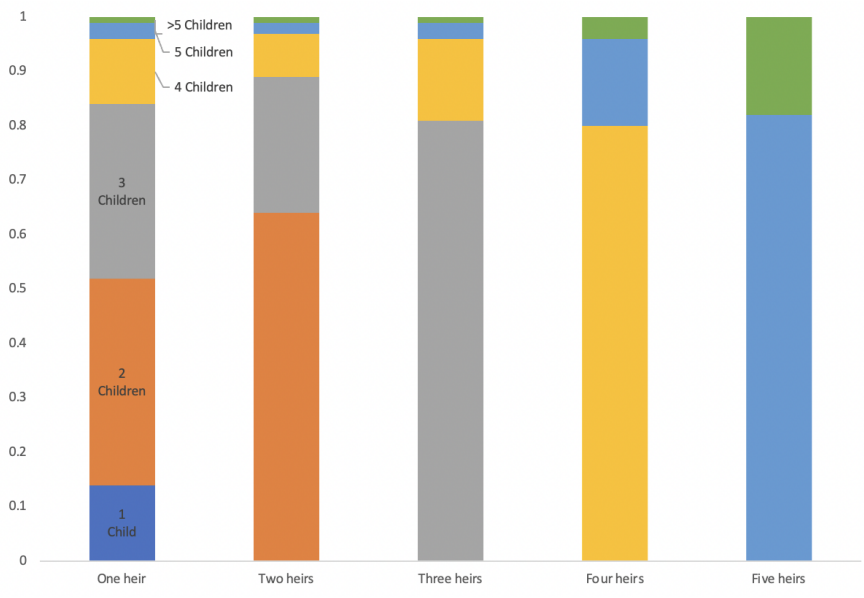
(A) All firms



(B) Transfer firms

Figure 4: Breakdown of number of children by heirs in within-family transfers

This figure reports the distribution of the number of children by the number of heirs that receive shares in the within-family transitions.



Appendix 1. Proposition 1 for three heirs

Proposition 1. When $N = 3$, there exists such $\alpha^* = \frac{B+C}{2B+C}$ that for $1 > \alpha > \alpha^*$ one child holds the majority of votes and for $\alpha < \alpha^*$ all children hold votes with equal voting power. The founder is indifferent between these two options if $\alpha = \alpha^*$ or $\alpha = 1$.

Proof. First, assume that no side transfers are allowed. Consider two options for how control can be divided: (1) one heir holds the majority of votes and thus has the full control and (2) all heirs hold votes with equal voting power. Denote the value to the founder when one heir holds the majority of votes as V^s and the value to the founder when all heirs holds votes as V^d. When $N = 3$,

$$V^s = (1 + 2\alpha) B + C$$

and

$$V^d = \left(3\alpha^2 + 2\alpha (1 - \alpha) (3 - \alpha)\right) B + \left(1 - (1 - \alpha)^3\right) C$$

The founder is indifferent between these two options when $V^s = V^d$, i.e. when $\alpha^* = \frac{B+C}{2B+C}$ and $\alpha^* = 1$. For $\alpha < \alpha^*$, $V^s > V^d$ and one heir holds the majority of votes, while for $1 > \alpha > \alpha^*$, $V^s < V^d$ and three heirs hold votes with equal voting power ($w_i \in \left(0, \frac{1}{2}\right)$ s.t. $\sum_{i=1}^{3} w^i = 1$).

Next, in case of deadlock, allow one heir i to promise a side transfer d to some other heir in exchange for the support for his preferred project, subject to $(B + w^i C - d) \geq 0$ and budget constraints $w^i C - d \geq 0$. First, coalitions formed between two out of three heirs are not stable. Say heir 1 offers θB to heir 2 in exchange for his support for the project that heir 1 prefers. Heir 1's utility is $(1 - \theta) B + w^1 C$, while heir 2's utility is $\theta B + w^2 C$. However, heir 3 has an incentive to offer heir 1 a split whereby heir 3 gets $(\theta - \epsilon) B$, while heir 1 has a utility of $(1 - \theta + \epsilon) B + w^1 C$, in which case both have incentives to deviate. Moreover, side transfers involving all three heirs do not remove the possibility of the deadlock either. The surplus from forming the coalition is constant and any division of B among three heirs can be dominated by a division of B among some two heirs. In summary, the possibility of the side transfers does not change the optimal allocation of control.[32] ●

[32]Here we assume that heirs cannot precommit to an ex ante binding agreement (that can be changed only by an unanimous vote) on how the deadlock is resolved. For instance, if $C > 2B$, such an agreement could specify that in case of deadlock, the "eldest" heir's project is implemented while the other two receive the monetary equivalent of B, i.e., everyone guarantees themselves $B + w^i (C - 2B)$. This possibility is assumed away because it might be practically and legally costly to implement.

Appendix 2. Main result for N heirs

Assume that N heirs and J different projects are available, s.t. $J \geq N$. The indices of heirs $i \in \{0; 1; 2; ...; N-1\}$ are ordered in such a fashion that $P(i^+ = j | i = j \& \forall i^- \neq j) \equiv \alpha (1-\alpha)^i$ for $\forall i^+ > i > i^-$. Further, without loss of generality, we assume that the unconditional probability $P(i = j) = \frac{1}{J}$.

The probability that all heirs prefer the same project is then $P(\cap i = j) = \alpha^{N-1}$. At the other extreme, the probability that all heirs prefer different projects is $(1-\alpha)^{\frac{N(N-1)}{2}}$. Denote $k^*(N) = \frac{N+1}{2}$ for odd N and $k^*(N) = \frac{N}{2}$ for even N. For $k \geq k^*(N)$, the probability that exactly k out of N heirs agree on the same project is:

$$P_N^{(k)} = f(k-1; N-1, \alpha) + \sum_{i=0}^{\min(k-2, N-1-k)} f(i; N-1, \alpha) P_{N-1-i}^{(k)}$$

where $f(k; N, \alpha)$ is a probability mass function of a binomial distribution.

Moreover, assume that if ownership is held among an even number of heirs and one coalition is formed that holds 50% of the votes, it can implement its preferred project. If two coalitions hold 50% of the votes, the one that has a heir with an index $i = 0$ wins.

The optimal ownership structure then depends on the number of heirs. It is never optimal to give control to an odd number of heirs and the (even) number of heirs to which it is optimal to give control depends on α. A range of αs exists for any even number of heirs to have an optimal control and the larger α us, the larger the number of heirs that hold control is.

Proposition A1. For all even k s.t. $3 < k < N$ there exists such $\alpha^{(k)}$ that it is optimal for the founder that k out of N heirs hold votes (with equal voting power) if $\alpha^{(k-2)} < \alpha < \alpha^{(k)}$. If $\alpha < \alpha^{(2)}$, it is optimal that the heir with an index $i = 0$ holds the majority of votes, while if $\alpha^{(N-1)} < \alpha < 1$, all N heirs hold votes (with equal voting power). When $\alpha = 1$, the ownership structure is irrelevant.

Proof. Assume first that only two options of bequest are available: splitting the ownership of the firm with equal voting power among all N heirs or leaving it to only one of them. If all N heirs hold equal voting power, the probability of not having a deadlock is $\sum_{k^*(N)}^{N} P_N^{(k)}$ and the expected value of private benefits is $\sum_{k^*(N)}^{N} k P_N^{(k)} B$. On the other hand, the expected value of private benefits if only the heir with an index $i = 0$ holds voting power is equal to $1 + (N-1)\alpha$. Denote the value to the founder from a single bequest as $V^s = (1 + (N-1)\alpha) B + C$ and the value to the founder from a divided bequest as $V^{d(N)} = \sum_{k=k^*(N)}^{N} \left(P_N^{(k)} (kB + C) \right)$.

Denote with α^* the level of agreement at which the founder is indifferent between these two options, estimated from the solution to $V^s = V^{d(N)}$. Further, we show that such a unique solution exists for all $N > 3$.

If $\alpha = 0$, $V^s > V^{d(N)}$ and the single bequest is optimal. Moreover, if α is close to 1, $V^s < V^{d(N)}$ and the multiple bequest is optimal. Both the value of a single bequest and the value of a divided bequest are increasing in α, i.e. $\frac{dV^s}{d\alpha} > 0$, and $\frac{dV^{d(N)}}{d\alpha} > 0$. As $\frac{d^2V^s}{d\alpha^2} = 0$ while $\frac{d^2V^{d(N)}}{d\alpha^2} < 0$, for any N there exists a unique $\alpha^* \in (0,1)$ at which $V^s = V^{d(N)}$.

Next, in addition to unilateral control or a control split among N heirs, allow the control to be split among $N-1$ heirs. The threshold $\alpha^{(N-1)}$ that defines the indifference of the founder toward the bequest between N and $N-1$ heirs is derived from $V^{d(N)} = V^{d(N-1)} + B\sum_{k=k^*(N-1)}^{N} R_N^{(k)}$, where $R_N^{(k)}$ is the probability that the heir who does not have an ownership stake agrees with the majority's choice of a project (if such majority exists), expressed as:

$$R_N^{(k)} = \alpha f\left(k-1; N-1, \alpha\right) + (1-\alpha) \sum_{i=0}^{\min(k-2, N-1-k)} f\left(i; N-1, \alpha\right) R_{N-1-i}^{(k)}$$

If N is even and thus k^* is the same for N and $N-1$, $V^{d(N)} \geq V^{d(N-1)} + B\sum_{k=k^*(N-1)}^{N} R_N^{(k)}$. This relation comes from the fact that (a) $P_N^{(k)} > P_{N-1}^{(k)}$, i.e., it is more likely that a certain number of heirs will agree when there are more of them; (b) since $P_N^{(k)} > R_N^{(k)}$, for the same probability of deadlock, a heir prefers to have voting rights rather than not to have voting rights. Thus, there is no advantage of leaving the bequest to $N-1$ instead of N if k^* does not change.

However, if N is odd and thus k^* is different for N and $N-1$, dividing the bequest among fewer people reduces the probability of a deadlock. Since $P_N^{(k)} > R_N^{(k)}$ and each heir still prefers to have voting rights rather than not to have voting rights for the same probability of deadlock, there is a trade-off between a lower valuation of private benefits and a higher valuation of expected cash flows. $\alpha^{(N-1)}$ at which the founder is indifferent between these two options can again be derived from $V^{d(N)} = V^{d(N-1)} + B\sum_{k=k^*(N-1)}^{N} R_N^{(k)}$, which can be restated as:

$$V_{k^*(N)}^{d(N)} - V_{k^*(N)}^{d(N-1)} - B\sum_{k=k^*(N)}^{N} R_N^{(k)} = P_{N-1}^{(\frac{N-1}{2})}\left(\frac{N-1}{2}B + C\right) + R_N^{(\frac{N-1}{2})}B.$$

Both sides of the equation are non-negative (the left-hand side is non-negative by the same argument as it is for an even N) and for $\alpha > \alpha^{(N-1)}$ monotonically decreasing in α. At $\alpha < \alpha^{(N-1)}$, the right-hand side is larger. At $\alpha = 1-\epsilon$, the left-hand side is larger. That implies that there exists a unique $\alpha^{(N-1)}$ such that if $\alpha > \alpha^{(N-1)}$, a division among N is

preferable while if $\alpha < \alpha^{(N-1)}$, a division among $N-1$ is preferable.

This argument can be iterated for all k s.t. $3 \leq k < N-1$. Thus, for all even k there exists such $\alpha^{(k)}$ that k out of N heirs hold decisive votes if $\alpha^{(k-2)} < \alpha < \alpha^{(k)}$. If $\alpha < \alpha^{(2)}$, the heir with an index $i = 0$ holds the majority of votes, while for an odd N if $\alpha^{(N-1)} < \alpha < 1$ and for an even N if $\alpha^{(N-2)} < \alpha < 1$, all N heirs hold decisive votes.•

In fact, if 50% of the votes is not sufficient to implement the preferred project for any of the coalitions, it is never optimal to give control to the even number of heirs, and the (odd) number of heirs to which it is optimal to give control depends on α. A range of αs exist for any odd number of heirs to have an optimal control and the larger α is, the larger the number of heirs that hold control is. The argument is the same as in the case when 50% of the votes is sufficient. Because reducing the number of owners from an odd N to an even $N-1$ does not change k^*, there is no advantage of dividing the control among $N-1$ heirs.•

Moreover, it is optimal for the founder to give controlling heirs equal voting power.

Proposition A2. The controlling heirs have equal voting power.

Proof. Suppose not. The agreement among some heirs is then less important than the agreement among others. The probabilities of agreement can thus be reassigned to be $P(i^+ = j \& i = j \& i^- \neq j) \equiv \gamma^i \alpha (1-\alpha)^i$ for $\forall i^+ > i > i^-$, where $1 \geq \gamma > 0$ is the choice variable that measures dispersion among the voting power of heirs. The benefit of dispersed voting rights is that the probability of deadlock is lower. For instance, the probability that all of heirs will prefer different projects is $(\gamma(1-\alpha))^{\frac{N(N-1)}{2}}$.

For any N and α, $V^{d(N)}$ is maximized with $\gamma = 1$, which means that everyone's voting power is equal and none of the possible coalitions is associated with a discount in valuing their expected private benefits.•.

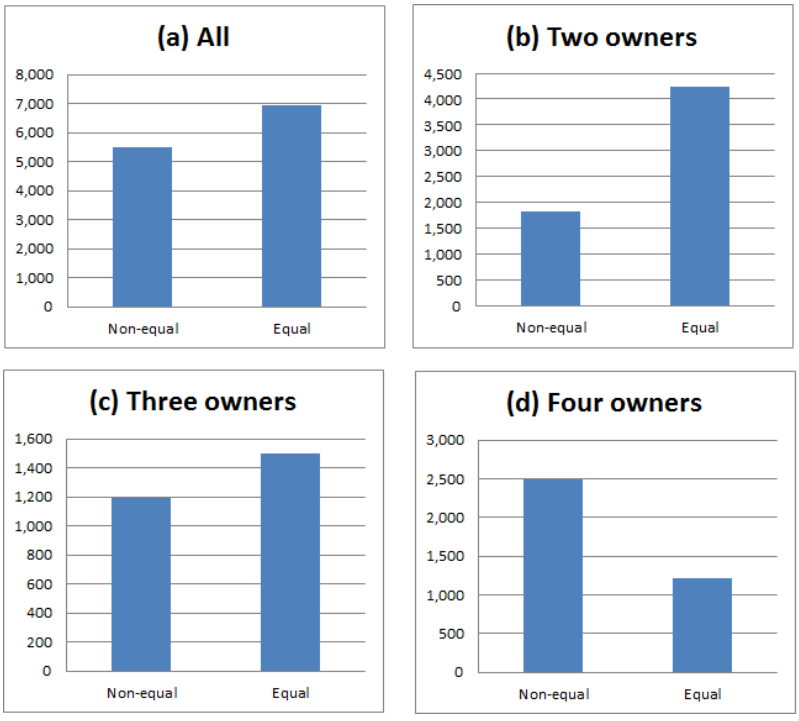
Internet Appendices

Internet Appendix 1. Ownership distribution in the US

Because of the data quality, we rely on the Norwegian sample for our empirical analysis, but here we also provide evidence that these findings extend to other, larger, economies and in particular to the US. That family firms vary in terms of the ownership stakes can be seen from 2007 Survey of Business Owners Public Use Microdata Sample which reports the ownership distribution for the four largest owners of 2,165,680 US firms. We look at those firms that identify themselves as family firms and where all of the largest four owners have inherited their stakes. Out of 13,667 such firms, 12,433 have between two and four owners. 6,936 or 55.8% of these have an equal division of ownership (either 50% each in case of two owners, 34% or 33% each in the case of three owners, or 25% each in the case of four owners).

The figure below reports the distribution of equal and unequal ownership based on the number of owners for firms having between two and four owners. Figure (a) reports the distribution of all firms across the two groups of equal and non-equal ownership between the family members. Figure (b) reports the distribution of firms with two owners. Figure (c) reports the distribution of firms with three owners. Figure (d) reports the distribution of firms with four owners.

Distribution of equal and unequal ownership in US family firms



Internet Appendix 2. Data procedure

We start with the raw relationships, provided by the Norwegian Registry, and then describe how we create the deep family relationship map, and how we merge it with the ownership data.

Raw relationships

The raw relationships provided by the data provider are as follows:

1. Spousal relationships

The data allows us to have a complete set of dates of marriages, separations, divorces for spouses or domestic partners, and of dates of death or of becoming a widow(er). We process these dates to end up with a clean panel data where a person 1 (p1) is linked to a person 2 (p2) via marriage from time 1 to time 2. One person can have multiple non-concurrent relationships. We check that the personal number is legible and conforms to the mathematical test formula for personal numbers. We perform this test for all individuals and consider the ones that pass this test as fully identified individuals. We keep only the relationships between the fully identified individuals.

2. Parental relationships

The raw data provides information about parents for all core individuals (source 1) and for all of their relatives (source 2). Some of the parent entries also specify the custody status and date. We also have information about children for the core persons (source 3). We combine the sources 1, 2, and 3 to create the person–parent relationship. In a few cases there are more than two parents. We cap the number of parents to four to avoid the very few cases with five identified parents. We also test that a parent is not a spouse. In other words, p1-p2 can have only one concurrent relationship in our data. This condition is imposed to avoid data errors propagating one-to-many relationships at a small cost of dropping legitimate concurrent multiple relationships.

3. Grandparents

This field is available for the core individuals.

4. Great grandparents

This field is available for the core individuals.

5. Great-great grandparents

This field is available for the core individuals. The data provider warned us that the data quality for this very remote relationship is not as good as for the other relationships.

6. Children

We invert the parent relationship data to create the children data.

7. Siblings

We use sibling relationships as identified by the data provider for core persons.

8. Cousins

We use the first-degree cousin relationships as identified by the data provider.

Deep family relationship data

We permute these relationships 1–8 in the following way to form the *Deep Relationship Map*:

- We consider a relationship set p1-p2-role and join it with p2-p1-role on p2. In addition, we permute this set by a year array covering our panel data time period. We check that the marriage/partnership is active in the year and that the persons are already born in the year.[33] This procedure gives us p1-p2-role-role-p2-p1. From the 8x8 role-role matrix, we keep the core deep relationships and record those.

- After redundant relationships, the resulting output dataset contains 37 family roles. These roles are up to 8 level apart vertically (e.g., person–parent is level 1) and 4 levels apart horizontally (e.g., person–parent is level 0, siblings are level 1, cousins are level 2).

- *Deep Relationship Map* might identify several relationships for a p1-p2 couple. We avoid this possibility by assigning each p1-p2-newrole outcome a four-digit code (role-code), where the first two digits are used to rank relationship's path (the smaller the number the more important the path) and the last two digits assign a number to the newrole (the smaller the number the more important the relationship is). Note that there can be several paths to identify one p1-p2-newrole set.

[33] We keep the year dimension for the rest of the steps and do not mention it for brevity's sake.

- We drop the p1-p2-rolecode sets where either of the persons has passed away a year before or a year earlier.

- For each p1-p2 we calculate the minimum rolecode and keep the relationship numerical code. The output is a set p1–newrole–p2, which we rename p1-p2-newrole. This procedure forms the *Deep Relationship Map* with 37 relationships (see Appendix Table IA1).

Matching deep family relationships and ownership data

The following procedure describes how we match the deep relationship data to ownership data:

- We permute the basic relationships 1–5 and apply the family-ownership data-matching algorithm. The algorithm starts with the relationship group of a person, who has some role in a company (owner, board member, CEO). We split this group into clusters of persons, which are linked through the basic relationships 1–5, and call these clusters *raw families*. We aggregate the ultimate ownership share (through direct and indirect ownership channels) for each *raw family* and rank the shares to identify the largest *raw family*.[34]

- We then take the largest owner *raw family* for each firm year. The previous step considers only *raw family* members who have some role in the firm. We extend this set by adding family members who are not direct owners using the *Deep Relationship Map* and augment the *raw family* to create the *extended family*. In particular, we permute the *extended family* on itself and look up relationships from the *Deep Relationship Map*.

- Some of the persons with *extended family* relationships will end up having roles in the firm even if they were not linked by *raw family* relationships but the key goal is to capture the persons with *extended family* relationships that do not have roles in the firm. In particular, we count the unique set of individuals who have siblings; the unique set of individuals who have a sibling born on the same day (twins); and the unique set of individuals who have cousins (also, second-degree cousins and third-degree cousins).

[34]Note that in some cases the largest owner may not be an individual or a family.

Internet Appendix 3. Additional tables

Table IA1: Deep relationship map

Role Number	Vertical Distance	Lateral Distance	Role	Alternative Path
1	0	0	HOV	
2	0	0	EKT	
3	1	0	BARN	
5	-1	0	FRL	
6	-1	0	STEFRL	
7	-2	0	BES	
8	-3	0	OLD	
9	-4	0	TIP	
11	1	0	STEBARN	
12	-1	1	ONKLTANTE	FRL
13	2	0	BARNEBARN	
14	3	0	OLDBARN	
15	4	0	TIPBARN	
16	1	1	NEVONIESE	BARN
21	0	1	SOSKEN	
22	0	2	SOSKENBARN	SOSKEN
23	0	3	TREMENING	SOSKEN SBN
24	0	4	FIRMENING	SOSKEN SBN TRE
35	-1	0	SVIGERFRL	FRL
31	0	1	LOVSOS	
32	0	2	LOVSBN	
37	-2	0	LOVBES	BES
38	-3	0	LOVOLD	OLD
39	-4	0	LOVTIP	TIP
40	1	0	BARN-EKT	
43	2	0	STE-BARNEBARN	BARNEBARN
44	3	0	STE-OLDBARN	OLDBARN
45	4	0	STE-TIPBARN	TIPBARN
46	2	1	NEVONIESEBARN	BARNBARN
47	3	1	NEVONIESEBARNBARN	OLDBARN
53	1	2	SOSKENBARN-BARN	BARN
54	2	2	SOSKENBARN-BARNBARN	BARNBARN
55	1	3	TREMENINGBARN	BARN
56	-1	2	FRL-SOSKENBARN	FRL ONKLTANTE
57	-2	1	BES-SOSKEN	BES
58	-1	3	FRLTREMENING	FRL ONKLTANTE FRLSOSKENBARN
59	-2	2	BES-SOSKENBARN	
60	-3	1	OLD-SOSKEN	

Table IA2: Proximity between children home residences

This table provides the correlations between a geographic proximity between children home residences and the outcomes of ownership transitions. The data is based on the Norwegian private family firms matched to the family relationships and focuses on the ownership transfers during 2000–2019. We limit the sample to the cases for which we have children home residence data for all children. The geographic proximity is measured as the average maximum distance (in 100km) between each children pair over the pre-transition sample period. In column (1), we correlate the the percentage of heirs who receive the bequest (the left-hand-side variable) with the geographic proximity between children. In column (2), we correlate the dummy, equal to one if the ownership is transferred within the family and zero if the ownership is transferred outside of the family (the left-hand-side variable), with the geographic proximity between children. In column (3), we correlate the firm age at the time of its transition to outside ownership (the left-hand-side variable) with the geographic proximity between children. We control for number of children. We report the coefficients and the robust standard errors, clustered at the industry level, in the brackets. ***, **, and * refer to the statistical significance at 1%, 5%, and 10%, respectively.

Geographic proximity	(1) % heirs with bequest	(2) Within family transfer	(3) Age at outside transfer
Geographic proximity	-0.267***	-0.609***	-5.940*
	(0.080)	(0.134)	(2.836)
Number of children (18+)	-0.087***	0.166***	1.680***
	(0.005)	(0.005)	(0.104)
Constant	0.857***	0.138***	11.516***
	(0.013)	(0.021)	(0.636)
R^2	0.098	0.193	0.039
N	6606	15562	8414

Table IA3: Private benefits

This table provides full coefficients for Table 4's heterogeneity analysis to Table 2 and Table 3 based on the proxies of private benefits. The data is based on the Norwegian private family firms matched to the family relationships and focuses on the within-family bequests during 2000–2019. We condition the sample on the families having multiple children. In Panels A-B, the dependent variable is the percentage of heirs who receive the bequest. In Panel C-D, the dependent variable is the dummy, equal to one if the ownership is transferred within the family and zero if the ownership is transferred outside of the family. We correlate these dependent variables with the characteristics of the family of the founder in the subsamples with large and small private benefits. In Panels A and C, the proxy of private benefits is the firm's size rank in its locality ("Only game in town"). In Panels B and D, the proxy of private benefits is whether family name appears in the firm's name. In columns (1)-(2), we relate the dependent variable to a dummy if any of the children have different levels of education (Different education). In columns (3)-(4), we relate it to the standard deviation in children's age (Age dispersion). In column (5)-(6), we relate it to the dummy if any of the children are born to different parents (Different parents). We focus on the differences in coefficients in these sample splits and report Chi-squared statistic on the differences in the last row of each panel. We report the coefficients and the robust standard errors, clustered at the industry level, in the brackets. ***, **, and * refer to the statistical significance at 1%, 5%, and 10%, respectively.

Panel A: Percentage of heirs with bequest						
	Private benefits: "Only game in town"					
	High	Low	High	Low	High	Low
	(1)	(2)	(3)	(4)	(5)	(6)
Different education	0.010	-0.016**				
	(0.014)	(0.007)				
Age dispersion			-0.010**	-0.020***		
			(0.004)	(0.002)		
Different parents					-0.119***	-0.172***
					(0.021)	(0.011)
Number of children (18+)	-0.098***	-0.078***	-0.092***	-0.065***	-0.095***	-0.075***
	(0.009)	(0.004)	(0.009)	(0.005)	(0.010)	(0.005)
Constant	0.821***	0.859***	0.845***	0.890***	0.824***	0.852***
	(0.021)	(0.015)	(0.024)	(0.018)	(0.022)	(0.014)
R^2	0.135	0.083	0.148	0.103	0.148	0.102
N	1041	2886	1041	2886	1041	2886
High-Low	0.026**		0.010**		0.053**	
χ^2	4.62		4.02		5.91	

Panel B: Percentage of heirs with bequest

	Private benefits: Eponymy					
	High	Low	High	Low	High	Low
	(1)	(2)	(3)	(4)	(5)	(6)
Different education	0.035*	-0.017**				
	(0.020)	(0.008)				
Age dispersion			-0.006**	-0.018***		
			(0.003)	(0.001)		
Different parents					-0.135**	-0.154***
					(0.040)	(0.010)
Number of children (18+)	-0.071***	-0.089***	-0.064***	-0.077***	-0.064***	-0.087***
	(0.009)	(0.005)	(0.010)	(0.005)	(0.010)	(0.006)
Constant	0.785***	0.858***	0.805***	0.887***	0.785***	0.855***
	(0.029)	(0.012)	(0.033)	(0.014)	(0.033)	(0.012)
R^2	0.068	0.105	0.072	0.122	0.074	0.122
N	554	4347	554	4347	554	4347
High-Low	0.052**		0.012***		0.019	
χ^2	4.99		16.05		0.19	

Panel C: Within-family transition

	Private benefits: "Only game in town"					
	High	Low	High	Low	High	Low
	(1)	(2)	(3)	(4)	(5)	(6)
Different education	-0.107***	-0.114***				
	(0.015)	(0.018)				
Age dispersion			-0.007	-0.022***		
			(0.006)	(0.003)		
Different parents					-0.171***	-0.233***
					(0.021)	(0.019)
Number of children (18+)	0.146***	0.151***	0.163***	0.173***	0.158***	0.161***
	(0.007)	(0.005)	(0.007)	(0.008)	(0.007)	(0.006)
Constant	0.156***	0.271***	0.081***	0.233***	0.089***	0.208***
	(0.028)	(0.017)	(0.019)	(0.020)	(0.020)	(0.020)
R^2	0.216	0.191	0.202	0.189	0.217	0.196
N	2997	5722	2637	5284	2997	5722
High-Low	0.007		0.014**		0.062*	
χ^2	0.06		5.35		3.01	

Panel D: Within-family transition						
	Private benefits: Eponymy					
	High	Low	High	Low	High	Low
	(1)	(2)	(3)	(4)	(5)	(6)
Different education	-0.174***	-0.116***				
	(0.041)	(0.012)				
Age dispersion			-0.005	-0.021***		
			(0.007)	(0.003)		
Different parents					-0.157**	-0.215***
					(0.056)	(0.011)
Number of children (18+)	0.145***	0.149***	0.160***	0.172***	0.153***	0.161***
	(0.014)	(0.004)	(0.016)	(0.006)	(0.015)	(0.005)
Constant	0.357***	0.218***	0.241***	0.176***	0.261***	0.148***
	(0.043)	(0.024)	(0.043)	(0.019)	(0.036)	(0.022)
R^2	0.199	0.203	0.169	0.197	0.173	0.206
N	999	10120	905	9182	999	10120
High-Low	-0.057		0.016**		0.059	
χ^2	2.63		4.62		1.14	

Table IA4: Commune and industry fixed effects

This table provides a robustness check of the instrumental variables specification for ownership transition outcomes, corresponding to Table 5, Panel B. The data is based on the Norwegian private family firms matched to the family relationships and focuses on the ownership transfers during 2000–2019. We instrument the founder's divorce with the number of divorces by the founder's first cousins. Column (1) reports the second stage, where the dependent variable is the percentage of heirs who receive the bequest. Column (2) reports the second stage, where the dependent variable is the dummy, equal to one if the ownership is transferred within the family and zero if the ownership is transferred outside of the family. Column (3) reports the second stage, where the dependent variable is the firm's age at the time of its transition to outside ownership. We control for commune and industry fixed effects. We report the coefficients and the robust standard errors, clustered at the industry level, in the brackets. ***, **, and * refer to the statistical significance at 1%, 5%, and 10%, respectively.

Instrumental variables specification (Table 5, Panel B, second stage)			
	(1)	(2)	(3)
	% heirs with bequest	Within family transfer	Age at outside transfer
Founder divorce	-0.264***	-0.794***	-13.905***
	(0.066)	(0.106)	(2.336)
Number of children (18+)	-0.082***	0.154***	1.516***
	(0.005)	(0.005)	(0.137)
R^2	0.094	-0.172	-0.052
N	6547	15566	15566

Table IA5: Children working outside of the firm

This table reports regression specifications, where in columns (1)-(2) the dependent variable is investment, defined as the change in the book value of fixed assets after accounting for depreciation, accumulated during the three years after the share transfer and scaled by the fixed assets at the time of the transfer, and capped between 0 and 1; in columns (3)-(4) the dependent variable is the cumulative sales growth during the three years after the share transfer, and capped at -100% and 200%; and in columns (5)-(6) the dependent variable is a dummy if the firm is not reporting sales, assets, and employees at the end of the sample period. The data is based on the Norwegian private family firms matched to the family relationships and focuses on the within-family bequests during 2000–2019. We condition the sample on the families having multiple children and we condition that none of the children worked for the firm at the time of transition. In columns (1), (3), (5), the explanatory variable is the number of children who inherit the firm's shares during the ownership transfer (Number of heirs). In column (2), (4), 6) the explanatory variable is the fraction of children who inherit the firm's shares, out of all children in the family (% Percentage of inheriting children). We report the coefficients and the robust standard errors, clustered at the industry level, in the brackets. ***, **, and * refer to the statistical significance at 1%, 5%, and 10%, respectively.

Robustness of Table 6 and Table 7 for family firms without children employed in the firm						
	Investment		Sales growth		Discontinued operations	
	(1)	(2)	(3)	(4)	(5)	(6)
Number of heirs	-0.020**		-1.509**		0.001	
	(0.008)		(0.702)		(0.001)	
% Percentage of inheriting children		-0.060***		-4.660*		0.006
		(0.020)		(2.258)		(0.004)
Number of children (18+)	0.005	-0.005	-0.520	-1.267	0.001	0.002
	(0.008)	(0.007)	(0.967)	(1.248)	(0.002)	(0.002)
Age of heirs	-0.003***	-0.003***	0.006	0.008	-0.000**	-0.000**
	(0.001)	(0.001)	(0.099)	(0.100)	(0.000)	(0.000)
% Male children heirs	0.024*	0.024	4.494*	4.430*	-0.003	-0.002
	(0.013)	(0.014)	(2.369)	(2.327)	(0.005)	(0.005)
% University education of heirs	-0.037**	-0.038**	4.764	4.779	0.003	0.003
	(0.016)	(0.016)	(3.615)	(3.630)	(0.004)	(0.004)
invest3_pre	0.194***	0.194***				
	(0.021)	(0.021)				
Constant	0.404***	0.436***	1.932	4.379*	0.025***	0.021***
	(0.068)	(0.064)	(2.080)	(2.163)	(0.008)	(0.007)
R^2	0.035	0.035	0.002	0.002	0.001	0.001
N	2306	2306	2482	2482	4219	4219

Table IA6: Full children transfers

This table reports regression specifications, where in columns (1)-(2) the dependent variable is investment, defined as the change in the book value of fixed assets after accounting for depreciation, accumulated during the three years after the share transfer and scaled by the fixed assets at the time of the transfer, and capped between 0 and 1; in columns (3)-(4) the dependent variable is the cumulative sales growth during the three years after the share transfer, and capped at -100% and 200%; and in columns (5)-(6) the dependent variable is a dummy if the firm is not reporting sales, assets, and employees at the end of the sample period. The data is based on the Norwegian private family firms matched to the family relationships and focuses on the within-family bequests during 2000–2019. We condition the sample on the families having multiple children and we condition that the founder fully exited his stake and all the ownership was divided between his children. In columns (1), (3), (5), the explanatory variable is the number of children who inherit the firm's shares during the ownership transfer (Number of heirs). In column (2), (4), 6) the explanatory variable is the fraction of children who inherit the firm's shares, out of all children in the family (% Percentage of inheriting children). We report the coefficients and the robust standard errors, clustered at the industry level, in the brackets. ***, **, and * refer to the statistical significance at 1%, 5%, and 10%, respectively.

Robustness of Table 6 and Table 7 for full family transitions						
	Investment		Sales growth		Discontinued operations	
	(1)	(2)	(3)	(4)	(5)	(6)
Number of heirs	-0.031*		-0.640*		0.003**	
	(0.015)		(0.316)		(0.001)	
% Percentage of inheriting children		-0.092*		-2.979*		0.012***
		(0.048)		(1.491)		(0.004)
Number of children (18+)	0.014	-0.001	-0.318	-0.876	0.001	0.003**
	(0.010)	(0.007)	(0.468)	(0.854)	(0.001)	(0.001)
Age of heirs	-0.002**	-0.002**	-0.013	-0.007	-0.000*	-0.000*
	(0.001)	(0.001)	(0.052)	(0.064)	(0.000)	(0.000)
% Male children heirs	0.081***	0.080***	1.981*	2.185	-0.002	-0.002
	(0.019)	(0.019)	(1.122)	(1.568)	(0.003)	(0.003)
% University education of heirs	-0.048*	-0.048*	2.998	4.040	0.004***	0.004***
	(0.027)	(0.027)	(1.900)	(2.460)	(0.001)	(0.001)
invest3_pre	0.183***	0.182***				
	(0.035)	(0.034)				
Constant	0.408***	0.457***	1.860	3.814**	0.011*	0.003
	(0.038)	(0.021)	(1.201)	(1.671)	(0.006)	(0.007)
R^2	0.038	0.038	0.001	0.001	0.002	0.002
N	3182	3182	4664	3556	4997	4997